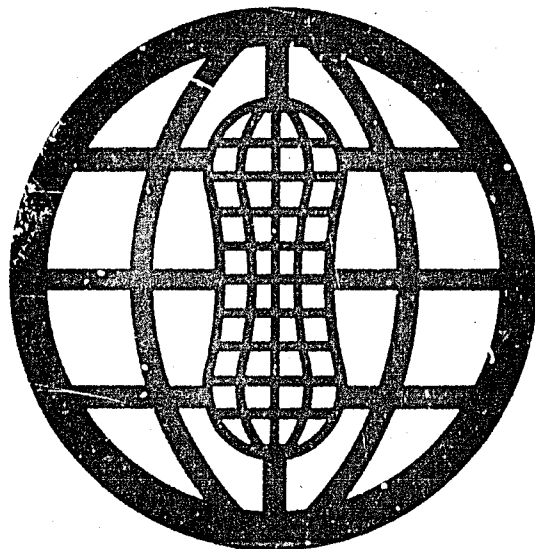


**Peanut Collaborative Research
Support Program
(CRSP)**

*Triennial Review
by the
External Evaluation Panel
1985*



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EXECUTIVE SUMMARY

The Peanut Collaborative Research Support Program CRSP grant document established an External Evaluation Panel (EEP) consisting of three to five eminent scientists recommended by the CRSP Management Entity to AID/BIFAD for specified terms of appointment. Periodically as appropriate the EEP shall:

1. Review projects and programs of the CRSP and provide written evaluation.
2. Make recommendations for the addition; elimination; or modification of component projects and overall objectives, to include retention, elimination, or addition of new overseas sites.

An EEP was nominated and approved during 1984.

Mr. Donald C. Pickering, Agriculturalist, World Bank, Washington, DC (later designated chairman).

Dr. A. Hugh Bunting, Tropical Agronomist/Ecologist, and Professor Emeritus of Agricultural Development Overseas, the University of Reading, England.

Dr. Pierre Gillier, Peanut Breeder/Agronomist, and retired Head of Oilseeds Department, IRHO, Paris.

Dr. Kenneth H. Garren, Peanut Pathologist and retired USDA Peanut Research Leader, Suffolk, Va.

Dr. Max Milner, Food Scientist/Nutritionist and retired Executive Secretary of the American Institute of Nutrition, Washington, D.C.

An organizational meeting was held in Washington, D.C. in November 1984 to develop a scope-of-work and a schedule for U.S. university and host-country site visits in compliance with requirements for a Triennial Review in the Guidelines for CRSP's established by BIFAD/AID. These visits were accomplished from February through September 1985.

The scope-of-work developed for the U.S. university and host-country site visits covered the following items:

1. Implementation and Management
2. Adequacy of Science
3. Geographic Coverage and Applicability of Research
4. Institutional Development
5. Research Progress and Application
6. Summary
7. Reviewer Recommendations.

PEANUT CRSP

Summary Assessment by the External Evaluation Panel

INTRODUCTION AND METHODOLOGY

This summary is based on the findings of the five man Panel appointed to evaluate the progress of the Peanut CRSP during its first three years or so of operation. Three of the Panel members, Garren (USA), Gillier (France), and Pickering (UK) had played some part in the planning of the Program at its inception. The two others, Bunting (UK), and Milner (USA), came to it with a broad familiarity with the CRSP approach in addition to long years of experience in research and the production and utilization of the crop. The national diversity of Panel members ensured a well rounded assessment of CRSP activities. However, it was recognized that their geographic dispersion and pressure of other duties would perforce limit interactions largely to exchanges of correspondence, and telephone conversations, except during field trips to US institutions or collaborating countries.

In light of this limitation on exchange of views, the Panel agreed at the outset on standard formats for evaluation of research projects at US institutions and in collaborating countries as appropriate to each group^{1/}. Formats were derived from the Panel's scope of work as previously debated and agreed with the governance of the CRSP. Covering each major area of interest, the review forms sought to ensure consideration and rating of each significant component on a six point scale together with summary comments for each major area, an overall recommendation rating for each project, plus a narrative section highlighting review findings. While this approach might be criticized as being somewhat mechanistic, Panel members found it to be a satisfactory method of recording their views and providing a basis for objective assessment and comparative analysis of performance.

To the extent possible, the Panel conducted its assessments by operating in groups of two individuals whether at US institutions or in collaborating countries. Groupings varied according to perceived professional needs and individual comparative advantage, and to some extent availability. Such variations promoted the objectivity of assessments and underscored the importance of following a standard review format.

THE ASSESSMENT

The Panel expresses itself generally in complete agreement with the concept of the Peanut CRSP and with its principal features. The

^{1/} See Introduction, p. 3-6.

targetting of efforts based on alleviation of five primary constraints identified in the planning phase via clearly articulated research objectives is an appropriate approach. Program design, utilizing a small number of US institutions has minimized program overhead and management costs and has clearly proven cost effective. The eight host countries chosen as collaborators have enabled the Program to impact in three major geographic regions: Southeast Asia, Semi Arid Tropical Africa, and the Caribbean. A summary assessment of projects and their contribution to the overall progress of the CRSP is presented below.

LOW YIELDING CULTIVARS

The three projects having this constraint as their primary objective are evaluated as follows:

International Peanut Evaluation Program (GA/INPEP)

This is arguably the most complex logistically, and is perhaps the least satisfactory of all projects within the CRSP. Originally planned for collaboration with three francophone West African countries (one of which subsequently failed to ratify its collaboration agreement) plus five territories in the Caribbean Region, it is an operation calling for comparatively heavy in-country involvement and hence travel by the US Principal Investigator (P.I.). In the event this had not occurred as of mid 1985, and results have suffered considerably in consequence.

Reports on the state of the program in individual countries and the responsible US institution with recommendations have been submitted by the Panel to the management of the CRSP. In summary form they call for:

- o Significantly more collaboration and guidance from the US Principal Investigator, with serious consideration to the provision of a Co-Investigator in recognition of the comparative institutional and related weaknesses of collaborating countries.
- o Sub division of the West African and Caribbean efforts into two sub projects to take account of their basic environmental differences.
- o Consideration of network development in West Africa to facilitate interaction between country investigators and with the P.I. The possibility of extending such networking to closer linkages with the Senegal based CRSP breeding project (TX/BCP/S) should be an aspect of this consideration. However, the Panel counsels caution in this latter aspect of its recommendation because of Nigerian and Burkinian concerns about domination by Senegalese researchers. These concerns under-score the importance of (an) active Principal Investigator(s).
- o Given better support from the P.I. the Panel recommends consideration of expansion of on-site research in Niger via the CRSP to establish the constraints on yields from insects, diseases and nematodes.

- o In the Caribbean the recommended heavier PI involvement should be directed towards facilitating increased training of local staff. This should follow a review of the feasibility of refining the Caribbean sub project to take account of the perceived need for studies on such questions as differing maturity responses by cultivars, and the impact and epidemiology of such diseases as rust and leaf spots on yield in the Caribbean region.

(Response: Retirement of the co-Principal Investigator for the project early in the program left one person with excessive travel needs in two regions. The P.I. felt that there was not the need for an annual visit in the cultivar testing program. Each host country collaborator visited the U.S. P.I. for short-term training and a visit was made by the U.S. P.I. to each country for establishment of the project. The EEP view is accepted.

Based on Board and Technical Committee deliberations and the EEP concurrence, the program in West Africa (Niger and Burkina Faso) has been linked to the Texas A&M breeding project in Senegal. Expansion of the West Africa work will be with proper deliberation and planning. We will be cognizant of the concern of domination of the program by Senegal.

The GA/INPEP will be concentrated into a GA/BCP/CAK program in the Caribbean. More interaction with the local staff will follow, cultivar improvement will expand, and research will be initiated on disease, physiological, and mineral nutrition problems).

Disease-Resistant Peanut Varieties for Semi-Arid Environments (TX/BCP/S)

The project is characterized by sound design, good science, administration, coordination, and strong in-country support by the Principal Investigator, his colleagues, and his institution. Its potential for results that will be useful not only in Semi Arid Tropical Africa but also in the US and other semi-arid regions of the world is significant and argue strongly for its continuation.

On the other hand, the major generic problems in conducting and managing agricultural research in Senegal have inevitably impacted adversely on progress. Fortunately the work of the CRSP receives strong support from the USAID Mission. Changes being sought by major aid agencies in Senegal, including the US, in the administration of the national agricultural research institute (ISRA) seek to improve this situation. In the event that they do not, and particularly, remove the serious bottlenecks hampering the flow of external and counterpart funds to the project, special action will be called for as indicated below.

Notwithstanding the "country" problems referred to above the Panel strongly supports the project and recommends its continuation. Specific suggestions follow:

- o The system of disbursing CRSP funds should be simplified in order to remove the acute financial constraint on project implementation. In the event that modified procedures, involving financial planning by, accountability requirements of, and direct channelling to relevant Senegalese researchers, are unacceptable to ISRA management, consideration should be given to the use of an external fund manager of CRSP funds perhaps in USAID Dakar. The Panel would prefer not to see the latter course of action but recognizes that financial management problems must be overcome if an otherwise excellent project is not to founder.

(Response: We are aware of this problem and have tried to impress upon the administration the urgency of timely availability of funds. Hopefully the newly appointed administration and new procedures will aid in this matter. The new ISRA Director General has been informed and indicated a willingness to help. The ISRA administration has not been in favor of a permanently located U.S. CRSP person. We are aware of donor efforts to effect a change in ISRA management of research and funds).

- o The drought hazard in Senegal, and in other SAT African countries, has seriously limited the collection of yield and other data from field tests. This could and should be ameliorated by expanding the geographic scope for the project to the Casamance Region (in the South of Senegal), an area of more reliable rainfall, but nevertheless relevant to the Semi Arid Tropics.

(Response: Agreement has been made and tests were conducted in the higher rainfall regions of Burkina Faso in 1985. This alleviates the need for tests in the Casamance region which has rainfall similar to that of the Burkina Faso test sites. The linkage to Burkina Faso and Niger because of the change in the GA/INPEP project will further spread the risk of climatic problems in Senegal).

Peanut Varietal Improvement for Thailand and Philippines (NCS/BCP/TP)

Covering two countries representative of peanut producers in much of the East Asia Region this project is well designed and is being satisfactorily implemented by all agencies concerned. The US institutions, the P.I. and his colleagues, collaborating scientists and institutions demonstrate a commendable cooperative relationship. Their project is entirely relevant to the needs of small scale peanut growers in the East Asia Region and is producing results of value to plant breeders for the US peanut industry.

The Panel strongly recommends continuation and has no more than the following minor suggestions to improve an excellent endeavor:

- o Consideration should be given by the P.I. and his colleagues to minor extensions (one or two days) in country visits. Their

technical assistance value is perceived by the Panel and collaborating scientists to be of a very high order and should not be downplayed. Part of this technical assistance should be to foster to stronger linkages between Philippines and Thai researchers.

(Response: The U.S. P.I.'s plan to spend more time in both host countries within time and fund constraints. Mature Ph.D. candidates from NCSU are presently spending a year doing thesis research in Thailand and Philippines which contributes to this need of more in-country time).

- o In the Philippines the Panel commends the excellent support of the coordinating body PCARRD. It suggests action may be needed by PCARRD to establish criteria and guidelines for defining the factor of "quality" in peanut as perceived in the Philippines. PCARRD should also work with the P.I. to foster peanut program linkages between Philippine and Thai researchers.

(Response: The lack of research on quality of new peanut germplasm is a weakness of the project that was recognized earlier. Work was initiated on oil quality of germplasm at NCSU in 1984. We will try to expand this work and coordinate with the food technology projects as much as possible).

- o In Thailand, project implementation would be facilitated by improved timeliness in the release of CRSP and counterpart funds, which in turn would be facilitated by more and better advanced planning of research activities by Thai project managers. At the central government level, the Peanut CRSP Coordinator should seek to facilitate linkages between Thai and Filipino researchers in the peanut breeding field.

(Response: Effort will be made to seek more timely release of CRSP funds. We feel this is not a great problem. Relative to Thailand and Philippine cooperation, a regional workshop is planned for 1986 and further interaction will be encouraged.

MYCOTOXIN MANAGEMENT

Whereas only one project addresses this topic as a primary objective, four others take it into account as a secondary objective. This they do in an entirely logical and appropriate manner in their design and implementation. The following paragraphs present Panel findings on:

Mycotoxin Management in Peanut by Prevention of Contamination and Monitoring (TX/MM/S)

As noted earlier, all those concerned with the Peanut CRSP at Texas A & M have dedicated full support at all relevant levels. The project is seen to have strengthened an already significant program in mycotoxicoses and public health, and has added a valuable international perspective. In Senegal, its value is appreciated; its major thrust is appropriate and should be continued. Whilst in no way downplaying the importance of

speculative basic research, the Panel nevertheless feels that there may be some slight over-emphasis on this aspect to the detriment of cooperative endeavors in the collaborating country. Comment has already been made regarding unsatisfactory research administrative and flow of funds in Senegal. This state of affairs equally affects the project under review. The Panel's recommendations in that respect are the same as for TX/BCP/S and will not be repeated here.

As implied above, the Panel is satisfied with the design and implementation of this project, subject to improvement in administrative arrangements in Senegal. It should continue along the lines planned with some fine tuning of the work by the P.I. and his colleagues at Texas A & M., and some relaxation of efforts by them to undertake all the maintenance of the laboratory instrumentation and other equipment for the researchers in Senegal. As noted, the Panel feels that an apparent slight preoccupation with basic research considerations and "high tech" instrumentation should be corrected in order to improve the "spin-off" from US work to Senegalese and other developing country conditions. In the Panel's view these are likely to continue to be characterized by limited technical knowledge and comparatively unsophisticated technological equipment in the short to medium term in this field.

(Response: A reasonably good effort has been put forth to train Senegalese researchers in the maintenance of equipment. Spare parts are a problem to obtain on a timely basis. New, appearingly sophisticated, procedures, are needed to advance knowledge in how to prevent aflatoxin contamination. These procedures will be adapted to LDC use and staff trained in their use).

YIELD LOSSES FROM PESTS

Five projects have primary objectives within this constraint domain. Two have already been reviewed in the context of their focus on low yielding cultivars, viz TX/BCP/S and NCS/BCP/TP. The other three concerning peanut viruses in Nigeria, arthropod management in Thailand and Philippines, and IPM strategies for groundnut insects in Burkina Faso are addressed below.

Peanut Viruses: Etiology, Epidemiology, and Nature of Resistance (GA/PV/N)

In general terms the project is seen by internationally recognized virologists to be well designed and highly relevant to an important and industry-wide constraint. It is staffed by exceptionally able and enthusiastic scientists in the US and the collaborating country of Nigeria. Despite perceived problems arising from lack of financial support from within Nigeria the project has made good progress and should be continued. Specific recommendations follow, based on Panel member reviews at the University of Georgia, in Nigeria, and at international meetings in Cambridge, England that discussed "New Developments in Techniques for Virus Disease of Groundnut".

- o The plan of work for future research in Nigeria could be too ambitious for available staff and resources. This problem

should be addressed, prioritizing the items therein as recommended in the 1983 CRSP Annual Report but also taking account of the outcome of the Cambridge meetings and the evolving scope of work required on the Rosette virus. Broadening the area of cooperation with other concerned institutions in Europe and elsewhere, and in particular those represented at Cambridge meetings referred to above should also be sought in the context of meeting plan objectives. However, the Panel understands that funding for the institutions in question may prove a major constraint to their future active involvement. Action is needed by the P.I. and management of the CRSP to establish the financial implications, and to pursue means of promoting the degree of cooperation deemed desirable between the CRSP and these institutions.

(Response: Meetings in September 1985 with cooperators Misari, Ansa, Kuhn, and Demski were completed. Cooperators are only working on projects or areas for which they volunteered. All of Misari's and 50% of Ansa's (Nigerian cooperators) research efforts are on the peanut program which should allow ample time to accomplish the objectives. Institutions involved in the project, other than Georgia and Nigeria are voluntary and receive no CRSP funds and a high degree of cooperation exists).

- o Financial support to the Nigerian collaborating scientists to facilitate their travel outside Nigeria for exchange of views, techniques, and intellectual enhancement should be actively pursued. Its provision should be made on terms that enable the researcher in question to utilize it for the purposes intended and with minimal administrative barriers to such use.

(Response: New procedures approved at the University of Georgia will allow for travel advance to non-university employees).

- o Continued support and assistance from the USAID Mission in Nigeria will be important in facilitating the importation of equipment and other logistical problems concerning the project.

(Response: Efforts will be made to continue this linkage).

Management of Arthropods on Peanut in Thailand and Philippines (NCS/IM/TP)

In common with the other projects designed and operated by North Carolina State University in Thailand and Philippines, this was judged to be of excellent quality, highly relevant to the countries concerned, and enthusiastically and competently managed. The project should be continued as planned subject to generic observations made in respect of NCS/BCP/TP and the following minor course adjustments.

- o If this has not already been done, the Panel recommends that consideration be given to initiating studies on post harvest pests of peanut in the collaborating countries. The Panel

recognizes that this observation is a reflection of a perceived overall Peanut CRSP weakness, i.e., of failure to give explicit consideration to post harvest pest problems. This deserves serious thought during discussions of possible extension of CRSP activities.

(Response: A U.S. graduate student will be involved in post harvest pest research. Local research in Philippines and Thailand will be initiated in 1986. Effort to coordinate research with the Food Technology project will be made).

- o The Panel strongly supports the proposed sabbatical for the P.I. in Thailand or the Philippines and suggests that, in addition to fostering project linkages between Thailand and Philippines, he should to the extent possible promote networking with other Asian peanut producing countries, such as Indonesia, Malaysia and Burma.

(Response: Dr. Campbell plans to be in Thailand and Philippines for six months beginning in September 1986. He has been to Burma at AID invitation for consultation on insect problems and has been invited for further work there in 1986).

IPM Strategies for Peanut Insects in SAT Africa (CA/IM/BF)

The project is well conceived and highly relevant to Burkina Faso itself and also to peanut producing countries generally in SAT Africa. Its linkages particularly with IRHO/CIRAD scientists, but also with staff of such institutions as IITA and SAFGRAD located in Burkina Faso, are important and should be strengthened in this context and also in light of the value of such linkages to the University of Georgia in its work on peanut in the US.

The Panel recommends continuation of the project as conceived and articulated in the plan of work subject to the following observations:

- o Special efforts are needed to convince senior research administrators in the national research organization, IBRAZ, of the relevance of the project to the needs of the country. This may best be done by encouragement to the University of Ouagadougou Research Institute (ISP) personnel to improve contacts with IBRAZ.

(Response: Closer cooperation between the ISP and IBRAZ is evident).

- o Given realization of the relevance of the project by IBRAZ, problems of experimental plot allocation, insecticide procurement and access to transport could well be resolved. However, the Panel recognizes the problems of overcoming bureaucratic prejudice. It wonders if judicious interventions by USAID Mission may be called for in this regard.

(Response: The project was established with IBF because of facilities and staff availability and interest. Hopefully bureaucratic problems will not interfere with the good research being accomplished. Both groups are now in the same ministry).

INADEQUATE FOOD SUPPLIES

The CRSP focus on this constraint has been via three projects managed by the Universities of Alabama A & M, and Georgia in Sudan and the Caribbean, and Thailand and Philippines respectively. An attempt has been made therefore to cover all three regions of the CRSP focus. That it has not been entirely successful in this regard is partially a function of the choice of collaborating countries: who was to predict the impact of a coup and the Sahelian drought on Sudan? It is also partially a function of judgment as to the interpretation of the role of the CRSP at the adaptation and development end of the research and development (R&D) association. Some would argue that much of the food technology research in peanut relevant to developing countries has been completed and that what remains is technology dissemination with perhaps a modicum of adaptation to meet local dietary preferences and socio-economic conditions. This debate exercised the planners of the CRSP and remains alive during its evaluation.

The following questions continue to be raised:

- o Is there unnecessary duplication in the Philippines and Thailand projects?

(Response: Replication of research may be viewed as duplication, but necessary at times. Duplication will be minimized).

- o Are food technology projects within the CRSP related more to what US collaborators are able and prepared to provide rather than to the real needs of host countries?

(Response: Research is developed based on in-country surveys and response to what the cooperators view as important).

- o Is there not a need for additional agro-economic studies on peanut utilization?

(Response: Yes. Cost may control what is done. A study is being planned for the Philippines for 1986).

- o Should not the CRSP expand its mandate to cover more fully the area of post harvest handling and subsequent utilization? This question is posed with particular reference to the apparent need for systematic checks for the presence of aflatoxins and, when detected, a determination of their concentrations.

(Response: Reason for this question is not completely understood, since aflatoxin control and post harvest problems are a significant part of the program).

The Panel considers that questions such as those raised above warrant debate within the governance of the CRSP and by those responsible for deciding future funding. Whereas, as indicated above and elsewhere, the Panel considers the Peanut CRSP to be, by and large, extremely successful

in its concept and execution of projects pertaining to production problems, it feels that some rethinking of the "food technology" aspects may be called for. More precisely, and rather than obfuscating the question by consideration of individual project issues, the Panel recommends as follows:

- o Appointment of a specialized sub group to review the "food technology" projects undertaken within the CRSP to establish their relevance and to advise the Board of Governors of the CRSP on possible redirection of effort.
- o The sub-group will comprise three distinguished food technology scientists. Dr. Max Milner will represent the EEP as a resource person. Additional resource persons will include the Principal Investigators for each food technology project, plus such other relevant persons concerned with the planning of this aspect of the CRSP and the implementation of these projects as it deems necessary.
- o The sub-group will be provided with and expected to review all relevant documentation. After such review and consultation with the resource persons it will submit its report through Dr. Milner, who will comment on behalf of the EEP, to the management of the CRSP.
- o Redesign of projects as recommended by the sub group and accepted by management within the framework of the CRSP, and their implementation within temporal and budgetary parameters assigned by the financing agency.

(Response: A subgroup was selected and met at the Georgia Experiment Station 19 and 20 December 1985. Members were: Dr. John Cherry, Chairman, Director of USDA/ARS Eastern Research Laboratory, Philadelphia; Dr. Lloyd Rooney, Cereal Quality, Texas A&M University; and Dr. Guy Woodruff, Food Scientist Emeritus, University of Georgia. Dr. Clinton Chichester, Food Scientist, University of Rhode Island, cancelled. Dr. Max Milner, EEP, participated. Project plans, progress, and EEP reports were provided. Recommendations will be utilized in the Food Technology projects. A report from this subgroup and comments by Dr. Milner follow this Summary Assessment.

SOIL MICROBIOLOGICAL BARRIERS (RCS/TX/SM/TP)

This is a primary objective of the joint project between North Carolina State and Texas A & M Universities in Thailand and Philippines. Divided between Rhizobial and Mycorrhizal considerations affecting nitrogen fixation and growth of peanut, the project has clearly established its relevance within collaborating countries, in addition to the soundness of its design and the competence of the Principal Investigators from the two US institutions concerned. The projects have clear regional and international significance and should be continued. The Panel underscores the importance of testing the effectiveness of local Rhizobial strains against imported material. Additional comments are as follow:

- o With regard to the NCSU component, the Panel was very favorably impressed by the P.I. but, in view of his rather personalized management style, suggests that consideration of broadening the geographic scope of the project should be subject to his continuing availability.

(Response: The comment refers to proposed expansion to Cameroon. The Board and TC has already voted not to expand to Cameroon).

- o A comparable problem is seen within the Philippines project. Future plans of work must take account of management within Philippines. This may be weakened by staff promotion. US Principal Investigators must be alive to the likely need for downward adjustment of short term goals pending familiarization and provenance of new collaborating country project managers.

(Response: We have no control over duties assigned to the collaborators, such as administration. Efforts are underway to increase graduate training of Philippine students, both at UPLB and NCSU).

- o As noted earlier the Thailand project, as also that in Philippines, would benefit from a slight prolongation of time spent by the PI in-country, on technical assistance grounds.

(Response: Travel clearance has hampered trips planned in the past. More time will be planned in future trips).

- o With regard to the considerations affecting mycorrhizae, the Panel is alive to the speculative nature of the research. Continuation is strongly supported, with the proviso that expansion of scope should be conditional on a clear indication of the beneficial impact on productivity of peanut by mycorrhizal fungi together with an indication of possible means of manipulating the soil environment to increase their establishment. Future reports by the P.I. should address these issues perhaps in consultation with other experts in the field, such as Dr. James Hendrix, University of Kentucky, and Dr. Norman Schenk, University of Florida, with the objective of providing CRSP managers with the evidence needed to make these decisions.

(Response: The P.I. is aware of the project nature. Research will focus on ways of efficient inoculation. The P.I. is in professional contact with other U.S. researchers in the field, and will continue to seek their advice).

CONCLUSION

The Panel would like to take this opportunity of expressing its gratitude to all concerned with the Peanut CRSP for their patience, forbearance and professionalism in their dealings with the EEP. As indicated above, the Panel is fully supportive of the aims, objectives and accomplishments of the Peanut CRSP. Panel members trust that their observations will be seen to be both constructive and relevant.

SUBJECT: Ad Hoc Committee Report for Peanut CRSP External Evaluation Panel to Study Food Technology Projects Research Focus, December 19-20, 1985.

The External Evaluation Panel (EEP) Ad Hoc Committee, composed of J. G. Woodroof, L. W. Rooney and J. P. Cherry (Chairman), met with representatives of the Food Technology projects, Peanut Collaborative Research Support Program (PCRSP), December 19-20, 1985. PCRSP representatives included: B. Singh, J. C. Anderson, T. Nakayama, R. Raunekar, A. Resurreccion, R. Brackett and L. R. Beuchat. Also present were M. Milner, EEP representative, and D. G. Cummins, Program Director. The EEP Ad Hoc Committee's assignment was to advise the CRSP Board of Directors about the relevance of the projects focusing for the past three years on adequate food supplies from peanuts and, if needed, possible program redirections.

Prior to the meeting, Dr. Cummins sent each Ad Hoc Committee member: a) initial planning reports for the three food technology projects; b) annual progress reports of the PCRSP scientists for each of three years (1982-84); and c) the 1985 EEP assessments evaluating progress made on the projects. The charge of the Peanut CRSP Summary Assessment by the EEP, pgs. VII-IX, was explained to Ad Hoc Committee members, whereby they came to the review prepared to discuss the questions with PCRSP representatives.

The Ad Hoc Committee agrees with the EEP summary assessment that the PCRSP has been extremely successful in its concepts and most projects have objectives relevant to the needs of less developed countries (LDC). It was recognized that the PCRSP is staffed with competent scientists successfully working within funding constraints to develop programs in food science, technology and production to meet the needs of the LDCs. Some project activities have already been modified and redirected by PI's based upon EEP advice and criticisms. We compliment the PI's on their interest and enthusiasm to participate in international agricultural development, especially in view of the relatively modest funding levels available in the individual projects. Reactions of the Ad Hoc Committee relative to the food technology projects follow.

The Ad Hoc Committee evaluated the EEP's concern that the food technology projects involved only technology transfer activities without basic research. We believe that basic research on peanut composition, processing properties, aflatoxin detection and control, processing properties and other aspects relevant to peanut utilization has been accomplished and is continuing at PCRSP institutions. These fundamental aspects have not been incorporated into the annual reports since much of the research is not supported directly by PCRSP funds. The Ad Hoc Committee believes that the food technology projects investigators should incorporate into their research activities and progress reports more of the fundamental research that is being done by PCRSP institution collaborators to support the project activities in the LDC's.

Major surveys on post harvest utilization of peanuts have been conducted to determine how peanuts are used in foods. The Ad Hoc Committee feels that the surveys have served a useful purpose to provide information on the relative importance and problems in utilization of

peanuts. We believe that PCRSP PI's should compile a publication to assess the current international situation on use of peanuts in food. Although the surveys may seem like duplication of research (as indicated in the EEP question, "unnecessary duplication in the Philippines and Thailand project?"), the data are actually showing the individuality of each country. In studies on the acceptability of new types of foods, the restraints which differ greatly among countries, have to be identified and evaluated. Detailed individual reports on the surveys are useful; but, an overall report on the use and role of peanuts in LDCs would be valuable to point out similarities and contrasts among Asian, African and Caribbean areas. The surveys have already provided guidance to the U.S. and LDCs for future research on postharvest and food product development and laboratory testing of quality. The information obtained in the current surveys is undoubtedly incomplete; however, we believe additional large surveys are not justified and that the resources should be applied to solving problems already uncovered.

Aflatoxin contamination of foods made from peanuts in LDCs is a major problem that is being addressed by PCRSP scientists. This contamination is pervasive and excessive. Research, e.g. proper drying methods and packaging, (CO₂) applications, and management of the aflatoxin problems, are ongoing as part of the PCRSP. Research to improve harvesting, handling, storage, packaging and processing of peanuts for food includes evaluation of the effects on aflatoxin levels. It was agreed among meeting participants that postharvest technologies of 20-30 years ago which could be used directly or after slight modification, e.g. solar drying methods for postharvest utilization, might be more practical in LDCs and should be used in studies to understand peanut quality. There is a need for closer collaboration of the food technology scientists with other PCRSP groups, especially the microbiologists working on mycotoxin management, detection and methods for detoxification of aflatoxin in contaminated peanuts.

The review showed a clear realization by PCRSP scientists that food technology research should be more closely coordinated with breeding and variety evaluation programs through collaborative studies. Through the years, breeding and variety evaluation studies have mainly concentrated on agronomic factors, yields, size uniformity and disease resistance. Attempts to improve productivity, yield, disease and insect resistance, etc., cannot be assumed to be successful unless food quality is improved or at least not impaired. The food technologists need to define the attributes of peanuts with acceptable "quality" for use in the major kinds of peanut foods. For example, are peanuts with acceptable quality for roasting, also acceptable for boiling? Do varieties of peanuts exist with variation in processing properties, i.e. brittle testa? Closer collaboration among plant breeders and food scientists in both the U.S. and LDC's could prevent the development of peanuts with poor processing properties. PCRSP PI's are already moving in this direction. A publication summarizing current knowledge of peanut processing qualities in relation to plant breeding may be useful. A critical evaluation is needed of current information on rapid screening methods for food quality for use by plant breeders. However, before this can be accomplished, the properties of peanuts with good and poor processing qualities need to be documented. A study of the literature could show that this information may already be available.

The development of simple modifications of existing peanut processing techniques is an area worth consideration. Would it be possible to develop microbial cultures that could expedite fermented foods production? An example would be Kisra of the Sudan fortified with peanut cake. PCRSP PI's have research underway ranging from basic to applied processing research.

On the question of agro-economics or marketability of peanuts, the collaborative work that would be done by plant breeders, microbiologists and food scientists must recognize the practical, economic feasibility of adopting new technological advances in LDCs. Understanding of the environmental and socio-economic constraints, as well as those of food preservation and preparation technology are needed if cost-effective, tasty, nutritious and aflatoxin-free peanut products are to be made available. Agro-economic or socio-economic aspects or impacts need to be recognized relative to the costs of developing and commercially advancing new peanut products. However, the financial constraints of the PCRSP do not permit sufficient resources to accomplish detailed economic-social studies. Those studies, when they are critically required, can possibly be funded from other sources, i.e. AID country funds, World Bank, etc.

The annual reports of the PCRSP food technology projects should more clearly document fundamental studies conducted at PCRSP institutions that support the applied technology transfer and research activities in LDCs. We believe that USAID leverages their funds to the optimum through the PCRSP program. However, the EEP must remain cognizant of the fact that most PI's have modest funds to use at the project level. Thus, PCRSP research must be carefully focused and coordinated with other country developmental funds.

Worthy of recognition is that most of the research in food technology covered by the Ad Hoc Committee review is included in the top three priorities of the First National Peanut Consultation and Peanut-CRSP Review held at PCARRD, Los Banos, Laguna, Philippines, on February 7-8, 1985 (Attachment A). The scientists of the PCRSP have already taken the initiative to expand the projects to cover more fully the important areas of postharvest handling and subsequent utilization which the Ad Hoc Committee recommends should be supported by the EEP.

Summary: We believe that the PCRSP Food Technology projects have been and are in the process of responding positively to the EEP criticisms by reorienting research activities. We do not see unnecessary duplication. PCRSP food technology reports could be improved. Better interaction of food technology projects with other appropriate PCRSP institutions that support PCRSP LDC activities. The Caribbean project appears to be underway and should be productive. Publications are needed to summarize the survey results and the current information on peanut processing qualities, especially in respect to plant improvement programs.

EEP Comments and PI Response: The EEP Chairman, Don Pickering has reviewed the Ad Hoc Committee report and is fully in agreement with its deliberations and recommendations. Max Milner, EEP member for Food Technology, was involved in the meeting and his views are incorporated into the report. The PI's have recognized needs for improvement since the first review, and have been modifying research to reflect EEP review, and will continue to improve the projects based on the EEP and Ad Hoc Committee reports.

Attachment A

PRIORITY RESEARCH AREAS IN PEANUT (PHILIPPINES)^{1/}

1. Establishment of benchmark information and agro-economic assessment of production, post production, utilization and marketing.
2. Improvement of postharvest handling techniques such as stripping, drying and storage to manage aflatoxin problems; standardization and improvement of packaging to prolong shelf life and improve acceptability of food products.
3. Development of a seed production, processing, storage and distribution scheme.
4. Development of low cost technology to reduce high input costs such as use of rhizobium and mycorrhizae, organic fertilizer, green manuring, botanical pesticides, biological control and minimize tillage.
5. Development and improvement of village level processing and utilization.
6. Establishment of water and fertilizer requirements under various cropping systems.
7. Disease management with emphasis on epidemiology of virus and development of integrated approaches to control major diseases.
8. Testing, evaluation and improvement of farm tools and equipment suitable for small farm conditions.
9. Testing and evaluation of POT under various agro-economic conditions.
10. Development of technology transfer techniques.
11. Development of integrated insect pest management and establishment of economic threshold levels for major insect pests.
12. Development of high yielding pest resistant varieties tolerant to stress conditions and suited to various cropping systems, e.g., rice-based, coconut-based, corn-based, and sugarcane-based.

^{1/}Summarized output resulting from the First National Peanut Consultation and Peanut-CRSP Review held at PCARRD, Los Banos, Laguna, Philippines, February 7-8, 1985.

INTRODUCTION

An External Evaluation Panel (EEP) is an integral part of all Collaborative Research Support Programs (CRSP's). The external evaluation by the EEP is most important to the CRSP operations to assure objectivity in decision making on important and sometimes difficult institutional issues.

Consistent with this criteria, the Peanut CRSP grant document established an EEP consisting of three to five eminent scientists recommended by the CRSP Management Entity to AID/BIFAD for specific terms of appointment. Periodically as appropriate the EEP shall:

1. Review projects and programs of the CRSP and provide written evaluation.
2. Make recommendations for the addition, elimination, or modification of component projects and overall objectives, to include retention; elimination; or addition of new overseas sites.

The Guidelines for the CRSP's as circulated by BIFAD/AID on June 21, 1985 further defines the EEP roles. Principal purposes of the evaluation are to: maintain programmatic focus and effective scientific balance of research toward achievement of objectives; identify inadequate performances, identify activities irrelevant or marginal to CRSP objectives; consider effective balance between research and training for development of institutional research capability; assess the balance of domestic versus overseas research in terms of effectiveness of solving constraints in developing countries; evaluate the cost-effectiveness of the entire CRSP operation in terms of actual cost of doing business versus costs of alternatives that may require less funding, or may otherwise be more efficient or more effective; examine ways of dissemination of research results, and the effectiveness of utilization, a measure of the appropriateness of the research; and report its findings and recommendations annually to the ME, the Board, AID, and JCARD/BIFAD. Some evaluation needs to be made at least annually, although components of an evaluation may be on-going throughout the year. In-depth evaluations with overseas and U.S. site visits should be made within the triennial period in preparation for the Triennial Review.

EEP MEMBERS

A slate of nominees for the Peanut CRSP was proposed by the Principal Investigators, Technical Committee, Board of Directors, and Program Director during mid-1983. The Board later approved a list of five nominees that were presented to AID/BIFAD. Approval of these nominees was received in May 1984.

Basic criteria used in choosing the EEP were:

- a. A background in and a basic understanding of science.
- b. Experience in international agricultural research and/or development and knowledge of LDC problems.

- c. Specific in-depth experience in peanut research.
- d. An understanding of the U.S. landgrant research system.

The EEP members selected were:

1. Mr. Donald C. Pickering, Associate Director, Agriculture and Rural Development, the World Bank, Washington, DC. He served a number of years (1954-1967) in the northern Nigeria peanut production region in agricultural development with the British Colonial Agricultural Service, and since 1967 in several roles of project development and evaluation with the World Bank. (Strengths: a, b)
2. Professor A.H. Bunting, Professor Emeritus of Agricultural Development overseas, the University of Reading, England. He has had extensive experience in agricultural development, including responsibility in the British schemes for peanut production in East Africa during the colonial period. He served on a consultative team to develop the groundnut program for ICRISAT. (Strengths: a, b, c)
3. Dr. Pierre Gillier, retired, Head of the Annual Oil Crops Department of IRHO, Paris. He was head of the peanut research department at Bambey, Senegal for a number of years prior to nearly 20 years in IRHO, Paris. Expertise in peanut research and development in the West Africa Francophone countries. (Strengths: a, b, c)
4. Dr. Kenneth Garren, former Peanut Research Leader, USDA, Suffolk, Virginia. He has extensive experience in peanut pest management and production, and is a recognized authority on mycotoxins. (Strengths: a, b, c, d)
5. Dr. Max Milner is the former Executive Officer for the American Institute of Nutrition. He has a university background at Minnesota (Biochemistry), Kansas State (Grain Science and Industry), Columbia (Human Nutrition), and MIT (International Nutrition) and extensive experience in food related activities with several international groups. (Strengths: a, b, c, d)

The Board of Directors and Technical Committee felt that this 5 member EEP was manageable in size and collectively strong in the basic criteria used in the selection process. However, it was recognized that an EEP of this size could need additional input in some specific areas during an in-depth evaluation, such as the Triennial Review. If deemed necessary at the time of developing a scope of work, the EEP would be complemented with short term advisors to provide additional expertise in specific areas.

Scope-of-Work

A scope-of-work for the EEP was developed by the Program Director, Board of Directors, Technical Committee, AID Program Manager, and the BIFAD Representative, and later approved at a Board of Directors meeting. The approved draft was reviewed by the EEP at their first organizational meeting. The scope-of-work assured a uniform review across locations and that the review focused on the major issues.

The approved scopes-of-work follow.

U.S. UNIVERSITY PROJECT REVIEW

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

- 1.11 Understanding and support of project objectives/collaborative mode
- 1.12 General attitude toward international programs - support of researchers involved.
- 1.13 Logistical and fiscal support
- 1.14 Perceived relevancy of collaborative program to U.S. research interests
- 1.15 Status of GESP in relation to earlier industry reaction to funding
- 1.16 Resource commitment to program
- 1.17 Suggestions/comments

1.2 Researcher involvement

- 1.21 Understanding and support of project objectives/collaborative mode
- 1.22 General attitude toward international program
- 1.23 Logistical support
- 1.24 Perceived relevancy of collaborative program to U.S. research interests
- 1.25 Status of GESP in relation to earlier industry reaction to funding
- 1.26 Overall commitment to program
- 1.27 Suggestions/comments

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology
- 2.2 Progressiveness and innovativeness of research
- 2.3 Appropriateness of research - basic, adaptive - relevancy to U.S. needs
- 2.4 Social science/economic perspective
- 2.5 Suggestions/comments

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to host country/U.S. goals
- 3.2 Complementarity to ongoing peanut research efforts - demands on time, resources
- 3.3 Transferability of research results to U.S. programs
- 3.4 Suggestions/comments

4. INSTITUTIONAL DEVELOPMENT
 - 4.1 Extent of strengthening research capabilities (scientist development, facilities)
 - 4.2 Extent of development of collaborative mode - how are collaborators interacting? - Enthusiasm for research
 - 4.3 Training progress - U.S. students
 - 4.4 Suggestions/comments
5. RESEARCH PROGRESS AND APPLICATION
 - 5.1 Achievement of research objectives
 - 5.2 Impact on research priorities
 - 5.3 Potential of research to be applicable to U.S. needs
 - 5.4 Suggestions/comments
6. SUMMARY
 - 6.1 Specific strengths
 - 6.2 Specific weaknesses
7. REVIEWERS RECOMMENDATIONS

IN-COUNTRY PROJECT REVIEW

1. IMPLEMENTATION AND MANAGEMENT
 - 1.1 USAID Mission involvement
 - 1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.
 - 1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.
 - 1.13 Mission interest for project future
 - 1.14 Suggestions/comments
 - 1.2 Host Country
 - 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode.
 - 1.22 Administration of program government or institutional level.
 - 1.23 Fiscal management
 - 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans.
 - 1.25 Attitude toward U.S. participants and their involvement.
 - 1.26 Commitment of governments and/or institutions to programs - researcher level and above - resource commitment. Importance of peanut research in development goals.
 - 1.27 Suggestions/comments.
 - 1.3 Resources committed to program
 - 1.31 Personnel
 - 1.311 Directly committed/indirect & supportive
 - 1.312 Adequacy of number and capability to function
 - 1.313 Involvement of women
 - 1.314 Overall effectiveness of program personnel
 - 1.315 Suggestions/comments.

- 1.32 Equipment/facilities/supplies
 - 1.321 Availability-reason for unavailability
 - 1.322 Adequacy-reason for inadequacy
 - 1.323 Suggestions/comments

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology
- 2.2 Progressiveness and innovativeness of research
- 2.3 Appropriateness of research-basic, adaptive
- 2.4 Adequacy of social science/economic perspective/sensitivity.
- 2.5 Suggestions/comments

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals
- 3.2 Complementarity to ongoing peanut research activities in-country.
- 3.3 Responsiveness to perceived producer and consumer needs
- 3.4 Communications with other in-country entities.
- 3.5 Does location impact regionally as well as in-country
- 3.6 Relationship to other international research efforts - ICRISAT, IRR1, IRHO, etc.
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation
- 3.8 Suggestions/comments

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities)
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.
- 4.3 Training progress - short term, post graduate training
- 4.4 Suggestions/comments.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives
- 5.2 Impact of research on institution and government priorities and policies.
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.
- 5.4 Potential of research for success in alleviating production and utilization constraints
- 5.5 Impact of research on Women in Development
- 5.6 Suggestions/comments.

6. SUMMARY

- 6.1 Specific strengths
- 6.2 Specific weaknesses

7. REVIEWER RECOMMENDATIONS

REVIEW SCHEDULE

The EEP met twice prior to beginning their review schedule. Three of the members, (Pickering, Garren, and Milner) attended a Peanut CRSP

investigators meeting in July 1984 where the investigators presented oral reviews of their research. Several host-country collaborators were present and reported on their involvement. The meeting was held in conjunction with the American Peanut Research and Education Society Annual Meeting in Mobile, Alabama.

All five members were present for a meeting in November, 1984 in Washington, D.C. to discuss the review process and develop a tentative review schedule. An original timetable of completing the Triennial Review process by June 1985 was delayed until December 1985 with AID approval to enable EEP visits to be made during the cropping season.

Site visits were made as follows:

1. Philippines: February 1985. Garren and Milner. Projects - NCS/BCP/TP, NCS/IM/TP, GA/FT/TP, and NCS/TX/SM/TP. Review coincided with First National Peanut Consultation and Peanut CRSP Review.
2. University visits to Alabama A&M University, Texas A&M, and North Carolina State: April 1985. Pickering, Garren, Milner, Gillier. Projects - All projects plus ME review in Georgia. The AID management review team accompanied the EEP.
3. Cambridge, England: April 1985. Garren. Project - GA/PV/Na. A research review and planning conference of project collaborators was held which included Peanut CRSP (Georgia and Nigeria cooperators), ICRISAT, West German Virus Institute, and the Scottish Crops Research Institute. A potential Australian collaborator attended. Meeting held following an AAB International Conference on "New Developments in Techniques for Virus Detection."
4. Nigeria: July 1985. Bunting. Project - GA/PV/Na.
5. Burkina Faso, Niger, and Senegal: August-September 1985. Garren and Gillier. Projects - GA/INPEP/BE, NI, GA/IM/BE, TX/BCP/S, and TX/MM/S. Team attended the International Symposium on Agrometeorology of Groundnut in Niamey which was co-sponsored by the Peanut CRSP and included several U.S. and African CRSP participants.
6. Caribbean - Trinidad, Antigua, Jamaica, and Belize: September 1985. Milner and Bunting. Projects - GA/INPEP/CAR, AAM/FL/FT/CAR.
7. Thailand: September 1985. Pickering and Gillier. Projects - NCS/BCP/TP, NCS/IM/TP, GA/FT/TP, and NCS/TX/SM/TP.

REVIEW REPORTS

The EEP Review Reports for the individual projects follow. A cover or content sheet precedes each report to index each report. Both university and host-country site visit reports are included under each project.

EEP REVIEW REPORTS
for

GA/INPEP.....	Page
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PEANUT CRSP

CAPSULE EVALUATION STATEMENT ON A PROJECT

This statement prepared by: Kenneth H. Garren

Dates: October 23-24, 1985

Peanut CRSP Code: GA/INPEP/Nr 1/, (M) 2/, BF, CAR

Project Title: International Peanut Evaluation Program

U.S. University: University of Georgia, Coastal Plain Experiment Station, Tifton

Host "Countries": 3/NIGER
BURKINA FASO
CARIBBEAN Area

EEP Reviewers: At University of Georgia, Tifton, Max Milner & Pierre F. Gillier,

Dates: April 1 & 2, 1985

Discussions With: (Key personnel only)

At Georgia Coastal Plain Experiment Station, Tifton Dr. W.D. Branch, U.S. PI of GA/INPEP/--
(Dr. R.W. Hammons, Co-PI had retired before April 1)
(David Cummins, ME of Peanut CRSP) Also present &
(Loren Schulze, U.S. AID participated in
(Carval Wiggins, U.S. AID the discussions)

EEP Reviewers saw as Specific Strengths of this project at U of GA-Tifton

1. Dr. Branch, the U.S. PI, seems a talented, diligent scientist. 2. Almost all foreign contractual agreements sought have been obtained. 3. Main sub-projects have at least been started. 4. Host countries have designated collaborators and some training of collaborators has been started, thus showing good possibility of getting some experimental results in the future.

EEP Reviewers saw as Specific Weaknesses of this project at U of GA-Tifton

1. Dr. Branch, the U.S. PI is carrying a heavy burden of research responsibility, the greater part of which is for U of GA, leaving little

1/ Dr. Bunting's report on EEP trip to Nigeria July 10-13, 1985 made the excellent suggestion that in CRSP acronyms NIGER be "Nr" & NIGERIA be "Na".

2/ MALI, originally designated a host country of INPEP never got around to signing its part of the contractual agreements.

3/ Each host "country" will be treated separately in this Capsule Evaluation

time for INPEP. 2. The original Co-PI seemed to have been of little help in activating INPEP before his retirement, even though he has now volunteered to go to host countries as a "consultant". EEP reviewers feel there is need for an active-duty peanut breeder as Co-PI or cooperator in U.S. 3. No data in hand to determine results from the first growing-season's field plots--though there seems to have been ample time to have obtained and transmitted these data. 4. Little evidence of meaningful contacts between U.S. PI and host country researchers. 5. It took an apparently unnecessarily long time to obtain contractual agreements with the host countries--and this is a partial explanation for weakness (4). 6. The U.S. PI has not visited any host country.

Recommended Future Directions, U of GA-Tifton

(From 2nd Tentative Draft, 10 May, 1985, Gillier, reviewed by Milner)

Though three years into this project, the U.S. PI has not yet visited the host countries. EEP believes this significant impediment should be rectified soon. Travel funds should be allocated to enable U.S. PI to visit and maintain contact with host country locations. A U.S. Co-Investigator should be appointed soon so as to let Dr. Branch off of a part of this important but too heavy task of his. (Co-Investigator suggested as mainly for the Caribbean part of the project). Take under serious consideration the six recommendations already presented by CRSP Technical Committee in minutes of its meeting of October 15-16, 1984.*

(*These six recommendations are repeated verbatim below).

AFRICA

INPEP

Recommendations:

1. Strengthen each country program to support and enhance the peanut varietal improvement research program on a broader base than just a single annual coordinated variety test.
2. Subdivide Africa and Caribbean effort because of the geographical location.
3. Coordinate or link the effort in Africa (Mali, Niger, Burkina Faso (Upper Volta)) more closely with the Senegal based CRSP breeding project, which should strengthen the overall regional effort. The variety introduction program would benefit from the more intensive breeding program.
4. Strengthen and individualize the Caribbean effort, since environmental conditions are different from Sahelian Africa.
5. Consider developing a "network" type effort in Africa to ease travel time to meet with collaborators by bringing all collaborators in Africa to one of the host countries each year (change each year) for a mini-workshop, plot observations, etc.

6. Encourage Branch to be more active collaborator, primarily in arranging for site visits. Consider bringing in a co-investigator to replace Hammons or use Hammons as a consultant as he has volunteered to do.

Host Country: NIGER

EEP Reviewers: Kenneth H. Garren & Pierre F. Gillier, August 19-27, 1985

Discussions With: (Key personnel only)

- 1) U.S. AID - Dr. Ernest F. Gibson, Deputy ADO
Ms. Lynn Graybeal, Liaison to CRSPs, etc.
- 2) INRAN* - Dr. Moussa Saley, Director General
Mr. Magah M. Issaka, Director, Dept. of Agronomic Research
Mr. Amadou Mounkaila, Research Collaborator, INPEP "PI" for Niger

(*INRAN is acronym for Niger's Nat. Institute for Research on Crop Agr.)

EEP Reviewers saw as Specific Strengths of this project in NIGER

1. Niger (INRAN) authorities recognize the great need for peanut research in NIGER and recognize that this Peanut CRSP project is virtually "it" as far as peanut research in NIGER is concerned. (INRAN Director Saley told us that recent drought years have contributed to such a great decline in (and "interest" in) peanut production in Niger that--while only a few years ago exported peanut accounted for about 50% of Niger's total income from exports--Niger now imports peanut from other African countries, etc.). 2. The enthusiasm of Mr. Mounkaila. 3. Experiment stations and field plot land are available for peanut varietal introduction and testing if support is provided. 4. Cooperating support personnel (a plant pathologist and an entomologist) are available if CRSP funds can be provided to pay part of their salaries and give some support funds.

EEP Reviewers saw as Specific Weaknesses of this project in NIGER

1. Lack of real direction from the U.S. and lack of contact with the U.S. PI and slow flow of analyses, etc. back from the U.S. 2. The activity in Niger of several U.S. AID projects and location of ICRISAT's West African Center there may have caused a "let-them-do-it-all" attitude and no interest in providing any of Niger's limited funds as a contribution to INPEP-Niger. 3. Isolation (at Maradi) of the Niger researcher (Mr. Mounkaila) plus a series of years of drought have combined to make for a low level of meaningful results from the first three years of this project. 4. Lack of transportation (vehicle) and very low funding have compounded the results of Mr. Mounkaila's isolation. 5. Without further short-term training Mr. Mounkaila may not have the level of education to carry on the more sophisticated program this project needs.

Recommended Future Directions, NIGER

Recommend that the Peanut CRSP variety testing and evaluation in Niger be continued and that consideration be given to expanding the research by:

1. Developing real on-site research on the constraints on peanut production from insects, diseases, and nematodes. This, of course, will require an "expansion" of CRSP funding to Niger.
2. More contact with and guidance from the U.S. PI and other U.S. cooperators; more contact with other peanut breeders and field testers in Sahelian or West Africa--particularly those in Peanut CRSP projects. Caution: If such an expansion is undertaken, it must be carefully and tactfully guided by U.S. "promoters" of it. In Niger (as well as in Burkina Faso) there was a frank expression of fear that any expansion into a "regional project" would quickly result in domination of the project by better financed, better equipped, better educated (more "articulate"?), researchers. (Meaning, apparently, researchers from ICRISAT and Senegal).

Host Country: BURKINA FASO (Formerly Upper Volta)

EEP Reviewers: Kenneth H. Garren & Pierre F. Gillier, August 13-17, 1985

Discussions With: (Key personnel only)

- 1) U.S. AID - Mr. Roger Bloom, Agricultural Project Officer
- 2) ISP* - Dr. Guillaume Sessouma, Director of Studies
Dr. Philippe Sankara, Research Collaborator, INPEP "PI" B.F.

(*ISP = Institute Superior Polytechnique of University of Ouagadougou)

- 3) IBRAZ* - Mr. Michel Sedago, Director General
Mr. Albert Djigma, Peanut Leader, Oilseed Program

(*IBRAZ = Inst. Burkina for Research on Agriculture & (Zoology) Livestock)

EEP Reviewers saw as Specific Strengths of this project in BURKINA FASO

1. The dedication of Dr. Sankara.
2. Project well received and supported at ISP.
3. Awareness of need for project by lower level B.F. governmental administrators.
4. Good prospects for much meaningful data from 1985 field season.
5. The IRHO/CIRAD (French Agricultural Research Groups) unit in B.F. and many opportunities to cooperate with it.

EEP Reviewers saw as Specific Weaknesses of this project in Burkina Faso

1. Lack of understanding and directions between U.S. PI and B.F. researchers.
2. Slow return from U.S. of test outlines, data analyses, etc.
3. Transportation difficulties because of frequent road barriers ("inspections") within B.F.
4. Transportation difficulties because of no CRSP vehicle, no funds to support it if had it on hand.
5. Slight enthusiasm for project evident at top level of B.F. agricultural administrators (IBRAZ).
6. Capt. T. Sankara "President" of B.F. has program to remake B.F. into English translation of B.F.--i.e. "land of upright men" and some cite instances where this seems to be impeding progress in agricultural research.

Recommended Future Directions, BURKINA FASO

This research is definitely a priority need for B.F. Recommend following: Speeding of support services from U.S. More guidance from U.S., including "on-site" in B.F. guidance. Establishment of field plots in southern part of B.F. where rainfall is usually better. Addition of U.S. cooperators (possibly change in U.S. PI?). More contacts with and cooperation with "on-site" personnel of INPEP/Nr and TX/BCP/S. And, thereafter, an enlargement of the program, but enlargement tempered by the ongoing "political climate" in B.F.

Host Country (area): CARIBBEAN

EEP Reviewers: Max Milner and Hugh Bunting, September 1-7, 1985

Geographic locations of INPEP activities - Antigua, Jamaica, St. Kitts, St. Vincent, Belize

Discussions With: (Key personnel only) INPEP/CARIBBEAN1/

ANTIGUA Dr. Laxman Singh, CARDI^{2/} Agronomist, INPEP/CAR PI
A.L. Sargeant, Head CARDI Unit
Robin Yearwood, Minister of Agriculture

TRINIDAD St. Claire Forde, CARDI Research Director

JAMAICA Anthony Johnson, Deputy Minister of Agriculture
Joe Suah, Head CARDI Unit
Horace Payne, Agronomist

EEP Reviewers saw as Specific Strengths of this project in CARIBBEAN

1. Helpful to U.S. peanut industry to study rusts, leafspots, here on windward side of U.S. crop even though few peanut are grown in the region. 2. Dr. Singh seems a competent, energetic, innovative scientist, dedicated to evaluation the potential of new peanut varieties in the region. 3. Dr. Singh seems to have full support of CARDI and relevant governments. 4. Work program seems fully up to schedule.

EEP Reviewers saw as Specific Weaknesses of this project in CARIBBEAN

1. Personal involvement of the U.S. PI and of other U.S. scientists as collaborators seems most inadequate. 2. More training for CARDI personnel should have been initiated by this time. 3. Transfer of funds

1/ This evaluation based on report from Max Milner received by KHG 1 Nov. and on brief notes by D.G. Cummins on verbal comments made by Bunting to Cummins. Milner's report states "...the entire INPEP Caribbean program, will be reviewed by Dr. Hugh Bunting of EEP".

2/ CARDI = Caribbean Agric. Research & Develop. Institute, U. of West Indies, St. Augustine, Trinidad.

from CARDI headquarters to Singh's program is inefficient. 4. This variety trail project alone duplicates to an extent what can be obtained through ICRISAT.

Recommended Future Directions, CARIBBEAN

The program as established seems well on schedule. Timewise, only 5-10% of Dr. Singh's time is paid-for by CRSP funds. Dr. Singh wishes to expand the program and the reviewers saw potential value in expanding the project considerably to do more than correct weakness 4. above.

Recommend, if Peanut CRSP funds are available and additional U.S. personnel is available and willing, that more U.S. time be spent in-country to train local scientists to do a better job. Recommend, further, that consideration be given to expanding the project so that research can include more "science", as, for examples: a) Eco-physiology studies of differing maturity response by cultivars. b) Studies on rust - leafspots - epidemiology, races. etc.

NARRATIVE SUMMARY

External Evaluation Panel Review of U.S. University Projects

EEP Members: Max Milner, Pierre Gillier, With AID representatives Loren Schulze and Carvel Wiggins, 01-05 April 1985.

University of Georgia Coastal Plain Experiment Station (Tifton)

Peanut CRSP Code: GA/INPEP/N, BF, CAR

Project Title: International Peanut Evaluation Program

Discussion With:

1. W.D. BRANCH Principal Investigator, Department of Agronomy Coastal Plain Experiment Station (Tifton) Plant Breeder.

Recommendation Rating: Impressions received by reviewers were dominated by the too recent start of this project and by the reduction of the number of investigators. With the necessity to multiply seeds and to obtain all agreements and data transmission, it is impossible to hope for a normal working of this project before 1986.

Panel Members Narrative Review: The project discussion was conducted in the plant breeding laboratory (Coastal Plain Experiment Station, Tifton) in the presence of Panel members and Dr. D. Cummins. Dr. W.D. Branch appears to be a talented, diligent scientist, carrying a heavy burden of research responsibilities, primarily on behalf of the UGA, but also for the CRSP.

Main Remarks

- The first change with initial project is the reduction to one investigator for this very large program (Retirement of Dr. R.O. Hammons).
- A second remark was the lack of documents to determine the first result value.
- The third was a great difficulty to obtain communication between Dr. Branch and his collaborators.
- The fourth was the very long time to sign agreements with different countries.

Situation of the PROJECT

Since 1982, 90 entries have been sent to Cameroon, Niger and the Caribbean and 60 entries have been sent to Burkina Faso.

In Cameroon (Garoua and Maroua) good performance was obtained with TIFSPAN and a contact was developed through a AID agent working in the north: Tim Schilling.

In Niger a two years screening replicated field test was completed to date, with Amadou Mounkaila collaborator.

In the Caribbean, the project could be in conflict with a similar project and the local collaborator changed.

In Burkina Faso the Collaborator Philip Sankara (Ouagadougou University) developed experiment in Gampela Station.

In Mali, agreement was just signed at the EEP review time. (original plans included Mali as a collaborating country).

Some collaborators as Philip Sankara attended APRES and Peanut CRSP meeting in Alabama followed by a short training in Tifton. Other visitor trainings are forecasted: Amadou Mounkaila.

Discussion on the project Evolution related to UGA

It will be difficult to accomplish the original goal of a coordinated international variety test. All countries are not in the same yearly schedule of sequence in test, and only few replicated tests had been reported to date.

Nevertheless reciprocal benefits to U.S. programs are already apparent in utilization of African germ plasm by Dr. Branch in developing disease resistant cultivars in Tifton.

The EEP believes that Dr. Branch activities would be even more productive if supplemented at Tifton with a stronger program of more basic research in peanut breeding and genetic. Genotype/Environment interaction has been mentioned as a desirable area for a productive research. For that, time and funds are to be available.

The EEP pointed out Dr. Branch was in need of help to analyze new cultivars for various utilization and food related properties (shelling yield, organoleptic characteristic, protein content, flavor-related volatiles, linoleic acid content, etc.....). Arrangement with Dawson Station can be made for these analytical services; attention of UGA administrators should be brought on this point.

Recommended remedial action

After three years of involvement with this project the PI has not visited the countries concerned. EEP believed this significant impediment should be rectified as soon as possible. Travel funds to adequately visit and maintain contact with locations for which he is responsible must be allocated.

In locations where it is possible to find AID correspondent (Cameroon with Tim Schilling, Mali with Scheuring) or other institutions, all contacts are to be developed in order to coordinate the effort.

A Co-Investigator is to be found in order to assist Dr. Branch in the broad geographically based project. (mainly for Caribbean part of the project).

Take in account the 6 recommendations already presented by CRSP technical committee in October 1984.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/INPEP/N, M, BF, CAR

Project Title: International Peanut Evaluation Program

Overall Recommendation Rating: The first results reported are interesting, but it is difficult to give an appreciation with so little information. The necessity of agreement obtention and seed multiplication push back later the first real data. It is suggested to find a co-investigator to change the work load and thus give a better support for this project. More frequent contact with collaborators and with more convenient institutions are also proposed. Burkina Faso situation is not very convenient because Philip Sankara is a pathologist of University of OUAGADOUGOU, but only IBRAZ develop a breeding program on peanut and had an experimental network in all country.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative Involvement

- 1.11 Understanding and support of project objectives and the collaborative mode.....: S
- 1.12 General attitude towards international programs and support of researchers involved.....: S
- 1.13 Logistical and fiscal support.....: S
- 1.14 Perceived relevancy of collaborative program to U.S. research interests.....: S
- 1.15 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.16 Resource commitment to project.....: S

1.17 Summary Comments: No fundamental modifications or revision of management and organization are to be proposed except to find a co-investigator. The contact with the basic collaborators specifically at the preharvest time to control existing experiment and prepare the data transmission must be reinforce by an imperative visit of PI in West Africa in September in each location

^{1/} Code: E - Exceptional; HS - Highly Satisfactory; S - Satisfactory; NS - Not Satisfactory; IE - Inadequate Evidence for Evaluation; NA - Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: IE
- 1.22 General attitude toward international program: IE
- 1.23 Logistical support..... : IE
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: S
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: IE
- 1.26 Overall commitment to project.....: IE

1.27 Summary Comments: The main Investigator is fully involved and committed to this project but he is alone. It is too early to give an appreciation. Better collaboration, and more frequent control would be useful. Some specific equipment as sheller and sizer (experimental machinery) are to be provide in certain locations to facilitate data obtention.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: S
- 2.4 Local science and economic perspective.....: IE

2.5 Summary Comments: All classical scientific means are used to obtain good Informations on new varieties and local germplasm and to detect their reaction with environment. This project can be very useful for detection of new source of resistance in short cycle varieties.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: S
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: IE
- 3.3 Transferability of research results to U.S. programs.: S

3.4 Summary Comments: This project is relevant to National and U.S. goal. In MALI and NIGER Peanut Research was stopped in the same time that bilateral French/Niger agreement (4 or 5 years ago) and just routine multiplication was continued. No ICRISAT Programs are to be developed in this area on Peanut during the next campaign and CRSP is a good complementary activity for local scientists. The collection and evaluation of germplasm will be an interesting work for the future of University of Georgia.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: S

4.2 Extent of development of collaborative mode.....: IE
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: S

4.4 Summary Comments: When the whole project will be settled and running, it is likely that CRSP will be valuable means for increasing research capabilities of Georgia University. Many tentatives to improve the information collection were developed. The visit of host collaborator Philip Sankara (Burkina Faso) after APRES meeting in July 1984 was organized in Tifton. Other visitor training are forecasted: Amadou Mounkalla (Niger). A higher level of collaboration would be preferable in order to improve the efficiency.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: IE

5.2 Impact on research priorities.....: IE

5.3 Potential of research results for application to U.S. needs.....: IE

5.4 Summary Comments: Too early to have any result and any impact.

6. SUMMARY

6.1 Specific Strengths: All agreements obtained, start of main subprojects, designation and training of collaborators, good capabilities to collect results in the future.

6.2 Specific Weaknesses: Too slow procedure, difficulty in contact with authority, no data transmission, lack of control, travel frequency too low.

NARRATIVE SUMMARY

External Evaluation Panel Review of Host Country Projects

By Drs. Pierre Gillier and Kenneth Garren at U.S. AID Mission, Ouagadougou; at ISP (Institute Superior Polytechnique) of Univ. of Ouagadougou; at IBRAZ (Institute Burkina (Faso) for Research on Agriculture and Zoology ("Live-stock")), Ouagadougou; and at Field Station at Sarfa, B.F. - August 14-17, 1985.

Peanut CRSP Code: GA/INPEP/BF

Host Country: BURKINA FASO
(Formerly Upper Volta)

Project Title: International Peanut Evaluation Program

Discussions With:

- 1) U.S. AID - Mr. Roger Bloom, AID Agricultural Project Officer
Mr. Albert Ouedrago, Assistant to Mr. Bloom
- 2) ISP - Dr. Guillaume Sessouma, Director of Studies
Dr. Philippe Sankara, Research Collaborator, Peanut CRSP -INPEP
1/ Mr. Indrissa Dicko, Entomologist, Plant Pathologist,
Research Collaborator, Peanut CRSP GA/INPEP/BF
- 3) IBRAZ - Mr. Michel Sedago, Director General, IBRAZ
Dr. Bossou N'Gueta, Technical Advisor to Mr. Sedago
Mr. Albert Higma, Peanut Leader for IBRAZ Oilseed Program
Dr. Salawil Asimi, Member of IBRAZ Oilseed Committee and Director Sarfa Field Station (At Sarfa only)
- 4) CIRAD/IRHO* Dr. Christian Picasso, Plant Pathologist, Technical Advisor to IBRAZ
Mr. Jean Bosco, Plant Pathologist, Assistant to Dr. Picasso

Recomendation Rating:

After three years of operation this project is now well underway and making reasonable progress. Probably more progress would have been made and evident if U.S. PI had given clearer, more understandable, and more detailed instructions; and if U.S. PI had been more prompt in analyzing the samples and data sent him. In spite of very bad weather for the last three years all introductions have been increased and today good experiments are "in situ". Dr. Sankara, the BF "PI" is a very capable

1/ As of September, 1985 Mr. Dicko is pursuing a PhD in entomology at University of Georgia.

* See note on CIRAD in section 6.1 of Profile of GA/INPEP/BF.

scientist and he has developed good cooperative relations with other institutions in BF. With improvement in rainfall, meaningful results may be expected from the 1985 test season. Recommend speeding of support services from the U.S. accompanied by careful expansion of peanut breeding and varietal selection BF. "Careful" expansion is advised in view of the current political "climate" under which agricultural research is operating in BF.

Panel Member's Narrative Review:

1) Basis of Review:

Sankara's field records. Meetings at U.S. AID - BF. Conferences with Sankara. Visits with Sankara to field tests at Gampela and Saria Stations.

2) CRSP Format:

See Project Profile Summary for GA/INPEP/BF.

3) Implementation and Management:

Since 1983 season Sankara has increased in nursery and tested in field trials cultivar lines from U.S. Seeds obtained in 1983 were multiplied and tested in basic experiment in 1984 and planted in different locations for testing in 1985. Following the date of introduction from U.S. these cultivar groups are labeled Group I, Group II and Group IV. Also, in 1985 there was introduced from Texas A & M, by another agreement, several lines for testing for disease resistance and earliness.

The complex program is well managed by Philip Sankara--mainly at Gampela Station, but also at many other locations in BF. Now a synthesis and analysis of results is needed in order to organize the program by availability of transportation, seed quality, and disease and pest resistance.

Until now, Sankara has done well. The need today is to restructure the overall program. Some varieties with long cycles are in the North (short rainy season) and short cycle varieties are sometimes in the South (long rainy season). Controls ("checks") were different in 1983, 1984 and 1985. It is certainly a very interesting program, but it needs a better structure and a basis for continuing comparative analyses of results.

Sankara used the CRSP support well but he lacks transportation facilities. He must spend many days in the country to inspect and observe fields and nurseries. For this he must now use his private car.

4) Adequacy of Science:

So far this is low level research. It appears to be mainly a routine testing of different cultivars under BF conditions. There is, however, some adaptation of disease-inoculation techniques to the BF condition. Sankara is capable of a higher level of research.

5) Geographic Coverage and Applicability of Research:

The goal of this project is in accordance with host country goals. Scattering field tests throughout the country gives a regional character to the program. If there is detection of resistant or tolerant varieties, the interest for U.S. and the total scientific community is evident.

6) Institutional Development:

The support of Peanut CRSP is essential to this project. Many students at ISP are working directly in the program, and many other students are keeping it under observation.

7) Research Progress and Application:

It is too early to think of any direct utilization of results from this program. But integration into BF's national program for agriculture gives a good opportunity to use resistant or tolerant lines detected by field tests in a breeding program.

PROJECT PROFILE SUMMARY

(In-Country Project Review)

Code: GA/INPEP/N, M. BF, CAR Host Country: BURKINA FASO
Title: INTERNATIONAL PEANUT EVALUATION PROGRAM

Overall Recommendation Rating:

After three years of operation this project is now well underway and making reasonable progress. Probably more progress would have been made and evident if U.S. PI had given clearer, more understandable, and more detailed instructions; and if U.S. PI had been more prompt in analyzing the samples and data sent him. In spite of very bad weather for the last three years all introductions have been increased and today good experiments are "in situ". Dr. Sankara, the BF "PI" is a very capable scientist and he has developed good cooperative relations with other institutions in BF. With improvement in rainfall, meaningful results may be expected from the 1985 test season. Recommend speeding of support services from the U.S. accompanied by careful expansion of peanut breeding and varietal selection BF. "Careful" expansion is advised in view of the current political "climate" under which agricultural research is operating in BF.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission
programs.....: HS

1.12 Mission logistic, programmatic and financial support of
project. Attitude toward U.S. personnel traveling
in-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: U.S. AID is very supportive of the Peanut CRFSP projects in BF. We got the impression that the agricultural program of U.S. AID in BF is extensive and that Mr. Bloom, with whom we talked, is so in touch with the projects and so committed to Peanut CRSP and other projects that he may well be in the "overworked" category.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode.: S
- 1.22 Administration of program-government level.....: S
- 1.22A Administration of program-institutional level....: S
- 1.23 Fiscal management.....: S
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: HS
- 1.26 Commitment of governments and/or institutions to programs--researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: Captain Thomas Sankara, President of the National Revolutionary Council has a program to remake Burkina Faso into his concept of its new name he gave it--"land of Upright Men." Some observers feel parts of his program are misguided and cite instances where the program is impeding progress in agricultural research. Other than this the host country people at all levels understand that this project is to BF's national interest. Scientists and administrators appreciate the funds and the advice. ISP is participating to the maximum of its own resources. The overseeing Ministry--Ministry of Superior Education and Scientific Research--considers this project an important part of its national program.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect & supportive....: S
- 1.312 Adequacy of number and capability to function: S
- 1.313 Involvement of Women.....: IE
- 1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: All researchers involved are dedicated to the project and spend a major part of their time in activity related to this CRSP project. Many students of ISP are also involved.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: Equipment seen was only "bare bones" equipment. By frequent maintenance check-ups and an occasional innovative modification it can merit a "satisfactory" rating. To make the equipment truly satisfactory the two CRSP projects need to have a car or jeep for transportation. (Personal cars were used while the EEP was there). There is a need for transportation to visit all trial locations. Dr. Sankara formerly had a F.I.S. support-grant for equipment and this equipment is now used in the CRSP program.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: S

2.4 Adequacy of social science/economic perspective/sensitivity.....: S

2.5 Summary Comments: Drought, the further depression of a low level economy, and vicissitudes of the struggle for effective self-government have prevented doing more than maintaining a low but satisfactory rating in this category. The objective of finding varieties resistant to or tolerant of different diseases and insects is well recognized as worthwhile, but the progress of the program is not sufficient to enable a good forecast of development of a scientific program. Good cooperation with some other institutions is evident and helpful.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: S

3.2 Complementarity to ongoing peanut research activities in-country....: S

3.3 Responsiveness to perceived producer and consumer needs: HS

3.4 Communications with other in-country entities.....: S

3.5 Does location impact regionally as well as in-country.: S

3.6 Relationship to other international research efforts - ICRISAT, IRRI, IRHO: S

3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: This project is integrated into the national agricultural program of BF, and it is in perfect accord with the national goals of BF. The "PI" (Sankara) is a member of Oilseed Commission, and his work is coordinated closely with IBRAZ (see Narrative Review). An Extension Service is available to disseminate results when they become available. Project's work on IBRAZ station and the scattering of experimental fields give a regional character to the program. Contact with IBRAZ, IRHO, ICRISAT, Prof. Zambettakis, etc. give an international basis to the program.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: S
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: S
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Without the CRSP program there would be no research in BF of this nature on peanut. The CRSP support is the only resource of this department of ISP and there is at present no other laboratory in BF to work on peanut rust and peanut leafspot. Dr. Sankara uses many students and trains them to help him make observations and do routine laboratory work.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: S
- 5.2 Impact of research on institution and government priorities and policies.....: IE
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: IE
- 5.4 Potential of research for success in alleviating production and utilization constraints-including small farm production constraints.....: S
- 5.5 Impact of research on Women in Development.....: NA

5.6 Summary Comments: We needed a report from U.S. PI, Dr. Branch, to discuss results with Dr. Sankara. Unfortunately such report was not available. Nevertheless we did go over with Dr. Sankara all data he had. It may be too early to forecast impact of the research to date, but it is interesting to note good behavior patterns for certain strains in regard to Cercospora tolerance and earliness. Seed introduction and field trials must be maintained for several years to give a good indication of the quality and worth of the material and need for seed multiplication.

6. SUMMARY

6.1 Specific Strengths: 1. The dedication of Dr. Sankara. 2. Project well received and supported at ISP. 3. Awareness of need for project by lower level B.F. governmental administrators. 4. Good prospects for much meaningful data from 1985 field season. The IRHO/*CIRAD unit in B.F. and the many opportunities to cooperate with it.

6.2 Specific Weaknesses: 1. Lack of understanding and directions between U.S. PI and the BF researchers. 2. Slow return from U.S. of results of test outlines, data analyses, etc. 3. Transportation difficulties because of frequent road barriers ("inspections") within B.F. 4. Transportation difficulties because of no CRSP vehicle, no funds to support it if had it on hand. 5. Slight enthusiasm for project evident at top level of B.F. agricultural administrators (IBRAZ). 6. Capt. T. Sankara "President" of B.F. has program to remake B.F. into English translation of B.F.--i.e. "land of upright men" and some cite instances where this seems to be impeding agricultural research progress.

7. Reviewers Recommendations: This research is definitely a priority need for B.F. Recommend following: Speeding of support services from U.S. More guidance from U.S., including "on-site" in B.F. guidance. Establishment of field plots in southern part of B.F. where rainfall is usually better. Addition of U.S. cooperators (possibly change in U.S. PI?). More contacts with and cooperation with "on-site" personnel of INPEP/Nr and TX/BCP/S. And, thereafter, an enlargement of the program, but enlargement tempered by the ongoing "political climate" in B.F.

*CIRAD = Center for International Cooperation in Agronomic Research, Adm. Hdq. Paris, labs Montpellier, France. CIRAD has several research arms. IRRHO is the oilseeds research arm (Dr. Gillier is retired Head of Annual Oil Crops Department of IRHO). We talked with Dr. C. Picasso, plant pathologist and chief of IRHO/BF and his associate Mr. J.P. Bosco.

NARRATIVE SUMMARY

External Evaluation Panel Review of Host Country Projects

By Drs. Pierre Gillier and Kenneth Garren at U.S. AID Mission, Niamey; at INRAN (Niger's National Institute for Research in Crop Agriculture), Niamey; and in Hotel Gaweye, Niamey, between and after sessions of the International Symposium on Agronomy of Groundnut; August 17-27, 1985. (We did not visit Maradi where the Research plots are located and where the researcher is headquartered, because air service had been discontinued).

Peanut CRSP Code: GA/INPEP/Nr Host Country: NIGER

Project Title: International Peanut Evaluation Program

Discussions With:

- 1) U.S. AID - Dr. Ernest F. Gibson, Deputy Agricultural Development Officer, Ms. Lynn Graybeal, U.S. AID Liaison Officer to Peanut CRSP, TROPISOILS, INTSORMIL, IPM Project.
- 2) INRAN - Dr. Moussa Saley, Director General
Mr. Magah M. Issaka, Director, Department of Agronomic Research
 1/ Mr. Amadou Mounkaila, Research Collaborator (The INPEP "PI" for Niger)
- 3) Others - Dr. Morel, AGRIMET (Dr. Gillier only)

Recommendation Rating:

Isolation at Maradi of the Niger researcher (Mr. Mounkaila) and his field plots plus a series of years of drought have combined to make for a low level of meaningful results from the first three years of this project. The drought years have also contributed to a decline in peanut production in Niger. INRAN Director Saley told us that, while Niger now imports some peanut, only a few years ago exported peanut accounted for about 50% of Niger's total income from exports. The INRAN administration does see an acute need to increase peanut research in Niger. We recommend that the peanut CRSP variety testing and evaluation in Niger be continued and that consideration be given to expanding the research by 1) more contact with and guidance from the U.S. PI; and 2) developing real on-site research on the constraints on peanut production from insects, diseases, and nematodes.

Panel Members' Narrative Review:

1) Basis of Review:

Annual report of CRSP for 1983. One document given the reviewers by Amadou Mounkaila. Meetings (discussions) with Magah Issaka, Moussa Saley, and Amadou Mounkaila as noted above.

2) CRSP Format:

See Project Profile Summary for GA/INPEP/Nr.

3) Implementation and Management:

Each year, beginning with 1982, Mounkaila tried to plant seeds of introductions, but with very dry conditions the yield level and seed quality were both always very bad and no significant results were obtained.

No comments seem needed on the management. The poor environment of Tarna Station is a constraint for Moukaila, who did not receive from U.S. Principal Investigator any real support (documents, analyses, etc.). Some discordances may be found between CRSP annual report and official results reported in Niger. It will be better to have uniform publication through closer U.S. - Niger cooperation.

4) Adequacy of Science:

As noted in the Profile results so far are too poor to make this evaluation.

5) Geographic Coverage and Applicability of Research:

With Tarna and Magaria experiments the Eastern area of Niger is covered. With Bengou experiment South Eastern area is covered. These places are very representative of Sahelian area. Evaluation of climatic effects and pest incidence can be generalized from these places to a very large area.

6) Institutional Development:

In Niger now, peanut research is entirely supported by CRSP funds.

7) Research Progress and Application

It is too early for evaluation comments. But the request of Niger (INRAN) authorities to give CRSP a better knowledge of Niger's peanut situation by sending a CRSP representative to national meeting of Niger's Peanut Commission in March is a promise of interest and cooperation of this country so that CRSP may participate in peanut crop restoration in Niger.

Peanut CRSP: External Evaluation Panel Review

PROJECT PROFILE SUMMARY

(In-Country Project Review)

Code: GA/INPEP/Nr

Host Country: NIGER

Title: INTERNATIONAL PEANUT EVALUATION PROGRAM

Overall Recommendation Rating:

Isolation at Maradi of the Niger researcher (Mr. Mounkaila) and his field plots plus a series of years of drought have combined to make for a low level of meaningful results from the first three years of this project. The drought years have also contributed to a decline in peanut production in Niger. INRAN Director Saley told us that, while Niger now imports some peanut, only a few years ago exported peanut accounted for about 50% of Niger's total income from exports. The INRAN administration does see an acute need to increase peanut research in Niger. We recommend that the peanut CRSP variety testing and evaluation in Niger be continued and that consideration be given to expanding the research by 1) more contact with and guidance from the U.S. PI; and 2) developing real on-site research on the constraints on peanut production from insects, diseases, and nematodes.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission programs.....: S

1.12 Mission logistic, programmatic and financial support of
project. Attitude toward U.S. personnel traveling
in-country.....: S

1.13 Mission interest for project future.....: S

1.14 Summary Comments: On August 20 the EEP panelists, Dr. Cummins, Peanut CRSP Program Director, and some U.S. Peanut CRSP scientists then in Niamey talked with Dr. E.F. Gibson, Deputy ADO, US AID and Ms. Lynn Graybeal, CRSP Liaison, US AID, Niamey in Dr. Gibson's office. We got a good review of the several AID-supported agricultural projects in Niger.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

The U.S. AID Mission - Niger has an understanding of, an interest in, and does support the Peanut CRSP project in Niger. The CRSP Peanut project is, however, a small, marginal project as viewed from the aspect of the total U.S. AID program in Niger.

1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: S
- 1.22 Administration of program-government level.....: S
- 1.22A Administration of program-institutional level....: S
- 1.23 Fiscal management.....: S
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans.....: S
- 1.25 Attitude toward U.S. participants and their involvement.....: S
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: S

1.27 Summary Comments: Everywhere we turned, we heard **stated--usually in gratitude--**that without Peanut CRSP there would be no research on peanut in this country that once exported some peanut and peanut products. Administrators seem to be doing the best they can for Mr. Mounkaila within a poorly financed bureaucracy composed of persons having little training for their positions.

Nevertheless the government does have a clearly defined goal to restore peanut to their previous importance in the intra-Niger food consumption picture. Funds seem well used and cooperation within INRAN is good.

1.3 Resources committed to program

- 1.31 Personnel
 - 1.311 Directly committed/indirect & supportive.....: S
 - 1.312 Adequacy of number and capability to function.....: S
 - 1.313 Involvement of women.....: 1E
 - 1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: This was designed and implemented as essentially a one-man project within Niger. Mr. Mounkaila impressed us as being capable of carrying on the project as now designed.

It seems, in fact, the only real research on peanut being carried on by the government of Niger. So far CRSP funds have been used mainly for workers and general support of Tarna station. For the program as now constituted, the Tarna station and personnel is adequate.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: Plans for the Peanut CRSP Program Director and the two EEP panelists to go to Miradi (where Mr. Mounkaila is stationed and does his work) were dropped. Air Niger is out of business and a trip to Miradi by car was not advised. We talked a great deal with Mr. Mounkaila in Niamey (to attend the International Symposium on Agronomy of Groundnut).

He stated that equipment of the former Peanut Department is being used by him, and the Station provides 3 hectares for experiment and 25 hectares for seed multiplication. The main problem for Mounkaila is transportation. He was able to visit experiments away from Tarna only twice in 1984.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: IE

2.2 Progressiveness and innovativeness of research.....: IE

2.3 Appropriateness of research - basic and adaptive.....: IE

2.4 Adequacy of social science/economic perspective/sensitivity.....: IE

2.5 Summary Comments: The real situation in regard to this project is difficult to evaluate since we did not visit Maradi-Tarna. Also all seeds were practically destroyed in 1984 by drought, except in Bengou. The 1985 program is devoted almost entirely to seed multiplication, and, again, a promising situation is found only in Bengou. Mounkaila is a competent technician, but not much more. To complete the project as now designed he will need much help from the U.S. and/or INRAN in the area of evaluating disease and insect damage and resistance, etc. There appears to be an acute need for further training of INRAN scientists.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: S

- 3.2 Complementarity to ongoing peanut research activities in-country.....: S
- 3.3 Responsiveness to perceived producer and consumer needs: S
- 3.4 Communications with other in-country entities.....: IE
- 3.5 Does location impact regionally as well as in-country.: S
- 3.6 Relationship to other international research efforts - ICRISAT, IRR1.....: IE
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: S

3.8 Summary Comments: In effect this Peanut CRSP project is peanut research in Niger. This program was adopted by the National Oilseed Commission of Niger and the coverage is expected to cover all peanut-growing areas of Niger--East and South East. Mounkaila is aware of ICRISAT's presence in Niger, and has some contact with the ICRISAT Center. But without transportation, such contacts are of little help. There could be better transfer of results between Mounkaila and ICRISAT if transportation facility is provided.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: S
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: S
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Without CRSP support, there would be no peanut research program in Niger. Amadou Mounkaila and INRAN Organization are very happy to collaborate and requested extension of cooperation to other research department. The Director of Agronomic Research Magah Isaka requested a short term training (January-April) for Amadou Mounkaila.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: IE
- 5.2 Impact of research on institution and government priorities and policies.....: IE
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: IE
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: S

5.5 Impact of research on Women in Development.....: IE

5.6 Summary Comments: The INPEP "research" activity in Niger has been underway only a short time. No substantial results except from one trial in 1982. This year (1985) all activity concentrated on seed multiplication. It is too early to do evaluation of impact of this work. At least two good seasons are necessary before conclusions. This and slow flow of support services from U.S. and on-site (in-country) impediment in the apparent financial impoverishment of INRAN resulted in reviewers' decision that the logical rating for category 5 is "IE".

6. SUMMARY

6.1 Specific Strengths: 1. Niger (INRAN) authorities recognize the great need for peanut research in NIGER and recognize that this Peanut CRSP project is virtually "it" as far as peanut research in NIGER is concerned. (INRAN Director Saley told us that recent drought years have contributed to such a great decline in (and "interest" in) peanut production in Niger that--while only a few years ago exported peanut accounted for about 50% of Niger's total income from exports--Niger now imports peanut from other African countries, etc.). 2. The enthusiasm of Mr. Mounkaila. 3. Experiment stations and field plot land are available for peanut varietal introduction and testing if support is provided. 4. Cooperating support personnel (a plant pathologist and an entomologist) are available if CRSP funds can be provided to pay part of their salaries and give some support funds plus provide some additional training.

6.2 Specific Weaknesses: 1. Lack of real direction from the U.S. and lack of contact with the U.S. PI and slow flow of analyses, etc. back from the U.S. 2. The activity in Niger of several U.S. AID projects and location of ICRISAT's West African Center there may have caused a "let-them-do-it-all" attitude and no interest in providing any of Niger's limited funds as a contribution to INPEP-Niger. 3. Isolation (at Maradi) of the Niger researcher (Mr. Mounkaila) plus a series of years of drought have combined to make for a low level of meaningful results from the first three years of this project. 4. Lack of transportation (vehicle) and very low funding have compounded the results of Mr. Mounkaila's isolation. 5. Without further short-term training Mr. Mounkaila may not have the level of education to carry on the more sophisticated program this project needs.

7. Reviewers Recommendations: Recommend that the Peanut CRSP variety testing and evaluation in Niger be continued and that consideration be given to expanding the research by : 1. Developing real on-site research on the constraints on peanut production from insects, diseases, and nematodes. This, of course, will require an "expansion" of CRSP funding to Niger. 2. More contact with and guidance from the U.S. PI and other U.S. cooperators; more contact with other peanut breeders and field testers in Sahelian or West Africa--particularly those in Peanut CRSP projects. Caution: If such an expansion is undertaken, it must be carefully and tactfully guided by U.S. "promoters" of it. In Niger there was a frank expression of fear that any expansion into a "regional project" would quickly result in domination of the project by better financed, better equipped, better educated (more "articulate"?), researchers.

NARRATIVE SUMMARY

External Evaluation Panel (EEP) Review of Host Country Projects. by M. Milner (EEP), following visits to CARDI (Antigua, Trinidad and Jamaica), the PI's involved and relevant government officials and agencies, Sept. 1-7, 1985. N. B. Milner's review refers only to the INPEP program he observed in Antigua, and to related discussions at CARDI headquarters in Trinidad. The INPEP activities in Jamaica, and indeed the entire INPEP Caribbean program, will be reviewed by Dr. Hugh Bunting of EEP.

Host Countries: Antigua and Jamaica (through CARDI).

Peanut CRSP Code: GA/INPEP/CAR

Project Title: International Peanut Evaluation Program in the Caribbean.

Discussions With:

Laxman Singh, CARDI agronomist, Antigua, September 2, 1985
A. L. Sargeant, Head of CARDI unit, Antigua, September 2, 1985
Robin Yearwood, Minister of Agriculture, September 2, 1985
Francis Henry, Govt. Agr. Specialist, September 2, 1985
Hayden Thomas, Government analyst, September 2, 1985
St. Claire Lorde, CARDI Research Director, Trinidad, September 3, 1985
Don Walmsley, CARDI, September 3, 1985
Horace Payne, CARDI agronomist, Mona, Jamaica, September 5/6, 1985
Joe Suah, Head of CARDI unit, Jamaica, September 5/6, 1985
Anthony Johnson, Dept. Minister of Agric., Jamaica, September 5/6, 1985

Recommendation Rating:

The INPEP varietal testing program in Antigua and neighboring islands under supervision of Dr. Laxman Singh of CARDI appears to be proceeding on schedule. Thirty cultivars furnished from Tifton in 1984 were grown in Antigua in that year. The harvested seed was distributed to other islands where they will be grown in 1985. These varieties were observed growing in field plots for the second year. Twenty five new cultivars provided from Tifton in 1985 will be seeded in a few weeks. Dr. Singh is requesting additional CRSP support for increased personnel and other resources to enable him to adequately carry out this expanding activity as well as new investigations into causes of leaf yellowing (chlorosis?) and rust which have been observed to be affecting the INPEP cultivars. Only 5-10% of Dr. Singh's time is presently supported by CRSP funds. These proposals were endorsed by his CARDI superiors in Trinidad. This EEP reviewer was impressed by Dr. Singh's program and is inclined to agree that some increase in CRSP funding for the purposes outlined, is warranted, subject presumably to some realistic resource matching by CARDI.

Panel Member's Narrative Review:

1. To gain background for this report, the EEP member reviewed the considerable number of relevant MOU's and POW's, the 1983 CRSP Annual Report and also subsequent trip reports by Dr. Cummins and others. This review is based primarily on the visit to the Caribbean by the EEP member between September 1 and 7, 1985.

2. Thorough discussions were held in Antigua on September 2, primarily with Dr. Laxman Singh, but also with his CARDI colleague, Dr. A. L. Sargeant and with officials of the government of Antigua.

3. Thirty peanut varieties (100 seeds each) provided from Tifton in 1984 were grown on local plots in that year, and are being increased again in 1985. Seed from the 1984 crop was distributed for similar tests in St. Kitts, St. Vincent and Jamaica, which are being grown in 1985. Twenty five additional cultivars recently sent from Tifton will be planted in Antigua in the next few weeks.

4. Dr. Singh conducted Cummins and Milner to the test plots referred to above. The second-year INPEP increases were approximately two weeks from maturity.

5. Dr. Singh pointed out incidence of rusts in these plants as well as a leaf yellowing or chlorosis, which may be due to iron deficiency. He believes that the unique Caribbean climate and soils may be factors in these syndromes. Dr. Cummins suggested that the leaf yellowing may be related to the water drainage profile of the field. Dr. Singh wishes to study these problems more intensively, but needs additional resources to do so. He believes that information gained from such research may be of considerable value to peanut production scientists everywhere.

6. As for personal collaboration with the INPEP program at Tifton, Dr. Singh and 2 colleagues (from Belize and Jamaica) have visited Tifton. As yet there have been no reciprocal visits by Dr. Branch or his colleagues.

7. Discussions with Antigua Ministry of Agriculture officials elicited strong commitment and support for the peanut CRSP program. They emphasized the small percentage of Dr. Singh's time being supported from CRSP funds and that the CARDI and Government counterpart resources provided were much greater than those of CRSP.

8. Dr. Singh made a strong case for increased CRSP support which would permit hiring of one or two trained assistants, and purchase of more vehicles. This would permit intensification of the seed multiplication efforts, research into the leaf yellowing and rust problems, development of improved post harvest handling techniques and carryout of a cooperative agro-economic study with the other islands to evaluate farmer and consumer preferences and demands. This request would require about \$30,000 above the current \$20,000 CRSP budget.

9. Our visit on September 3 in Trinidad at CARDI headquarters confirmed our impressions of confidence in Dr. Singh's effectiveness in the INPEP and related activities. His superiors supported expansion of his program.

10. The Project Profile Summary accompanying this EEP review, rates performance for each of the points raised under various headings such as Scope of Work Including Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability, Institutional Development, Research Progress and Application, and Summary. ensuing paragraphs refer to these topics.

Implementation and Management: A highly satisfactory rating is warranted. The progress of Dr. Singh's program seems satisfactory and excellent support is being provided by CARDI and the Government. Similar confidence was voiced by the AID Mission in Jamaica.

Adequacy of Science: This is also rated as highly satisfactory, although research into plant disease and possible nutrient deficiency noted by Dr. Singh has not yet begun, due to inadequacy of resources.

Geographic Coverage and Applicability: The program is providing needed information concerning the suitability and potential of the INPEP varieties in the Caribbean region, including resistance to diseases and pathogens which may be unique to this region.

Institutional Development: This CRSP program is strengthening the credibility of CARDI in its role of stimulating peanut production in the Caribbean. Reciprocal advantage to the U.S. workers, other than providing evidence of the performance and potentials of the INPEP cultivars, is not so evident. Unfortunately, none of the Tifton counterparts have visited their Caribbean collaborators, or observed their field programs.

Research Progress and Application: The CARDI peanut variety evaluation program seems to be making excellent progress, considering the constraints of staff time and other resources which CARDI can provide under present funding arrangements. This research will clearly be of value in determining the adaptability and productivity of the new cultivars in this tropical environment.

Summary:

Specific Strengths: The principal investigator, Dr. Laxman Singh, appears to be a competent, energetic and innovative plant scientist, dedicated to the CARDI/CRSP objectives of evaluating the potential of new peanut varieties in the Caribbean region. He seems to have the full support of CARDI and the relevant governments. His work program appears to be fully up to schedule. Similar good performance can be anticipated in the future. Additional CRSP support to permit expanded varietal testing efforts and some research in plant diseases and/or nutritional deficiencies seems warranted.

Specific Weaknesses: Personal involvement of the Tifton collaborators seems to be inadequate. More training of CARDI personnel should have been initiated by this time. Efficiency of transfer of funds from CARDI headquarters to Singh's program may require some improvement.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/INPEP/CAR In-Country Project Review

Project Title: International Peanut Evaluation Program in the Caribbean

Host Countries: Antigua and Jamaica (through CARDI)

*N.B. This review refers only to project activities supervised by Dr. Laxman Singh in Antigua and some neighboring islands. EEP member Dr. Hugh Bunting will deal with the Jamaica program and the overall CRSP/INPEP program in the Caribbean.

Overall Recommendation Rating: The INPEP varietal testing program under the supervision of Dr. Laxman Singh of CARDI appears to be making good progress. All cultivars supplied by GA/Tifton have been reproduced in the field and seed has been distributed to other islands as scheduled. Additional CRSP support, with matching CARDI resources, seems justified in order to meet the expanding work load, and the desirability of initiating research into pathogenic and/or nutritional deficiency diseases which are emerging in some of the INPEP cultivars being tested, now numbering 55.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of
project. Attitude toward U.S. personnel traveling
In-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: The U.S. AID Mission in Jamaica, represented by Mr. Leland Voth, is highly supportive of this program. Having arrived on his present assignment only recently, Mr. Voth emphasized his intention to become more closely involved in the future.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators
and scientists. Concept of collaborative mode...: HS

1.22 Administration of program-government of institutional
level: HS

1.23 Fiscal management.....: HS

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans....: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: HS
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: A highly satisfactory rating seems warranted. Officials of the governments involved are fully supportive, and have indicated confidence in CRSP and in CARDI's management of the project.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/Indirect & supportive....: HS
- 1.312 Adequacy of number and capability to function.....: S
- 1.313 Involvement of Women.....: IE
- 1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: Dr. Laxman Singh and his colleagues are committed and energetic. However, the growing workload, and the apparent need to initiate additional research on deficiency and pathogenic diseases emerging in these cultivars seems to merit increased CRSP support, with matching resources from CARDI, for increased personnel and other resources.

1.32 Equipment/facilities/supplies

- 1.321 Availability-reason for unavailability.....: S
- 1.322 Adequacy-reason for Inadequacy.....: S

1.323 Summary Comments: Transport equipment is old and overextended. Replacement of these vehicles seems urgent.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and Innovativeness of research.....: S
- 2.3 Appropriateness of research - basic and adaptive....: HS
- 2.4 Adequacy of social science/economic perspective/sensitivity.....: IE

2.5 Summary Comments: Dr. Singh's professional drive and scientific curiosity is commendable, as indicated by a desire to undertake more basic studies. He believes that a study of the agro-economic factors is desirable.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals.....: HS
- 3.2 Complementarity to ongoing peanut research activities in-country.....: HS
- 3.3 Responsiveness to perceived producer and consumer needs: S
- 3.4 Communications with other in-country entities.....: HS
- 3.5 Does location impact regionally as well as in-country.: HS
- 3.6 Relationship to other international research efforts - ICRISAT.....: S
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: The program deserves a highly satisfactory rating since it is yielding information on geographic adaptability and productivity of new peanut cultivars in the tropical environments of the Caribbean.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: S
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? ~ enthusiasm for research.....: HS
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: This program is strengthening CARDI's scientific competence, institutional capacity and overall credibility with the supporting governments in this region. It seems unfortunate that the GA/Tifton counterparts have not taken full advantage of this project by visiting more frequently, this improving Tifton's institutional experience and capacity in international agriculture.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: S
- 5.2 Impact of research on institution and government priorities and policies.....: HS
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: IE

5.4 Potential of research for success in alleviating production and utilization constraints.....: HS

5.5 Impact of research on Women in Development.....: IE

5.6 Summary Comments: Good progress is being made, but additional resources may need to be provided by CRSP and CARDI in order to realize the full research and scientific potential of the program.

6. SUMMARY

6.1 Specific Strengths: Dr. Singh's competence and initiative will be a major element of success of this program. There is no doubt that the project will provide valuable information on the adaptability and productivity of new peanut varieties in tropical environments.

6.2 Specific Weaknesses: There has been some misunderstanding about the flow of CRSP funds to field collaborators through CARDI. This administrative problem should be cleared up.

7. Reviewers Recommendations: EEP's recommendations are positive. The project should be continued with consideration given to expansion of CRSP funding with matching resources from CARDI, to permit Dr. Singh to handle the increasing workload and to permit initiation of some work on plant diseases and nutritional deficiencies.

PEANUT COOPERATIVE RESEARCH SUPPORT PROGRAM
EEP REVIEW AGENDA: IN-COUNTRY PROJECT REVIEW

PROJECTS GA/INPEP/CAR (Belize) and AAM/FL/FT/CARDI (Belize)
Reviewed 1 - 4 September 1985

A.H. Bunting
University of Reading, United Kingdom

1. IMPLEMENTATION AND MANAGEMENT

1.1 USAID Mission involvement

1.11 Mission understanding and backing of project objectives

The CRSP is a new activity in Belize. Mr. Charles R. Jenkins, Agriculture Development Officer, said that the Mission had not been informed about it. He was however aware of the work of Dr. Rai, for CARDI, on peanut.

Complementarity to Mission programs

Peanut have not been identified as part of the program of support for agricultural diversification in Belize for which \$7 m over 5 years has been allocated by AID; but the crop could probably be included under this program if the Government of Belize so desired. Mr. Jenkins thinks the crop may be marginal on production costs, but has not reached any firm conclusion. CARDI/CRSP would have to concern itself with processing; and AID has doubts about the size of the market in Belize. There may be prospects for export to other countries of the region, provided the product can compete in price and quality with US exports. CARDI/CRSP should keep in touch with the Mission, particularly as the diversification program develops.

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country

These questions have not yet arisen. The Mission director wishes to know about the movements of US citizens in Belize, and expects prior arrangements to be made about visits and about imports. These concerns are in part related to the drugs problem in Central America.

1.13 Mission interest for project future

Positive, subject to questions raised above.

1.14 Suggestions/comments

Mr. Jenkins was positive and helpful. He could become a good friend of the CRSP. Maybe we could consider the question I have raised before, whether he could be included as an "honorary" member of the project team.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode

Dr. Rai enjoys a close relationship with the Ministry of Agriculture and information flows easily in both directions. Dr. Branch has been only once to Belize, but Dr. Rai has visited him at Tifton. There seem to be no difficulties about the collaboration, partly, I think, because it depends on CARDI, which is accepted as a regional institution, so that the CRSP is not a foreign body.

1.22 Administration of program-government or institutional level

The program is administered through CARDI; but at the time of my visit no CRSP funds had been received in Belize and CARDI was carrying the costs. I do not think that this was an exceptional burden since the program in the field was both young and small, and the station would have had to be managed anyway.

1.23 Fiscal management

Though the Government of Belize (GOB) provides core funds for the work of CARDI in the country, the CRSP funds, when they arrive, will not pass through GOB accounts. This is acceptable to GOB.

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans

There is not conflict between the CRSP and the GOB's perception of its research needs; but I did not ask the critical question - if GOB were given the CRSP funding as a free grant, would it spend the money on peanut research? Peanut are not at present a significant crop, whereas corn and beans are. If, as is suggested below, the CRSP were to undertake some studies of soils and crop nutrition, and of adaptation of peanut to climate and to the existing milpa crop production system, parallel benefits might spin off for the rest of the national program.

1.25 Attitude to U.S. participants and their involvement

No difficulties here, but US CRSP workers have had little contact with Belize and so there has been no opportunity for problems to declare themselves.

1.26 Commitment of governments and/or institutions to programs - researcher level and above - resource commitment. Importance of peanut research in development goals.

The Ministry fully supports the proposed program, but the resources committed are CARDI's, and no CRSP funds have yet been received. The Ministry regards peanut as important for import substitution and for domestic needs. Such peanut as are grown are produced by the Mayas, among whom I was told that the men do the agriculture field work. (If

this is true, it will disappoint some of my socio-economic friends, who have convinced themselves that traditional agriculture is a prime field for women's liberation). My feeling (which is based on instinct more than information) is that traditional Mayan agriculture in Belize (though perhaps not in Guatemala or Yucatan) has so far been little affected by development or by research, and that peanut production will be affected by CRSP research only to the extent that Maya agriculture as a whole becomes linked to development.

1.27 Suggestions/comments

The CRSP would benefit from a more complete understanding of the present state and future prospects of the crop. We should explore with Professor Peter Hildebrand, University of Florida Gainesville, who has long experience of rural studies in neighbouring Guatemala (and is a member of the EEP of the Bean/Cowpea CRSP), how best the Peanut CRSP might approach these questions.

Our food technology colleagues might usefully find out how far they can assist the prototype food technology development at S. Elena, Cayo district (see trip report) which is the only place in Belize where peanut are processed.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect and supportive

The whole programme appears to turn on Dr. Rai, who carries all CARDI's work in Belize. My notes here are incomplete, but I think his support consists on one very efficient secretary, one technician, and field labour, who between them look after programs on maize and beans as well as peanut.

1.312 Adequacy of number and capability to function

Adequate for what is being done in this initial season; not adequate for much more.

1.313 Involvement of women

Only the secretary already mentioned, so far as my notes go.

1.314 Overall effectiveness of program personnel

More or less adequate. The standards of the field work were passable without being excellent. Some of the rows were obviously mixtures, which may not be the fault of Dr. Rai's assistants. Dr. Rai himself has not previously been much involved with research (as opposed to development) on peanut, so that matters like classification and structure of different varieties, and their relationships to breeding and agronomy, absence of dormancy in Spanish and Valencia forms (which seem to do best among the

materials at the station - but do they germinate in the ground, or are they harvested and dried in time?), about recent development in breeding for disease resistance, and perhaps even about aflatoxin problems in a warm wet climate, which underly the ways in which peanut research workers think, seem to be strange to him. He is learning fast, but he needs literature, and perhaps a more extended visit to ICRISAT; but this would damage the program in Belize for relatively little return, since he is talking about changing his job anyway. He was formerly in Guyana, for which he has a great affection; and there is no doubt that Guyana needs people of his quality.

1.315 Suggestions/comments

Difficult to respond without some clearer picture of how far it will be useful to go with peanut research in Belize. However I would hazard the suggestion that it would be useful to post one person for say two years in the first instance in Belize, to work with local agricultural staff on a study of current production of the crop (to bring up to date, and probably to extend, the base line study which Dr. Rai conducted when he came first to Belize in 1978); and to arrange for a graduate student or postdoc, under supervision from Trinidad or a US University, to study the soil-crop nutrition problem which is suggested by the widespread yellowing of many varieties of the crop on the limestone soils.

1.32 Equipment/facilities/supplies

1.321 Availability - reason for unavailability

The program is young, and at this stage it needs no more than field facilities; but it should be able to work at several other locations besides Belmopan, which means transport as well as sticks and string.

1.322 Adequacy - reason for inadequacy

As 1.321 above.

1.323 Suggestions/comments

None until the evolution of the program is clearer.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology

There is now science in the program at present - not even enough, I feel, to interpret and think forward from the observations on, and the results of, the work so far. I have considerable regard for suck-it-and-see agronomy, and have done plenty of it myself, but it is not science. Only through science (particularly soil science, agro-climatology and crop botany, including eco-physiology) can it lead to testable hypotheses for further progress.

There is a mystery, for me, about the attributes of the varieties in this unusual environment - for peanut. I do not understand why the plants are so large and so long-lived, or why the old-time "Tennessee Red" is so different from its cousins, or what happens about dormancy or the lack of it. We know nothing about the epidemiology of the leaf diseases, nor do we have the capacity to follow up the unexpected. I would expect nematodes to offer difficulties including the spread of viruses. A one-man band, even if the performer is so skilled a virtuoso as Dr. Rai, cannot hope to render convincingly a score as complex as this.

See also 1.315 above.

2.2 Progressiveness and Innovativeness of research

In the sense that new varieties are being observed, the existing work is progressive and innovative, but that is not to say much.

2.3 Appropriateness of research - basic, adaptive

The present work is the right way to start; but it needs the additions in base-line study and soil science, and greater depth in peanut botany and agronomy.

2.4 Adequacy of social science/economic perspective/sensitivity

None so far, but I suppose the base-line work I suggest would include these elements, and would also prevent them from crowding technical considerations off the stage, as happens all too often in so-called "farming systems research".

2.5 Suggestions/comments

Covered in 1.315 above.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals

Not in conflict, but I do not think there are any very clearly defined national goals for the peanut crop, let alone for research on it.

3.2 Complementarity to ongoing peanut research activities in-country

There are not other peanut research activities in-country.

3.3 Responsiveness to perceived producer and consumer needs

Since I do not think the needs of either producers or consumers are sufficiently well known, this question can only be answered by saying that whatever those needs may be, the identification of productive, adapted and disease-tolerant varieties with different characteristics is likely to support them.

3.4 Communications with other in-country entities

The CRSP program is operated by CARDI, which seems to be in friendly and non-competitive contact with the research staff of the Ministry at headquarters and at the Central Research Farm.

3.5 Does location impact regionally as well as in-country?

No, but results in the wet environment and on the limestone soils of Belize could be useful in neighbouring parts of Mexico and (in a more ideal world) in Guatemala.

3.6 Relationship to other international research - efforts - ICRISAT, IRRI

To ICRISAT indirectly, through CARDI.

3.7 Transferability of research (in-country, regionally, internationally) for implementation

In theory, this would happen through the Ministry's field service. In practice, I would expect that anything that is done will be done by CARDI, which will expect the CRSP to fund it.

3.8 Suggestions/comments

It is really too early to speculate further about this than I have already done in preceding paragraphs.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities)

As things stand, the CARDI/CRSP work does not strengthen the national research organization, except in so far as it frees resources for work on other things. There is no University in Belize, but there is an agricultural school in Belize City. I did not visit it, but it may be able to support the work and (through its students) disseminate any useful results the Ministry may wish to disseminate.

4.2 Extent of development of collaborative mode - how are collaborators (U.S., host country) interacting? - enthusiasm for research

Little interaction so far with US investigators: such influence become attenuated along the line from Georgia to Trinidad to Antigua to the periphery in Belize.

4.3 Training progress - short term, postgraduate training

None, but there should be. Maybe the CRSP can find some Belizean graduates from Trinidad, Canada or the US who could be trained for

research on peanut if that is what GOB wants; but I fear that they would soon be brain-drained. The Ministry would certainly value help in training Belizean research workers.

4.4 Suggestions/comments

This is a small and limited nation, and similarly the national institutions are small and limited. In relation to the CRSP, CARDI stands proxy for them. It is good to strengthen CARDI, but that is not easy to do. So dependent an agency does not have a continuing collective persona to retain the strength it acquires.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives

5.2 Impact of research on institution and government priorities and policies

5.3 Sufficiency of training/encouragement for promotion of information flow to user

5.4 Potential of research for success in alleviating production and utilization constraints

5.5 Impact of research on Women in Development

5.6 Suggestions/comments

Since the work to be funded by the CRSP began only in June 1985, it is too soon to attempt an answer to this battery of questions. All I would offer is that the work has started and is being done well enough for the immediate purpose.

6. SUMMARY

6.1 Specific strengths

The seeming internal stability of the country; its strong traditional systems of farming; the support of the Government and the collaboration of CARDI; the dedicated reliability of Dr. Rai; the interesting array of problems already evident which await attack and solution, let alone those which will come.

6.2 Specific weaknesses

Meager resources, no clear perspective of the future evolution of the program, no support yet in food technology.

7. REVIEWER RECOMMENDATIONS

The CRSP has made a modest but useful start. It should continue; and the US investigators should take an active interest. They will find it

rewarding, particularly if they find Belize as attractive as I did. Particular attention is needed to the study of the existing production and future prospects of the crop, to the behavior of the varieties, of which a still wider range should be included, in different agroclimatic regions of the country; to the soil/plant nutrition aspects suggested by the leaf yellowing; to the epidemiology of the leaf diseases (why are they so severe in a country where peanut are so little grown - or do they come from Guatemala or on the prevailing S-E winds from South America?), to the ways in which peanut might fit into milpa rotations without making impossible demands on labour, time and attention; to the question of germination of seeds of the non-dormant varieties which appear to have been successful so far; and, in this warm, wet place, to our old sparring partner Aspergillus flavus.

PEANUT CRSP
EEP REVIEW AGENDA: IN-COUNTRY PROJECT REVIEW

PROJECTS GA/IRPEP/CAR (Jamaica) and AAM/FL/FT/CARDI (Jamaica)

By Dr. A. H. Bunting, September 5-6, 1985

1. IMPLEMENTATION AND MANAGEMENT

1.1 USAID Mission involvement

1.11 Mission understanding and backing of project objectives
Complementarity to mission programs

The AID Mission in Kingston (Leland Voth, program officer) fully supports the work of the CRSP in Jamaica and in the Caribbean generally. We did not hear enough, in a short visit, to determine how the CRSP relates to other AID activities in the island. It was suggested that the CRSP might do more in the countries of the mainland, in addition to Belize.

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.

The project does not seem to depend on the Mission for logistics: CARDI appears to have adequate arrangements of its own. We heard of no difficulties about US citizens travelling in Jamaica: it seems that the existing protocols suffice.

1.13 Mission interest for project future

Positive.

1.14 Suggestions/comments

It would be sensible for CARDI to copy reports on CRSP activities to the Mission, and to invite Mission personnel to visit them in the field. Maybe appropriate professional officers of the Mission could be regarded as members of the project team.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode

The Ministry of Agriculture seems content with CARDI's support for the national program on peanuts, but did not seem to be aware that the CRSP has specific purposes within it. I feel that the CRSP is seen as providing general support for the program as a whole, including the food technology part.

1.22 Administration of program - government or institutional level

We encountered no problems.

1.23 Fiscal management

We encountered no problems.

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans

It is not clear how the Government sees the specific research needs of Jamaica for peanuts in relation to its policy of self-sufficiency (a prominent current buzz-word in the Caribbean). The first question I ask when I review a commodity research program is "how much of this stuff do you want in five or ten years' time, and where do you expect to produce it?": the answer determines my assessment. I do not have any clear idea about the future effective demand for peanuts in Jamaica.

Mr. Payne told us that average yields are now about 2.5 tons per hectare. This does not accord with the report of the visit to St. Elizabeth parish, said to be the main peanut growing area of Jamaica, by Dr. H. Jones and Dr. B. Singh, in the report by Dr. B. O. Okezie and others on their visits in May 1984. They reported a yield of about 1.25 tons per hectare on about 1900 hectares, representing an output of about 2400 tons - all of which, except that part which is retained for seed, is said to be sold right after harvest. Yet we were told at Jamaica Frozen Foods that production is about 250 tons. Evidently there are some inconsistencies here.

That the peanuts are sold after harvest does not suggest that they are an important part of customary rural diets in St. Elizabeth parish.

Mr. Payne told Dr. Singh and Dr. Okezie in December 1984 that processors are not getting enough peanuts to satisfy the needs of the local market. This may mean that the local product does not meet aflatoxin standards; and it is also clear (see below) that it costs too much. At the same time Dr. Ahmed was told that consumption (seemingly largely by townfolk buying raw peanuts in the market) approaches 5000 tons. Since the imports, from the US, are said to be about 1500 tons, another 1000 tons is presumably produced outside St. Elizabeth parish.

Mr. Payne suggested to us, perhaps without much forethought, that the potential area of the crop is about 20,000 hectares. If this were developed, the output would far outrun the present market potential.

If all Jamaica needs is say an extra 2000 tons, and this can be got on 1600 additional hectares (at 1.25 tons per hectare), an island-wide effort is not required. There is already a complete soils survey of the island (backed up by fertilizer response studies, using maize, on the main soils), and a sufficient stock of climatic data. It should be possible to identify the most suitable and likely areas for say 2000 hectares of peanuts, and concentrate the effort in them.

Price appears to be a significant part of the problem. The producer (or is it the middleman?) is said to expect a price of \$J 80 to 150 per bushel, whereas Mr. Payne believes that \$40 would ensure a satisfactory profit at a yield of 2.5 tons/ha. If in fact yield is only 1.25 tons, the market price may reflect the costs of production; and perhaps the conclusion might be that yields are too small. During our visit to the

Ministry we were told that farmers' expectations are too great, but the facts also suggest that producers are not sufficiently affected by market competition (with the imported product) to improve their methods or to bring down their expectations. This in turn suggests to me that they have other ways of acquiring income and are not interested in the crop at smaller prices. If this is right, it would indicate that the local crop has no future in the market place in Jamaica or anywhere else. I hope that this is not the correct conclusion, but I doubt whether enough is known to reach a more defensible one. (Of course all these numbers may be in doubt because it is never clear whether we are talking about nuts in shell (pods, fruits) or shelled nuts (kernels)).

Further, if larger yields can be obtained, so that the price falls, but the market does not correspondingly expand, the area harvested is bound to fall as the less productive growers are forced out of the business.

The conclusion from this (unless there are other documents which I have not seen) is that CARDI/CRSP should do some more work on the economics of production and marketing of the crop in Jamaica, the prospects of the crop in the field and in the market place, and the constraints (including aflatoxin) which prevent it from substituting more completely for imports. This might lead to a more precise definition of the research program. The program we saw on paper seemed to be a conventional maximum yield, and largely experiment station, program, which is not necessarily tackling the most important problems.

1.25 Attitude to U. S. participants and their involvement

No problems reported.

1.26 Commitment of governments and/or institutions to programs - researcher level and above - resource commitment Importance of peanut research in development goals

The Government, and CARDI, are committed to the program, and so are Mr. Suah and Mr. Payne personally. As to development goals, see comment under 1.24 above.

1.27 Suggestions/comments

See 1.24 above - we may be flogging a wooden horse.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect and supportive
- 1.312 Adequacy of number and capability to function
- 1.313 Involvement of women
- 1.314 Overall effectiveness of program personnel
- 1.315 Suggestions/comments

I cannot answer confidently here because we were not able in the time to disentangle the CRSP from all the other peanut-related science activities of CARDI, the University of the West Indies, the Food

Technology Institute, the Bureau of Standards, and the private or parastatal food technology sector.

Mr. Payne spends three-quarters of his time on peanuts, supported from a variety of sources. Mr. Suah feels that the INPEP work needs an extra technician, but no corresponding request appears in the list of requirements included in the papers for our visit, nor did Mr. Suah specify what the technician would do. I can well imagine that a wide ranging series of trials in the island would need extra staff, but since the considerations in 1.24 above do not suggest to me that such a series is necessary, I would not find this easy to support without further detail. Of course if my assessment is wrong, I shall be happy to stand corrected; but it will need something approximating to proof, rather than assertion, to do this.

I am left with the impression that although the US PI's in these two projects have paid several visits to the Caribbean, the CRSP funding is perceived primarily as a sort of bilateral grant in aid, with little or no attention (at the professional rather than the administrative level) to the cooperative component. I hope I am wrong.

1.32 Equipment/facilities/supplies

1.321 Availability - reason for unavailability

1.322 Adequacy - reason for inadequacy

1.323 Suggestions/comments

There appears to be a considerable amount of equipment about, but the papers provided include request, not supported by program proposals, for a range of equipment for proximate analysis, determination of aflatoxins, and small scale processing. It seems that this equipment has been ordered, so no doubt the US PI involved is satisfied. The EEP may have to ask some questions, and will certainly have to look, in later evaluations and reports, for evidence that something useful has been done with the equipment.

2. ADEQUACY OF SCIENCE

I propose to answer these queries in terms of a conventional maximum yield program producing for a substantial and elastic market. Since I saw nothing in the field except some of the first sown plots in a sowing date experiment on the UWI campus, my comments are bound to have an air of unreality. Perhaps this reflects what I feel about the program as a whole. I shall deal primarily with the INPEP part of the work, since Dr. Milner knows so much more than I do about the PI part.

2.1 Level of science/research to generate new technology

Little or no science is reported in the INPEP program in Jamaica: it consists of very conventional steam agronomy. To turn this into science one has to ask "why" and "how" questions, usually of an agroclimatological and ecophysiological sort. The work at present is concerned with "what" questions - fair enough, provided the program objectives are realistic.

2.2 Progressiveness and innovativeness of research

There does not appear to be anything progressive or innovative about the agronomy; as described it is solid conventional stuff. At the end of the day, it might identify varieties particularly well adapted to the general and local conditions of different environments in the island, but it will not explain why they are so adapted.

2.3 Appropriateness of research - basic, adaptive

None of the work we heard about is basic, so I suppose it is adaptive, whatever that may mean.

2.4 Adequacy of social science/economic perspective/sensitivity

1.24 above will suggest that the program needs a stronger economic perspective and that we do not know enough about who produces peanuts in Jamaica, what happens to them, and how.

2.5 Suggestions/comments

We need more factual information on actual production (including cash and other resources committed), prices, marketing channels and perspectives of appropriate volumes of output.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals

The program is perceived by government as relevant to its objective of greater self-sufficiency.

3.2 Complementarity to ongoing peanut research activities in-country

The CRSP activities are part of the national peanut program carried out by CARDI.

3.3 Responsiveness to perceived producer and consumer needs

See 1.24 above. The program could lead to a larger volume of production at a smaller price, but it is not clear how elastic the demand is - since such evidence as there is suggests that peanuts and peanut products are eaten for pleasure by better-off urban dwellers and are not a subsistence crop for the rural or urban poor.

3.4 Communications with other in-country entities

These seem to be good - with CARDI of course, and with the Ministry of Agriculture, the Food Technology Institute, the Jamaica Scientific Research Council, the parastatal Jamaica Frozen Foods and other food industries, and with the Grace Kennedy Co. on the production side. In so far as the CRSP is a part of the national program on peanuts, it is very much part of the local scene.

3.5 Does location impact regionally as well as in-country?

At present, no.

3.6 Relationship to other international research efforts - ICRISAT, IRRI

None, except through CARDI and indirectly through the CRSP with ICRISAT.

3.7 Transferability of research (in-country, regionally, internationally) for implementation

I do not know enough about the output of the research to judge.

3.8 Suggestions/comments

The Peanut CRSP in Jamaica seems to me to be very much an in-island affair, helping to meet government objectives which are defined in principle but seem to lack more immediate practical objectives. In the meeting in Guyana which followed my visit to Trinidad, I was impressed by the analysis of food need and purposes in the Caribbean presented by Mr. H. Blades, Director of Trade and Agricultural Development at the CARICOM Secretariat in Georgetown, and a most impressive person. Perhaps our colleagues at AAM would find discussions with Mr. Blades valuable.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities)

I think the CRSP is supporting the work of Mr. Payne and helping him to extend it; but this is part of CARDI and as at present conducted is not likely directly to increase national research capability in Jamaica.

4.2 Extent of development of collaborative mode - how are collaborators (U.S., host country) interacting? - enthusiasm for research

I have the feeling that collaboration at the professional level is not sufficiently well developed. Dr. Branch would surely be hard put to it to do more, since he has to work with so many countries; but some way of strengthening INPEP professionally in the Caribbean is clearly needed. No one could fault Mr. Payne for enthusiasm; I wish I could have seen more of his practical performance.

4.3 Training progress - short term, postgraduate training

Training would be welcomed by Government, but so far as I know the CRSP has not trained any Jamaicans outside the island.

4.4 Suggestions/comments

Most of the substantial volume of reports I have about INPEP in Jamaica seems to reflect organization and intentions. Both are desirable, but it seems to take a long time and much paper to get this

thing off the ground. In the Caribbean there is a tendency for talk to be more abundant than work.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives

Mr. Payne's report suggests that INPEP trials and observations have been carried out, but I do not know with what general results. I think this is partly my fault: I found it difficult to do more in so short a visit at the wrong time of year.

5.2 Impact of research on institution and government priorities and policies

So far as I know, none.

5.3 Sufficiency of training/encouragement for promotion of information flow to user

=

No training that I hear of. I expect CARDI has its ways of disseminating results to the Ministry and its field staff, but I am not informed.

5.4 Potential of research for success in alleviating production and utilization constraints

The main technical difficulty we heard about is small yield (though two quite different figures for yield have been given). Why the yields are small I do not know. Maybe labour rather than land is the limiting constraint, in which case output per man-hour at peak periods would be a better measure than yield per hectare. But I did not (for example) learn anything about losses due to pests and diseases or to the potential of INPEP materials in lessening these. Maybe some of them will be more suitable than the materials currently grown (said to be Valencia forms) for the processing industry. There is evidently much the CRSP could do to suggest technical improvements in post-harvest operations and in processing.

5.5 Impact of research on Women in Development

No information. The female director of the Food Technology Institute is about to leave Jamaica.

5.6 Suggestions/comments

INPEP should seek to use environmental and pest/disease information to interpret the results of trials, particularly those conducted at many locations.

6. SUMMARY

6.1 Specific strengths

Mainly the experience, enthusiasm and competence of Horace Payne and the support of Mr. Suah and CARDI, and of the Government of Jamaica.

6.2 Specific weaknesses

Lack of a sufficiently clear definition of what it is we are really trying to achieve in Jamaica - how much of what sorts of products under what circumstances and with what constraints?

7. REVIEWER RECOMMENDATIONS

This was a poor visit. It was too short, and it seems to have been at the wrong time of year. Our hosts saw it as a public relations exercise; a person less charitable than me might have suspected that wool was being pulled over his eyes. I saw no experiments (bar the early stage of a sowing date trial at the UWI campus) and no crops (bar the irrigated fields at Halse Hall). So my recommendations may not be worth the paper they are typed on.

For what they are worth, they are that we should seek to define objectives and projects more precisely in terms of national goals; and that we should seek to make the INPEP work more analytical and explanative. But since I am left with lingering doubts about what actually happens in the research program, I think it is essential that I, or some other agronomic member of the EEP, should visit Jamaica at a more suitable time of year, preferably along with Dr. Branch, and do a more thorough job on a schedule which responds to the needs of the CRSP rather than to the promotional purposes of the HC PI.

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NARRATIVE SUMMARY

External Evaluation Panel Review of U. S. University Projects

By Drs. Kenneth H. Carren and Pierre Gillier (EEP), and
Drs. Fred Johnson and Carval Wiggins (USAID)

Texas A & M University April 3 & 4, 1985

Peanut CRSP Code: TX/BCP/S

Project Title: Disease Resistant Peanut Varieties for Semi-Arid
Environments

Discussions with:

- * i) Dr. O. D. Smith, Principal Investigator, Dept. of
Soil & Crop Science, College Station, Breeder
- * ii) Dr. A. M. Schubert, Co-Principal Investigator 1/,
Texas A and M Plant Disease Research Station,
Yoakum, Plant Physiologist (drought physiology)
- *iii) Dr. D. H. Smith, Texas A&M Plant Disease Research
Station, Yoakum, Plant Pathologist
- * iv) Dr. W. J. Gricher, Texas A&M Plant Disease Research
Station, Yoakum, Agronomist, Station Superintendent
- # v) Dr. C. E. Simpson, Texas A&M Research and Extension
Center, Stephenville, Breeder and Exploring Botanist
- **vi) Dr. R. E. Pettit
Mrs. Ruth A. Taber, Department of Plant Pathology,
College Station, Plant Pathologists

1/ As noted in Peanut CRSP Newsletter of 05/22/85

* Discussions at Yoakum and College Station

Discussions at College Station

** Only limited discussions on TX/BCP/S with these two PIs of the other
two Texas A&M Peanut CRSP projects - TX/MM/S and NCS/TX/SM/TP

Recommendation Rating: On the basis of evidence presented, the reviewers received very favorable impressions of the project and the Texas A&M staff charges with its implementation. The reviewers feel that the project as conceived is sound and should continue as planned, with perhaps some adjustments, hopefully only temporary adjustments, to compensate for the lack of well-trained personnel in Senegal.

Panel Members' Narrative Review: The review was conducted on the basis of informal reports, with laboratory and greenhouse tours, of the six scientists listed above, with the reviewers having opportunity to ask questions and explore some points further. These took about ten hours. There was a helpful session of about one hour with the senior University officials responsible for scientific and administrative oversight of the project's work plan and budget.

One reviewer had participated, earlier in the week, in the review at N.C. State University. He brought a review report framework created at N.C. State by EEP Chairman, Don Pickering, after completion of the N.C. State review. This report framework can be traced back to the meeting of the CRSP EEP, Technical Committee, and Board of Directors, with the Program Director, in Washington, D.C. on October 31, 1984 in which meeting the document "Scope of Work for the EEP" and adjunct documents were adopted as official guidelines for reports from the EEP. The general framework of this report and the final PROJECT PROFILE SUMMARY will reflect the five main headings in the "Scope of Work for the EEP" document. These headings are numbered 1-5 below and in PROFILE SUMMARY they will be given a rating.

1. Implementation and Management: This project is proceeding at an acceptable pace. The scientists devoting part (or all) of their time to it are highly competent with apparent dedication that equals their competence. Overall, we feel the contribution to this project by Texas A&M researchers is much above the level to be expected from the amount of time shown on charts, etc. as being time these researchers (other than the PI) are expected to devote to the CRSP project. This reflects an excellent meshing of the CRSP work into an ongoing program of Texas A&M research on peanut breeding and varietal improvement.

The total Peanut CRSP program at Texas A&M obviously has dedicated support from the level of University administration immediately involved.

2. Adequacy of Science: Received a satisfactory rating on all but one of the scores. Without going into cytogenetics, which has not yet been written into the project, there are no readily available means of expressing "progressiveness" or "innovativeness" in a plant breeding, varietal testing project. However, the researchers observed seem to be of the type that does not hesitate to reverse field and try other tactics, particularly "new" tactics, when such seems available. Plant breeding is usually a long range project, and the emphasis on field testing and the newly introduced search for drought resistance at Texas A&M, makes the project look less "progressively scientific" than those breeding projects involving cytogenetics, tissue culture, etc.

3. Geographic Coverage and Applicability of Research: These factors were rated Satisfactory to Highly Satisfactory. There was evidence of clear complementarity to ongoing research. Demands on time and resources seem in keeping with a meshing of the CRSP breeding project into a continuing peanut breeding program at Texas A&M that is well in touch with other U.S. peanut breeding programs. Disease resistance, and, more-and-more, drought resistance are goals of U.S. and world-wide peanut breeding projects.

4. Institutional Development: Due largely to the enthusiasm and drive of the PI and one or two other researchers, this aspect was rated highly by the reviewers in two of the three rating areas. That there is little apparent progress on training is not due to a lack of effort on the part of those involved at Texas A&M. In fact, the PI, knowing that EEP member and Texas A&M reviewer, Dr. Gillier, had extensive experience in Senegal and other W. African countries, talked with Dr. Gillier about what might be done to alter the attitude of agencies of the government of Senegal towards sending personnel to the U.S. for training. Within Texas A&M this Peanut CRSP project has unquestionably strengthened an already strong program on breeding peanuts for disease/drought resistance and has added international outlook and potential thereto.

5. Research Progress and Application: The project seems to be Satisfactory in regard to achievement of objectives and Highly Satisfactory in regard to the potential of research results for application to U. S. needs. There did not appear to be, at present, any special impact of the project on established research priorities in the Texas A&M peanut breeding program. The project's direction is clearly in line with perceived needs in the host country as well as in the U.S. In 1985 there should be data that will enable subsequent reviews to be more definitive.

Summary: We conclude that the project is well conceived, that it meshes well with a broader program of peanut breeding and varietal selection of Texas A&M. This well managed project, fully supported by Texas A&M administrators, should be continued much as it is now. With more opportunity for training of Senegalese scientists to take over the project's Senegal tests, etc., its potential for outreach to Sahelian Africa may well be speeded, but this potential definitely is in the project.

Special Note: The visit of EEP members and U.S. Aid representatives to Texas A&M was coordinated by Dr. Olin Smith, the Principal Investigator of TX/BCP/S who is also the Texas A&M representative on the technical committee of the Peanut CRSP. At the outset Dr. Smith gave each of a ca. 35 page book with an agenda, and abstracts of all the reports that would be presented to the reviewers.

While this review document is based primarily on the reports of, and the give-and-take discussions with the first five researchers listed on its page 1, it seems well to list all 19 of the reports on TX/BCP/S for which there are abstracts in the booklet. This is particularly appropriate since shortage of time permitted nothing more than mere mention of some of these reports.

These reports: 1) Germplasm exchange and increase. 2) Evaluation of germplasm for leafspot resistance. 3) Greenhouse isolated seed increase. 4) Survey of production constraints in Senegal. 5) Fungi associated with peanut in Senegal. 6) Resistance to pod rot. 7) Resistance to Sclerotium rolfsii (white stem mold). 8) Environmental influences on shell structure. 9) Screening peanut cultivars for resistance to drought related stress diseases. 10) Introgression of leafspot resistance into cultivated peanut. 11) Association of leafspot resistance and anatomical traits of inter-specific hybrid progenies. 12) Evaluation of breeding lines for leafspot resistance and yield. 13) Evaluation of peanut germplasm for resistance to peanut foliar diseases. 14) Utilization of resistance sources to develop improved peanut lines. 15) Population development and increase. 16) Growth duration standards. 17) Drought stress resistance evaluations in peanut. 18) Using a peanut canopy temperature stress index to schedule irrigation. 19) Use of line-source irrigation gradient systems to induce variable water stress in peanut.

Hopefully a copy of this Texas A&M booklet will be appended to the final versions of these review reports. This will show where persons, other than those listed on page 1, are involved in the research of TX/BCP/S.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: TX/BCP/S

Project Title: Disease Resistant Peanut Varieties for Semi-Arid Environments

Overall Recommendation Rating: The general outlook of this project; its potential for results useful in U. S. semi-arid areas, as well as in the world's other vast semi-arid areas; its implementation by the PI and other close collaborators; and one other Texas A&M Peanut CRSP project's making direct contributions to it (i.e. TX/MM/S) and working in the same host country are fully appropriate. Support from Texas A&M is appropriate. It should continue as planned.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

- 1.11 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.12 General attitude towards international programs and support of researchers involved.....: HS
- 1.13 Logistical and fiscal support.....: HS
- 1.14 Perceived relevancy of collaborative program to U.S. research interests.....: HS
- 1.15 Status of CRSP in relation to earlier industry reaction to funding.....: HS
- 1.16 Resource commitment to project.....: HS

1.17 Summary Comments: Meeting with senior agricultural management at Dean, Director, and Department Chairman levels (some of these have a background in overseas agricultural research and development) indicated a clear understanding and commitment to the aims and objectives of the Peanut CRSP in general and this project in particular. This position is evidenced by the allocation of staff time and resources to the project.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support..... : HS
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: HS
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: HS
- 1.26 Overall commitment to project.....: HS

1.27 Summary Comments: As indicated, the PI as well as a goodly number of the Texas A&M staff at College Station and two branch experiment stations are involved to the fullest extent time will permit and contribute, strongly, to this project.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: S
- 2.4 Local science and economic perspective..... : IE

2.5 Summary Comments: As far as could be ascertained by the discussions and meetings with the several investigators involved, this aspect of the project generally warrants a Satisfactory rating. However, the social science and economic aspects are difficult to evaluate.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: HS
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: HS
- 3.3 Transferability of research results to U.S. programs...: S

3.4 Summary Comments: The project seems of considerable relevance to host country and U.S.'s goals in this area. It appears to demonstrate clear complementarity to ongoing research efforts and to the time and resources available. Germplasm developed and tested appears to be likely to achieve a satisfactory level of transferability to U.S. programs centered at Texas A&M. The reviewers kept in mind that all plant breeding projects must be evaluated from a long-range viewpoint.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities.....: HS
- 4.2 Extent of development of collaborative mode.....: HS
(interaction with collaborators/enthusiasm for research)
- 4.3 Training progress.....: S

4.4 Summary Comments: Within Texas A&M this Peanut CRSP project has unquestionably strengthened an already strong program on breeding peanut for disease/drought resistance, and has added international outlook and potential thereto. Furthermore, there is some hope, if perhaps only a slim hope, that Dr. Gillier may be able to help undo the impasse in Senegal over training in the U.S. for Senegalese researchers on the project.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: S
- 5.2 Impact on research priorities.....: S
- 5.3 Potential of research results for application to U.S. needs.....: HS

5.4 Summary Comments: Although it is still too soon to report on other than the potential inherent in such a plant breeding project, this one appears to be well on track. Results in 1985 should enable subsequent reports to be more definitive.

6. SUMMARY

6.1 Specific Strengths: The strong background of the PI and his closest collaborators in scientific peanut breeding. The diversity of environments in Texas, enabling the researchers to observe the products of their breeding under conditions closely approximating those of Senegal and other parts of Sahelian Africa.

6.2 Specific Weaknesses: The inability, so far, to provide training for Senegalese breeders and other technicians, thus requiring more time-consuming and fund-draining trips to Senegal by the PI and other Texas A&M personnel to see that field testing of lines is being properly done.

NARRATIVE SUMMARY

External Evaluation Panel Review of Host Country Projects

By Drs. Pierre Gillier and Kenneth Garren - (Introductory and preliminary review in Niamey, Niger during and between sessions of AGRO MET SEM (International Symposium on Agrometeorology of Groundnut) August 21-26, 1985). On-site reviews at U.S. AID Mission, Dakar; ISRA (Senegalese Institute for Agricultural Research), Dakar; ITA (Senegalese Institute of Food Technology), Dakar-Hann; ISRA-CNRA (National Center for Agronomic Research), Bambe; ISRA-SCS ("Secteur Centre Sud"), Kaolack; and at ISRA Field Station, Nioro Du Rip. August 29 - September 2, 1985.

Peanut CRSP Code: TX/BCP/S

Host Country: SENEGAL

Project Title: DISEASE-RESISTANT PEANUT VARIETIES FOR SEMI-ARID ENVIRONMENTS

Discussion With:

- A) AGRO MET SEM Dr. Aly N'Diaye (See ISRA below)
- 1/ Dr. Olin D. Smith, Texas A & M University, U.S. PI of TX/BCP/S
 - 2/ Dr. Donald H. Smith, Texas A & M University (Yoakum), Cooperator, TX/BCP/S (Plant Pathologist)
 - 3/ Dr. Charles E. Simpson, Texas A & M University (Stephenville), Cooperator, TX/BCP/S (Geneticist-Breeder)
- 1) **U.S. AID** Mr. Mamadou Traore, (A Senegalese, apparently an assistant to Mr. Richard Caldwell, Project Manager (?) for Peanut CRSP)
2. **ISRA**
- 4/ Dr. Madike Niang, Director General, Dakar (Sept. 2)
 - 4/ Dr. Mocketar Toure, Scientific Director, Dakar (Aug. 29)
 - 5/ Dr. Aly N'Diaye, Plant Physiologist, CNRA, Bambe, Coordinator of Peanut CRSP projects for ISRA, (Dakar, Bambe, Niamey, Niger)

-
- 1/ Chaired Session IV of AGRO MET SEM on Climate and Groundnut Production and was with EEP panelists in Dakar, August 31 to late afternoon September 2.
 - 2/ Presented paper at AGRO MET SEM entitled "A Disease Forecasting Method for Groundnut Leaf-spot", and was with EEP panelists in Dakar, August 31 to late afternoon September 2.
 - 3/ Was with EEP panelists in Dakar, August 31 to late afternoon September 2.
 - 4/ These officials were introduced to the EEP panelists as "Doctor..."
 - 5/ This Senegalese researcher was listed in the 1983 Annual Report of the Peanut CRSP as "Dr." rather than as "Mr."

Discussions With: (Continued)

2) ISRA (Continued)

- 1/ Dr. Jean C. Mortreuil, "Selectionneur", CNA (and CIRAD/IHRO, Bambey (Dakar, Kaolack, Nioro Du Rip)
Mr. Saliou Diangar, Director, Branch Station at Nioro Du Rip (Nioro Du Rip)
- 2/ Mr. J.L. Khalfaoui, "Ingenieur de Recherche", CIRAD/IHRO and ISRA, Bambey and Dakar (Dakar)

Recommendation Rating: The general direction of this project in Senegal is satisfactory, and it should be continued. We recommend that the project can be extended to the southern area of Senegal, around Casamance, where there is higher and more predictable rainfall with resultant higher yield and higher disease development.

A major difficulty observed was fiscal management (fund handling and utilization). Great confusion in this area results from overlong retention of CRSP funds in the hands of the ISRA administration. We recommend, therefore, that--pending reforms asked-for by The World Bank a simple system of dispersing CRSP funds be found and implemented. Such system be based on a responsibility of each researcher to define, within limits of a fixed budget, his needs for funds and determine when these funds are needed without having to go through all administrative channels. If this solution is not acceptable to Senegalese authorities then the only solution seems to be to use an external fund manager--someone in U.S. AID or similar institution--who follows the situation month by month, and evaluates needs in advance, and furnishes funds for normal operations in accordance with an established budget.

Panel Member's Narrative Review:

1) Basis of Review:

Peanut CRSP annual report. Records of Texas A & M University. Mortreuil's documents. Conferences in ISRA Dakar and ISRA Bambey. Visits to Bambey and Nioro Station fields.

-
- 1/ Listed as "Dr." in the report on TX/BCP/S in the 1983 Annual Report of the Peanut CRSP - with no "o" at the end of the surname.
 - 2/ Mr Khalfaoui, a peanut breeder with CIRAD/IHRO at Bambey, seems to be a helpful but unofficial collaborator on TX/NCP/S. He is listed here because he was helpful to the EEP panelists in Dakar the confused morning of August 29. He, alone, attempted to explain to the panelists why the much publicized and recently received "Peanut CRSP" station wagon seemed to be in Limbo and not in evidence in Dakar.

2) CRSP Format:

See Project Profile Summary for TX/BCP/S.

3) Implementation and Management:

There is no problem with acceptance and understanding of project by authorities. Scientists are enthusiastic and ready to work hard. But administration is so bad it was not possible to plant early in Bambeý where soils were not plowed at the time of first rainfall (June 21) and had to wait until July 15 to plant. When EEP was in Niore (August 30) workers on CRSP project protested because they did not receive salary before religious feast of Tabasky on August 27. It was impossible, until intervention of EEP in Dakar, to obtain insecticides for peanut fields at Bambeý invaded by Aphis. No money was available! The CRSP car was used for the first time by project scientists when EEP arrived in Dakar--three months after its delivery to Bambeý. The Director at Bambeý had appropriated it for himself.

ISRA, in spite of frequent requests of investigators, would not authorize a part of this program in Casamance where it will be easier to do tests on rust, rosette, Cercospora, etc.

We mention these difficulties passed along to us by project scientists because during last meeting at ISRA the Director General seemed to think that the new rules "required" by The World Bank will change the situation. We think it will not be easy to change the system unless there is a drastic change in the basic philosophy underlying the basic governmental system and an active desire within the basic system to change. Therefore we recommend to Peanut CRSP administration that it be vigilant.

4) Adequacy of Science:

Many Senegalese varieties are used as controls in this project. These varieties came from many years of selection under Sahelian conditions and they integrate environmental responses. Comparisons with U.S. varieties during several seasons can give very interesting and valuable information. These control varieties were obtained by hybridization of parental lines maintained in a seed collection. This is a very important seed collection. No good cold storage is used to maintain this seed collection and maintenance of this seed collection is an important assignment of ISRA. There are risks of losing this seed collection. So the EEP recommends that the Texas A & M Team look at this problem and help the Senegalese maintain this scientific background.

5) Geographic Coverage and Applicability of Research:

No ratings of "HS" here for two reasons: a) ISRA authorities have refused several times to extend the study to Casamance where climatic conditions are much more conducive to having plants survive in test plots. b) Because ISRA authorities (who are not scientists, not actually involved in the research) are always reticent when a program includes or calls for participation of persons from or in other countries.

6) Institutional Development:

Support from Peanut CRSP is used partly to develop some non-CRSP programs and integration into the "national program" is the means that covers the reality. It was difficult to isolate the Peanut CRSP program, but it is essential that Peanut CRSP ME pays attention to this situation and if a new procedure is developed for management of Senegal's funds earmarked to support agricultural research, then a better separation of Peanut CRSP funds within the new procedure should be insisted-upon as a firm basis for close review.

7) Research Progress and Application:

We rate this "S" with no "HS" because we are worried by the high incidence of peanut clump disease in the Bambey fields. There has been no attempt at control, even though researchers appear to be aware that DD-Shell is very effective in controlling peanut clump. This introduces an important heterogeneity or nonuniformity into these test plots and it is difficult in such situations to obtain significant results.

Will ISRA see to it that in the future DD treatment is applied systematically to these selection fields?

PROJECT PROFILE SUMMARY

Peanut CRSP Code: TX/BCP/S

In-Country Project Review

Project Title: DISEASE RESISTANT PEANUT VARIETIES FOR SEMI-ARID ENVIRONMENTS

Host Countries: SENEGAL (In-Country)

Overall Recommendation Rating: The general direction of this project in Senegal is satisfactory, and it should be continued. We recommend that the project be extended to the southern area of Senegal, around Casamance, where there is higher and more predicatable rainfall with resultant higher yield and higher disease development.

A major difficulty observed was fiscal management (fund handling and utilization). Permanent confusion in fiscal management results from: 1. Administrators passing the responsibility from one person to another. 2. Lack of invoices. 3. Lack of authorization for expenses. 4. Absence of Team Leader when his signature is needed. 5. Etc., etc. All of which is called good basis for retention of CRSP funds in accounts of ISRA control.

A World Bank Team was in Dakar on at least a second visit while we (The EEP) were there. It was there in regard to the fiscal management policies (above), and again voicing a need for a drastic cut in administrative staff and a complete reorganization of ISRA's research institutions. The EEP wishes to endorse The World Bank's firm stand and hopes that some means may be found to adequately support the research in Senegal of Peanut CRSP projects until such time as the reforms asked-for by the World Bank may be effected.

We recommend, therefore, that a simple system of dispersing CRSP funds be found and implemented. Such system be based on a responsibility of each researcher to define, within limits of a fixed budget, his needs for funds and determine when these funds are needed without having to go through all administrative channels. If this solution is not acceptable to Senegalese authorities then the only solution seems to be to use an external fund manager--someone in U.S. AID or similar institution--who follows the situation month by month, and evaluates needs in advance, and furnishes funds for normal operations in accordance with an established budget.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission programs.....: IE

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: IE

1.13 Mission interest for project future.....: IE

1.14 Summary Comments: Thursday August 28 was neither a U.S. nor a Senegalese holiday. That day, according to AGENDA, we made our first call--the important call on U.S. AID, Dakar. We asked several times to see Mr. Richard Caldwell. We were soon joined by Dr. Aly N'Diaye, ISRA's CRSP Coordinator. We succeeded in finding neither Mr. Caldwell nor any other "American" in U.S. AID. We did, however, find the office of a Mamadou Traore, whom Dr. N'Diaye said was "Mr. Caldwell's assistant". Mr. Traore apparently could neither speak nor understand English, but he was the only non-clerical person at U.S. AID the EEP was able to "talk with".

It is not our point to complain about this failure to talk with an interested employee or official of U.S. AID. Nor do we wish to place blame on anyone. But the AGENDA did call for us to evaluate the above points in regard to U.S. AID.

The only thing accomplished by this visit--per AGENDA--to U.S. AID, Dakar was to obtain, for one U.S. scientist, a permit to get into the U.S. Embassy to exchange \$U.S. for CFA bank notes. This is hardly a significant "lead-in" to AGENDA item 1.1.

1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: NS
- 1.22 Administration of program-government level.....: NS
- 1.22A Administration of program-institutional level.....: NS
- 1.23 Fiscal management.....: NS
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: S
- 1.25 Attitude toward U.S. participants and their involvement.....: S
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: S

I/ Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

1.27 Summary Comments: Institutions visited are very happy to collaborate with Peanut CRSP and scientists are enthusiastic. Unfortunately implementation of this program is slowed down by bad management at the administrative level. Retention of money at ISRA administrative level delayed planting time, salary of workers is not paid regularly. CRSP car is in hands of Bambey Director and not at the disposal of CRSP researchers or CRSP visitors. It is difficult to determine where and for what the funds of the project are used and many other projects are interfering with Peanut CRSP research.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: HS

1.312 Adequacy of number and capability to function.....: S

1.313 Involvement of Women.....: IE

1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: Research scientists assigned to the project are enthusiastic and dedicated to the project and their capability is adequate. They are limited by poor management.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: NS

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: Equipment, etc. is adequate but the use of the equipment by CRSP workers is not satisfactory in the case of the CRSP car. Bureaucracy and in obtaining funds supposedly available delays filling many orders and, therefore, limits the research activities.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: S

2.4 Adequacy of social science/economic perspective/sensitivity.....: IE

2.5 Summary Comments: There seemed nothing less than satisfactory about the "adequacy of science" as represented by either Dr. N'Diaye or Dr. Mortreuil. Senegalese researchers need periodic visits of U.S. investigators to be oriented and trained further. Agrometeorology symposium was a good opportunity for Kalfaoui to get another and broader view of the drought problem.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals.....: S
- 3.2 Complementarity to ongoing peanut research activities in-country.....: S
- 3.3 Responsiveness to perceived producer and consumer needs: S
- 3.4 Communications with other in-country entities.....: IE
- 3.5 Does location impact regionally as well as in-country.: S
- 3.6 Relationship to other international research efforts - ICRISAT, IHRO/CIRAD.....: S
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: S

3.8 Summary Comments: Integration into Senegal's national agricultural program makes sure there is a good adaptation to Senegalese needs without risk of duplication. ISRA works in connection with IBRAZ and Botswana Research Department for disease tests and seed multiplication. Relations with ICRISAT and University of Paris, CIRAD and Museum are good.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: S
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: S
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: With the research budget constantly decreasing (or, to be more exact, no access to available CRSP funds for people working in research departments) CRSP support is essential to maintain some level of research. A project for training, in U.S., for a University of Dakar student was proposed. No news was obtained during our trip on this proposal.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: S
- 5.2 Impact of research on institution and government priorities and policies.....: S
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: S
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: S
- 5.5 Impact of research on Women in Development.....: IE

5.6 Summary Comments: Some results have already been obtained to guide selection of further test varieties and give hope for realization of objectives in spite of drought continuing year by year. Extension to Casamance in order to test varieties under better conditions will be useful.

6. SUMMARY

6.1 Specific Strengths: 1. The Senegalese researchers and administrators involved recognize and appreciate the great potential value of the research of this project. 2. The Senegalese researchers are capable, some are well trained, all are anxious to get on with the research. 3. There is now present in Senegal an important germplasm base for peanut breeding. 4. There is a good cooperation with some other institutions and researchers working in the same area. 5. Good direction from and contact with U.S. PI and other U.S. research cooperators.

6.2 Specific Weaknesses: 1. Bad fiscal management and resultant over-long retention of funds by the ISRA bureaucracy slows down all operations in Senegal--i.e. there are very frustrating bottlenecks in Senegal in the path of U.S. funds moving into the country to buy supplies, pay field labor, provide transportation, etc. 2. The tendency of some Senegalese researchers to use weakness 1. as a "crutch"--i.e. as an excuse for their lack of desire or ability to compromise and make-do in order to get some worthwhile research done. 3. Sometimes in Senegal the two FEP panelists asked each other - "Is everything that CRSP funds seem to be paying for in the plan-of-work of TX/BCP/S"? "How does this test (or etc.) contribute to achievement of the objectives of TX/BCP/S"? 4. The failure of Senegalese to see the need to extend the project's tests into the Casamance area.

7. Reviewers Recommendations: The general direction of this project in Senegal is satisfactory, and it should be continued. We recommend that the project can be extended to the southern area of Senegal, around Casamance, where there is higher and more predicatable rainfall with resultant higher yield and higher disease development.

A major difficulty observed was fiscal management (fund handling and utilization). Great confusion in this area results from overlong retention of CRSP funds in the hands of the ISRA administration. We recommend, therefore, that--pending reforms asked-for by The World Bank a simple system of dispersing CRSP funds be found and implemented. Such system be based on a responsibility of each researcher to define, within limits of a fixed budget, his needs for funds and determine when these funds are needed without having to go through all administrative channels. If this solution is not acceptable to Senegalese authorities then the only solution seems to be to use an external fund manager--someone in U.S. AID or similar institution--who follows the situation month by month, and evaluates needs in advance, and furnishes funds for normal operations in accordance with an established budget.

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NARRATIVE SUMMARY

External Evaluation Panel Review of U.S. University Projects

By Drs. Kenneth H. Garren and Pierre Gillier (EEP, and
Drs. Fred Johnson and Carval Wiggins (US AID)

Texas A and M University, April 3 & 4, 1985

Peanut CRSP Code: TX/MM/S

Project Title: Mycotoxin Management in Peanut by Prevention of Contamination and Monitoring

Discussions With:

- i) Dr. R.E. Pettit, Principal Investigator, Dept. of Plant Pathology, College Station, Plant Pathologist.
- ii) Dr. Norman D. Heidelbaugh (DVM), Head Dept. of Veterinary Public Health, College Station.
- iii) Mrs. Barbara E. Richardson, Dept. of Veterinary Public Health, College Station, Public Health Survey Specialist.
- iv) Dr. Timothy D. Phillips, Dept. of Veterinary Public Health, College Station, Mycotoxicologist.
- v) Dr. Eric C. Shephard, Dept. of Veterinary Public Health College Station, Mycotoxicologist.
- iv) Dr. Randall L. Geiger, Dept. of Electrical Engineering, College Station, Electrical Engineer.

Recommendation Rating: On the basis of evidence presented, the reviewers received very favorable impressions of the project and the Texas A & M staff charged with its implementation. The reviewers feel that the project as conceived is sound and should continue as planned, with perhaps some adjustments to compensate for heavy emphasis, at Texas A & M, on basic research and application of the results of all research by use of "high tech" instrumentation vis-a-vis limited technical knowledge and instrumentation in the host country, Senegal.

Panel Members' Narrative Review: The review was conducted on the basis of informal reports, with laboratory tours, of the six scientists listed above, with the reviewers having opportunity to ask questions and explore some points further. These took about six hours. There was a helpful session of about one hour with the senior University officials responsible for scientific and administrative oversight of the project's work plan and budget.

One reviewer had participated, earlier in the week, in the review at N.C. State University. He brought a review report framework created at N.C. State by EFP Chairman, Don Pickering, after completion of the N.C. State review. This report framework can be traced back to the meeting of the CRSP EEP, Technical Committee, and Board of Directors, with the Program Director in Washington, D.C. on October 31, 1985 in which meeting the document "Scope of Work for the EEP" and adjunct documents were adopted as official guidelines for reports from the EEP. The general framework of this report and the final PROJECT PROFILE SUMMARY will reflect the five main headings in the "Scope of Work for the EEP" document. These headings are numbered 1 - 5 below and in the PROFILE SUMMARY they will be given a rating 1/.

1. Implementation and Management: This project is proceeding at an acceptable pace. The scientists devoting part (or all) of their time to it are highly competent with apparent dedication that equals their competence. Overall, we feel the contribution to this project by Texas A & M researchers is much above the level to be expected from the amount of time shown on charts, etc. as being time these researchers (other than the PI) are expected to devote to the CRSP project. This reflects an excellent meshing of the CRSP work into an ongoing program of Texas A & M research on a) peanut; b) mycotoxicology; c) veterinary public health.

The Peanut CRSP Technical Committee feels Dr. Pettit, the PI of TX/MM/S, is spreading himself too thin. We could not see that this situation, if it exists, is hindering progress on TX/MM/S. Dr. Pettit is good at detecting research potential in others and thereafter harnessing that research potential.

The total Peanut CRSP program at Texas A & M obviously has dedicated support from the level of University administration immediately involved.

2. Adequacy of Science: Received a Highly Satisfactory rating on all scores. As noted previously, there is much basic research in this project. Basic research generally is innovative, and may tend to somewhat over-impress even those observers with long experience in research. However, the researchers observed seem to be of the type that does not hesitate to reverse field and try other tactics, other approaches, when such seems advisable. In the socio-economic area, Mrs. Richardson left on April 8 for Senegal to conduct a survey on the extent to which aflatoxin contaminated foods and feeds seem to be getting into the food and feed chains in Senegal and the apparent effects of such contaminated foods and feed on public health.

3. Geographic Coverage and Applicability of Research: Everyone realizes the potential in this project for wide range applicability of results, but as yet it is just a potential. The Peanut CRSP Technical Committee had suggested the possibility of tying in the Sudanese food technology project (AAMU/ET/SE) with the Senegalese mycotoxin project, but no steps seem to have been taken in this direction.

1/ Code: E - Exceptional; HS - Highly Satisfactory; S - Satisfactory;
NS - Not Satisfactory; IE - Inadequate Evidence for Evaluation;
NA - Not Applicable

The best hope for quick useful results of research seems to lie in the veterinary public health aspects as Mrs. Richardson conducts her surveys in Senegal.

Mycological surveys of peanut fruit mycoflora have established the prevalence of Aspergillus flavus/A. parasiticus and other toxicogenic fungi in the soils of peanut fields in both Texas and Senegal and further such surveys seem unnecessary.

Colloidal clay as a means of purifying peanut oil in Senegal seems promising, and further research on this is advised. Mycotoxin assays of peanut oil and peanut products in Senegal should be continued.

Manipulation of soil microflora to suppress A. flavus, etc. is long range, but should be continued. Studies on nature of resistance of pods and seeds to penetration of A. flavus, etc. are discouraging in that there are no consistently resistant peanut lines to work with. This should not be pursued further until demonstratable resistance is detected in the field. (This is not to say the graduate student should abandon this study--just do not put another graduate student on it at present).

The dielectrical determination of mold status in peanut samples is very interesting. At this time it has not quite gotten out of the basic research phase. Practical application seems several years off--use in Senegal and other LDCs seems more than several years away. But the researcher involved felt that a breakthrough might come at any time. The CRSP support of this project in electrical engineering is probably minimal, and certainly is paying off.

4. Institutional Development: Due largely to the enthusiasm and drive of the PI and one or two other researchers, this aspect was rated highly by the reviewers in two of the three rating areas. The ELP reviewers emphasized, to those concerned that they see a need for training in the U.S. of Senegalese personnel in areas other than mycology. There was some discussion with Dr. Gillier of the prospects for broadening the training base for the Senegalese counterparts. Within Texas A & M this Peanut CRSP project has unquestionably strengthened an already fairly strong program on mycotoxins and public health and, further, has added international outlook and potential thereto.

5. Research Progress and Application: The main objectives of this project may be considered short-term--i.e. reduction (if not elimination) now of aflatoxins in foods and feeds containing peanut materials--. There is no effective way of judging research progress and application towards such objective without a) extensive public health surveys in Senegal and b) public health statistics from past years for Senegal. Due to an apparent lack of public health statistics for Senegal, the CRSP project probably will have to first build up a statistical basis for judging whether progress is being made before attempting to pass judgement on itself.

As noted under 3. (above) sufficient research progress has been made in some areas to abandon these lines of research. In other areas--for example the purification of crude peanut oil--extension rather than research now seems the order of the day.

Summary: We conclude that the project is well conceived, that it meshes well with a broader program of Texas A & M on the relation of mycotoxins in peanut (and other foodstuffs) as related, through use in the diet of humans and domestic animals, to the important socio-economic consideration known as "public health". The project has some basic research aspects any one of which could pay off soon, or never. But such speculative research should be supported, and, seemingly, it is not a strain on the funds budgeted to Texas A & M by the Peanut CRSP. This well managed project, fully supported by Texas A & M administrators, should be continued much as it is now. Some changes suggested herein might divert some funds to aspects promising more immediate practical application.

Special Note: The visit of EEP members and U.S. AID representatives to Texas A & M was coordinated by Dr. Olin Smith, who is the Texas A & M representative on the technical committee of the Peanut CRSP. At the outset Dr. Smith gave each of us a ca. 35 page booklet with an agenda, and abstracts of all the reports that would be presented to the reviewers.

While our review document is based primarily on the reports of, and the give-and-take discussions with the six researchers listed on its page 1, it seems well to list all 10 of the 10 reports on TX/MM/SW for which there are abstracts in the booklet:

- 1) Fungi associated with peanut and peanut products;
- 2) Activity and survival of Aspergillus flavus;
- 3) Fungi which influence the activity of A. flavus;
- 4) Studies of Macrophomina phaseolina and other fungi associated with groundnuts;
- 5) Structural features of maturing peanut pods in relation to A. flavus invasion;
- 6) Screening peanut cultivars for resistance to A. flavus group fungi;
- 7) Examination of peanut plant parts for morphological and biochemical features which relate to disease resistance;
- 8) Detection and detoxification of mycotoxins;
- 9) Electrical characteristics of mold and/or aflatoxin contamination in peanut based upon the dielectric features;
- 10) Establishment of baseline aflatoxin levels in a Senegalese population.

Hopefully a copy of this Texas A & M booklet will be appended to the final version of these review reports. This will show where personnel, other than the six listed on page 1, are involved in the research.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: TX/MM/S

Project Title: Mycotoxin Management in Peanut by Prevention of Contamination and Monitoring

Overall Recommendation Rating: The EEP feels that the project warrants a Highly Satisfactory rating on the basis of its management, its implementation, and its relevance to both U.S and collaborating host country interests. The Panel feels that, even at this early stage in the life of the Peanut CRSP project, there are promises of practical application of research results of this project and socio-economic potentials that should be emphasized, even at the expense of some of the project's current research.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

1.11 Understanding and support of project objectives and the collaborative mode.....: HS

1.12 General attitude towards international programs and support of researchers involved.....: HS

1.13 Logistical and fiscal support.....: HS

1.14 Perceived relevancy of collaborative program to U.S. research interests.....: HS

1.15 Status of CRSP in relation to earlier industry reaction to funding.....: S

1.16 Resource commitment to project.....: HS

1.17 Summary Comments: Texas A & M beans, Directors, Department Heads with whom we visited gave a definite impression of being firmly in favor of international programs in general and of Peanut CRSP and other CRSPs in particular. Some of them have a background in international programs in agriculture.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support..... : S
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: HS
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.26 Overall commitment to project.....: HS

1.27 Summary Comments: Dr. Pettit, the PI, is very good at getting his collaborators and research associates inspired, committed, and deeply involved in all phases of the research on which the team is working.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: HS
- 2.2 Progressiveness and innovation of research.....: HS
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: HS
- 2.4 Local science and economic perspective.....: HS

2.5 Summary Comments: As noted in the general summary, there is much basic research in this project. Basic research generally is innovative. The socio-economic aspects can be well covered by such work as the survey Mrs. Richardson went to Senegal on April 8 to make..

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: S
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: HS
- 3.3 Transferability of research results to U.S. programs...: S

3.4 Summary Comments: This project is clearly more relevant to the goals of the host country than to the U.S. Application of current knowledge from U.S. applied "research" to harvesting, drying (curing), and storage of peanut, and subsequent processing under scientific guidelines now available is keeping the aflatoxin-mycotoxin hazard within reasonable bounds in the U.S. Not so in Senegal and other LDCs.

Particularly in Africa is there now an urgent need for some simple measures and guidelines on this hazards. The application of Texas A and M research results on a simpler scale in Senegal could well be a model pilot study observation of which would benefit many LDCs other than Senegal.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities.....: HS
- 4.2 Extent of development of collaborative mode.....: HS
(interaction with collaborators/enthusiasm for research)
- 4.3 Training progress in Senegal.....: S

1/ Dr. Amadou Ba, Food technologist, Bambey, Senegal was trained in general mycology in Dr. Pettit's laboratory at Texas A & M last year. He is scheduled for advanced training at Texas A & M this year. There is an obvious need for training of Senegalese personnel in areas other than mycology. This will be developed further in 5.4 and 6.2 below.

4.4 Summary Comments: Within Texas A & M this peanut CRSP project has unquestionably strengthened an already fairly strong program on mycotoxicoses and public health and, further, has added international outlook and potential thereto. There is some promise, though at present it may not be strong, that a fairly good similar program may be developed in Senegal.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: S
- 5.2 Impact on research priorities.....: S
- 5.3 Potential of research results for application to U.S. needs.....: HS

5.4 Summary Comments: The heavy emphasis on basic research and high tech instrumentation makes for excellent prospects for extensive use of research results in the U.S.--on U.S. peanut farms, in the U.S. peanut processing industry, and in U.S. public health surveys and other public health work.

Only in this public health area is there much prospect for use of research results in Senegal in the near future. Training of Senegalese, and simplification of some of the instrumentation for use by these trained Senegalese should have high priority in this project.

6. SUMMARY

6.1 Specific Strengths: The strong background of research in several departments of Texas A & M on which the CRSP project was obviously built and on which it continues to draw support. The enthusiasm and dedication of the researchers who talked with the EEP reviewers. The availability of the latest in technical instrumentation to obtain and/or analyze research results.

6.2 Specific Weaknesses: The impasse over training for Senegalese collaborators and the understandable, but nevertheless important lack of any plans for simplification of some of the highly technical procedures so that they can be handled "on site" in Senegal. The perhaps disproportionate amount of time, energy, and resources that is being devoted to speculative basic research.

NARRATIVE SUMMARY

External Evaluation Panel Review of Host Country Projects

By Drs. Pierre Gillier and Kenneth Garren - (Introductory and preliminary review in Niamey, Niger during and between sessions of AGRO MET SEM (International Symposium on Agrometeorology of Groundnut) August 21-26, 1985). On-site reviews at U.S. AID Mission, Dakar; ISRA (Senegalese Institute for Agricultural Research), Dakar; ITA (Senegalese Institute of Food Technology), Dakar-Hann; ISRA-CNRA (National Center for Agronomic Research), Bambey; ISRA-SCS ("Secteur Centre Sud"), Kaolack; and at ISRA Field Station, Nioro Du Rip. August 29 - September 2, 1985.

Peanut CRSP Code: TX/MM/S

Host Country: SENEGAL

Project Title: MYCOTOXIN MANAGEMENT IN PEANUT BY PREVENTION OF CONTAMINATION AND MONITORING

- A) AGRO MET SEM Dr. Aly N'Diaye (See ISRA below)
 Dr. Amadou Ba (See ISRA below)
 1/ Dr. Robert E. Pettit, Texas A & M University, U.S. PI
 of TX/MM/S
- 1) U.S. AID Mr. Mamadou Traore. (A Senegalese, apparently an
 assistant to Mr. Richard Caldwell, Project Manager (?)
 for Peanut CRSP)
2. ISRA Dr. Madike Niang, Director General, Dakar (Sept. 2)
 Dr. Mocktar Toure, Scientific Director, Dakar (Aug. 29)
 Dr. Aly N'Diaye, Plant Physiologist, CNRA, Bambey,
 Coordinator of Peanut CRSP projects for ISRA, (Dakar,
 Bambey, Niamey, Niger)
 Dr. Amadou Ba, Technologist, SC-Sud, Kaolack (Dakar,
 Kaolack, Niamey)
 Mr. Amangone N'Doye, Animal Physiologist, National
 Livestock Nutrition Lab., Dakar-Hann (Dakar)
 Dr. Jean C. Mortreuil, "Selectionneur", CNA (and
 CIRAD/IHRO, Bambey (Dakar, Kaolack, Nioro Du Rip)
 Mr. Saliou Diangar, Director, Branch Station at Nioro
 Du Rip (Nioro Du Rip)
 Mr. J.L. Khalifaoui, "Ingenieur de Recherche",
 CIRAD/IHRO and ISRA, Bambey and Dakar (Dakar)
- 3) ITA Dr. Ousamane Kane, Director General, Dakar - Hann
 Mr. Mouhamadou Diop, Technical Director, Dakar - Hann
 Mr. Bachir Sarr, Chemist-Technician, Dakar - Hann

-
- 1/ Presented a paper at AGRO MET SEM entitled "Incidence of Aflatoxin in Groundnuts as Influenced by Seasonal Changes in Environmental Conditions", and was with EEP panelists in Dakar, Kaolack, and Bambey August 28 through Saturday, August 31.

Recommendation Rating: The general direction of this project in Senegal is satisfactory, and it should be continued. However, we recommend that the U.S. PI firm-up his control and direction of the project and abandon his attempt to do "almost all of it" himself.

A major difficulty observed was fiscal management (fund handling and utilization). Great confusion in this area results from overlong retention of CRSP funds in the hands of the ISRA administration. We recommend, therefore, that--pending reforms asked-for by The World Bank a simple system of dispersing CRSP funds be found and implemented. Such system be based on a responsibility of each researcher to define, within limits of a fixed budget, his needs for funds and determine when these funds are needed without having to go through all administrative channels. If this solution is not acceptable to Senegalese authorities then the only solution seems to be to use an external fund manager--someone in U.S. AID or similar institution--who follows the situation month by month, and evaluates needs in advance, and furnishes funds for normal operations in accordance with an established budget.

Panel Member's Narrative Review:

1) Basis of Review:

Peanut CRSP annual reports. Reports of Texas A & M researchers. (Amadou Ba's available reports were stopped by ISRA administration in Bambey or Dakar). Conferences in ISRA, Dakar; in veterinary laboratory; in experimental cattle shed; in ITA; in Kaolack lab; in fields and laboratory at Niore du Rip Station.

2) CRSP Format:

See Project Profile Summary for TX/MM/S.

3) Implementation and Management: Some research, such as that of Amadou Ba at Kaolack, warrants a "HS" rating. Other research is not very satisfactory such as that in veterinary laboratory. In this laboratory the people in charge said they could not obtain money to buy, at proper time, peanut hay, chickens, sheep, etc. for their experiments. This seemed true! It is difficult to place exact responsibility for this delay. At government administrative level many promises are made (without apparent realistic basis) of better management in the future.

Overlapping of different agencies (ISRA, ITA, etc.) makes it difficult to follow movement and use of CRSP funds. Amadou Ba's activities are limited by lack of transportation, but he overcomes difficulties and does good work. Some others do not do this.

With good management researchers could forecast procurement needs six months in advance and avoid many of the delays in procurement. This is hard for African research workers to do, but, in Senegal, it seems an imperative rule. Maintenance of new sophisticated apparatus purchased with CRSP funds is not effective. Some breakdowns of such apparatus are, at best, normal but when these breakdowns take place, why is not the former apparatus, still around, used again so that all analyses are not stopped?

The research people with whom we talked seemed capable but not too many problems bearing upon them is decreasing their research productivity and, in many instances, breaking their spirits and preventing their trying to develop personal initiative.

4) Adequacy of Science: Some experiments and tests are in good condition and their results are potentially useful. In Senegal opportunities for research on the aflatoxin problem seem almost unlimited and much data could be collected with moderate attention and effort.

5) Geographic Coverage and Applicability of Research: Some results already obtained can be used for "Aspergillus flavus-resistant" genotype selection over a large area. Other results and/or potential results could be used by other scientists at a regional level. Senegalese consider Peanut CRSP as integrated into its national agricultural research program. This facilitates communication between several institutions.

6) Institutional Development: With better management by Senegalese authorities (ISRA, ITA, etc.) Peanut CRSP would have a stronger impact on the local institutions.

7) Research Progress and Application: It will be a good thing if this program reinforces the concept in African scientific community, that aflatoxin problem is an important and dangerous problem.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: TX/MM/S

In-Country Project Review

Title: MYCOTOXON MANAGEMENT IN PEANUT BY PREVENTION OF CONTAMINATION AND MONITORING

Host Countries: SENEGAL

Overall Recommendation Rating: The general direction of this project in Senegal is satisfactory, and it should be continued. However, we recommend that the U.S. PI firm-up his control and direction of the project and abandon his attempt to do "almost all of it" himself.

A major difficulty observed was fiscal management (fund handling and utilization). Permanent confusion in fiscal management results from: 1. Administrators passing the responsibility from one person to another. 2. Lack of invoices. 3. Lack of authorization for expenses. 4. Absence of Team Leader when his signature is needed. 5. Etc., etc. All of which is called good basis for retention of CRSP funds in accounts of ISRA control.

A World Bank Team was in Dakar on at least a second visit while we (The EEP) were there. It was there in regard to the fiscal management policies (above), and again voicing a need for a drastic cut in administrative staff and a complete reorganization of ISRA's research institutions. The EEP wishes to endorse the World Bank's firm stand and hopes that some means may be found to adequately support the research in Senegal of Peanut CRSP projects until such time as the reforms asked-for by the World Bank may be effected.

We recommend, therefore, that a simple system of dispersing CRSP funds be found and implemented. Such system be based on a responsibility of each researcher to define, within limits of a fixed budget, his needs for funds and determine when these funds are needed without having to go through all administrative channels. If this solution is not acceptable to Senegalese authorities then the only solution seems to be to use an external fund manager--someone in U.S. AID or similar institution--who follows the situation month by month, and evaluates needs in advance, and furnishes funds for normal operations in accordance with an established budget.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission programs.....: IE

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: IE

1.13 Mission interest for project future.....: IE

1.14 Summary Comments: Thursday August 28 was neither a U.S. nor a Senegalese holiday. That day, according to AGENDA, we made our first call--the important call on U.S. AID, Dakar. We asked several times to see Mr. Richard Caldwell. We were soon joined by Dr. Aly N'Diaye, ISRA's CRSP Coordinator. We succeeded in finding neither Mr. Caldwell nor any other "American" in U.S. AID. We did, however, find the office of a Mamadou Traore, whom Dr. N'Diaye said was "Mr. Caldwell's assistant". Mr. Traore apparently could neither speak nor understand English, but he was the only non-clerical person at U.S. AID the EEP was able to "talk with".

It is not our point to complain about this failure to talk with an interested employee or official of U.S. AID. Nor do we wish to place blame on anyone. But the AGENDA did call for us to evaluate the above points in regard to U.S. AID.

The only thing accomplished by this visit--per AGENDA--to U.S. AID, Dakar was to obtain, for one U.S. scientist, a permit to get into the U.S. Embassy to exchange \$U.S. for CFA bank notes. This is hardly a significant "lead-in" to AGENDA item 1.1.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: NS

1.22 Administration of program-government level.....: NS

1.22A Administration of program-institutional level....: NS

1.23 Fiscal management.....: NS

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: S

1.25 Attitude toward U.S. participants and their involvement.....: S

1/ Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: S

1.27 Summary Comments: Institutions visited are very happy to collaborate with Peanut CRSP and scientists are enthusiastic. Unfortunately implementation of this program is slowed down by bad management at the administrative level. Retention of money at ISRA administrative level delayed planting time, salary of workers is not paid regularly. CRSP car is in hands of Bambey Director and not at the disposal of CRSP researchers or CRSP visitors. It is difficult to determine where and for what the funds of the project are used and many other projects are interfering with Peanut CRSP research.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: HS

1.312 Adequacy of number and capability to function.....: HS

1.313 Involvement of Women.....: IE

1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: Of the research scientists interviewed, Amadou Ba and Bachir Sarr seem very capable and dedicated and are doing a good job. Our opinion of people working in veterinary research laboratory is less favorable (perhaps because they are waiting for funds to buy feed for their test animals) and it is difficult to determine the exact value of their results. If their progress is slow, we believe it is not the fault of scientists but rather of administrators. There was everywhere except at Kaolack (Dr. Ba) an evident need to reaffirm to the Senegalese researchers that Dr. Pettit, the U.S. PI, is technically in control of (directing) the project and that reports should be made first to him and made promptly. Also we (Gillier and Garren) were told of interesting and important research in Senegal under CRSP TX/MM/S when we made an "EEP visit" to Texas A & M in April of 1985 that, with one slight exception, was not mentioned during our "EEP visit" to Senegal. The exception--a Texas A & M researcher listed in the CRSP Annual Reports as a collaborator had stopped by one of the labs we visited and picked up all the data from one experiment. Though this had taken place several weeks before our visit, Dr. Pettit was unaware of this.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: NS

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: Equipment and supplies are rated adequate only because CRSP funds were available to purchase them and because, in some cases, the U.S. PI apparently has hauled supplies, equipment and/or repair or replacement parts over to Senegal. EEP waited some hours at Dakar-Hamm for a technician. The main thing this waiting accomplished was that equipment parts were picked up by the U.S. PI to be brought back to the U.S. for repairs. Difficulties also exist in regard to supplies. Orders are often delivered only after three to six months of delay. Another logistic problem is transportation. Amadou Ba is greatly limited by not having transportation available to visit field experiments and collect material. He also badly needs extension of laboratory space which he cannot get because of some conflict with the Director of the Center at which he is located.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovativeness of research.....: S
- 2.3 Appropriateness of research - basic and adaptive.....: S
- 2.4 Adequacy of social science/economic perspective/sensitivity.....: IE

2.5 Summary Comments: Research competence of host country researchers is improving as a result of CRSP support. However, it is too early to make a meaningful evaluation, even though some research is going well and gives results that are potentially useful.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals.....: HS
- 3.2 Complementarity to ongoing peanut research activities in-country.....: S
- 3.3 Responsiveness to perceived producer and consumer needs: S
- 3.4 Communications with other in-country entities.....: S
- 3.5 Does location impact regionally as well as in-country.: HS
- 3.6 Relationship to other international research efforts - ICRISAT, IHRO/CIRAD.....: S
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: S

3.8 Summary Comments: CRSP is integrated into national agricultural research program and, consequently, is complementary to existing research programs overall. Senegalese research institutions we visited have good relationship with several similar national and international entities working on the same problems or in the same area of mycotoxin detection and control. For examples - other ISRA researchers, oil millers, SONACOS, ORAN, Faculty of Medicine, ICC, ICRISAT, Museum CIRAD. Tests developed by Amadou Ba for screening peanut are valuable.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities).....: S

4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: S

4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: With CRSP support, activities of laboratories and production of scientific observations increased tremendously. A better connection between ITA and ISRA was developed and many programs were reactivated. (Sadly, we observed, much of this stopped when the finance level decreased and the barriers to movement of available funds increased). Also, training request by Bachir Sarr was formulated. (Action still pending?) Periodic visits of U.S. investigators are very useful for maintaining higher level of activity and are very much appreciated by Senegalese researchers.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact of research on institution and government priorities and policies.....: S

5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: S

5.4 Potential of resarch for success in alleviating production and utilization constraints.....: S

5.5 Impact of research on Women in Development.....: IE

5.6 Summary Comments: Research objectives are clearly defined in TX/MM/S write-ups in the two Peanut CRSP annual reports, but they are such as to seem designed mainly for achievement through work in the U.S. By comparison with U.S. research progress the Senegalese sites' research progress and achievements, so far, are very small. More than a "fair amount" of research progress in Senegal seems, to the EEP,

essential to the success of the overall project. The question is, therefore, has there been in Senegal so far more than a "fair amount" of research progress? If the answer is no, will removal of the well-recognized impediments to research activity in Senegal give a potential for some research progress on TX/MM/S in Senegal?

Some results from this project may be helpful in stimulating peanut product development in Senegal when experiment on peanut cake utilization is terminated. Also, the same for domestic peanut oil extraction. Already tests are useful for Aspergillus flavus-resistance selection in progenies. Other programs in progress in Senegal may make some contribution to control of aflatoxin-contamination of peanut and peanut products which, of course, is an urgent problem in public health.

6. SUMMARY

6.1 Specific Strengths: 1. The Senegalese researchers and perhaps a few of the administrators involved recognize and appreciate the great potential value of the research of this project. 2. The Senegalese researchers are capable, some are well trained, all are anxious to get on with the research. 3. Equipment "on-site" in Senegal is adequate for a high level of analyses and experimentation, but only if it is handled by properly trained technicians and if it is properly maintained. 4. There is good cooperation with some other institutions and researchers working in the same area. 5. Good direction from and contact with U.S. PI and other U.S. research cooperators.

6.2 Specific Weaknesses: 1. In some instances the drive and dedication of the U.S. PI kills initiative and instills a lack of desire to try for on-site correction of Senegalese problems impeding research. 2. Poor background of some Senegalese researchers in experimental design and related research techniques. 3. Some Senegalese researchers have not yet recognized that reports should be made to the U.S. PI and made promptly. 4. The lack of training and/or desire to see to proper maintenance, in Senegal, of CRSP-purchased sophisticated equipment vital to on-site research. 5. Bad fiscal management and resultant over-long retention of funds by the ISRA bureaucracy slows down all operations in Senegal--i.e. there are very frustrating bottlenecks in Senegal in the path of U.S. funds moving into the country to buy supplies and maintain equipment.

7. Reviewers Recommendations: The general direction of this project in Senegal is satisfactory, and it should be continued. However we recommend that the U.S. PI firm-up his control and direction of the project and abandon his attempt to do "almost all of it" himself. A major difficulty observed was fiscal management (fund handling and utilization). Great confusion in this area results from overlong retention of CRSP funds in the hands of the ISRA administration.

We recommend, therefore, that--pending reforms asked-for by The World Bank--a simple system of dispersing CRSP funds be found and implemented. Such system to be based on a responsibility of each researcher to define, within limits of a fixed budget, his needs for funds and determine when these funds are needed without having to go through all administrative channels. If this solution is not acceptable to Senegalese authorities then the only solution seems to be to use an external fund manager--someone in U.S. AID or similar institution--who follows the situation month by month, and evaluates needs in advance, and furnishes funds for normal operations in accordance with an established budget.

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NARRATIVE SUMMARY

External evaluation Panel Review of U.S. University Projects

EEP Members: Max Milner, Pierre Gillier, with AID representatives
Loren Schulze and Carval Wiggins, 1-5 April 1985

University of Georgia - Pathology Department - Experiment

Peanut CRSP Code: GA/PV/N

Project Title: Peanut viruses: Etiology, Epidemiology and Nature of
Resistance.

Discussion With:

1- Jim Demski, Principal Investigator, UGA

RECOMMENDATION RATING

The reviewers received a very favourable impression of the project and staff involved in his development. In spite of important difficulties found in NIGERIA, the Principal Investigator and his collaborators were able to bring program to a successful issue. Interesting results were obtained, valuable for collaborating country and U.S. scientists together.

The project would be continued as planned except if minor modifications seem necessary (resulting of recent advances in virology detected during Cambridge meeting). The panel suggest (on the occasion of next visit of Investigator in West Africa) to meet ORSTOM virologist in ABIJAN (Ivory Coast) working on peanut viruses with a large application fields in the North of Ivory Coast and South of Burkina Faso.

PANEL MEMBERS NARRATIVE REVIEW

The review was conducted in Griffin (Pathology Department of University of Georgia) in laboratories and greenhouses used by this project. The Principal Investigator explained the working conditions in USA and Nigeria and all difficulties found in this last country. He stated about the different collaborative people: Cedric Khun, Dr. Reddy (ICRISAT) Dr. Casper and S. Meyer (German institution) and Nigerian Cooperators S. Misari and Okon Ansa.

Results obtained during last mission at IAR Samaru were exposed to Panel members:

Initiation to heterologous encapsidation with CCMV and GR-C for virus mechanic transmission
Establishment of a working system for ELISA serology
Mechanical transmission trial with different material and host plant
Tentatives to find - Nature of resistance to GR
- Identification of other viruses
- Transmission agent

Seeds sanitary control by specific test (Peanut stripe virus) is now in use by many laboratories in order to detect viruses without harming the germination seeds (a little bit of cotyledon sampled) this test is applied to breed stock seeds as a routine in order to eliminate infested lot. Soybean and cowpea also are concerned and are host plant for peanut stripe virus (Introduction by China seeds)

Reviewers were impressed by quality and importance of research works, the good performance of the project and his immediate impact on the seed quality control.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/PV/N

Project Title: Peanut Viruses: Etiology, Epidemiology and Nature of Resistance

Overall Recommendation Rating:

No changes seems needed. This project is well started and give excellent results. The staff charged with implementation and all collaborators give a very favourable impression (perhaps new development could be taken in consideration following CAMBRIDGE meeting) we recommend to maintain this project as planned.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

1.11 Understanding and support of project objectives and the collaborative mode.....: HS

1.12 General attitude towards international programs and support of researchers involved.....: HS

1.13 Logistical and fiscal support.....: HS

1.14 Perceived relevancy of collaborative program to U.S. research interests.....: HS

1.15 Status of CRSP in relation to earlier industry reaction to funding.....: HS

1.16 Resource commitment to project.....: S

1.17 Summary Comments: Though the working conditions in Nigeria were difficult, the Investigator always obtained a good collaboration of native scientists through IAR, Samaru. This program has an international status with informal collaboration of German and British people and receive from pathology department of UGA a full support. The benefit of this project on the future seed quality is already so important that his continuation is justified in the inte est of all participants.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support..... : S
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: HS
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: HS
- 1.26 Overall commitment to project.....: HS
- 1.27 Summary Comments:

All scientists involved in this project attained objectives and had a good understanding of international cooperative system in which it must be developed. Collaboration between several institutions induce a reciprocal benefit. This work is very important for seed industry and for the protection against risks of contamination by foreign seeds introduction. Workshops were organized in different states in order to spread practical technics control methods.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: HS
- 2.2 Progressiveness and innovation of research.....: HS
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: HS
- 2.4 Local science and economic perspective.....: IE

2.5 Summary Comments: The investigators and collaborators qualification involved in this project is highly satisfactory. The most advanced technics are used to develop this program. The necessity to work outside of US for GRV makes easier all contact with foreign specialist. It helps to compare technical progress and innovations and push to adapt new concept to country need. The best example is the stripe virus test.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: HS
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: HS
- 3.3 Transferability of research results to U.S. programs...: HS

3.4 Summary Comments: The peanut production decreasing related to rosette virus disease in Nigeria and in many other West African countries justify this project. It is susceptible to give to U.S. scientists a better knowledge of peanut virus diseases unknown in USA at this time. A strategy of future protection can be elaborated without danger. This research is transferable for practical use.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: HS

4.2 Extent of development of collaborative mode.....: HS
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: S

4.4 Summary Comments: This project obviously increases the research capabilities of Pathology Department UGA. Makes easier access ,or Dr. Demski team to peanut virus disease unknown in USA on which they were not be able to work in Griffin. Helps for developing international cooperation for training by workshop other people susceptible to use new control technics.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: HS

5.2 Impact on research priorities.....: HS

5.3 Potential of research results for application to U.S. needs.....: HS

5.4 Summary Comments: Comparatively to other projects, it was very quickly started. Targets determined for the first phase (82-85) are in good way to be attained. The transfer capacity from results to US application is important. The program planned for the second phase will be able to be developed in time.

6. SUMMARY

6.1 Specific Strengths: Well designed, relevant, staffed by very enthusiastic investigator and supported by various and dynamic collaborators.

6.2 Specific Weaknesses: Difficulties with Nigerian environment, poor equipment and maintenance in African countries, constraint of time.

NARRATIVE SUMMARY

External Evaluation Panel Review of Host Country Project

By Dr. A. H. Bunting at Institute of Agricultural Research, Ahmadu Bello University, Samaru, Zaria, Nigeria. 11-12 July, 1985.

Peanut CRSP Code: GA/PV/N In-Country Project Review

Project Title: Peanut Viruses: Etiology, Epidemiology and Nature of Resistance.

In this brief visit it was not possible for the reviewer to assemble all the information needed to reply fully to all questions. He spent virtually all of his limited time on the science, and had as a result two most exciting days.

In the field, at the time of the visit, there were the makings of a very severe outbreak of rosette disease. The plants were young, most of them carried aphids, and many exhibited disease symptoms. Chlorotic rosette and green rosette were so sharply distinct from each other that they appeared as two separate diseases. Since the distinction appeared within plots of cultivars or accessions regarded as genetically homogeneous, the simplest hypothesis is that there are two different symptom-inducing agents. Dr. Ansa has the minimum facilities needed to test this hypothesis and proposed to do so at once. Whatever the outcome of the test, he has a winner either way. The next stages of the work are bound to deliver extremely important basic information about this complex of diseases.

1. IMPLEMENTATION AND MANAGEMENT

1.1 USAID Mission Involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs

The HC investigators are in touch with US Consul Ron Trigg in Kaduna and with agricultural attache C.E. Goldthwaite in the US Embassy in Lagos. These persons understand and have discussed the program and they help with imports of equipment and materials.

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.

The mission provides logistic support, and there is no suggestion of any reservation about the work of the CRSP or of BIFAD.

1.13 Mission Interest for project future.

Positive, according to reports from investigators and from Institute Director John H. Davies.

1.14 Suggestions/comments

The US PI, Dr. Demski, has arranged for equipment to be imported in future through the US Embassy; this arrangement will surely be warmly welcomed by the CRSP. It might be helpful, if Mr. Goldthwaite and Dr. Demski concur, to invite the former (and any other professionally qualified member of the staff of the US mission in Nigeria) to be named as a member of the project team in Nigeria. Even if the designation were little more than honorific, it would probably strengthen relations between the mission and the CRSP.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode.

Very Satisfactory.

1.22 Administration of program - government or institutional level.

It is very difficult for the HC Investigators to obtain foreign currency when they are required to travel overseas. Perhaps the CRSP could provide them, on such occasions, with payment orders drawn on a bank in the airport at which they end their first journeys out of Nigeria, for example at Heathrow or JFK.

Some time ago, the University failed to clear two cheques from the CRSP. The present procedure, by which cheques are made out to the Institute and endorsed to the University, should prevent such difficulties in future, so long as the administration of the Institute continues secure.

1.23 Fiscal management

Satisfactory.

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans.

Fully satisfactory: no change in direction except as dictated by the unfolding logic of the program itself. See section 2.2 below.

1.25 Attitude to U.S. participants and their involvement.

Dr. Garren felt that the HC Investigators had been less than courteous to him after a meeting at Cambridge, England. He had expected to meet them, but they had instead gone off with Adrian Gibbs and others to Rothamsted. I am satisfied that they did not know that Dr. Garren expected to meet them, and that they intended no discourtesy either to him or to any other US colleagues. Indeed, they speak most warmly of their associations with US Investigators. I hope that this can be accepted as offsetting the earlier adverse comment.

1.26 Commitment of governments and/or institutions to programs - researcher level and above - resource commitment. Importance of peanut research in development goals.

No direct knowledge of attitude of government, but no reason to suspect any lack of commitment. The research forms part of a national endeavour to rehabilitate the groundnut industry, and to increase the supply and diminish the aflatoxin risks of groundnuts in human diets. On the oil side, groundnut oil is a preferred food commodity, but the oil mills are working at no more than 5% of potential output for lack of raw material. The producers and government feel that they can live with the Cercospora leafspots (to which greatly improved resistance is in any case now becoming available) but that rosette disease is always potentially disastrous - as it may well be this year.

In the Institute of Agricultural Research, the project is regarded as important and valuable. It is treated as part of the IAR oilseeds program, of which it is the main externally-supported element. The US collaborators are listed as visiting scientists.

1.27 Suggestions/comments

The US collaborators should endeavor to get to know Ahmadu Bello University and its leading people, especially in agriculture, better than they have had time to do so far. They and their Nigerian colleagues might then seek to become better acquainted with related development research in the northern states, for example at the Lake Chad Research Institute and perhaps the Lake Kafniji Research Institute. In this and similar ways they might be able to recreate the community of peanut workers in the region, many of whose members are still around, and so help to develop a national coordinated research programme on the crop. They could also help to strengthen links with research in Senegal and elsewhere in West Africa.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect and supportive

The report on the IAR Oilseed Research Programme presented to the cropping scheme meeting in 1984 contained lists of the 13 members of the oilseeds research review committee, of 28 oilseeds research participants, and of 10 oilseeds technical staff. Some of these people have left IAR, and some have been replaced. The list as it was at the time of the review is appended to this report. Of the seniors, only Dr. Misari and Dr. Ansa devote the greater part of their time to the CRSP project.

1.312 Adequacy of number and capability to function.

This is the absolute minimum number necessary to make progress, but it seems just adequate for present purposes. The pronounced motivation and originality of mind of these two scientists substantially exceed what

is regarded as satisfactory in all too many institutions in developing countries at the present time. The CRSP is fortunate to have such collaborators.

1.313 Involvement of women.

One of the research participants, P.E. Olorunju, and one graduate student, Mary Abraham, are female.

1.314 Overall effectiveness of program personnel.

Nothing to add to 1.312.

1.315 Suggestions/comments.

Considering the very bad time IAR is experiencing - all Nigerian funds devoted to salaries and none over for operations or maintenance - the moral support of the management and the devotion of the investigators are most creditable. These people deserve all the support the CRSP can give.

With more equipment, the project could provide valuable research experience for higher degree candidates from foreign countries (in Africa and elsewhere) and from Nigeria. It could probably accept one or more postdoctoral students also. As will appear below, the project seems poised to use substantial additional strength.

1.32 Equipment/facilities/supplies

1.321 Availability - reason for unavailability

The equipment available includes the gear for gel electrophoresis and for ELISA, a UV transilluminator for viewing gel preparations, and a refrigerated high speed Beckmann centrifuge that is only just in service, cannot attain really high speeds, and may be dangerous. (Its switch has to be held "on" by a cunningly poised block of wood). There is no low-speed centrifuge. A high speed blender and a UV spectrophotometer do not work. The reasons are lack of funds to purchase equipment and lack of maintenance.

1.322 Adequacy - reason for inadequacy.

The equipment is just adequate for the work being done. More work, and perhaps even better work, could be done with more gear and adequate maintenance.

1.323 Suggestions/comments

This section is tentatively offered by an amateur for Dr. Demski's consideration. The laboratory appears to need, and the workers to be able to use, a freeze drier, a good UV spectrophotometer with a recorder, a fraction collector with UV monitor, a low speed centrifuge with a range of rotors, a high speed blender, a camera attachment for the UV transilluminator, and (for the epidemiological work) a number of suction traps. If CRSP funds cannot meet the cost, the reviewer would be

prepared to support an application to the International Foundation for Science for part of it.

However, none of this will be of any use unless arrangements can be made for maintenance, which should include the rehabilitation of the Bechmann centrifuge.

During a subsequent visit to the International Institute of Tropical Agriculture, Ibadan (IITA), the reviewer ascertained that IITA would be willing to discuss an arrangement to provide maintenance services for this laboratory, at an appropriate price. IITA has a first class instrument workshop, accustomed (in addition to much else) to the equipment of a virology laboratory. It would help if equipment purchased for IAR were identical to or compatible with the equipment of the virology lab at IITA. IITA uses its own aircraft for visits to the north; it could transport an instrument maintenance engineer from time to time. I do not think IITA could undertake a general service of this sort for IAR, but the quality of the virus work at IAR and the similarity of interests seemed to justify a special appeal in this case.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology.

In breeding, the impending advances in virology from Dr. Ansa's work should permit a closer analysis of the bases of the known tolerances and resistances to the diseases of the rosette complex; and this in turn will perhaps permit different types of resistance to be combined in breeding. Disease management methods may also be based on the epidemiological work, but for this it seems likely that the epidemiology will have to be conducted on a geographically more substantial scale, using meteorology to study seasonal movements and sources of infected aphids (local or distant?).

2.2 Progressiveness and Innovativeness of research.

It is not too much to say that the two days at IAR with Dr. Misari and Dr. Ansa were as exciting scientifically as any this reviewer can remember. Of course, it is impossible to separate the contributions of these two from those of the US investigators and of the rest of the international community with which they all collaborate; but our colleagues at Samaru have the inestimable comparative advantage of sitting on top of the material in its own environment. Where else could one see so convincingly that green rosette and chlorotic rosette are two different syndromes - and also explore the fascinating possible consequences of this field observation? Dr. Ansa has both the professional competence and (just) the essential equipment to determine whether there are two symptom-inducing agents or only one. Either way, he is on to a winner. Where else could one study, on a sufficient scale and in an appropriate environment, how the luteovirus enables the aphid to become infective? Where better to seek the source or the ancestry of the virus complex which *Arachis hypogaea* encountered for the first time after the Portuguese brought it to Africa around 1500, but which was never transferred to India or the Far East? And where better to explore the incompletely explained significance of H. H. Storey's uncompleted work, in the forties and fifties, on the genetics of aphids in relation

to transmission of rosette? It is little wonder that this reviewer came away dazzled by the richness of the lode which the CRSP has tapped in this project.

2.3 Appropriateness of research - basic, adaptive.

Fully satisfactory - the basic will break new ground for the adaptive to exploit.

2.4 Adequacy of social science/economic perspective/sensitivity

Not relevant at this stage.

2.5 Suggestions/comments.

Nothing to add to the response to 2.2 above.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.

Satisfactory: should contribute to the Nigerian programme of rehabilitation of the peanut crop in due course. Relevant also to peanut producing nations in West Africa generally, and probably in Eastern and Southern Africa also.

3.2 Complementarity to ongoing peanut research activities in-country.

Appropriate.

3.3 Responsiveness to perceived producer and consumer needs.

The rosette diseases are a major threat to the crop (along with some others) in Nigeria and elsewhere in West Africa, where peanut and peanut oil are increasingly important in diets.

3.4 Communications with other in-country entities.

Could be strengthened - see 1.27 above.

3.5 Does location impact regionally as well as in-country?

Potentially yes, actually probably no, since the West African Groundnut Council seems to be dormant and anglophone-francophone links are not very robust.

3.6 Relationship to other international research efforts - ICRISAT, IRRI.

Links strongest with the international community outside Africa in virology and vector entomology. Links with ICRISAT probably satisfactory, and perhaps more so when the ICRISAT Sahelian centre at Niamey has made more progress (no work on rosette is possible in India). Link with work on virology, especially of cowpeas, at IITA could usefully

be strengthened. No link with IRRI so far as this reviewer knows, and none required, at this stage anyway.

3.7 Transferability of research (in-country, regionally, internationally) for implementation.

Potentially readily transferable because the results are likely to be applicable wherever the rosette diseases are important.

3.8 Suggestions/comments.

At the risk of repetition, suggest that links with other workers in Nigeria and the region and continent be strengthened because the rosette diseases are unique to Africa and cause serious losses in some (but not all) regions where the crop is grown; much work is now possible, but remains to be done, on the etiology and epidemiology of the complex, on the nature of the resistances and tolerances in different varieties, on the seasonal epidemiology of the vector/disease complex in different regions of Africa, and on the origin and evolution of the disease complex. This reviewer's instinct is to search diligently in the genus Vigna.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities)

This project has done much to maintain and advance the competence and confidence of two very able workers. Work of this quality is still rare in African institutions.

4.2 Extent of development of collaborative mode - how are collaborators (U.S., host country) interacting? - enthusiasm for research.

Satisfactory on every point. The contribution and the personal friendship of the US investigators are highly valued.

4.3 Training progress - short term, postgraduate training.

Dr. Misari supervises two MS students, Y.M. Abubakar on rosette epidemiology from the viewpoint of control of the vector, and Mary Abraham (from India) on transmission of rosette. Dr. Ansa supervises Dauladi Danjora, who will attempt to purify the single strand RNA (or RNAs) from green and chlorotic rosetted plants. They could take more students, and would welcome more from overseas (though the conditions of life might prove testing for some).

4.4 Suggestions/comments.

The CRSP has here a rare and important opportunity to develop a centre of real excellence in an African institution which is currently in very difficult circumstances. It may be that much of the more basic work could be done in the US, UK, Germany or some other developed country. But some at least of it could be done at Samaru by African workers. In the reviewer's view, it therefore must be done there, in order to advance

the achievement and confidence of an interdisciplinary team of two African scientists, working in conditions which many foreigners would regard as impossible. After all, this is one of the things the CRSP is about.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.

Good progress on purification of the luteovirus component; more may be expected on the symptom inducing agents of green and chlorotic rosette. It would be interesting, in collaboration with ICRISAT, to rebuild the IAR collection of wild species of Arachis and include them in the studies of resistance and epidemiology.

5.2 Impact of research on institution and government priorities and policies.

Highly valued by the Institution and the country; not yet sufficiently developed to affect policies.

5.3 Sufficiency of training/encouragement for promotion of information flow to user.

Too early to comment, but IAR is well placed to disseminate practical products as they become available.

5.4 Potential of research for success in alleviating production and utilization constraints.

Considerable, through breeding, and through control based on epidemiology.

5.5 Impact of research on Women in Development.

Not applicable.

5.6 Suggestions/comments.

Covered above.

6. SUMMARY

6.1 Specific strengths.

The problem itself, in which IAR has the comparative advantages of position and environment; the personal qualities of the investigators; the excellent relation between them and their US counterparts, and also with the world community in their disciplines; support of the Institution.

6.2 Specific weaknesses.

Lack of a relatively small amount of necessary equipment (by the standards of laboratories in developed countries) and of maintenance for it.

7. REVIEWER RECOMMENDATIONS

Continue support; provide necessary additional equipment and arrange maintenance; be proud of what has been achieved and hopeful of more to come.

NARRATIVE SUMMARY
Informal Report on EEP Activities on GA/PV/N (Peanut Viruses)

in Cambridge, England, April 8-14, 1985

In 1968 I spent a USDA-ARS sabbatical working with Prof. Dennis Garrett at Botany School, University of Cambridge on the ecology of soil fungi. I emphasized fungi that invade roots and geocarps ("fruits that think they are roots") of peanut. Two vivid recollections of this stay are unrelated to soil fungi: (1) J.D. Watson's book Double Helix (an account of Nobel laureate work on molecular structure of DNA) was then a best seller in Cambridge. (2) A lecture at the Botany School on groundnut rosette, and a couple of private conversations with the researcher, Dr. R. Hull, then at the Plant Virus Institute in Cambridge. These 1968 recollections came into juxtaposition at April, 1985 AAB Cambridge Conference on "New Developments in Techniques for Virus Detection".

In 1968 I saw as the essential points on groundnut rosette: 1. Chlorotic and green rosette are the two symptomatic forms of the disease; 2. Two distinctly different viruses must work together to incite the disease; 3. Aphis craccivora is the vector. 4. Why this common insect of African peanut fields does not spread the disease even more widely and more destructively is a secret locked in the nature of the two viruses as related to the structure and physiology of the host plant and the vector.

By the 1985 Cambridge "Techniques" conference the two rosette viruses had been classified as (1) a symptom inducing agent, and (2) an "assister" agent, not inducing symptoms. In the Conference DNA, cDNA, and/or RNA were featured in about one-third of the papers. The Conference paper from the Peanut CRSP project was: Comparison of ELISA and cDNA Probes to Detect Potyviruses in Peanut Seeds, by C.W. Kuhn and J.W. Demski, with a poster in the poster session on Molecular Cloning of a dsRNA associated with Groundnut Rosette Disease by E. Breyel, G. Gross, R. Casper, S. Meyer, Kuhn, Demski, O.A. Ansa and S.M. Misari. (The first four named are W. German "informal" cooperators on GA/PV/N).

Drs. Ansa and Misari (The Nigerian PIs) were to be at the "Techniques" conference, but they had not shown by the close of the Conference (1700, April 12). We then moved to the Cambridgeshire Moat House (about 8 miles from Cambridge) for the ICRISAT-sponsored meeting "to coordinate international research into rosette virus disease of groundnut". Misari and Ansa reached Dr. Demski by phone at dinner April 12. They were at Heathrow with a RR ticket to Cambridge, but with no money that could be converted to Pounds. They arrived by taxi (fare paid by Dr. Demski) at about 0200 April 13. (More on this in my formal CRSP report).

After dinner Dr. Demski organized an informal discussion on the peanut stripe virosis as related to the region from SE Asia to Australia. This among eight persons--two from Australia. (Again, more detail in the formal report).

A capsule view of the ICRISAT meeting April 13-14 is best shown by listing authors and titles of abstracts in a bound volume and of longer handouts that were distributed.

Abstracts: 1. R.W. Gibbons, Breeding for Rosette Resistance; 2. Breyel, Gross, Casper, Meyer, Kuhn, Demski, Ansa and Misari, Molecular Cloning of a dsRNA Associated with Groundnut Rosette Disease; 3. S.M. Misari and O.A. Ansa, Progress on Rosette Virus Research at Samaru; 4. K.R. Bock, Research on Rosette Disease in South Africa.

Handouts: 1. J.W. Demski and C.W. Kuhn, Peanut CRSP Virus Project Summary, Groundnut Rosette Planning Conference, Cambridge, England, April 13-14, 1985; 2. A.F. Murat & J.H. Raschke, Studies on Viruses that Depend on Luteoviruses for Transmission by Aphids; 3. D.V.R. Reddy, Rosette Virus Disease of Groundnut (Arachis hypogaea L.).

Peanut CRSP: External Evaluation Panel Review

NARRATIVE REVIEW

Special "In-Country Type" Project Review Conducted by:

EEP member Kenneth H. Garren in Cambridge, England, U.K. in April 1985 at: 1) AAB International Conference on "New Developments in Techniques for Virus Detection", 10-12 April; and 2) ICRISAT-sponsored "Meeting to Coordinate International Research Into Rosette Virus Disease of Groundnut", 12-14 April.

Peanut CRSP Project Code: GA/PV/N

Project Title: PEANUT VIRUSES: ETIOLOGY, EPIDEMIOLOGY, AND NATURE OF RESISTANCE

Review of contribution to project GA/PV/N of personnel working in:

Host Country NIGERIA - Country No. 1

Personnel Available For Discussion: Drs. Stephen M. MISARI & Okon A. ANSA (Vector Entomologist & Virologist, respectively) of Institute for Agricultural Research, Ahamadu Bello University, Samaru-Zaria, Nigeria.

(Though not listed in '83 Peanut CRSP Ann. Rpt. as PIs, the reviewer assumes they are actually Co-PIs of the Nigerian project).

Titles of Reports Presented:

1. E. Breyel, G. Gross, R. Casper, S. Meyer, C.W. Kuhn, O.A. Ansa and S.M. Misari

Molecular cloning of a dsRNA associated with groundnut rosette disease - AAB-Poster

(Poster displayed in poster rooms of Conference of 1) above, with abstract distributed in bound Abstracts of Poster Session)

Also Verbal report presented by Dr. Breyel in Meeting of 2) above.

2. S.M. Misari and O.A. Ansa

PROGRESS ON ROSETTE VIRUS RESEARCH AT SAMARU

Verbal report presented jointly in Meeting of 2) above with Abstract on pages 42 & 43 of bound Abstracts of the Meeting.

KHG's Narrative Review: It was not the intent or purpose of this review to evaluate the science, implementation, etc. of the U.S. work on Peanut CRSP project GA/PV/N--i.e. this review should not overlap, more than is absolutely necessary, the U.S. University review of GA/PV/N conducted by EEP members Gillier and Milner at University of Georgia, Experiment on April 2, 1985 and by EEP members Milner and Pickering at University of Georgia, Athens on April 3, 1985. Rather, in the light of currently existing impediments to travel into and out of Nigeria, the host country of GA/PV/N, this review was intended to take advantage of the projected attendance at the AAB Conference (1) above) of the two Nigerian Co-PIs, Drs. Misari and Ansa; two former informal cooperators from Scotland, U.K., Drs. Murat and Harrison; two current informal cooperators from West Germany, Drs. Casper and Breyel; two current informal cooperators from ICRISAT, Drs. Reddy and Gibbons; and two potential future informal cooperators from Australia, Dr. Gibbs and Miss Boswell.

Although to do so will call for what seems to be considerable repetition, it seems best to report this review in a country-by-country format, 1/ taking as the review's bases the following: (a) Formal reports (or posters) presented at the AAB Conference (1) above) and informal discussions of the reviewer and others pertaining thereto. (b) The informal reports presented at the ICRISAT-sponsored Meeting (2) above), the "question-and-answer" exchange accompanying these reports, and the Abstract appearing in the bound Abstracts of the Meeting (c) And, in some instances, one-on-one discussions between the EEP reviewer and the research-cooperator or host country research. In preparing these reports the reviewer attempted to throw light on the extent to which the activities of the country's cooperators furthered the overall research as well as furthered the aims and objectives of the Peanut CRSP as defined in the document "Scope of Work for the EEP".

The reviewer visited the Philippines to review projects at UPLB/PCARRD, where he took two documents as his guide--namely "Peanut CRSP Scope of Work for the EEP" and "EEP Review Agenda--In-Country Project Review". He prepared for the Filipino projects in biological sciences a two-part report of a Narrative Review based on a Project Profile Summary. The Profile, in turn, was based on the two aforementioned documents (see paragraph below).

As with his evaluations of the Filipino Peanut CRSP projects this, the Narrative Review for the Host Country of GA/PV/N, NIGERIA, is based on a country Project Profile Summary. For the Nigerian Profile, however, there is a FOREWORD of a special analysis of the involvement of Nigeria, as a location, and of the two Nigerian PIs (of GA/PV/N), as researchers, in the

1/ Countries taken in this order: 1. Host country, NIGERIA; 2. SCOTLAND, U.K.; 3. GERMANY (West); 4. ICRISAT (INTERNATIONAL); 5. AUSTRALIA

RESEARCH PLAN, 1982-1989 of the GA/PV/N part (pages 60-70) of Peanut CRSP 1983 Annual Report. Thereafter the Profile has a brief "Overall Recommendation) and then, whenever possible, rates performance to date 2/ on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These items may be considered in more detail in ensuing paragraphs.

(As will be noted, it was necessary to make generous (i.e. more than usual) use of the IE rating in the Profile).

Recommendation Rating: On the basis of review of the poster exhibited as stated; the participation of Drs. Misari and Ansa in the discussions of the Meeting of 2) above; study of the abstract submitted by Misari and Ansa for that Meeting; and of brief personal discussions with them the reviewer received a favorable impression of their work on the project. The reviewer recommends that the project be continued with some thought given to correcting weaknesses in providing support for extra-Nigeria travel of Misari and Ansa and in the perhaps overly ambitious reach of the research as expressed in stated research plans.

1. Implementation and Management: The reviewer had no opportunity to look into the important aspect of relation of the work in Nigeria on GA/PV/N to the U.S. AID Mission in Nigeria. Situations described in the Profile leads the reviewer to conclude that some adjustments in management within the host country are in order. Personnel and material aspects of the implementation seem adequate.

2. Adequacy of Science: The reviewer was favorably impressed with the scientific acumen of the Nigerian Co-PIs. He finds justification for regarding this as perhaps the greatest strength of the Nigerian arm of GA/PV/N.

3. Geographic Coverage and Applicability of Research: The reviewer was very favorably impressed with developments in the ICRISAT-sponsored Meeting of 2) above. The potential for Peanut CRSP's being deeply involved in progress towards solution of a problem of wide geographic coverage is great. No real progress in a research project of similar nature could have more beneficial applicability than is possible here.

2/ Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

4. Institutional Development: The complexity of the main problem of GA/PV/N--the peanut (groundnut) rosette disease--calls for a high degree of technical skill, scientific insight, and dedication on the part of the on-site investigators in particular. These factors seem evident here and Nigerian institutions involved should be strengthened by the research of the project.

5. Research Progress and Application: To date the "ground breaking" or "stage setting" research in Nigeria has progressed well. The proof of real progress and real applicability will have to come from research planned for years 4 and onward.

Peanut CRSP: External Evaluation Panel Review

PROJECT PROFILE SUMMARY

Special "In-Country Type" Project Review Conducted by:

EEP member Kenneth H. Garren in Cambridge, England, U.K. in April 1985 at: 1) AAB International Conference on "New Developments in Techniques for Virus Detection", 10-12 April; and 2) ICRISAT-sponsored "Meeting to Coordinate International Research into Rosette Virus Disease of Groundnut", 12-14 April.

Peanut CRSP Project Code: GA/PV/N

Project Title: PEANUT VIRUSES: ETIOLOGY, EPIDEMIOLOGY, AND NATURE OF RESISTANCE

Review of contribution to project GA/PV/N of personnel working in:

Host Country - NIGERIA

FOREWORD

Involvement of NIGERIA, as location of research, and of Nigerian Co-PIs in the research and research progress of GA/PV/N

1. Nigerian Co-PIs

- 1.1 Dr. Steve MISARI (PhD, U. Cal., Berkeley) - Vector Entomologist
- 1.2 Dr. Okon ANSA (PhD, U. Cal., Davis) - Serologist, Molecular Biologist

2. Work travel of researchers of GA/PV/N and cooperating researchers into and out of NIGERIA in 1983, 1984 as reported in Peanut CRSP Annual Report for 1983.

- 2.1 James Demski, U.S. PI
1983, worked in NIGERIA July 16 to August 5 and again from October 22 to November 7.
- 2.2 Cedric Euhn, U.S. Cooperator (UoIGA)
1983, worked in NIGERIA October 24 to November 2.
- 2.3 Sylke Meyer, Graduate Student from W. German cooperators' labs
1983, worked in NIGERIA from October 23 to November 7. (Note: Drs. Demski and Euhn were in Nigeria at this time).

- 2.4 Okon ANSA, Nigerian Co-PI
 1984, worked at Scottish Crops Research Institute, Dundee March 15-April 16. (Note: This work overlapped that of ICIRSAT cooperator D.V.R. Reddy who was at SCRI November, 1983 through April of 1984 after (?) an 8 month sabbatical at University of Georgia, Experiment).
3. Main lines of Research Progress at Samaru, NIGERIA as reported by MISARI and ANSA to Meeting of 2) above (bound Abstracts of Meeting).
- 3.1 Purification of Groundnut Rosette Assistor Virus
 (Progress, but not yet "purified").
- 3.2 Rosette Transmission
 (Green & chlorotic rosette transmitted using Aphis craccivora as vector).
- 3.3 Rosette Resistance
 (Aim--not yet achieved--to determine mechanisms of resistance).
- 3.4 Epidemiology
 (Studying - vector population dynamics, alternate hosts of the virus and of the vector, etc.).
4. "Research Completed" involving NIGERIA, as location, and/or Nigerian Co-PIs as researchers ('83 CRSP Ann. Rpt., P. 66, Stage 1 - "Research completed").
- 4.1 Improved method to mechanically inoculate peanut with groundnut rosette virus-chlorotic strain (Demski, MISARI, ANSA, Kuhn, NIGERIA)
- 4.2 Association of an infectious nucleic acid with the symptom inducing agent which causes the groundnut chlorotic rosette (Reddy, Murant, ANSA - Scotland, Fuhn, Casper - Germany)
- 4.3 Confirmed the requirement of the presence of the luteovirus for aphid transmission of groundnut rosette; also the failure of aphids to transmit groundnut rosette from infected mechanically inoculated plants (MISARI, Demski, ANSA, Reddy, Casper - NIGERIA & Germany & Scotland).
- 4.4 Identification (Ann. Rpt. P. 66, Par. 4) of more desirable hosts than peanut to culture groundnut rosette virus for nucleic acid studies (Demski, ANSA, NIGERIA, Reddy, Scotland, Casper, Kuhn, Germany).
5. "Research Plan" Stage II, years 4-6, involving NIGERIA as location and Nigerian Co-PIs as researchers. ('83 CRSP Ann. Rpt. Pages 66,67)

- 5.1 Development of a cDNA blotting hybridization method to assay peanut plants for four viruses: (i) groundnut rosette luteovirus; (ii) groundnut rosette symptom-inducing-agent; (iii) PMV (peanut mottle); (iv) peanut stripe virus (Casper, Breyel, Kuhn, ANSA - Germany, U.S. (Georgia), NIGERIA).
 - 5.2 Initiate inheritance of resistance studies by making crosses among appropriate susceptible and resistance peanut cultivars (MISARI, Demski, Kuhn, ANSA - NIGERIA).
 - 5.3 Studies of resistance to groundnut rosette: Compare (i) effect of mechanical and aphid inoculation on susceptible and resistant peanut cultivars, (ii) the spread of groundnut rosette in fields with susceptible and resistant peanut cultivars, (iii) field spread of groundnut rosette specifically (sic) resistant to mechanical and aphid inoculation (MISARI, Demski, ANSA - NIGERIA).
 - 5.4 Initiate an exchange of peanut seed between Nigerian CRSP project and ICRISAT station in Malawi if ways can be found to clear the seed from Malawi through the Nigerian government's plant quarantine enforcement (MISARI, ANSA, NIGERIA, Bock, ICRISAT, Malawi), not in '83 Ann. Rpt., but rather developed (suggested by Bock of ICRISAT) at Meeting of 2) above.
6. "Research Plan" Stage III, years 4-8, involving NIGERIA as location and Nigerian Co-PIs as researchers. Research to be initiated as soon as two potent diagnostic research tools are available, cDNA prepared for the nucleic acids of the groundnut rosette symptom-inducing-agent (SIA) and the luteovirus (LV) and ELISA conjugates for the luteovirus. Research will overlap with and be coordinated with Stage II studies (5. above).
- 6.1 Survey in NIGERIA, and perhaps other African countries, for the presence of single and mixed infections of SIA and LV in peanut (MISARI, ANSA, Demski, Kuhn, Reddy - NIGERIA & ?).
 - 6.2 Survey for sources of inoculum of SIA and LV in natural hosts other than peanut (MISARI, ANSA, Demski, Kuhn, - NIGERIA).
 - 6.3 Analyses of purified virions of luteovirus to determine if the SIA nucleic acid is encapsidated by the LV coat protein (ANSA, Kuhn - NIGERIA/Germany).
 - 6.4 Comparison (dot blot hybridization) of the nucleic acids of variants of SIA (such as chlorotic rosette, green rosette, and mosaic rosette) (ANSA, Kuhn, Casper - NIGERIA/Germany).
 - 6.5 Determine nature of resistance to groundnut rosette by critical studies of the SIA and LV nucleic acid replication cycles and dsRNAs and subgenomic RNAs (Kuhn, ANSA - NIGERIA/Germany).

- 6.6 In inheritance studies, evaluate F₁, F₂, and F₃ populations for reaction to SIA alone, LV alone, and a mixture of SIA and LV; criteria for evaluation will include symptomatology, field performance, and factors related to the nature of resistance (6.5 above) (MISARI, ANSA, Kuhn, Demski - NIGERIA).
- 6.7 Epidemiological studies will include monitoring field spread under a variety of conditions of single and mixed infections (MISARI, Demski, ANSA - NIGERIA).
- 6.8 Aphids will be collected from a variety of sources and at different times of the year to detect the presence of SIA, LV, or both (MISARI, Demski, ANSA - NIGERIA).

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/PV/N

In-Country Project Review
Special Report: Cambridge,
England

Project Title: PEANUT VIRUSES: ETIOLOGY, EPIDEMIOLOGY, AND NATURE OF RESISTANCE

Host Countries: NIGERIA

Overall Recommendation Rating: Even a cursory study of the FOREWORD shows Nature has given the Nigerian researchers on GA/PV/N a very taxing and challenging assignment--the on-site investigation of a very complicated peanut disease. Satisfactory progress has been made in the ground-breaking phases of the research in Nigeria (FOREWORD sections 3 and 4) but the reviewer tends to believe the lion's share of the credit for this progress goes to U.S. and German researchers working in Nigeria, and to U.S. and cooperating researchers working in Scotland and Germany. "Plans for the future" (FOREWORD sections 5 and 6) give Nigeria, as a location for the research and Misari and Ansa, as the resident researchers, greater and even more challenging roles. While he did not visit in Nigeria, the reviewer concludes that, with some adjustments suggested in the remainder of this Profile, these researchers can meet the challenge.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission programs.....: IE

1.12 Mission logistic, programmatic and financial support of
project. Attitude toward U.S. personnel traveling
in-country.....: IE

1.13 Mission interest for project future.....: IE

1.14 Summary Comments: The reviewer has good reason to believe there is a U.S. AID Mission in Nigeria, but he finds no reference to contacts with it in the "Peanut CRSP Planning Report" (of 11/17/81) or other documents furnished him.

Therefore, a total IE rating on 1.1.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: S
- 1.22 Administration of program-government level: NS
- 1.22A Administration of program-institutional level...: NS 1/
- 1.23 Fiscal management.....: NS
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: NS 1/
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: IE

1.27 Summary Comments: Nigerian Co-PIs arrived on round trip ticket in London three days "late", with RR ticket to Cambridge but, they said, with no funds to provide for themselves food, lodging and further transportation. Thus the reviewer rates 1.22, 1.22A, 1.23 NS. Also the reviewer thought he was told there would be opportunity April 14 PM and April 15 for him to interview, question, and otherwise discuss the project with the Nigerian Co-PIs. Instead the Nigerian Co-PIs encountered former acquaintances in the Hotel lobby about noon April 14 and went away with these former acquaintances and were not thereafter unavailable. The reviewer sincerely feels that it is not pique that leads to a NS rating on 1.25.^{2/}

1/ Upgrade from NS to S. Nigerian site review by Dr. A.H. Bunting received many weeks after this review by K.H. Garren was prepared, suggests institution administrators would administer satisfactorily if government administrators would permit them to do so.

2/ Upgrade from NS to S. Nigerian site review by Dr. A.H. Bunting, received many weeks after this review by K.H. Garren was prepared, offers "misunderstanding" as the explanation here.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect & supportive.....: S
- 1.312 Adequacy of number and capability to function.....: S

1.313 Involvement of Women.....: IE

1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: The generally Satisfactory rating here is based on the assumption that, as Dr. Kuhn told the reviewer in Cambridge, there are two Nigerian I.A. peanut breeders assigned to this project--one in Samaru, one in Kano.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: IE

1.322 Adequacy-reason for inadequacy.....: IE

1.323 Summary Comments: The reviewer assumes the facilities, etc. at Samaru are at least satisfactory else the progress reported in FOREWORD sections 3 and 4 as having been accomplished at least partially in Nigeria could not have been accomplished. However, it seems to the reviewer that written and vocal reports are not adequate evidence for an unbiased evaluation of category 1.32.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: HS

2.2 Progressiveness and innovativeness of research.....: HS

2.3 Appropriateness of research - basic and adaptive.....: HS

2.4 Adequacy of social science/economic perspective/sensitivity.....: IE

2.5 Summary Comments: His brief contacts with the Nigerian Co-PIs, hearing their report to the Meeting of 2) above, and their participation in the discussions at that Meeting, a review of material on which FOREWORD sections 3 and 4 are based plus a knowledge of the educational background of the Co-PIs seems ample justification for a Highly Satisfactory rating for this category.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: S

3.2 Complementarity to ongoing peanut research activities in-country.....: IE

3.3 Responsiveness to perceived producer and consumer needs: HS

3.4 Communications with other In-country entities.....: IE

- 3.5 Does location impact regionally as well as in-country.: HS
- 3.6 Relationship to other international research efforts - ICRISAT, IITA.....: HS
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: Peanut rosette virosis is important in all peanut growing areas of Africa. It is so important there that it is of concern in all world's peanut growing areas. The ICRISAT-sponsored Meeting (2) above) on this peanut virosis is recognition of the international scope of the problem. This plus the involvement of researchers in Scotland and Germany in the U.S.-Nigerian peanut viroses project supported by Peanut CRSP plus, also, the close cooperation with ICRISAT that is evident seems, to the reviewer, to merit a Highly Satisfactory rating for (this important) category 3.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS
- 4.3 Training progress-short term, post graduate training.: IE

4.4 Summary Comments: Peanut rosette virosis is a very complex and complicated disease requiring high caliber research backed by enthusiasm for both research and the collaborative mode. The reviewer has no doubt but that the progress to date (FOREWORD 3, 4) calls for a Highly Satisfactory rating on 4.1 and 4.2. He was unable to delve into the matter of "training" with the Nigerian Co-PIs, but he assumes neither of them needs much further training. Perhaps, however, there is need for some training in places other than Nigeria for supporting technicians.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: S
- 5.2 Impact of research on institution and government priorities and policies.....: IE
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: IE
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: HS
- 5.5 Impact of research on Women In Development.....: IE

5.6 Summary Comments: ("Coverage, Applicability") The reviewer feels that, so far, the research of this project performed primarily in Nigeria has been basically ground-breaking research (i.e. "setting the stage"), and, since the stage seems firmly set, this research should be rated Satisfactory. The important rating on 5.1 (immediately above) will come when enough research is done under Profile FOREWORD "Research Plan" Stage II, sub-sections 5.2, 5.3 (and perhaps 5.4) to make ratings on those specific bits of research. Unquestionably this project's research aims merit a Highly Satisfactory rating on 5.4 (immediately above). The reviewer must give the remaining items of "Coverage, Applicability" (category 5, immediately above) an IE rating.

6. SUMMARY

6.1 Specific Strengths: The training, background, and specific areas of expertise of both Misari and Ansa admirably equip them to do the type of research this project demands and, thus, must be considered a strength. Other definite strengths are the international importance of the peanut (groundnut) rosette disease--the basic problem attacked by GA/PV/N; the interest of top researchers and research institutions active on the international scene in this basic problem; and the groundwork research already accomplished with the help of these cooperating researchers and institutions.

6.2 Specific Weaknesses: The apparent inability of Misari and Ansa to obtain anything approaching adequate financial support for travel outside of Nigeria seems a marked weakness. (By hearsay evidence the reviewer concludes that impediments to travel inside Nigeria of U.S. participants in GA/PV/N is a weakness). The reviewer feels that the many different lines or avenues of research set-up in the "Research Plan" Stage II and Stage III (FOREWORD sections 5 and 6) can become a weakness. If all these lines of research are undertaken concurrently this could spread the talents, time, and energy of the on-site Nigerian researchers too thinly.

7. Reviewers Recommendations: The reviewer enthusiastically recommends that this, the Nigerian arm of Peanut CRSP GA/PV/N be continued with at least its present level of financial support. He recommends that much effort be made to maintain the present level of informal cooperation with the Biologische Bundesanstalt of W. Germany and that thought be given to renewing or reviving the informal cooperation with the Scottish Crops Research Institute. Peanut CRSP researchers are willingly committed to the close cooperation with ICRISAT that GA/PV/N exemplifies. He recommends that a search be made for ways to support essential extra-Nigeria travel for Nigerian researchers--ways that do not break rules and regulations of either the Nigerian government or the University of Georgia ("home" of Peanut CRSP's Management Entity). (And ways that do not rely on the U.S. PI's making irregular and informal "advances" to Nigerian researchers in travel status from his personal funds). Finally, the reviewer recommends that individual items of research under the "Research Plan" Stage II and Stage III (FOREWORD sections 5 and 6) each be assigned a priority level in the event the research "reach" of GA/PV/N shows evidence of beginning to overtake the research "grasp" of GA/PV/N/

Peanut CRSP: External Evaluation Panel Review

NARRATIVE REVIEW

Special "In-Country Type" Project Review Conducted by:

EEP member Kenneth H. Garren in Cambridge, England, U.K. in April 1985 at: 1) AAB International Conference on "New Developments in Techniques for Virus Detection", 10-12 April; and 2) ICRISAT-sponsored "Meeting to Coordinate International Research Into Rosette Virus Disease of Groundnut", 12-14 April.

Peanut CRSP Project Code: GA/PV/N

Project Title: PEANUT VIRUSES: ETIOLOGY, EPIDEMIOLOGY, AND NATURE OF RESISTANCE

Review of contribution to project GA/PV/N of personnel working in:

Cooperating Country - SCOTLAND, U.K. (Former,
Country No. 2 see '83 AR, p. 64,66)

Personnel Available For Discussions: Drs. A.F. Murat and B.D. Harrison, of Scottish Crops Research Institute, Invergowrie, Dundee, Scotland, U.K.

Titles of Reports Presented:

1. A.F. Murat and J.H. Raschke -
Studies on viruses that depend on luteoviruses for transmission by aphids Report presented to Conference of 1) above. Abstract page 25 of bound Abstracts.
2. B.D. Harrison, D.J. Robinson, M.A. Mayo and D.V.R. Reddy -
Genome properties and relationships of Indian peanut clump virus
AAB-Poster - (Poster displayed in poster rooms of Conference of 1) above, with Abstract on page 48 of bound Abstracts)
3. Discussion by Dr. Murat in Meeting of 2) above (no Abstract)

KHG's Narrative Review: It was not the intent or purpose of this review to evaluate the science, implementation, etc. of the U.S. work on Peanut CRSP project GA/PV/N--i.e. this review should not overlap, more than is absolutely necessary, the U.S. University review of GA/PV/N conducted by EEP members Gillier and Milner at University of Georgia, Experiment on April 2, 1985 and by EEP members Milner and Pickering at University of Georgia, Athens on April 3, 1985. Rather, in the light of currently existing impediments to travel into and out of Nigeria, the host country of GA/PV/N, this review was intended to take advantage of the projected attendance at the AAB Conference (1) above) of the two Nigerian Co-PIs, Drs. Misari and Ansa; two former informal cooperators from Scotland, U.K.,

Drs. Murat and Harrison; two current informal cooperators from West Germany, Drs. Casper and Breyel; two current informal cooperators from ICRISAT, Drs. Reddy and Gibbons; and two potential future informal cooperators from Australia, Dr. Gibbs and Miss Boswell.

Although to do so will call for what seems to be considerable repetition, it seems best to report this review in a country-by-country format, 1/ taking as the review's bases the following: (a) Formal reports (or posters) presented at the AAB Conference (1) above) and informal discussions of the reviewer and others pertaining thereto. (b) The informal reports presented at the ICRISAT-sponsored Meeting (2) above), the "question-and-answer" exchange accompanying these reports, and the Abstract appearing in the bound Abstracts of the Meeting (c) And, in some instances, one-on-one discussions between the EEP reviewer and the researcher-cooperator or host country researcher.

The EEP reviewer took two documents as his guide--namely "Peanut CRSP Scope of Work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review". In preparing this report the reviewer attempted to throw light on the extent to which the activities of the country's cooperators furthered the overall research as well as furthered the aims and objectives of the Peanut CRSP as defined in the "Scope of Work for the EEP".

For the Host Country, NIGERIA, a Project Profile Summary was prepared that, whenever possible, rates performance to date on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application.

The reviewer is familiar with written agreements, etc. between ICRISAT and the Peanut CRSP designed to promote and guide their cooperative efforts. However, so far as the reviewer knows the "informal cooperations", past, present (and projected for the future), noted on pages 63, 66, 67 of the Peanut CRSP 1983 Annual Report do not or did not operate under agreements or understandings that would make it possible to evaluate the cooperators' contributions by the numerous and somewhat rigid criteria that are set down to be used on the host countries--in this case NIGERIA.

Therefore for these cooperating countries the Narrative Reviews will conclude with some General Summary Comments by the reviewer.

1/ Countries taken in this order: 1. Host country, NIGERIA; 2. SCOTLAND, U.K.; 3. GERMANY (West); 4. ICRISAT (INTERNATIONAL); 5. AUSTRALIA

General Summary Comments

Report to AAB Conference (1) above) gives a significant contribution Dr. Murat made to GA/PV/N through his studies on viruses--including the groundnut (peanut) rosette virus (GRV)--that depend on unrelated viruses for persistent transmission by aphids. These studies showed that most such "assister" viruses are luteoviruses and shed new light on the intrinsic nature of these "dependent" viruses. It was concluded that these "dependent" viruses may constitute new virus group. Three "dependent" viruses other than GRV were studied.

In the discussions of the ICRISAT-sponsored Meeting (2) above) Dr. Murat postulated that the infective agent of groundnut rosette virosis may be a single strand RNA encapsulated in a coat of the "assister" virus and that this agent moves only in the phloem in the host plant.

In a "round-up" discussion at the conclusion of this Meeting (2) above) Drs. Murat and Harrison explained that funding, or lack of it, has curtailed their work on GRV of late. (See Profile of evaluation of Host Country, NIGERIA of GA/PV/N, specifically FOREWORD section 4 for a brief view of research related to GA/PV/N carried on in their laboratories in SCOTLAND). They spoke of their special interest in doing further work related to GRV namely work: (a) exploratory work on the peanut plant itself; (b) virus interrelations and transmissions; (c) variability across Africa of the GRV. Asked if support of a technician would help, they replied that support of a bright student would be better, but support of a post-doctorate "internship" would be best.

Drs. Harrison and Murat took part in an informal discussion, requested by Dr. Demski, the night of April 11 on the subject of further work on the peanut stripe virosis that surveys made by Dr. Reddy (of ICRISAT) showed to be widespread in the SE Asia/S. Pacific islands area. They would be glad to participate if some support funding can be provided.

Peanut CRSP: External Evaluation Panel Review

NARRATIVE REVIEW

Special "In-Country Type" Project Review Conducted by:

EEP member Kenneth H. Garren in Cambridge, ENgland, U.K. in April 1985 at: 1) AAB International Conference on "New Developments in Techniques for Virus Detection", 10-12 April; and 2) ICRISAT-sponsored "Meeting to Coordinate International Research Into Rosette Virus Disease of Groundnut", 12-14 April.

Peanut CRSP Project Code: GA/PV/N

Project Title: PEANUT VIRUSES: ETIOLOGY, EPIDEMIOLOGY, AND NATURE OF RESISTANCE

Review of contribution to project GA/PV/N of personnel working in:

Cooperating Country - FEDERAL REPUBLIC OF GERMANY
Country No. 3

Personnel Available For Discussion:

Dr. Rudolf Casper Biologische Bundesanstalt
Dr. E. Breyer Braunschweig, (West) Germany

Titles of Reports Presented:

1. E. Breyer, G. Gross, R. Casper, S. Meyer, C.S. Kuhn, J.W. Demski, O.A. Ansa and S.M. Misari

Molecular cloning of a dsRNA associated with groundnut rosette disease

AAB-Poster - (Poster displayed in poster rooms of Conference of 1) above, with Abstract on page 10 of bound Abstracts)

2. Also - Verbal report presented in Meeting of 2) above, with the abstract from bound Abstracts of Posters repeated verbatim in bound Abstracts of Meeting of 2) above.

KHG's Narrative Review: It was not the intent or purpose of this review to evaluate the science, implementation, etc. of the U.S. work on Peanut CRSP project GA/PV/N--i.e. this review should not overlap, more than is absolutely necessary, the U.S. University review of GA/PV/N conducted by EEP members Gillier and Milner at University of Georgia, Experiment on April 2, 1985 and by EEP members Milner and Pickering at University of Georgia, Athens on April 3, 1985. Rather, in the light of currently existing impediments to travel into and out of Nigeria, the host country of GA/PV/N, this review was intended to take advantage of the projected attendance at the AAB Conference (1) above) of the two Nigerian Co-PIs, Drs. Misari and Ansa; two former informal cooperators from Scotland, U.K.,

Drs. Murat and Harrison; two current informal cooperators from West Germany, Drs. Casper and Breyel; two current informal cooperators from ICRISAT, Drs. Reddy and Gibbons; and two potential future informal cooperators from Australia, Dr. Gibbs and Miss Boswell.

Although to do so will call for what seems to be considerable repetition, it seems best to report this review in a country-by-country format, 1/ taking as the review's bases the following: (a) Formal reports (or posters) presented at the AAB Conference (1) above) and informal discussions of the reviewer and others pertaining thereto. (b) The informal reports presented at the ICRISAT-sponsored Meeting (2) above), the "question-and-answer" exchange accompanying these reports, and the Abstract appearing in the bound Abstracts of the Meeting (c) And, in some instances, one-on-one discussions between the EEP reviewer and the researcher-cooperator or host country researcher.

The EEP reviewer took two documents as his guide--namely "Peanut CRSP Scope of Work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review". In preparing this report the reviewer attempted to throw light on the extent to which the activities of the country's cooperators furthered the overall research as well as furthered the aims and objectives of the Peanut CRSP as defined in the "Scope of Work for the EEP".

For the Host Country, NIGERIA, a Project Profile Summary was prepared that, whenever possible, rates performance to date on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application.

The reviewer is familiar with written agreements, etc. between ICRISAT and the Peanut CRSP designed to promote and guide their cooperative efforts. However, so far as the reviewer knows the "informal cooperations", past, present (and projected for the future), noted on pages 63, 66, 67 of the Peanut CRSP 1983 Annual Report do not or did not operate under agreements or understandings that would make it possible to evaluate the cooperators' contributions by the numerous and somewhat rigid criteria that are set down to be used on the host countries--in this case NIGERIA.

Therefore for these cooperating countries the Narrative Reviews will conclude with some General Summary Comments by the reviewer.

1/ Countries taken in this order: 1. Host country, NIGERIA; 2. SCOTLAND, U.K.; 3. GERMANY (West); 4. ICRISAT (INTERNATIONAL); 5. AUSTRALIA

General Summary Comments

Poster (Report 1, above) for the AAB Conference (1) above) and abstract (Report 2 above) submitted for the ICRISAT-sponsored Meeting (2) above) deal with research done in Germany on a double stranded RNA isolated from peanut plants with typical symptoms of groundnut rosette disease. However, this dsRNA is not itself infectuous. The dsRNA is associated with the mechanically transmissible, symptom inducing agent (SIA) of the disease but not with the aphid transmissible luteo virus which acts as "assistant" for the SIA in field transmission. Procedure of trying to develop a diagnostic test for the SIA virus of groundnut rosette by cloning this dsRNA is described.

The contributions of this cooperating country (No. 3) to the groundwork research CA/PV/N is outlined in the FOREWORD to the Profile of the evaluation of host country NIGERIA, specifically FOREWORD section 4.

The projected roles of this cooperating country (No. 3) in Stage II, years 4-6 of research plan of CA/PV/N is outlined in section 5 of the above mentioned Profile FOREWORD while the projected role for Phase III, years 4-8, is outlined in section 6 of this FOREWORD.

In a "round-up" discussion following the ICRISAT-sponsored Meeting (2) above) Dr. Casper noted that his government (W. Germany) wishes German institutions such as his to get into helping with tropical agricultural problems and that ICRISAT and the Peanut CRSP had provided entrees for his institution. He applied to the EEC for supporting funds and after about a year, when he had almost forgotten the application, a grant came through. Dr. Breyel was added to the staff with this grant's funds, and the grant expires in September of 1986. Drs. Breyel and Casper are engaged in a serology exchange with Dr. Ansa in Nigeria, and 11 desired antisera are obtained in Germany one or both of them will go to Nigeria with the antisera. Dr. Casper feels that at the moment Dr. Ansa is ahead of their research in this area.

Drs. Casper and Breyel took part in an informal discussion, requested by Dr. Demski, the P.S. PI of CA/PV/N, the night of April 11 on the subject of further work on the peanut stripe virosis that surveys made by Dr. Reddy (of ICRISAT) showed to be widespread in the SE Asia/S. Pacific Islands area. They expressed a willingness to help wherever they can in further work on this peanut virosis.

Peanut CRSP: External Evaluation Panel Review

NARRATIVE REVIEW

Special "In-Country Type" Project Review Conducted by:

EEP member Kenneth H. Garren in Cambridge, England, U.K. in April 1985 at: 1) AAB International Conference on "New Developments in Techniques for Virus Detection", 10-12 April; and 2) ICRISAT-sponsored "Meeting to Coordinate International Research Into Rosette Virus Disease of Groundnut", 12-14 April.

Project Code: GA/PV/N

Project Title: PEANUT VIRUSES: ETIOLOGY, EPIDEMIOLOGY, AND NATURE OF RESISTANCE

Review of contribution to project GA/PV/N of personnel working in:

Cooperating Institution ICRISAT (INTERNATIONAL)

Personnel Available for Discussion: Drs. R.W. Gibbons and D.V.R. Reddy, Program Leader and Principal Virologist (respectively), Groundnut Improvement Program, ICRISAT (India), and Dr. F.R. Bock, ICRISAT Regional Groundnut Program for S. Africa, Chitedze Agr. Res. Station, Lilongwe, MALAWI.

Titles of Reports Presented:

1. D.V.R. Reddy, N. Bharathan, R. Rajeswari, S.N. Nigam and R.W. Gibbons
Detection of peanut mottle virus and screening for seed transmission
by enzyme-linked immunosorbent assay
2. B.D. Harrison, D.J. Robinson, M.A. Mayo and D.V.R. Reddy
Genome properties and relationships of Indian peanut clump virus

1 & 2 are AAB-Posters (Posters displayed in poster rooms of Conference of 1) above, with Abstracts on pages 42 and 48 of bound Abstracts).

3. D.V.R. Reddy - Rosette virus disease of groundnut (Arachis hypogaea
L.)
4. R.W. Gibbons - Breeding for rosette resistance
5. F.R. Bock - Research on rosette disease in southern Africa

3, 4, & 5 were discussions presented at the Meeting of 2) above with Abstracts printed separately (3) and on pages 1 (4) and 5-7 (5) of bound Abstracts of the Meeting.

KHG's Narrative Review: It was not the intent or purpose of this review to evaluate the science, implementation, etc. of the U.S. work on Peanut CRSP project GA/PV/N--i.e. this review should not overlap, more than is absolutely necessary, the U.S. University review of GA/PV/N conducted by EEP members Gillier and Milner at University of Georgia, Experiment on April 2, 1985 and by EEP members Milner and Pickering at University of Georgia, Athens on April 3, 1985. Rather, in the light of currently existing impediments to travel into and out of Nigeria, the host country of GA/PV/N, this review was intended to take advantage of the projected attendance at the AAB Conference (1) above) of the two Nigerian Co-PIs, Drs. Misari and Ansa; two former informal cooperators from Scotland, U.K., Drs. Murat and Harrison; two current informal cooperators from West Germany, Drs. Casper and Breyel; two current informal cooperators from ICRISAT, Drs. Reddy and Gibbons; and two potential future informal cooperators from Australia, Dr. Gibbs and Miss Boswell.

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The EEP reviewer took two documents as his guide--namely "Peanut CRSP Scope of Work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review". In preparing this report the reviewer attempted to throw light on the extent to which the activities of the country's cooperators furthered the overall research as well as furthered the aims and objectives of the Peanut CRSP as defined in the "Scope of Work for the EEP".

For the Host Country, NIGERIA, a Project Profile Summary was prepared that, whenever possible, rates performance to date on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application.

1/ Countries taken in this order: 1. Host country, NIGERIA; 2. SCOTLAND, U.K.; 3. GERMANY (West); 4. ICRISAT (INTERNATIONAL); 5. AUSTRALIA

The reviewer is familiar with written agreements, etc. between ICRISAT and the Peanut CRSP designed to promote and guide their cooperative efforts. However, so far as the reviewer knows the "informal cooperations", past, present (and projected for the future), noted on pages 63, 66, 67 of the Peanut CRSP 1983 Annual Report do not or did not operate under agreements or understandings that would make it possible to evaluate the cooperators' contributions by the numerous and somewhat rigid criteria that are set down to be used on the host countries--in this case NIGERIA.

Therefore for these cooperating countries the Narrative Reviews will conclude with some General Summary Comments by the reviewer.

General Summary Comments

A recording transcribed to print of the several discussions of the (2) above) ICRISAT-sponsored "Meeting to Coordinate International Research Into Rosette Virus Disease of Groundnut" together with the bound Abstracts of that Meeting and Dr. Reddy's separate paper 1/ (Report No. 3 above) would make a valuable "Proceedings"-type publication. Notwithstanding this, however, I did not attempt to make notes general enough to be a basis for a "Discussions" section of a "Proceedings" of the Meeting. Rather I concentrated my note-taking on: (a) matters where one might say that ICRISAT has played, and perhaps will continue to play, the role of a cooperating country in contributing to progress on GA/PV/N; (b) other matters of specific interest to personnel of GA/PV/N and/or Peanut CRSP; (c) matters contributing in general to the continuing close coordination of Peanut CRSP's activities with those of ICRISAT's Groundnut Improvement Program.

In the preliminary discussions of this Meeting (2) above) Dr. Gibbons stated that ICRISAT hopes for funds to expand its program on its three "mandated" legumes (peanut the major one and pigeon pea and chick pea) into SE Asia, with a coordinator "on-site". Dr. Reddy credited Peanut CRSP project GA/PV/N with developing procedures for consistent transmission of GRV.

In the several discussions of the Meeting (2) above) after presentation of each report abstracted in the bound volume of Abstracts several important points were developed:

1/ The reviewer can attach, as an Appendix, his copy of these Abstracts and of Dr. Reddy's separate paper to the final version of this review of GA/PV/N if this seems desirable.

Dr. Gibbons stressed need for a peanut variety resistant to GRV that has large seeds and is early maturing. He stated that in most of the countries of Africa plagued with GRV there is a big gap between research and extension. This almost stops distribution of seed of desirable peanut varieties including some varieties now known to be resistant to GRV. In African LDCs, including Nigeria, there is need for a government-supported organization that can get quality seed (peanut seed) to the farmer and see that he plants them. (Commercial seedmen operating in LDCs are not interested in self-pollinating crops such as peanut).

Dr. Misari got some hints on how he might improve his procedures for feeding the aphids he uses in his transmission studies on GRV.

Dr. Bock (of ICRISAT) told of his survey on species of plants found fairly commonly throughout the peanut growing areas of Africa. He started in Zimbabwe and N. Wouth Africa and went through Malawi, Tanzania, etc. up Africa's East Coast and across through the "peanut belt" of central and West Africa. More than 150 plant species common to this entire area were recorded. Dr. Bock also discussed the possibility of ICRISAT's funding one of the Nigerian researchers to a peanut conference in Zimbabwe next February (1986). Rosette will be a topic at this conference.

As noted in the FOREWORD to the Profile of the evaluation of the host country, NIGERIA, of GA/PV/N Dr. Reddy spent part 1/ of a sabbatical at the University of Georgia. He worked there with, mainly, Dr. Demski U.S. PI of GA/PV/N who is at UGA-Experiment. In correspondence (11/27/84) with the reviewer Dr. Reddy states "During my...sabbatical in UG I spent more than 50% of my time on characterizing peanut stripe (PStV), in preparing an antiserum and on methods for detecting PStV". Moreover, in September, 1984, Dr. Reddy surveyed "...groundnut crops in Thailand, the Philippines, Papua New Guinea and Indonesia. The main objective of the survey was to check on the occurrence and importance of virus diseases of groundnut in these countries". A final detailed report on this Groundnut Disease Survey in SE apparently has been prepared and a copy put on file with the ME of the Peanut CRSP. Apropos this disease survey, another quotation from correspondence from Dr. Reddy: "We very much appreciate the fact that the important data obtained in the survey would not be available to us were it not for the financial support provided by Peanut CRSP. Our ICRISAT Asian Legume Program is expected to start in 1985 and the information we have obtained on groundnut problems in East Asian countries through cooperation with your organization will be of great value to us."

1/ Peanut CRSP '82 Ann. Rpt. states "Dr. Reddy will spend 8 months of a years sabbatical in Dr. Demski's lab". In correspondence (11/27/84) with the reviewer Dr. Reddy calls it "...my 5 1/2 months sabbatical in UG...".

The FOREWORD of the Profile of the evaluation of host country NIGERIA, of GA/PV/N outlines in section 4 the direct contributions of ICRISAT, through Dr. Reddy's sabbatical, to the ground breaking research of GA/PV/N on GRV.

Dr. Reddy did not take part in the informal discussion, requested by Dr. Demski, the U.S. PI of GA/PV/N, the night of April 11 on the subject of further work on the peanut stripe virosis (PStV). However his (and ICRISAT's) important contribution to the PStV part of GA/PV/N is obvious.

Peanut CRSP: External Evaluation Panel Review

NARRATIVE REVIEW

Special "In-Country Type" Project Review Conducted by:

EEP member Kenneth H. Garren in Cambridge, England, U.K. in April 1985 at: 1) AAB International Conference on "New Developments in Techniques for Virus Detection", 10-12 April; and 2) ICRISAT-sponsored "Meeting to Coordinate International Research Into Rosette Virus Disease of Groundnut", 12-14 April.

Peanut CRSP Project Code: GA/PV/N

Project Title: PEANUT VIRUSES: ETIOLOGY, EPIDEMIOLOGY, AND NATURE OF RESISTANCE

Review of contribution to project GA/PV/N of personnel working in:

Cooperating Country - AUSTRALIA (Projected future Cooperator)

Country No. 5

Personnel Available For Discussion:

Dr. A.J. Gibbs and Miss Kathy F. Boswell, Virus Ecology Group, Research School of Biological Sciences, Australian National University, Canberra, AUSTRALIA

Titles of Reports Presented:

1. K.F. Boswell and A.J. Gibbs -
The VIDE database project: the flipside of virus identification

Report presented to Conference of 1) above. Abstract page 39 of bound Abstracts.

3. Discussions by Dr. Gibbs and Miss Boswell in connection with Meeting of 2) above (no Abstracts).

KHG's Narrative Review: It was not the intent or purpose of this review to evaluate the science, implementation, etc. of the U.S. work on Peanut CRSP project GA/PV/N--i.e. this review should not overlap, more than is absolutely necessary, the U.S. University review of GA/PV/N conducted by EEP members Gillier and Milner at University of Georgia, Experiment on April 2, 1985 and by EEP members Milner and Pickering at University of Georgia, Athens on April 3, 1985. Rather, in the light of currently existing impediments to travel into and out of Nigeria, the host country of GA/PV/N, this review was intended to take advantage of the projected attendance at the AAB Conference (1) above) of the two Nigerian Co-PIs, Drs. Misari and Ansa; two former informal cooperators from Scotland, U.K., Drs. Murat and Harrison; two current informal cooperators from West Germany, Drs. Casper and Breyel; two current informal cooperators from ICRISAT, Drs. Reddy and Gibbons; and two potential future informal cooperators from Australia, Dr. Gibbs and Miss Boswell.

Although to do so will call for what seems to be considerable repetition, it seems best to report this review in a country-by-country format, 1/ taking as the review's bases the following: (a) Formal reports (or posters) presented at the AAB Conference (1) above) and informal discussions of the reviewer and others pertaining thereto. (b) The informal reports presented at the ICRISAT-sponsored Meeting (2) above), the "question-and-answer" exchange accompanying these reports, and the Abstract appearing in the bound Abstracts of the Meeting (c) And, in some instances, one-on-one discussions between the EEP reviewer and the researcher-cooperator or host country researcher.

The EEP reviewer took two documents as his guide--namely "Peanut CRSP Scope of Work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review". In preparing this report the reviewer attempted to throw light on the extent to which the activities of the country's cooperators furthered the overall research as well as furthered the aims and objectives of the Peanut CRSP as defined in the "Scope of Work for the EEP".

For the Host Country, NIGERIA, a Project Profile Summary was prepared that, whenever possible, rates performance to date on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application.

1/ Countries taken in this order: 1. Host country, NIGERIA; 2. SCOTLAND, U.K.; 3. GERMANY (West); 4. ICRISAT (INTERNATIONAL); 5. AUSTRALIA

The reviewer is familiar with written agreements, etc. between ICRISAT and the Peanut CRSP designed to promote and guide their cooperative efforts. However, so far as the reviewer knows the "informal cooperations", past, present (and projected for the future), noted on pages 63, 66, 67 of the Peanut CRSP 1983 Annual Report do not or did not operate under agreements or understandings that would make it possible to evaluate the cooperators' contributions by the numerous and somewhat rigid criteria that are set down to be used on the host countries--in this case NIGERIA.

Therefore for these cooperating countries the Narrative Reviews will conclude with some General Summary Comments by the reviewer.

General Summary Comments

Report (Report 1, above) to AAB Conference (1) above) was on Dr. Gibbs' VIDE project (Virus Identification Data Exchange). VIDE initially concentrated on legume viroses. The system seems best described by the first sentence of the Abstract cited above: "Versatile computer-based methods have been developed recently for collecting, manipulating and distributing data, and our...(VIDE) project has been using such facilities to produce aids for plant virus diagnosis".

In the discussions of the ICRISAT-sponsored Meeting (2) above) Dr. Gibbs spoke of the ACIAR (Australian Center for International Agricultural Research) and of Australian work in agricultural research and development of SE Asia, including Thailand and Philippines 1/. He also spoke of possibility of fitting VIDE system into the computer at Samaru, Nigeria.

1/ The reviewer would note that the Peanut CRSP has four "two-legged" projects in SE Asia with each project having one leg planted in Thailand and the other leg planted in the Philippines. These projects are:

NCS/BCP/TP - "Peanut Varietal Improvement for Thailand and the Philippines".

NCS/IM/TP - "Management of Arthropods on Peanut in Southeast Asia".

GA/FT/TP - "Appropriate Technology for Storage/Utilization of Peanut".

NCS/TX/SM/TP - "Influence of Rhizobia and Mycorrhizae on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines".

A - Rhizobium Considerations

B - Mycorrhizae Considerations

Dr. Gibbs and Miss Boswell took part in an informal discussion, requested by Dr. Demski, the U.S. PI of GA/PV/N, the night of April 11 on the subject of further work on the peanut stripe virosis that surveys made by Dr. Reddy (of ICRISAT) showed to be widespread in the SE Asia/S. Pacific islands area. It seemed apparent to all present that the VIDE system could be a great help in putting this peanut virosis, apparently spreading from its center of origin in China, in sensible perspective.

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Note: Sudan site visit was scheduled but was not able to be completed. See bottom page 140.

NARRATIVE REVIEW
External Evaluation Panel Review of U.S. University Projects

By M. Milner and D.C. Pickering (EEP), at Alabama A & M University (AAMU), April 4/5, 1985.

Peanut CRSP Code: AAMU/FT/SU

Project Title: An Interdisciplinary Approach to the Optimum Food Utility of the Peanut in SAT Africa

Discussion With: Dr. B. Singh, Principal Investigator, and colleagues.

Recommendation Rating: The EEP reviewers are pleased to observe that AAMU is strongly committed to the objectives of the project, that this involvement has stimulated an international outlook at this institution, and they believe that a useful contribution of lasting impact at AAMU and in the host country will result from these activities. While the results of the first two years of effort in this project, consisting principally of a consumer peanut food consumption survey, will provide useful information, EEP recommends that the AAMU collaborators should undertake with their host country investigators, a thorough analysis of the most significant problems which are retarding peanut utilization, and from this review, identify are projects of high priority which are truly of a research character.

Panel Members' Narrative Review: Review of this project began with study of reports and related documents and involved discussions with the PI, Dr. Singh, and his collaborators (B.O. Okezie, G.C. Wheelock, H. Jones, D.R. Rao, J.C. Anderson and V. Caples) as well as interviews with several university administrators including the President.

2. The scientific and technical discussions were conducted following the usual CRSP format for such U.S. University reviews.

3. The Project Profile Summary accompanying this EEP Review, rates performance for each of the points raised under the various headings of Scope of Work, including Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These topics are covered in ensuing paragraphs.

4. Implementation and Management: A highly satisfactory rating seems warranted, for the program in the Sudan. No significant administrative problems at AAMU were identified in discussions with the administration, and indeed this group almost universally expressed warm approval and support. Commitment of the PI, his collaborators, and the University as a whole, to this CRSP must be considered excellent. The project has stimulated university-wide interest in international research of this kind.

5. Adequacy of Science: A "Satisfactory" rather "Highly Satisfactory" rating predominates in the Project Profile Summary, because of the EEP perception that the technical efforts appear to have a strong technology transfer rather than research bias. Nevertheless this technology transfer emphasis may be justified in terms of current host country needs. As for the direction of future efforts, EEP recommends that AAMU should undertake with their host country collaborators, a thorough analysis of all problems affecting increased utilization of peanut in the Sudan.

6. Geographic Coverage and Applicability of Research: Relevance of these efforts to host country goals is highly satisfactory, since the emphasis is on transferring knowledge and appropriate practices in peanut utilization and post harvesting technology to the host country. Reciprocal value of the host country scientific efforts to the U.S. is less obvious at this time; nevertheless they may help in designing future projects in other host countries with similar needs.

7. Institutional Development: The project serves ideally to develop and strengthen research capabilities at AAMU which emphasize international orientation and collaboration. All the collaborators are enthusiastic and highly motivated. Training in the U.S. of host country counterparts is in the planning stage.

8. Research Progress and Application: The first phase, involving a consumer peanut food utilization survey, is almost complete, and this will be helpful in guiding future efforts in relevant peanut product development. That such objectives are the most appropriate to host country needs is not, however, entirely clear, and a reassessment of research priorities and objectives with the host country collaborators is recommended. Potentials for reciprocal advantages to U.S. research remain unclear at this time although a positive impact on international research initiatives and interests at AAMU is very obvious.

9. Summary: Specific Strengths: The principal investigator, Dr. Singh, as well as his collaborators are competent, energetic, and thoroughly dedicated to this project and its objectives. Dr. Singh's enthusiasm and leadership have stimulated university-wide interest. Frequency of U.S. collaborator travel to the Sudan seems adequate, and sensitive interaction with the Sudanese workers is apparent.

Specific Weaknesses: The AAMU group seems not to have made adequate use of the considerable information from a number of previous technical assistance efforts in peanut utilization in East Africa (particularly British and U.N. activities). Future research should take into account such previous efforts, as well as a thorough review of research priorities with host country scientists.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: AAMU/FT/SU

Project Title: An Interdisciplinary Approach to the Optimum Food Utility of the Peanut in SAT Africa

Overall Recommendation Rating: Effective AAMU involvement in this project has stimulated an international outlook throughout the institution. EEP believes that a useful contribution of lasting impact to AAMU and the host country will result from this project. A Satisfactory to Highly Satisfactory rating is appropriate for progress achieved up to this time.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

1.11 Understanding and support of project objectives and the collaborative mode.....: HS

1.12 General attitude towards international programs and support of researchers involved.....: E

1.13 Logistical and fiscal support.....: S

1.14 Perceived relevancy of collaborative program to U.S. research interests.....: HS

1.15 Status of CRSP in relation to earlier industry reaction to funding.....: IE

1.16 Resource commitment to project.....: S

1.17 Summary Comments: The administrative involvement of AAMU is fully adequate; the University administration is cooperative and highly supportive. Linkages and contacts with host country counterparts are timely, sensitive, and appropriate.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: E
- 1.23 Logistical support..... : HS
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: S
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: IE
- 1.26 Overall commitment to project.....: HS
- 1.27 Summary Comments: PI is thoroughly competent and clearly committed to the project. He clearly perceives the international implications of these efforts, which are anticipated will provide benefits to the host country and to the U.S.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: IE
- 2.4 Local science and economic perspective.....: IE
- 2.5 Summary Comments: The ratings indicated above reflect EEP convictions that technology transfer activities rather than research as conventionally understood, predominate at this time. While this orientation may not be inappropriate at this stage of the project, stronger emphasis on research is recommended in future activities.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: S
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: NA
- 3.3 Transferability of research results to U.S. programs..: IE
- 3.4 Summary Comments: Response to host country technology needs predominates at this time, but spinoff of useful knowledge for other countries of the region as well as to the U.S. may well develop from this work.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: HS

4.2 Extent of development of collaborative mode.....: E
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: S

4.4 Summary Comments: Stimulation of an international outlook at AAMU is already a very positive development. The entire University and particularly the orientation of its new research program and priorities have been strongly influenced by this project.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact on research priorities.....: S

5.3 Potential of research results for application to U.S. needs.....: 1E

5.4 Summary Comments: A consumer peanut food utilization survey, almost completed, will guide future research and technology transfer efforts. A sensitive analysis in collaboration with host country counterparts, of research priorities needed to improve peanut food utilization, is strongly recommended.

6. SUMMARY

6.1 Specific Strengths: The PI is competent and energetic, showing excellent leadership qualities. Frequency of travel to the Sudan is adequate, and interaction with host country scientists is appropriate. Positive results from this work can be anticipated.

6.2 Specific Weaknesses: In formulating future technology transfer and research activities, the AAMU group should make more adequate use of previous extensive British and U.N. technical assistance activities in Africa.

The Sudan site visit of the EEP could not be made because the mission would not give clearance for travel due to mitigating circumstances. Two efforts for travel were made.

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NARRATIVE REVIEW
External Evaluation Panel Review of U.S. University Projects

By Dr. K. H. Garren and D. C. Pickering (EEP) with Dr. F. Johnson (BIFAD)
at North Carolina State University, Raleigh on April 1/2, 1985.

Peanut CRSP Code: NCS/BCP/TP

Project Title: Peanut Varietal Improvement for Thailand and
Philippines

Discussion with: I) Dr. J. C. Wynne, Principal Investigator, Dept. of
Crop Science, Raleigh, Breeder
II) Dr. H. T. Stalker, Co-Principal Investigator,
Dept. of Crop Science, Raleigh, Breeder-Cytogeneticist.
III) Dr. M. E. Beute, Co-Principal Investigator, Dept.
of Plant Pathology, Raleigh, Plant Pathologist.

Recommendation Rating: On the basis of evidence presented, the reviewers
received very favorable impressions of the project and the NCSU staff
charged with its implementation. The reviewers feel that the project as
conceived is sound and should continue as planned, with perhaps some fine
tuning as additional results are obtained to take account of existing and
evolving farming systems, particularly in collaborating countries.

Panel Members' Narrative Review: The review was conducted on the basis
of full and frank discussions with the PI and two of his four
Co-Principal Investigators in a three hour session at the NCSU Raleigh
campus, supplemented by separate meetings with the remaining two
Co-Principal Investigators in their capacity as PIs of supporting
projects (vis NCS/IM/TP and NCS/SM/TP) and senior university officers
responsible for scientific and administrative oversight of the projects
work plan and budgets, on April 1 and 2, 1985. These meetings were
supplemented by reference to periodic progress reports prepared by the
project team. Reference was also made to the tentative findings of Drs.
Garren and Milner on their visit to Philippines at which they met with
collaborating scientist from Thailand and Philippines.

2. The Raleigh meetings took as their agenda the Scope of Work for U.S.
universities discussed by the EEP members and agreed with the Technical
Committee and Board of Directors together with the Program Manager,
representing the Management Entity, at their meeting in Washington, DC in
late October, 1984. The procedure followed was to invite comments from
Project Team members and solicit responses to questions designed to throw
light on the extent to which the Scope of Work pertaining to U.S.
universities had been met by the Project Team. Reviewers were impressed
by the thought which had been given to project design and implementation
and the plans articulated for its continuation and evolution. This
Narrative Review is based on a Project Profile Summary which rated
performance to date ^{1/}on each of the points raised under the five main
headings of the Scope of Work, i.e. Implementation and Management,

1/ Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory;
NS = Not Satisfactory; IE = Insufficient Evidence for evaluation;
NA = Not Applicable.

Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These are considered in more detail in ensuing paragraphs.

3. Implementation and Management: From the standpoint of administrative involvement, the reviewers felt that a Highly Satisfactory rating was warranted on each of the six issues addressed. Of particular note were the obvious commitment of senior NCSU staff to the aims and objectives of the project as evidenced by the commitment of staff and resources, and the efforts made by the PI to allay the concerns of N.C. and Virginia State representatives of the industry to the Peanut CRSP.

4. Researcher involvement was also rated overall as Highly Satisfactory on the basis of the understanding and support of the collaborative mode, relevance to U.S. research interests, logistical support and clear commitment of all NCSU project staff.

5. Adequacy of Science received a Satisfactory rating on the subjects of level of science, progressiveness and innovativeness of the research and its appropriateness and relevance to U.S. needs. Reviewers did not feel however that the project at this stage provided adequate evidence from the perspective of social science and economics. As the performance of new lines is assessed further at the experiment station level, there will be need to take specific account of performance at the farm level under the conditions imposed by existing and evolving farming systems.

6. Geographic Coverage and Applicability of Research was rated Satisfactory to Highly Satisfactory in both Thailand and Philippines and also in the U.S. There was evidence of clear complementarity to ongoing research and demands on time and resources in all locations, so much so in the Philippines that it was not easy to detect with precision the point at which perceived benefits could be clearly attributed to the project.

7. Institutional Development was felt to be fully satisfactory, recognizing the strong research capabilities of NCSU in the field of varietal improvement, the ongoing effective institutional arrangements for this purpose in Philippines, and the strengthening of institutional capability as a result of the project in Thailand. Progress in training, via PI visits, provision of relevant literature, facilitation of workshops and attendance at courses held by cooperating country personnel, was rated Satisfactory.

8. Research Progress and Application appeared to be satisfactory in regard to achievement of objectives and the potential of research results for application to U.S. needs. There did not appear to be, at this stage, clear evidence of the impact of the project on research objectives except that, as noted earlier, its direction was clearly in line with perceived needs in collaborating countries and the U.S. itself. 1985 results should enable subsequent reviews to be more definitive.

9. Summary: As the foregoing paragraphs seek to indicate, the reviewer concludes that the project is well designed, relevant, adequately staffed and fully supported by both US and collaborating country scientists and research administrators. It appears clearly to be on the right track and should continue as planned. The reviewer has confidence that its managers are responsive and capable, and that its potential for outreach into other Southeast Asian countries is considerable and may well begin to be realized in the coming years.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: NCS/BCP/TP

Project Title: Peanut Varietal Improvement for Thailand and Philippines

Overall Recommendation Rating: The overall thrust of this project, its reported implementation by the PI and his collaborators and the supporting projects at NCSU, vis NCS/IM/TP and NCS/TX/SM/TP (regarding the Soil Microbiology component) are fully appropriate. Support from NCSU is appropriate. It should continue as planned.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative Involvement

1.11 Understanding and support of project objectives and the collaborative mode.....: HS

1.12 General attitude towards international programs and support of researchers involved.....: HS

1.13 Logistical and fiscal support.....: HS

1.14 Perceived relevancy of collaborative program to U.S. research interests.....: HS

1.15 Status of CRSP in relation to earlier industry reaction to funding.....: HS

1.16 Resource commitment to project.....: HS

1.17 Summary Comments: Meetings with senior agricultural management at Dean and Director of Agricultural Research Service level indicated a clear understanding of, and commitment to the aims and objectives of the Peanut CRSP in general and this project in particular. This position is evidence by the allocation of staff time and resources to the project.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support..... : HS
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: HS
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: HS
- 1.26 Overall commitment to project.....: HS
- 1.27 Summary Comments: As indicated above, the Principal Investigator and his colleagues are fully involved and strongly committed to the project.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: S
- 2.4 Local science and economic perspective.....: IE
- 2.5 Summary Comments: As far as could be ascertained by the review meeting with the investigators and from the material presented, this aspect of the project generally warrants a Satisfactory rating. However, the social science and economic aspects were difficult to assess.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: S
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: HS
- 3.3 Transferability of research results to U.S. programs...: S
- 3.4 Summary Comments: The project appears to be of considerable relevance to host country, and U.S. goals in this area. It appears to demonstrate clear complementarity to ongoing research efforts and to the time and resources available. Germplasm developed and tested appears to be likely to achieve a satisfactory level of transferability to U.S. programs entrusted to NCSU.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: S

4.2 Extent of development of collaborative mode.....: HS
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: S

4.4 Summary Comments: The CRSP appears to be a valuable means of strengthening research capability of NCSU in the field of peanut varietal improvement. Interaction with collaborators appears excellent and enthusiasm for the project is of a very high order.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact on research priorities.....: IE

5.3 Potential of research results for application to U.S. needs.....: S

5.4 Summary Comments: Although it is still too soon to report on other than the potential for impact of the project, it appears to be well on track. 1985 results should enable subsequent reports to be more definitive.

6. SUMMARY

6.1 Specific Strengths: Well designed, relevant, adequately staffed and supported by both U.S. and collaborating scientists.

6.2 Specific Weaknesses: Some minor glitches in travel approvals for U.S. scientists and need for earlier advice on reporting and related requirements, though these apply more to the M.E. than the project.

NARRATIVE REVIEW
External Evaluation Panel Review of Host Country Projects

By Drs. Max Milner and Kenneth H. Garren at US AID Mission, Manila; PCARRD (Philippine Council for Agriculture & Resources Research & Development), Los Banos; and UPLB (University of the Philippines at Los Banos) on February 5-12, 1985.

Peanut CRSP Code: NCS/BCP/TP

Project Title: Peanut Varietal Improvement for Thailand and Philippines

Host Country: PHILIPPINES

Discussions With:

- 1) At US AID, Philippines - Dr. James Beebe, Agricultural Program Officer.
- 2) At PCARRD - Dr. Ramon V. Valmayor, Executive Director, and Dr. Dely P. Gapasin, Director, Crops Research Department
- 3) At UPLB - Dr. E. T. Rasco, Jr., Director Institute of Plant Breeding, UPLB.
Mr. Edilberto Redona, Principal Investigator of NCS/BCP/TP
Dr. Candida B. Adalla, Entomologist
Mr. Vermando M. Aquino & Mr. Rodante E. Tabien - Research Associates in Plant Pathology and Plant Breeding.

Recommendation Rating: On the basis of evidence presented as described herein the reviewers received favorable impressions of the project and of the UPLB-IPB personnel charged with its implementation. The EEP considers this a sound project and it should continue as planned with perhaps some minor adjustments in management and some improvements in internal and international coordination.

Panel Members' Narrative Review: The review was conducted on the basis of formal (scheduled) discussions, one informal discussion, and visits to laboratories and field plots, with discussions therein, as follows:

- 1) A discussion of about two hours in length with Dr. Beebe, at US AID, Manila, Feb. 6.
- 2) A discussion of about a half-hour in length with Dr. Valmayor, at PCARRD, Feb. 6.
- 3) Discussions of about one hour each in length with Dr. Gapasin, Feb. 6 & 11.
- 4) A round table discussion--presided over by Dr. Gapasin--with most of the UPLB researchers assigned to the Peanut CRSP, four visiting NC State PI's of the Peanut CRSP, and Dr. Cummins, ME of the Peanut CRSP, - at PCARRD Feb. 8
- 5) Hearing oral reports and studying written handouts plus participating in workshops that were parts of First National Peanut Consultation & Peanut CRSP Review at PCARRD, Feb. 7 & 8.

- 6) Dr. Garren only, informal discussion specifically requested by Dr. Adalla at PCARRD, Feb. 8.
- 7) A brief discussion with Dr. Rasco, Feb. 9.
- 8) A tour of IPB facilities with Mr. Redona, Feb. 9.
- 9) Discussions totaling about two hours with Mr. Redona, Mr. Aquino, and Mr. Tabien, in laboratories, greenhouses, and field plots, Feb. 11.

The EEP, in meetings and discussions on this project, took two documents as its guide--namely "Peanut CRSP Scope of Work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review." The procedure followed was to listen to informal presentations of administrative and research personnel and then--when time permitted--to ask questions designed to throw further light on the extent to which project activities were responsive to the aims and objectives of the Peanut CRSP as defined in the "Scope of Work for the EEP."

As with other evaluations this Narrative Review is based on a Project Profile Summary which rated performance to date 1/ on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These items are considered in more detail in ensuing paragraphs.

1. Implementation and Management: As with other Peanut CRSP projects at UPLB/PCARRD, the reviewers felt that an overall Highly Satisfactory rating was warranted on the key components of this section of the review. Relations with and support of US AID, Manila are good, perhaps due partially to the groundwork laid by Dr. Beebe's predecessor in his post, the ME (Dr. Cummins) of the Peanut CRSP, and Dr. Gapasin of PCARRD. PCARRD, as the highest level of the host country's government that is directly involved, has taken all aspects of the Peanut CRSP as serious activities and assigned them high priorities.

In regard to the apparently lukewarm attitude of UPLB administration re the Peanut CRSP, the reviewers felt this might actually be a matter of inertia. Inertia brought on by three things - the unique nature of PCARRD as an administrative body; the location, physically, of UPLB and PCARRD adjacent to each other; and an apparently continuing reshuffling of UPLB administrators from department chairmen on up.

As to UPLB resources, including personnel and material, committed to this project, it seemed to the reviewers that this project was doing better in this regard than the other Peanut CRSP projects at UPLB. Perhaps this is at least partially due to the IPB's apparently semi-autonomous state. The background of continuing peanut breeding efforts over past years makes the effectiveness of the project's personnel an untested matter.

1/ Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

2. Adequacy of Science: The reviewers' impression is that Mr. Redona is a competent young scientist and that his two research associates are making significant contributions to the peanut breeding, each in a different area of expertise. The time does not seem ripe to transfer to the UPLB-IPB site some of the more progressive and innovative techniques in use at the project's home base (in the U.S.) at N.C. State. Dr. Adalla, to all appearances, is adept at the scientific approach to testing for insect resistance. Her particular situation as a contributor to two Peanut CRSP projects is treated in a bit more detail in the report on the IM project. Socio-economic aspects were not touched-upon in the reviewers' discussions.

3. Geographic Coverage and Applicability of Research: Nothing related to agricultural research and development has more potential for geographic coverage and widespread applicability than a new cultivar of a crop plant (or a new "breed" of domesticated animal) that has passed rigid comparison tests, in field tests with established lines. To produce such a cultivar(s) is, of course, the objective of this "regional" peanut breeding project. As stated in the Profile, this project is particularly strong in complementarity to the overall program of peanut research and extension in the Philippines. The project is almost a joint project with IRRI. And, whether or not it is per se directly coordinated with ICRISAT, it has, indirectly through N.C. State, good working relationships with ICRISAT.

4. Institutional Development: The Panel feels that the Peanut CRSP, as an entity, has strengthened the agricultural research program and outlook at UPLB. It also seems to have given renewed impetus to PCARRD's interest in promoting peanut culture in the Philippines. All of the Peanut CRSP projects at UPLB, in the view of the reviewers, seem to be strengthening the research and the collaborative mode of PCARRD/UPLB. As noted in the Profile, it is planned that Mr. Redona will go, soon, to N.C. State for course work and other training with the U.S. PI, Dr. Wynne. This should strengthen the staff of UPLB-IPB to some degree.

5. Research Progress and Application: Here, again, it seems apropos to repeat the summary for this category from the Profile. The reviewers feel it is difficult to accurately assess any plant breeding program in regard to this category. So much depends on the nature of the genetic lines the particular breeding program had as its base when the program was started. Then too, every one recognizes there is a strong element of luck operating throughout all plant breeding programs. The objectives of this project are such that its potential for alleviating peanut constraints is great. PCARRD will see that deserving new peanut lines are publicized and distributed.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: NCS/BCP/TP

In-Country Project Review

Project Title: Peanut Varietal Improvement for Thailand and the Philippines

Host Countries: PHILIPPINES

Overall Recommendation Rating: On the basis of: 1) Management; 2) Implementation; 3) relevance to both host country and U.S. interests; and 4) close cooperation with and supervision by the U.S. PI and one Co-PI the reviewers feel this project should continue with no major changes in plans.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: S

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Dr. James Beebe, Agricultural Program Officer, US AID Philippines, is "new" to the Philippines but not new to the post of Agricultural Officer of a US AID Mission. From experience in Sudan he is familiar with and very much in favor of CRSP projects. Relations, as Dr. Beebe sees them, are excellent between the ME of the Peanut CRSP and PCARRD (Philippine Council for Agriculture & Resources Research & Development). PCARRD is the Philippine central government's administrative body for this type of R&D. US AID Mission, through Dr. Beebe, will cooperate with ME and PCARRD in maintaining these good relations.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: HS

1.22 Administration of program-government level.....: HS

1.22A Administration of program-institutional level.....: S

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

- 1.23 Fiscal management.....: S
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: HS
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: The EEP felt the project warrants an almost completely Highly Satisfactory rating in this category. Two top administrators of PCARRD (Executive Director Valmayor, Crops Research Director Gapasin) are fully sold on the Peanut CRSP and very involved in it. On February 7-8, 1985 two EEP members attended a Philippine "National Peanut Consultation & Peanut CRSP Review." The CRSP program had a half-day of this review, and the EEP members, and others, were given a 151 page mimeo "Progress Report" on the Filipino part of four Peanut CRSP projects. Involvement in and interest in the Peanut CRSP on the part of the academic institution (Univ. of Philippines at Los Banos or UPLB) as displayed to the EEP seemed minimal.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect & supportive....: HS
- 1.312 Adequacy of number and capability to function.....: HS
- 1.313 Involvement of Women.....: HS
- 1.314 Overall effectiveness of program personnel: IE

1.315 Summary Comments: The reviewers found the number of people committed to this project to be Highly Satisfactory. However, by a handout that accompanied Mr. Redona's (the project's PI) report to the Consultation, the project was activated in July of 1983 to "...broaden an ongoing Philippine peanut breeding program." Without a miracle two growing seasons cannot show progress in selecting promising lines from an extensive field-testing of diverse lines. So the reviewers feel more time is needed to evaluate the overall effectiveness of the team operating the project.

1.32 Equipment/facilities/supplies

- 1.321 Availability-reason for unavailability.....: HS
- 1.322 Adequacy-reason for inadequacy.....: HS

1.323 Summary Comments: The EEP reviewers were pleased with the material that UPLB-IPB is supplying the project. This in spite of the PI's subtle complaints about cycle tires, etc. It seemed, to the reviewers, that the breeding project was doing better in this regard (1.32) than the other Peanut CRSP projects at UPLB.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and Innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: S

2.4 Adequacy of social science/economic perspective/sensitivity.....: IE

2.5 Summary Comments: As far as the reviewers could tell this aspect of the project deserves a Satisfactory rating. The time does not seem ripe to transfer to the UPLB-IPB site some of the more progressive and innovative techniques in use at the project's U.S. home base at N.C. State. Socio-economic aspects were not touched-upon in the reviewers' discussions.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: S

3.2 Complementarity to ongoing peanut research activities in-country.....: HS

3.3 Responsiveness to perceived producer and consumer needs: HS

3.4 Communications with other in-country entities.....: HS

3.5 Does location impact regionally as well as in-country.: HS

3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: HS

3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: The reviewers felt the project earns a Highly Satisfactory rating in this category. It is particularly strong in complementarity to peanut research and extension activities in the Philippines. The project is almost a joint project with IRRI. And, whether or not it is per se directly coordinated with ICRISAT, it has, indirectly through N.C. State, good working relationships with ICRISAT.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS
- 4.3 Training progress-short term, post graduate training.: HS

4.4 Summary Comments: Like the other Peanut CRSP projects at UPLB, this project seemed, to the Panel, to be strengthening the research and the collaborative mode of PCARRD/UPLB. The reviewers were told that it is planned that Redona will go soon to N.C. State for course work and training, with the U.S. PI Dr. Wynne, in genetics and more complex techniques of peanut breeding. This will add another significant member to the N.C. State alumni group at UPLB.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: S
- 5.2 Impact of research on institution and government priorities and policies.....: S
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: HS
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: S
- 5.5 Impact of research on Women in Development.....: S

5.6 Summary Comments: The reviewers feel it is difficult to accurately assess any plant breeding program in regard to this category. So much depends on the nature of the genetic lines the particular breeding program had as its base when the program was started. Then too, everyone recognizes there is a strong element of luck operating throughout all plant breeding programs. The objectives of this project are such that its potential for alleviating peanut production constraints is great. PCARRD will see that deserving new peanut lines are publicized and distributed.

6. SUMMARY

6.1 Specific Strengths: The Panel finds the strengths of this project to be: Its base in a long-term peanut breeding program in the Philippines (as outlined in the report of the PI to the Consultation). Its apparent support by UPLB/IPB administration. And, finally, its position as the Filipino counterpart of a strong, scientifically-based, peanut breeding program with strong international ties--the N.C. State peanut breeding program.

6.2 Specific Weaknesses: The Panel members in their discussions did not address the matter directly, but there was some indication that (even though this is a "TP" project--"T" = Thailand) the promise of measures to effect coordination with Thailand of the '83 Peanut CRSP Annual Report have not yet been fulfilled. The Panel members' observations suggest that, so far, coordination of this project with its Thailand counterpart and with peanut breeding programs at ICRISAT has been mainly through visits of N.C. State personnel to ICRISAT and Thailand and Philippines. If this is the case, this must be considered a weakness. Weaknesses more potential than actual, are the apparent lack of guidelines for determining the elusive and evasive factor of "quality" of promising new peanut lines and the lack of a formula for setting a limit on the number of lines under test per test season.

7. Reviewers Recommendations: The EEP recommends that this project be continued at its current level of research activity and its current level of support. However, the EEP would like to know if the weaknesses it thought it perceived really exist. If these do exist as weaknesses, the EEP would recommend that some steps be taken to eliminate them.

NARRATIVE REVIEW
External Evaluation Panel: In-Country Project Review

September 21-28, 1985

By Pierre Gillier and D. C. Pickering Host Country: Thailand

Peanut CRSP Code: NCS/BCP/TP

Project Title: Peanut Varietal Improvement for Thailand and the Philippines

Introduction Peanut CRSP activities in Thailand are an integral part of the Thailand Coordinated Groundnut Improvement Program. EEP members therefore decided that, in view of the apparently close coordination of the relevant Thai agencies, namely the Department of Agriculture, which is also the lead coordinating agency, with Khon Kaen and Katsetsart Universities, it would be repetitious to present the section on Implementation and Management separately in respect of each project. Rather, and since there was manifest full involvement of the USAID Mission with the Peanut CRSP in Thailand, it would be preferable to present separate reports on each of the four projects concerned, only regarding sections 2, 3, 5, 6 and 7 of the In-Country Project Review Agenda. Sections 1 and 4 therefore, which appear below in the Project Profile Summary Format, reflect panel members views of the generic situation and applies equally to each project. This review takes account of individual project reports, the Progress Report for 1984 of the Thailand Coordinated Groundnut Improvement Program, and discussions with key collaborators interviewed in the course of our Thailand visit. The latter included:

John Foti:	Agricultural Officer, USAID Mission, Bangkok
Roger Montgomery:	Evaluation Officer, USAID Mission, Bangkok
Vichitr Benjasil:	Coordinator Peanut CRSP, Thailand and Director, Field Crops Research Institute, Dept. of Agriculture, Bangkok, also Coordinator of project NCSU/BCP/TP in Thailand
Aree Waranyuwat:	Peanut Breeder, NCS/BCP/TP, Katsetsart University.
Aran Patanothai:	Peanut Breeder, NCS/BCP/TP, Khon Kaen University
Manochai Keerati- Kasikorn:	Collaborator, Entomologist, NCS/IM/TP, Khon Kaen University
Sathorn Sirisingh:	Collaborator, Entomologist, NCS/IM/TP, Dept. of Agriculture

Chintana Oupadissakoon: Principal Investigator, GA/FT/TP, Katsetsart University
 Yenchai Vasuvat: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Rhizobia).
 Omsub Nopamornbodi: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Mycorrhizae).

The generic views presented below are reflected in the overall recommendation rating for each project, and should be regarded as implicit in sections 6 and 7 of the reports on each project reviewed.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Understanding of and support is excellent as a result of thorough prior briefing by and good linkages with CRSP Management, and perceptions of clear relevance to Mission goals.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: HS

1.22 Administration of program-government of institutional level: HS

1.23 Fiscal management.....: HS

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS

1.25 Attitude toward U.S. participants and their involvement.....: E

1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: Strong interest in and commitment to the program because of its perceived relevance to national goals and its complementarity to the national groundnut improvement program whereby additional resources can be utilized to strengthen, particularly, the

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research programs of the two universities primarily concerned with peanuts in their agricultural mandates. Slightly longer visits by US scientists to review activities and advise on methodology would be welcomed by Thai collaborators and should be supported by CRSP management.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: HS

1.312 Adequacy of number and capability to function.....: HS

1.313 Involvement of Women.....: HS

1.314 Overall effectiveness of program personnel: HS

1.315 Summary Comments: As noted above the CRSP is seen as an integral part of national peanut improvement efforts. Consequently it receives a fully adequate share of dedicated personnel who value the CRSP as a means of strengthening the resource base available to them for their chosen work. This is a view shared by senior research managers in Thailand.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: HS

1.322 Adequacy-reason for inadequacy.....: HS

1.323 Summary Comments: The Breeding program is split between D.O.A., Kasetsart and Khon Kaen University. Fields of all qualities and in different location are available and used by cooperators without restrictions. Workers are abundant, fields treatment (Pesticides, Fertilizer, growth regulator, line etc.---) are applied in time, observations are made correctly and test infestation are standard and well done. Crops are in good condition and clean (in spite of weeds abundance). The first harvest of the rainy season was in progress when we passed and all things were running well. The number of experiments developed by K.K.U. is impressive.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: HS

2.2 Progressiveness and innovativeness of research.....: HS

2.3 Appropriateness of research - basic and adaptive.....: HS

2.4 Adequacy of social science/economic perspective/sensitivity.....: HS

2.5 Summary Comments: The competence of Cooperators and the quality of the research developed warrant commendation. All classical technics in use for this kind of program are adapted with success (infestation techniques, sensibility control, evaluation scale---etc.) by several assistants. This work is driven with a good perception of social and economical incidence, as a permanent contact with the farming system department of K.K.U. is maintained.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals.....: HS
- 3.2 Complementarity to ongoing peanut research activities in-country.....: HS
- 3.3 Responsiveness to perceived producer and consumer needs: HS
- 3.4 Communications with other in-country entities.....: HS
- 3.5 Does location impact regionally as well as in-country.: HS
- 3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: HS
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: The good linkage between all participants and the existence of a National Peanut Program elaborated and orientated each year by cooperators and by all other colleagues from D.O.A. and University, during a special meeting give the insurance that CRSP is in accordance with national goal. It is also for the same reason complementary of other researches and it is connected with producer and consumer needs. The scattering of experiments in many locations and during different seasons (before or after rice and during rainy season) is a guarantee of regional and even international impact and of good transferability. ICRISAT and IRRI are fully concerned by this program and a good collaboration is existing between different partners.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Thailand has already established a coordinated groundnut improvement program in collaboration with the Peanut CRSP and IDRC of Canada into which CRSP activities are fully integrated. The CRSP is playing an important part in strengthening Thai research capabilities and appears to be doing this job well by interaction between U.S. and Thai scientists. Training progress is good but could perhaps be improved by the expansion of training for Thai scientists at the MS and doctoral levels in collaborating U.S. institutions, given allocation of priority for this type of training by the Thai government through DOA.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: HS
- 5.2 Impact of research on institution and government priorities and policies.....: HS
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: HS
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: HS
- 5.5 Impact of research on Women in Development.....: HS

5.6 Summary Comments: The program follow a normal way in Bangkok as in Khon Kaen. Seed increasing, varietal experiment, test for foliar diseases and progenies studies are developed in excellent conditions and under several climatic situations. The best opportunity for this program was to promote a good linkage and a perfect cooperation between beneficiary institutions. Each increased largely his capacities and through the collaboration of a national well coordinated program, specific works were distributed following the competences. Results are discussed each year in a special commission, and documents on the achievement of this program and all other related informations are printed and distributed to different users. It is too early to diffuse any product of this program. Many preliminary results are promising in the way of diseases resistances, field improvement, seed quality and better adaptability to farming system. Many women are participating to research operation at conception and at execution level.

6. SUMMARY

6.1 Specific Strengths: The Thai program is characterized by strong commitment of US based collaborating research institutions, the USAID Thailand mission, and Thai agencies. In-country competence regarding the projects is of a generally satisfactory nature, and the objectives of the research projects are relevant to mutual needs. Their specific strengths relate to their relevance to Thai policy for crop

diversification, in this respect concerning the peanut crop, increased small farmer productivity, and poverty alleviation especially in N.E. Thailand. From a U.S. standpoint the CRSP activities are perhaps most directly valuable because of the opportunities they afford for research on the peanut stripe virus. Finally, the CRSP program has had a most useful impact in demonstrating to the Thais the benefits to be gained by Thai agency interaction.

6.2 Specific Weaknesses: This is overall a very strong program with relatively few weaknesses, and those noted could be remedied by relative "fine tuning" of activities. Some limitations in contact between collaborating Thai and U.S. scientists in the field could be a constraint on effective implementation of projects in Thailand. The technical assistance potential of such visits can hardly be underestimated, especially from the standpoint of application of appropriate research procedures and hence the validity of research results. Research planning and implementation in Thailand could proceed more smoothly by a clearer advance indication of available CRSP resources together with prompt release of funds. Thai agency research plans and estimated calls on CRSP resources might profitably be advanced and refined to permit earlier review by collaborating U.S. scientists and institutions, thus optimizing resource obligation.

7. Reviewers Recommendations: As noted above, the Thailand CRSP program is proceeding well and no major changes are called for. Continuing collaboration, via an extension of the CRSP should lead to the production of viable research results of mutual benefit derived from the generally excellent groundwork established to date.

The proposed sabbatical of Dr. W. V. Campbell (NCSU) would improve the technical assistance component of the program, especially were he to be based in Thailand. Some slight prolongation of in-country visits by U.S. scientists would also have a disproportionate beneficial impact on the quality of Thai research and hence the validity of its results.

More and better advance planning in Thailand of research activities with CRSP funded resource implications and the early conveyance of this information to collaborating U.S. scientists would facilitate greater efficiency in project implementation and resource utilization. Such planning will need to take into account the anticipated diminishing role of IDRC in Thai peanut related research, and the probable cessation of this avenue of assistance in 1988.

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NARRATIVE REVIEW
External Evaluation Panel Review of U.S. University Projects

By Dr. K.H. Garren and D.C. Pickering (EEP) with Dr. F. Johnson (BIFAD)
at North Carolina State University, Raleigh on April 1/2, 1985

Peanut CRSP Code: NCS/IM/TP

Project Title: Management of Anthropods on Peanut in South East Asia

Discussion With: Dr. W.V. Campbell, Principal Investigator, NCSU,
Senior managers of Agricultural Research NCSU,
Raleigh, North Carolina

Recommendation Rating: The project deserves a Highly Satisfactory rating for ongoing and past work. Emphasis should be placed on close links with other NCSU managed projects during the PI's forthcoming sabbatical in Thailand and Philipp'nes, planned for and recorded in his Scope of Work for the period.

Panel Members' Narrative Review: The review was conducted on the basis of a presentation by the PI in the context of NCSU involvement in the Peanut CRSP through his project and that pertaining to Varietal Improvement, and Rhizobium considerations on Nitrogen fixation and growth of peanut in Thailand and the Philippines. In addition, Dr. Campbell supported his oral presentation by written materials relevant to the project. The review involved a two hour discussion with the Principal Investigator supplemented by meetings with the Dean of Agriculture, and Director of Agricultural Research at NCSU. Evaluation Panel Members did not however have an opportunity to meet with the head of the Department to which Dr. Campbell is assigned.

2. As with other EEP Reviews, this was conducted on the basis of the Scope of Work for review of U.S. Universities. The PI was invited to make his presentation on work done and proposed and was questioned in the context of the issues raised in the Scope of Work in order to ascertain the extent to which the project was responsive to the aims and objectives of the Peanut CRSP.

3. This Narrative Review is based on a Project Profile Summary which rated performance to date 1/ on each of the points raised under the main headings of the Scope of Work, i.e. Implementation and Management,

1/ Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory;
NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA =
Not Applicable

Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These items are considered in more detail in ensuing paragraphs.

4. Implementation and Management: In common with other NCSU projects Panel Members rated this aspect at an overall Highly Satisfactory level. Despite being unable to obtain a reading from the PI's Department Head's support of the project (which was unfortunate), the Panel felt that the attitude of university senior administrators and their manifest understanding of the benefits of CRSP involvement was such that confidence in future full involvement by NCSU was warranted.

5. Researcher involvement was of a demonstrably high level. Indeed, one gained the impression that the CRSP had provided both focus and funds to a motivated researcher who has become fully committed to his involvement in the project in particular and the CRSP in general. The Panel commends the proposal that the PI should spend a 6-month period on sabbatical in Thailand and Philippines in connection with the project. A Scope of Work should be prepared and be reviewed and approved by Peanut CRSP governance prior to Dr. Campbell's departure for Thailand in order to ensure maximum benefit is obtained from his presence in collaborating countries.

6. Adequacy of Science: While the project did not appear to be moving into the outer areas of scientific endeavor, it is predicated on sound research principles and should result in opportunities for developing insect pest management methodologies and/or germplasm resistant to major arthropod pests in both developing countries and the U.S. An important feature of the project is its potential for application of results in other East Asian peanut producing countries. In these respects therefore the Panel Members rated this aspect as Satisfactory.

7. Geographic Coverage and Applicability of Research: As indicated in paragraph 6 above, the project is rated fully satisfactory on this score. One outcome of the PI's forthcoming sabbatical should be to pursue the extent to which linkages can be developed between Philippines and Thailand, and other Asian peanut producing countries concerning the objectives and outcome of this project. Opportunities are good in light of the interest already displayed by such countries in the Varietal Improvement and Rhizobia Projects (NCS/BCP/TP and NCS/TX/SM/TP respectively) and perhaps Dr. Campbell should be used as an ambassador to further the diffusion of interest and cooperation in the region for all three. This suggestion should be reviewed by the PI's of the projects concerned and put into effect, to the extent feasible.

8. Institutional Development: As noted in the Project Profile Summary and elsewhere, good impact has already been made in this field. It should be further promoted by the proposed sabbatical assignment of the PI in Thailand and Philippines in 1985/86 acting in accordance with Scope of Work that seeks to foster not only his project but the overall program of the Peanut CRSP in the East Asia Region.

9. Research Progress and Application: An important aspect of the project has been the establishment of similarities in pest characteristics between U.S. and collaborating countries and hence the progress made in developing economic thresholds for the most important pests in collaborating countries. The means of developing such thresholds were not made clear in the PI's presentation and there appears to be need for further elucidation of the methodology and parameters used, particularly in collaborating countries. Thereafter, and following evaluation from a financial and economic standpoint at the farm and national levels respectively, it may well be possible to begin to think in terms of detailed recommendations for control measures of the pests identified.

10. Summary: Panel members agree that the project is well designed, complementary to other Peanut CRSP initiatives in collaborating countries, enthusiastically and competently managed, and deserving of continuation largely as planned. Greater focus on linkages between related projects and promotion of networking with other Asian countries could be valuable by-products of the PI's proposed sabbatical period in Asia in 1985/86. These should be planned for and incorporated in his Scope of Work for the period.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: NCS/IM/TP

Project Title: Management of Arthropods on Peanut in Southeast Asia

Overall Recommendation Rating: EEP members concerned with the evaluation of this project were impressed by the competence, commitment and imagination of the PI for this project. Progress has generally been in the Highly Satisfactory range and the proposed sabbatical in Thailand and Philippines, given adequate backup in NCSU can only be of benefit to the CRSP. It is accordingly strongly endorsed.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

1.11 Understanding and support of project objectives and the collaborative mode.....: HS

1.12 General attitude towards international programs and support of researchers involved.....: HS

1.13 Logistical and fiscal support.....: HS

1.14 Perceived relevancy of collaborative program to U.S. research interests.....: HS

1.15 Status of CRSP in relation to earlier industry reaction to funding.....: S

1.16 Resource commitment to project.....: HS

1.17 Summary Comments: There is an unquestionable and highly supportive involvement of senior NCSU managers to this project conditioned in part by the establishment of problems similarities in this field between US and collaborating countries.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support..... : HS
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: HS
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: HS
- 1.26 Overall commitment to project.....: HS

1.27 Summary Comments: Although NCSU researchers generally were characterized by a high level of involvement in CRSP activities the PI in this case appeared to have taken his project as a personal challenge - without losing sight of its relevance to and linkages with US industry concerns. Researchers involvement is Highly Satisfactory.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: S
- 2.4 Local science and economic perspective.....: IE

2.5 Summary Comments: The project is predicated on well established research principles that should result in opportunities for developing appropriate germplasm and/or insect pest management methodologies in both developing, collaborating countries and the US.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: HS
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: HS
- 3.3 Transferability of research results to U.S. programs...: S

3.4 Summary Comments: Overall a highly satisfactory rating, and particularly in respect of other peanut growing countries in the East Asia Region which could well benefit from research results obtained in the Thailand and Philippines peanut production areas. Opportunities to network with, e.g. Malaysia and Indonesia should be examined in the context of other CRSP initiatives in these countries.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: HS

4.2 Extent of development of collaborative mode.....: HS
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: S

4.4 Summary Comments: The PI is obviously strongly committed to the project in particular and institutional development in collaborating countries in general. In this regard, and in respect of the three NCSU projects in Thailand and Philippines, the EEP is strongly supportive of the proposal that the PI take a 6-month sabbatical in the region to work with Thai and Philippines scientists on the project. A clear program of work is essential and should be cleared in advance with the Technical Committee of CRSP, i.e. before Dr. Campbell departs for Thailand.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact on research priorities.....: S

5.3 Potential of research results for application to U.S. needs.....: S

5.4 Summary Comments: A good start has been made to develop economic thresholds for the most important arthropod pests of peanut in the three countries from which it should be possible to derive damage indices. Perhaps of greatest significance has been the establishment of similarities, at least at the generic level, of insect pests in all three countries, and therefore the feasibility of a comprehensive research approach to their control.

6. SUMMARY

6.1 Specific Strengths: The project is characterized by exceptionally strong PI commitment, commitment that is strengthened by long US experience and readiness to apply this experience in collaborating countries. In this regard, the EEP commends the proposal that the PI should visit collaborating countries on sabbatical in 1985/86 with a view to developing arthropod control research techniques in Philippines and Thailand concurrently with planned research in Raleigh, NC.

6.2 Specific Weaknesses: It is difficult to identify weaknesses of the project without becoming picaresque, however, although the project has made a good start in addressing problems of arthropod pests on peanut production (and this should continue) thought need to be given to ways and means of addressing post harvest pest of peanut. This observation is inappropriately placed, since the omission of explicit consideration of the question is an overall CRSP weakness rather than one of this project. However EEP members take this, perhaps unsuitable, opportunity of recording their view on the subject.

NARRATIVE REVIEW
External Evaluation Panel Review of Host Country Projects

By Drs. Max Milner and Kenneth H. Garren at US AID Mission, Manila; PCARRD (Philippine Council for Agriculture & Resources Research & Development, Los Banos; and UPLB (University of the Philippines at Los Banos) on February 5 - 12, 1985.

Peanut CRSP Code: NCS/IM/TP

Host Country: PHILIPPINES

Title: Management of Arthropods on Peanut in Southeast Asia

Discussion With:

- 1) At US AID, Philippines - Dr. James Beebe, Agricultural Program Officer.
- 2) At PCARRD - Dr. Ramon V. Valmayor, Executive Director, and Dr. Dely P. Gapasin, Director, Crops Research Department.
- 3) At UPLB - Eliseo P. Cadapan, Assoc. Prof. of Entomology and Principal Investigator of NCS/IM/TP and Dr. Candida B. Adalla, Entomologist.

Recommendation Rating: On the basis of evidence presented and discussed and of visits to laboratories, greenhouses, and field plots the reviewers received a highly favorable impression of the project. They recommend that it continue, largely as conceived, with some thought given to correcting weaknesses perceived by the EEP reviewers and developed in the Profile namely weaknesses in the training program and in some aspects of the Intra-UPLB coordination.

Panel Members' Narrative Review The review was conducted on the basis of formal (scheduled) discussions and informal discussions as follows:

- 1) A discussion of about two hours in length with Dr. Beebe, at US AID, Manila, Feb. 6.
- 2) A discussion of about a half-hour in length with Dr. Valmayor, at PCARRD, Feb. 6.
- 3) Discussions of about one hour each in length with Dr. Gapasin, Feb. 6 & 11.
- 4) A round table discussion--presided over by Dr. Gapasin--with most of the UPLB researchers assigned to the Peanut CRSP, four visiting NC State PIs of the Peanut CRSP, and Dr. Cummins, ME of the Peanut CRSP, - at PCARRD Feb. 8.
- 5) Hearing oral reports and studying written handouts plus participating in workshops that were parts of First National Peanut Consultation & Peanut CRSP Review at PCARRD, Feb. 7 & 8.
- 6) Formal discussion with Dr. Cadapan of about two hours in length in his office at UPLB, Feb. 11.
- 7) Informal discussions at opportune times and in opportune places with Dr. Cadapan.
- 8) Dr. Garren only, informal discussion specifically requested by Dr. Adalla at PCARRD, Feb. 8.

The EEP, in meetings and discussions on this project, took two documents as its guide--namely "Peanut CRSP Scope of work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review". The procedure followed was to listen to informal presentations of administrative and research personnel and then--when time permitted--to ask questions designed to throw further light on the extent to which project activities were responsive to the aims and objectives of the Peanut CRSP as defined in the "Scope of Work for the EEP".

As with other evaluations this Narrative Review is based on a Project Profile Summary which rated performance to date 1/ on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These items are considered in more detail in ensuing paragraphs.

1. Implementation of Management: As with other Peanut CRSP projects at UPLB/PCARRD, the reviewers felt that an overall Highly Satisfactory rating was warranted on the key components of this section of the review. Relations with and support of US AID, Manila are good, perhaps due partially to the groundwork laid by Dr. Beebe's predecessor in his post, the ME (Dr. Cummins) of the Peanut CRSP, and Dr. Gapasin of PCARRD. PCARRD, as the highest level of the host country's government that is directly involved, has taken all aspects of the Peanut CRSP as serious activities and assigned them high priorities.

In regard to the apparently lukewarm attitude of UPLB administration to the Peanut CRSP, the reviewers felt this might actually be a matter of inertia. Inertia brought on by three things - the unique nature of PCARRD as an administrative body; the location, physically, of UPLB and PCARRD adjacent to each other; and an apparently continuing reshuffling of UPLB administrators from department chairmen on up.

As to UPLB resources, including personnel, committed to the project, to the reviewers the most impressive and important aspect was the PI, Dr. Cadapan. Dr. Cadapan says his official research time is assigned as follows: Peanut, 50%; biological control of arthropods, 25%; agriculture, 25%. This, the EEP feels, does not depict his broad involvement with many facets of peanut production in the Philippines. Although the reviewers did not specifically address the subject of coordination and cooperation with ICRISAT and other international organizations interested in promoting peanut production, Dr. Cadapan's interest and energy seemed to be centered in the intra-Philippine aspects of the current drive to increase peanut production. This is not to say he is anti-international

1/ Code: E - Exceptional; HS - Highly Satisfactory; S - Satisfactory; NS - Not Satisfactory; IE - Inadequate Evidence for Evaluation; NA - Not Applicable

in viewpoint. He is far from it and he has personal ties at IRRI. He is closely associated with the National Post Harvest Institute (UPLB), and is an observer and investigator of the economics of insecticide use and of the socio-economic aspects of Filipino peanut production.

2. Adequacy of Science: As noted in the Profile, the Panel felt the science was keyed, as it should be, primarily to the practical application of findings. There is a touch of progressiveness in work being done on biological control, but otherwise there is little that is innovative. The Panel was convinced, by discussions, that Dr. Cadapan brings a high level of socio-economic perspective to the project. Some of his observations apropos this conviction are: Most peanut now produced in the Philippines are eaten locally--usually fried in coconut oil. There is, he feels, much more in local needs to be met before there can be "cheap" peanut available to expand the peanut processing industry in that country. The future for peanut in the Philippines, he feels, is keyed to making more plantings along river banks to take advantage of furrow irrigation. There is a great need for help from several sources in the matter of peanut storage. Most peanut stored for more than two months in the Philippines are stored by professional warehousemen and these men have a long way to go to be truly "professional".

3. Geographic Coverage and Applicability of Research: Again, as noted in the Profile, the emphasis in this project is on practicality. The PI has respected status in intra-Philippine groups such as that assembled for the Consultation. As noted previously in this Narrative while the project has no evident close ties with other international research efforts and while Dr. Cadapan's interest and energy seemed to be centered in the intra-Philippine aspects of the current drive to increase peanut production, he is obviously not anti-international in viewpoint.

The EEP has noted in its review of the NC State part of this project that one outcome of Dr. Campbell's (the U.S. PI) projected sabbatical should be to pursue the extent to which linkages can be developed between Philippines and Thailand and other Asian peanut producing countries concerning the objectives and outcome of this project. The reviewers feel that Dr. Cadapan is admirably suited to be an equal partner in this endeavor to expand the Asian coverage of research results from the Peanut CRSP.

4. Institutional Development: The Panel feels that the Peanut CRSP, as an entity, has strengthened the agricultural research program and outlook at UPLB. It also seems to have given renewed impetus to PCARRD's interest in promoting peanut culture in the Philippines. All of the Peanut CRSP projects at UPLB, in the view of the reviewers, seem to be strengthening the research and the collaborative mode of PCARRD/UPLB. Dr. Cadapan, the PI of this project, must be given a lion's share of the credit for this strengthening, as well as major credit for the projected sabbatical at UPLB (and in Thailand) of the US PI, Dr. Campbell. As noted in the Profile, there is no evident plan to train, at the post-graduate level, a potential successor to Dr. Cadapan as PI of the project.

5. Research Progress and Application: In the Profile the Panel members gave this project a Highly Satisfactory rating in two areas of this category--i.e. getting research results out where they can be used to best advantage. Furthermore, the Peanut CRSP work is thoroughly meshed with other research and extension-type activities of UPLB and the entire program is based on a background of many years of effort at UPLB. This makes it difficult to decide now which bits of progress should be credited to Peanut CRSP.

Perhaps, then, this review should close with a summary of research progress in the Philippines on this IM project--as the reviewers saw it: Some peanut varieties from NC and UPLB - IPB show promise of resistance to insect damage. A close study of peanut plots and yields thereof shows that insects do much damage to peanut in the Philippines. Time of planting and density of plants influence insect damage and yield. October is better than November for planting. Though insect damage increases in denser stands, this is cancelled in October plantings by higher yields from denser stands. Increasing Ca by applying gypsum or calcic limestone does not affect insect populations and insect damage, but such does give higher yields. The frequency of application and amount of insecticide applied can be reduced without affecting efficacy. Dipel, "...a microbial insecticide..." shows much promise.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: NCS/IM/TP

In-Country Project Review

Project Title: Management of Arthropods on Peanut in Southeast Asia

Host Countries: PHILLIPINES

Overall Recommendation Rating: On the basis of: 1) Management; 2) implementation; 3) relevance to both host country and U.S. interests; 4) drive, dedication, and scientific acumen of its Filipino PI and its U.S. PI; and 5) the emphasis on practicality from the on-farm (especially on-small-farm) viewpoint, the EEP feels this project warrants a general Highly Satisfactory rating. The two EEP reviewers feel their evaluation was not unduly influenced by the personality and enthusiasm of the UPLB PI, but they would advise future reviewers to pay close attention to both results obtained after July, 1983 and to plans for continuation of the project in the event the current PI is moved upward at UPLB.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of
project. Attitude toward U.S. personnel traveling
in-country.....: S

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Dr. James Beebe, Agricultural Program Officer, US AID, Philippines, is "new" to the Philippines but not new to the post of Agricultural Officer of a US AID Mission. From experience in Sudan he is familiar with and very much in favor of CRSP projects. Relations, as Dr. Beebe sees them, are excellent between the ME of the Peanut CRSP and PCARRD (Philippine Council for Agriculture & Resources Research & Development). PCARRD is the Philippine central government's administrative body for this type of R&D. US AID Mission, through Dr. Beebe, will cooperate with ME and PCARRD in maintaining these good relations.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: HS
- 1.22 Administration of program-government level.....: HS
- 1.22A Administration of program-institutional level....: S
- 1.23 Fiscal management.....: S
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: HS
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: The EEP felt the project warrants an almost completely Highly Satisfactory rating in this category. Two top administrators of PCARRD (Executive Director Valmayor, Crops Research Director Gapasin) are fully sold on the Peanut CRSP and very involved in it. On February 7-8, 1985 two EEP members attended a Philippine "National Peanut Consultation & Peanut CRSP Review". The CRSP program had a half-day of this review, and the EEP members, and others, were given a 151 page mimeo "Progress Report" on the Filipino part of four Peanut CRSP projects. Involvement in and interest in the Peanut CRSP on the part of the academic institution (University of Philippines at Los Banos or UPLB) as displayed to the EEP seemed minimal.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect & supportive....: HS
- 1.312 Adequacy of number and capability to function.....: HS
- 1.313 Involvement of Women.....: HS
- 1.314 Overall effectiveness of program personnel: HS

1.315 Summary Comments: From what I saw and heard the EEP judged this to be the best of the teams assigned by PCARRD/UPLB to Peanut CRSP projects. It is a small team, dominated by the PI, Dr. Cadapan. Dr. Cadapan has a broad range of interests and activities. He interacts with the U.S. PI, P. Campbell, to the advantage of all aspects of the project and of Peanut CRSP.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: The Panel judged the equipment and other material to be satisfactory support of a project aimed primarily at developing methods of control for insects and closely related pests of peanut. An unstated objective of this project is to keep procedures as simple as they can be and yet achieve some control. The small Filipino farmer needs this simplicity.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: HS

2.4 Adequacy of social science/economic perspective/sensitivity.....: HS

2.5 Summary Comments: The Panel felt the science was keyed, as it should be, primarily to the practical application of findings. There is a touch of progressiveness in work being done on biological control, but otherwise there is little that is innovative. The Panel was convinced, by discussions, that Dr. Cadapan brings a high level of socio-economic perspective to the project.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: HS

3.2 Complementarity to ongoing peanut research activities in-country.....: HS

3.3 Responsiveness to perceived producer and consumer needs: HS

3.4 Communications with other in-country entities.....: HS

3.5 Does location impact regionally as well as in-country.: HS

3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: S

3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: The emphasis on practicality; the wide range of knowledge and interests of the PI; and the respected status the PI had in the group assembled for the Consultation convinced the Panel members present that this project deserves a Highly Satisfactory rating in this category. No close ties with any other international research effort were evident, though Dr. Cadapan has some personal ties with IRRI.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS

4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS

4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Like the other Peanut CRSP projects at UPLB, this project seemed, to the Panel, to be strengthening the research and the collaborative mode of PCARRD/UPLB. This project may be the main reason for the projected sabbatical at UPLB (and in Thailand) of the US PI, Dr. Campbell. There, however, is no evident plan to train, at the post-graduate level, a potential successor to Dr. Cadapan as PI of the project. Perhaps this is not needed. Many members of the UPLB staff are said to have advanced degrees from NC State.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact of research on institution and government priorities and policies.....: S

5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: HS

5.4 Potential of research for success in alleviating production and utilization constraints.....: HS

5.5 Impact of research on Women in Development.....: S

5.6 Summary Comments: The Panel members would give this project a Highly Satisfactory rating in two areas of this category--i.e. getting research results with a high degree of potential practicality and getting such results out where they can be used to best advantage. The Peanut CRSP work is thoroughly meshed with other research and extension-type activities of UPLB (these unofficially directed by the PI of the project) and the entire program is based on a background of many years of effort at UPLB. Thus it is difficult to decide which bits of progress should be credited to Peanut CRSP. Perhaps it is too early in the life of the Peanut CRSP to consider the matter of "credit".

6. SUMMARY

6.1 Specific Strengths: The strengths of this project have been mentioned several times in this Profile. It is hoped the Panel members were not unduly impressed with them and, therefore, overemphasized them. To summarize these strengths, as seen by the Panel members, they are: The scientific acumen, drive, and status of the PI, Dr. Cadapan. The emphasis on practicality in planning the experimental work. The good background of past work on which the Peanut CRSP is built.

6.2 Specific Weaknesses: Even though the Peanut CRSP Annual Report for 1983 states (page 116) that "Two graduate students are presently being trained in insect pest management using Peanut CRSP funds at North Carolina State University (NCSU)", the Panel saw no indication that these are Filipinos or that they are under consideration for assignments in the Philippines. Contingencies are facts of academic and research life and there is an apparent lack of a plan for training at the post-graduate level of researchers who might then be able to take over and carry on the project. The international training program outlined (page 116) in the '83 Annual Report is, in the Panel members' opinion a weak program.

The CRSP peanut breeding program and the CRSP arthropod management project at NCSU are virtually indistinguishable in regard to search for resistance to arthropods in the available peanut lines. At UFLB, according to Dr. Cadapan, Dr. Candida B. Adalla of the Department of Entomology works in the CRSP breeding program at UPLB's Institute of Plant Breeding and will feed peanut lines, superior from the viewpoint of possible resistance to insect damage, back to Cadapan through the CRSP/UPLB breeding Program. Dr. Adalla, in a private talk she requested with one Panel member expressed unhappiness and dissatisfaction with this arrangement.

While this situation may not be delaying progress and may be solely of intra-UPLB concern, the Panel members felt the search for arthropod-resistance in peanut lines in the Philippines might be helped by closer coordination with the other parts of the IM CRSP project there.

7. Reviewers Recommendations: The EEP recommends this very promising project be continued at its current level of research (and extension) activity and at its current level of support. However, the EEP would like to see some thought given to strengthen the project by correcting the weaknesses the EEP thinks it sees.

NARRATIVE REVIEW
External Evaluation Panel: In-Country Project Review

September 21-28, 1985

By Pierre Gillier and D. C. Pickering Host Country: Thailand

Peanut CRSP Code: NCS/IM/TP

Project Title: Management of Arthropods on Peanut in Southeast Asia

Introduction Peanut CRSP activities in Thailand are an integral part of the Thailand Coordinated Groundnut Improvement Program. EEP members therefore decided that, in view of the apparently close coordination of the relevant Thai agencies, namely the Department of Agriculture, which is also the lead coordinating agency, with Khon Kaen and Katsetsart Universities, it would be repetitious to present the section on Implementation and Management separately in respect of each project. Rather, and since there was manifest full involvement of the USAID Mission with the Peanut CRSP in Thailand, it would be preferable to present separate reports on each of the four projects concerned, only regarding sections 2, 3, 5, 6 and 7 of the In-Country Project Review Agenda. Sections 1 and 4 therefore, which appear below in the Project Profile Summary Format, reflect panel members views of the generic situation and applies equally to each project. This review takes account of individual project reports, the Progress Report for 1984 of the Thailand Coordinated Groundnut Improvement Program, and discussions with key collaborators interviewed in the course of our Thailand visit. The latter included:

John Foti:	Agricultural Officer, USAID Mission, Bangkok
Roger Montgomery:	Evaluation Officer, USAID Mission, Bangkok
Vichitr Benjasil:	Coordinator Peanut CRSP, Thailand and Director, Field Crops Research Institute, Dept. of Agriculture, Bangkok, also Coordinator of project NCSU/BCP/TP in Thailand
Aree Waranyuwat:	Peanut Breeder, NCS/BCP/TP, Katsetsart University.
Aran Patanothai:	Peanut Breeder, NCS/BCP/TP, Khon Kaen University
Manochai Keerati- Kasikorn:	Collaborator, Entomologist, NCS/IM/TP, Khon Kaen University
Sathorn Sirisingh:	Collaborator, Entomologist, NCS/IM/TP, Dept. of Agriculture

Chintana Oupadissakoon: Principal Investigator, GA/FT/TP, Katsetsart University
 Yenchai Vasuvat: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Rhizobia).
 Omsub Nopamornbodi: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Mycorrhizae).

The generic views presented below are reflected in the overall recommendation rating for each project, and should be regarded as implicit in sections 6 and 7 of the reports on each project reviewed.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Understanding of and support is excellent as a result of thorough prior briefing by and good linkages with CRSP Management, and perceptions of clear relevance to Mission goals.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: HS

1.22 Administration of program-government and institutional level: HS

1.23 Fiscal management.....: HS

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS

1.25 Attitude toward U.S. participants and their involvement.....: E

1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

1.27 Summary Comments: Strong interest in and commitment to the program because of its perceived relevance to national goals and its complementarity to the national groundnut improvement program whereby additional resources can be utilized to strengthen, particularly, the research programs of the two universities primarily concerned with peanuts in their agricultural mandates. Slightly longer visits by US scientists to review activities and advise on methodology would be welcomed by Thai collaborators and should be supported by CRSP management.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: HS

1.312 Adequacy of number and capability to function.....: HS

1.313 Involvement of Women.....: HS

1.314 Overall effectiveness of program personnel: HS

1.315 Summary Comments: As noted above the CRSP is seen as an integral part of national peanut improvement efforts. Consequently it receives a fully adequate share of dedicated personnel who value the CRSP as a means of strengthening the resource base available to them for their chosen work. This is a view shared by senior research managers in Thailand.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: HS

1.322 Adequacy-reason for inadequacy.....: HS

1.323 Summary Comments: The normal activity of this program is developed in the Department of Agriculture, in Kasetsart University and in Khon Kaen University. Fields, material for treatment, pesticides and workers are available without problems. Monitoring of peanut insect in farmers' fields is also easily realized. Many stations and experiment fields in different locations are used as the responsible people want. No problems for transportation. Laboratories are sufficient and well equipped.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: HS

2.2 Progressiveness and innovativeness of research.....: HS

2.3 Appropriateness of research - basic and adaptive.....: HS

2.4 Adequacy of social science/economic perspective/sensitivity.....: HS

2.5 Summary Comments: The good quality of experiment realization and the constant linkage with Dr. Campbell associated to the competence of collaborators give insurance on the high level of scientific input. Observations and treatment are made in excellent conditions; two technicians trained in ICRISAT apply standard techniques and all comparisons between international tests data and Thai data on the same subject can be made without difficulties. A cooperation excellent with breeding program for resistance tests to different pests is a guarantee of effectiveness. A constant view of farmers fields situation give a good appreciation of real impact on production level.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals.....: HS
- 3.2 Complementarity to ongoing peanut research activities in-country.....: HS
- 3.3 Responsiveness to perceived producer and consumer needs: HS
- 3.4 Communications with other in-country entities.....: HS
- 3.5 Does location impact regionally as well as in-country.: HS
- 3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: HS
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: S

3.8 Summary Comments: The good linkage between all participants and the existence of a National Peanut Program elaborated and orientated each year by cooperators and by all other colleagues during the annual groundnut research workshop give insurance that CRSP is in accordance with national goal. It is also complementary of other researches for the same reason. The existence of a part of this program concerned by farmer's field evaluation maintained a good approach of producer needs. It is difficult to evaluate the impact and transferability of result at the regional and international level because climatic differences and other factors can influence strongly plants and insects reactions. But the evaluation of degree of resistance to pest of different strains or cultivars are very important for the international scientific community. Good relations with ICRISAT are maintained.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Thailand has already established a coordinated groundnut improvement program in collaboration with the a Peanut CRSP and IDRC of Canada into which CRSP activities are fully integrated. The CRSP is playing an important part in strengthening Thai research capabilities and appears to be doing this job well by interaction between U.S. and Thai scientists. Training progress is good but could perhaps be improved by the expansion of training for Thai scientists at the MS and doctoral levels in collaborating U.S. institutions, given allocation of priority for this type of training by the Thai government through DOA.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: HS
- 5.2 Impact of research on institution and government priorities and policies.....: HS
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: S
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: S
- 5.5 Impact of research on Women in Development.....: S

5.6 Summary Comments: Much information could be obtained during this season with this program concerning the level of pod damaged by soil inhabiting insects and the effectiveness of pesticides against them, the effectiveness of insecticide against leaf miner and thrips, the distribution of insect pest in continuously planted peanut plot, and on the screening of peanut lines for insect resistance. Some other experiments with pheromones were going successfully. The most important and practical result was obtained in a study of minimizing insecticide use by good knowledge of leaf miner cycle and of economic level of input susceptible to be applied. Some women are participating in this program.

6. SUMMARY

6.1 Specific Strengths: The Thai program is characterized by strong commitment of US based collaborating research institutions, the USAID Thailand mission, and Thai agencies. In-country competence regarding the projects is of a generally satisfactory nature, and the objectives of the research projects are relevant to mutual needs. Their specific strengths relate to their relevance to Thai policy for crop diversification. In this respect concerning the peanut crop. Increased small farmer productivity, and poverty alleviation especially in N.E. Thailand. From a U.S. standpoint the CRSP activities are perhaps most directly valuable because of the opportunities they afford for research on the peanut stripe virus. Finally, the CRSP program has had a most useful impact in demonstrating to the Thais the benefits to be gained by Thai agency interaction.

6.2 Specific Weaknesses: This is overall a very strong program with relatively few weaknesses, and those noted could be remedied by relative "fine tuning" of activities. Some limitations in contact between collaborating Thai and U.S. scientists in the field could be a constraint on effective implementation of projects in Thailand. The technical assistance potential of visits of U.S. scientists can hardly be underestimated, especially from the standpoint of application of appropriate research procedures and hence the validity of research results. Research planning and implementation in Thailand could proceed more smoothly by a clearer advance indication of available CRSP resources together with prompt release of funds. Thai agency research plans and estimated calls on CRSP resources might profitably be advanced and refined to permit earlier review by collaborating U.S. scientists and institutions, thus optimizing resource obligation.

7. Reviewers Recommendations: As noted above, the Thailand CRSP program is proceeding well and no major changes are called for. Continuing collaboration, via an extension of the CRSP should lead to the production of viable research results of mutual benefit derived from the generally excellent groundwork established to date.

The proposed sabbatical of Dr. W. V. Campbell (NCSU) would improve the technical assistance component of the program, especially were he to be based in Thailand. Some slight prolongation of in-country visits by U.S. scientists would also have a disproportionate beneficial impact on the quality of Thai research and hence the validity of its results.

More and better advance planning in Thailand of research activities with CRSP funded resource implications and the early conveyance of this information to collaborating U.S. scientists would facilitate greater efficiency in project implementation and resource utilization. Such planning will need to take into account the anticipated diminishing role of IDRC in Thai peanut related research, and the probable cessation of this avenue of assistance in 1988.

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NARRATIVE REVIEW

External Evaluation Panel Review of U.S. University Projects 01 - 05
April, 1985

EEP Members: Max MILNER, Pierre GILLIER, with AID representatives Loren
SCHULZE and Carval WIGGINS

University of GEORGIA Coastal Plain Experiment Station (Tifton)

Peanut CRSP Code: GA/IM/BF

Project Title: IPM Strategies for Peanut Insects in SAT AFRICA

Discussions With: 1. Robert E. LYNCH, Principal Investigator UGA Tifton
2. Max BASS, Department Head (Entomology Dept. Tifton)

Recommendation Rating: Reviewers received a very favourable impression of the project and the staff involved in its development. The first collection of insects to identify the major economic pest of peanut crops was realized during the last season; another survey of stored product insects associated with peanut was realized during dry season 84-85. These research should be continued and increased during the next season following the initial chart (collection on time by month and by site) and with comparative procedure (treated and untreated plot). The Thrips, termite, and millipedes/aflatoxin association should be confirmed. Millipedes being not abundant near OUAGAQDOUGOU, the BOBODIO ULASSO and NIANGOLOKO areas should be prospected.

Panel Members Narrative Review:

- The Review was conducted in Coastal Plain Experiment Station (Tifton) after a visit to mycotoxin laboratory.
- The Investigator described the condition of program realisation by cooperators Patouin OUEDRAGO and Idrissa DICKO. The project was initiated in November 83 and activated during the '84 season.
- Samples were collected in 6 sites and will be used for identification, other post harvest samples will be used for aflatoxin evaluation.
- Results are not available and analysis are in progress.
- The main site for experimentation was GAMPELA near OUAGADOUGOU.
- The Investigator during visits to the fields could detect big difference between bed preparation (ridges or flat) varieties (natives or selected lines) and farmer origin (man,cash-crop, woman,garden-crop). Insects population was very different between these environments.
- Most important pests were thrips, termites, and millipedes, all connected with Aspergillus flavus infestation. Thrips with flowers and pegs infestation, termites with pod infestation during post harvest drying, millipedes with pods perforation were noted during growing phase.

- Millipedes populations are more important in the South, GAMPELA site is not convenient for such damage studies.
- Some reflections on the capabilities of University of OUAGADOUGOU to follow this project were exchanged between the members of the Panel. It was agreed that as far as basic research was concerned, OUAGADOUGOU University was convenient Institution (not for applied research or application).

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/IM/BF

Project Title: I.P.M. Strategies for peanut insects in SAT AFRICA

Overall Recommendation Rating: The first activity of this project started in 1984 and the results are not yet available. So, it is difficult to give recommendation. Nevertheless it seems convenient to continue collection, identification and analysis as planned formerly. Concerning promising breeding lines evaluation for resistance-susceptibility to major pest, the Panel suggest to contact IBRAZ (other agronomic research institution). It has a breeding program and several test scattered in the country and collaborative work with University of OUAGADOUGOU is possible.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

- 1.11 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.12 General attitude towards international programs and support of researchers involved.....: HS
- 1.13 Logistical and fiscal support.....: S
- 1.14 Perceived relevancy of collaborative program to U.S. research interests.....: S
- 1.15 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.16 Resource commitment to project.....: S

1.17 Summary Comments: For a first season, the collaborative work with University of OUAGADOUGOU seems satisfactory even if collection procedure was not exactly followed as planned, and if the support means were low. All things will be improved in 1985 with new car for transportation and new program.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: S
- 1.22 General attitude toward international program: S
- 1.23 Logistical support..... : S
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: S
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.26 Overall commitment to project.....: S

1.27 Summary Comments: Investigators and cooperators started the project correctly and obtained help from Dr. J. SUH (IITA/SAFGRAD Entomologist). The Entomology department of Coastal Plain Station (Tifton) set up determination and analysis. During November visit Dr. R.E. LYNCH was able to propose the program for 85 and determine realization procedure.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: S
- 2.4 Local science and economic perspective.....: IE

2.5 Summary Comments: The capabilities of Investigators and Collaborators associated in this project are highly satisfactory. University of OUAGADOUGOU is a fully convenient partner. Laboratories of UGA are capable to deliver determination and analysis required by this program.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: HS
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: HS
- 3.3 Transferability of research results to U.S. programs...: S

3.4 Summary Comments: The lack of entomologic research on peanut in BURKINA FASSO (priority was given to cotton and cereals) fully justify this project. Evaluation of U.S. varieties for sensibility to different pests is very interesting for U.S.A. (giving a better knowledge of existing germplasm). The settlement and observation of treated and untreated plot will be able to give an information on pesticide effectiveness.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: S

4.2 Extent of development of collaborative mode.....: S
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: S

4.4 Summary Comments: Damage studies concerning new, unknown or low active parasites in USA reinforce research capabilities of UGA and improve its knowledge on the new sources of resistance. Collaboration with Ouagadougou University and entomologist of IITA/SAFGRAD is benefic for the Entomology department of Coastal Plain Experiment Station (Tifton). Idrissa DICKO training after 1984 APRES meeting and Soilibo SOME, graduate student, summer work in Tifton give a valuable experience for future use in their country.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: IE

5.2 Impact on research priorities.....: IE

5.3 Potential of research results for application to U.S. needs.....: IE

5.4 Summary Comments: With only one season of observation and without results of analysis it is difficult to give an appreciation on the achievement of this project. It is only possible to forecast, if all things are running well during the next season (85), that very interesting data will be collected.

6. SUMMARY

6.1 Specific Strengths: Good understanding and support of project objective by collaborator interesting first observation. Promise of new car for transportation.

6.2 Specific Weaknesses: First data not valuable relate this to bad periodicity of observation - permanent network for experiment not existing and low level of millipedes population in the North.

NARRATIVE REVIEW

External Evaluation Panel Review of Host Country Projects

By Drs. Pierre Gillier and Kenneth Garren at U.S. AID Mission, Ouagadougou; at ISP (Institute Superior Polytechnique) of Univ. of Ouagadougou; at IBRAZ (Institute Burkina (Faso) for Research on Agriculture and Zoology ("livestock"), Ouagadougou; and at Field Station at Saria, B.F. - August 14-17, 1985. Panelists accompanied for all of these review-visits, except that at Saria Field Station, by Dr. Robert E. Lynch, the U.S. PI of GA/IM/BF. 1/

Peanut CRSP Code: GA/IM/EF

Host Country: BURKINA FASO

Project Title: IPM STRATEGIES FOR PEANUT INSECTS IN SAT AFRICA

Discussions With:

- 1) U.S. AID - Mr. Roger Bloom, AID Agricultural Project Officer
Mr. Albert Ouedrago, Assistant to Mr. Bloom
- 2) ISP - Dr. Guillaume Sessouma, Director of Studies
1/ Mr. Patouin Ouedrago, Entomologist, Research
Collaborator, Peanut CRSP GA/IM/BF
1/ 2/ Mr. Indrissa Dicko, Entomologist, Plant Pathologist,
Research Collaborator, Peanut CRSP GA/IM/BF
- 3) IBRAZ - Mr. Michel Sedago, Director General, IBRAZ
Dr. Bosso N'Gueta, Technical Advisor to Mr. Sedago
Mr. Albert Djigma, Peanut Leader for IBRAZ Oilseed
Program
Dr. Salawii Asimi, Member of IBRAZ Oilseed Committee
and Director, Saria Field Station (At Saria only)
- 4) CIRAD/IHRO 3/ Dr. Christian Picasso, Plant Pathologist, Technical
Advisor to IBRAZ
Mr. Jean Bosco, Plant Pathologist, Assistant to Dr.
Picasso

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- 1/ At the International Symposium on Agrometeorology of Groundnut in Niamey, Niger, August 21-26, 1985, in Session IV, the paper "Insect Damage to Groundnut in SAT Africa" prepared by Lynch, Ouedrago, and Dicko was presented by Dr. Lynch.
- 2/ Mr. Dicko went to Univ. of Georgia in September, 1985 to pursue a PhD in entomology. Mr. Salibo Aresene--now in B.F. army--was mentioned to the panelists as a replacement for Mr. Dicko on GA/IM/BF.
- 3/ CIRAD = International Cooperation in Agronomic Research, Adm. Hdq. Paris, labs Montpellier, France. CIRAD has several research arms. IRHO is the oilseeds research arm (Dr. P. Gillier is retired Head of Annual Oil Crops Dept. of IRHO).

- 5) Others Dr. Patyanalak, ICRISAT Team Leader, Millet
 Dr. Michel Homs IBRPGR delegate in B.F.

Recommendation Rating: This research is definitely a priority need for BF. Recommend that it be continued much as it is at present. Recommend a special effort be made by ISP personnel to improve contacts with and relations with IBRAZ in order that access to experimental plot land and obtaining of insecticides may be improved. Recommend establishment of field plots in southern part of BF where rainfall is usually better. Recommend revival of effort to obtain a vehicle for the priority use of the two BF Peanut CRSP projects.

Panel Member's Narrative Review

1) Basis of Review:

Reports, summaries, etc. in CRSP Annual Report. Documents furnished by P. Ouedrago. Conferences with Dr. Lynch, P. Ouedrago, I. Dicko. Visits to field plots at Gampela station.

2) CRSP Format:

See Project Profile Summary for GA/IM/BF with rated performances on various points.

3) Implementation and Management:

Based on a few preliminary results from 1984, Dr. Lynch outlined a 1985 program at Gampela and in six other locations with continuing analyses of insect populations and measurements of efficacy of some insecticides at protectants. All experiments were set-up, but insecticides were not readily available and at review time only insect populations were being measured. By now, we hope, insecticides have been obtained to continue the entire test.

In spite of the total support of U.S. AID and ISP administration, the vehicle ordered for the 1985 season had not arrived when the EEP was in BF. To overcome difficulties of transportation, BF personnel use a private car and pay expenses. Accomplishments to date warrant a satisfactory rating.

4) Adequacy of Science:

At the present time this is a very simple entomological problem and the research is, therefore, low-level. With Dr. Lynch's guidance and support the research field should be expanded and student training will increase the present research potential.

5) Geographic Coverage and Applicability of Research:

Results so far indicate the tests can well be extended over a larger region and to other areas of research. Concerning applicability, it is too early for such an evaluation.

6) Institutional Development:

Peanut CRSP is essential to maintaining some level of entomological research in JSP and for maintaining interest in research workers. CRSP training is useful.

7) Research Progress and Application:

It is too early to judge the impact of this program. But it is very important that we justify and guide some scientific testing of peanut insecticide treatments

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/IM/BF

In-Country Project Review

Project Title: IPM STRATEGIES FOR PEANUT INSECTS IN SAT AFRICA

Host Countries: BURKINA FASO (In-Country) Formerly Upper Volta

Overall Recommendation Rating: This research is definitely a priority need for BF. Recommend that it be continued much as it is at present. Recommend a special effort be made by ISP personnel to improve contacts with and relations with IBRAZ in order that access to experimental plot land and obtaining of insecticides may be improved. Recommend establishment of field plots in southern part of BF where rainfall is usually better. Recommend revival of effort to obtain a vehicle for the priority use of the two BF Peanut CRSP projects.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission involvement

1.11 Mission understanding and backing of project objectives.
Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: U.S. AID is very supportive of the Peanut CRSP projects in BF. We got the impression that the agricultural program of U.S. AID in B. is extensive and that Mr. Bloom, with whom we talked, is so in touch with the projects and so committed to Peanut CRSP and other projects that he may be in the "overworked" category.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

^{2/} Under IMPLEMENTATION & MANAGEMENT Categories 1.1, 1.2, 1.3 will, by their nature, be identical for the two Peanut CRSP projects in B.F.--GA/INPEP/BF and GA/IM/BF--hence the duplication in these two PROFILE SUMMARIES.

1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: S
- 1.22 Administration of program-government level: NS
- 1.22A Administration of program-institutional level...: S
- 1.23 Fiscal management.....: S
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: HS
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: S

1.27 Summary Comments: Captain Thomas Sankara, President of the National Revolutionary Council, has a program to remake BF into his concept of the new name he gave it--"Land of Upright Men". Some feel parts of his program are misguided and cite instances where the program is impeding progress in agricultural research. Other than this host country people at all levels understand that this project is to BF's national interest. Scientists and administrators appreciate the funds and the advice. ISP is participating to the maximum of its own resources. The overseeing Ministry--Ministry of Superior Education and Scientific Research--considers this project an important part of its national program

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect & supportive.....: S
- 1.312 Adequacy of number and capability to function.....: S
- 1.313 Involvement of Women.....: IE
- 1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: All researchers involved are dedicated to the project and spend a major part of their time in activity related to this CRSP project. Many students of ISP are also involved.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: Equipment seen was only "bare bones" equipment. By frequent maintenance check-ups and an occasional innovative modification equipment can merit a "satisfactory" rating. To make the equipment truly satisfactory the two CRSP projects need to have a car or jeep for transportation. (Personal cars were used while the EEP was there). There is a need for transportation to visit all trial localities. Since difficulties with finding insecticides slowed down the program this year (1985), better cooperation from IBRAZ and other institutions is essential for the future.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: S

2.4 Adequacy of social science/economic perspective/sensitivity.....: S

2.5 Summary Comments: At present with strict and detailed guidance from the U.S. PI, Dr. Lynch, the knowledge and capabilities of Mr. P. Ouedrago is fully employed. For the future, since Mr. I. Dicks is in the U.S. for advanced training, it should be possible to have a better level of science in the program.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: S

3.2 Complementarity to ongoing peanut research activities in-country.....: S

3.3 Responsiveness to perceived producer and consumer needs: HS

3.4 Communications with other in-country entities.....: S

3.5 Does location impact regionally as well as in-country.: S

3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: S

3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: This project is integrated into the national agricultural program of BF, and it is in perfect accord with the national goals of BF. It is complementary to IBRAZ activities, and this part of peanut research is not covered by other institutions in BF. By using many localities this project makes a good coverage of BF and has a regional aspect if we consider the large variation in climatic conditions represented by the coverage. Relations with IITA and SAFEGRAD are very good.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities).....: S

4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: S

4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Without the CRSP program there would be no research in BF of this nature on peanut. The CRSP support is the only resource of this department of ISP (except for some equipment and the students undergoing training). Cooperation is good, and Ouedrigo of ten uses private car and private expenses in official travel. Mr. Dicko is now working on PhD, Ouedrigo asked to follow but there is an administrative problem in the way of this.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact of research on institution and government priorities and policies.....: IE

5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: IE

5.4 Potential of research for success in alleviating production and utilization constraints.....: S

5.5 Impact of research on Women in Development.....: IE

5.6 Summary Comments: The results from 1984 season had been analyzed and gave leads on which to base a new 1985 program. It is too early to evaluate the results and the impact of the 1985 program. Nevertheless we could see in the field good experiments and correct scientific observations being made on them. During our review we had the opportunity of appreciating, with the U.S. PI, Dr. Lynch, the quality of the work.

6. SUMMARY

6.1 Specific Strengths: 1. The dedication of Mr. Ouedrago. 2. Project well received and supported at ISP. 3. Awareness of need for project by lower level B.F. governmental administrators. 4. The very good guidance and instruction and interest provided by Dr. Lynch. 5. The '85 field plots showed promise (August '85) of meaningful results. 6. The IRHO/CIRAD unit of B.F. and the many opportunities to cooperate with it.

6.2 Specific Weaknesses: 1. Transportation difficulties because of frequent road barriers ("inspections") within B.F. 2. Transportation difficulties because of no CRSP vehicle, no funds to support it if had it on hand. 3. A bottleneck somewhere preventing the obtaining at the right time (or ever) of such vital supplies as insecticides. 4. No enthusiasm for project evident at top level of B.F. agricultural administrators (IBRAZ). 5. Capt. T. Sankara "President" of B.F. has program to remake B.F. into English translation of B.F.--i.e. "land of upright men" and some cite instances where this seems to be impeding progress in agricultural research.

7. Reviewers Recommendations: We feel that enough "digging-in" has been accomplished and enough in the way of basic surveys have been made to justify optimism that CA/IM/BF can help meet a real and evident need in BF. We recommend consideration of limited expansion of this project through an increase in funds earmarked solely for the correction of weaknesses 2. and 3. above.

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NARRATIVE REVIEW

External Evaluation Panel Review of U.S. University Projects

By Drs. Pierre Gillier and Max Milner (EEP), at Georgia Experiment Station, April 3, 1985.

Peanut CRSP Code: GA/FT/TP

Project Title: Appropriate Technology for Storage/Utilization of Peanut

Discussion With: Dr. Tommy Nakayama, Principal Investigator, UGA, and colleagues.

Recommendation Rating: The UGA scientists are thoroughly committed to this collaborative project with their counterparts in Thailand and the Philippines. The survey in Thailand to evaluate peanut food consumption is almost complete, and techniques have been studied to store peanut in inert atmospheres at low temperature. Aflatoxin analyses have been started. The project activities should be continued but it is recommended that a thorough review should be undertaken with the Filipino and Thai counterparts in order to strengthen the food science research component, building on the technology transfer activities which have characterized the work so far.

Panel Members Narrative Review:

1. Basis of this Review includes relevant reports and documents, a meeting with Dr. Nakayama and his colleagues at the UGA Experiment Station, and with Dr. Escueta (Milner only) at the University of the Philippines in Los Banos. The EEP representatives had not had the opportunity to visit in Thailand and thus cannot comment effectively on this aspect of the project.
2. The CRSP Format for U.S. university reviews was followed in terms of the scientific and technical discussions indicated. In this context, the Project Profile Summary accompanying this EEP review, rates performance for each of the points raised under the various headings of Scope of Work, including Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application.
3. Implementation and Management warrants a satisfactory rating for work in progress at UGA and UPLB. The principle work at these institutions has been with means to stabilize peanut in storage using inert atmospheres (CO₂) and refrigeration temperatures. Dr. Nakayama believes that these efforts should be discontinued since the technology will be most useful in a certified seed industry rather than as an economical means to prolong the storage life of peanut for food use in tropical environments. In Thailand the principle activity has been to carry out a 700 family survey of peanut consumption, the data for which is now being analyzed. As for current and future research, the UGA group is working on stabilization of peanut quality by application of steam and

dry heat blanching of material stored in laminated plastic containers. Preliminary results seem encouraging, but the economics and utility for large scale application in Thailand and the Philippines has yet to be determined. Dr. Nakayama believes that all future efforts to develop peanut foods acceptable in these countries depends first on the availability of a dependable supply of stable peanut material. Other new research under consideration is the use of moisture absorbants in packaged peanut, and the development of peanut butter products in Bangkok. Future studies at UPLB are less clear, although aflatoxin work has been initiated.

4. Adequacy of Science: A "satisfactory" rather than "Highly Satisfactory" rating predominates in the Project Profile Summary, because the EEP believes that the efforts so far appear to have a strong technology transfer rather than research bias. Perhaps this emphasis is needed to strengthen host country capabilities to a point where research as conventionally understood, will be possible. As for direction of future efforts, EEP recommends that UGA undertake with their host country collaborators a thorough analysis of all problems affecting increased utilization of peanut in the Philippines and Thailand.

5. Geographic Coverage and Applicability of Research: Relevance of these efforts to host country goals is satisfactory, since the emphasis is on transferring appropriate practices in peanut utilization to the host countries. Reciprocal value of the host country scientific efforts to the U.S. is not yet clear since sustained and effective research has yet to be achieved in these countries.

6. Institutional Development: At this stage of the project, institutional strengthening is taking place primarily at UGA, where the commitment to this activity is strong. Training of host country counterparts in the U.S. is in the planning stage.

7. Research Progress and Application: The Thai peanut food utilization survey will be helpful in guiding peanut product development. The studies on means to stabilize stored peanut must precede practical applications in host countries. Control of aflatoxin contamination is urgent, since this problem is a severe threat to public health.

8. Summary:

Specific Strengths: The UGA group has strong personnel and institutional resources, and an excellent record of research accomplishment in relevant areas of food science and peanut utilization. The collaboration and interchange of information with the UPLB and Thai groups seems adequate.

Specific Weaknesses: EEP believes that the UGA workers should undertake a very thorough review with their Filipino and Thai counterparts in order to better identify food science research that relates to the most urgent problems in peanut utilization in these countries.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/FT/TP

Project Title: Appropriate Technology for Storage/Utilization of Peanut

Overall Recommendation Rating: Productive research at the host country institutions probably cannot be anticipated until adequate technical assistance, training and technology transfer have been provided. The utilization survey in Thailand, when completed, may suggest useful research opportunities. In the meantime, UGA's exploration of means to stabilize stored peanut may provide technologies useful in tropical environments. The project should continue accordingly.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative Involvement

- 1.11 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.12 General attitude towards international programs and support of researchers involved.....: HS
- 1.13 Logistical and fiscal support.....: S
- 1.14 Perceived relevancy of collaborative program to U.S. research interests.....: S
- 1.15 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.16 Resource commitment to project.....: S

1.17 Summary Comments: Administrative support at UGA is adequate, and frequency of visits of the PI to the host countries seems appropriate.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support..... : S
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: S
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.26 Overall commitment to project.....: HS

1.27 Summary Comments: The UGA collaborators are competent, and highly committed to the project. They understand the international implications and the need to identify developments beneficial to U.S. interests.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: S
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: S
- 2.4 Local science and economic perspective.....: IE

2.5 Summary Comments: Technology transfer and training are needed at the beginning of the project to stimulate the research competence of host country scientists. Scientific competence at UGA is widely recognised.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: S
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: S
- 3.3 Transferability of research results to U.S. programs...: S

3.4 Summary Comments: Response to host country technology needs predominates at this time, but spinoff of useful knowledge for other countries of the region as well as to the U.S. may well develop from this work.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: HS

4.2 Extent of development of collaborative mode.....: S
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: IE

4.4 Summary Comments: The UGA group is well equipped to assist its collaborators in the Philippines and Thailand in research orientation and stimulation of research productivity. Commitment and enthusiasm were obvious.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: IE

5.2 Impact on research priorities.....: S

5.3 Potential of research results for application to U.S. needs.....: IE

5.4 Summary Comments: Useful research will probably be identified from the results of the Thai food utilization survey. However more intensive analysis is needed to determine research of greatest priority in the host countries.

6. SUMMARY

6.1 Specific Strengths: The UGA principal investigator and his colleagues are widely recognized as competent food science research specialists. They should have no difficulty in transmitting this competence to their Thai and Filipino counterparts.

6.2 Specific Weaknesses: The EEP believes that the UGA workers should undertake a thorough review with their Filipino and Thai counterparts in order to better identify food science research that relates to the most urgent problems in peanut utilization in these countries.

NARRATIVE REVIEW

External Evaluation Panel Review of Host Country Projects

by Drs. Max Milner and Dr. K. H. Garren (EEP). University of the Philippines, Los Banos (UPLB). Based on EEP visits to the Philippines, Feb. 5 to 13, 1985.

Peanut CRSP Code: GA/FT/TP

Project Title: Appropriate Technology for Peanut Storage and Utilization

Discussion with: Dr. Elias Escueta, Principal Investigator, Institute of Food Science and Technology, UPLB.

Recommendation Rating: Effective work has been completed on the utility of inert gas atmosphere (CO₂) at normal and refrigeration temperatures, in extending the quality and germination of peanuts in sealed containers. The PI is aware that these efforts are essentially complete and that in consultation with the U.S. PI, Dr. T. Nakayama, other research approaches in applying food science to peanut should be considered.

Panel Members' Narrative Review: This analysis is based on close reading of the report under this title provided by Dr. Nakayama to the CRSP review in early November 1984 held at the World Bank in Washington; on the pertinent portion of the UPLB report "Integrated Research Program for Peanuts in the Philippines" (provided by PCARRD) covering the period July 1 to December 31, 1984; and specifically the material on pp 74-151 titled "Inert Gas Packaging and Storage of Shelled Peanuts"; and also on personal discussions in Los Banos with Dr. Escueta.

The work reported deals only with so-called "appropriate technology for peanut storage." Apparently no work has yet begun at UPLB on "consumption of peanut as food."

The research completed deals with the effects on shelled peanuts of controlled moisture and gaseous atmosphere (carbon dioxide as an inert gas is one variable) at normal and refrigerated temperatures on peanut viability and quality retention. The work is comprehensive and deserves commendation accordingly. It is primarily a technology transfer exercise, since the project design and results are not entirely original, similar studies having been reported previously by other workers. The results, which are based on rather complex technology, while interesting, do not appear to offer practical answers for meeting the needs for maintaining peanut quality in the course of production, harvesting, storage and marketing in the Philippines, where extremely serious problems exist. At best, the data do have relevance and possible utility to a national seed production and distribution program, which, as proposed in the EEP Trip Report, appears to merit high priority, but which so far has not been undertaken. These points were made to Dr. Escueta, who did not disagree.

Dr. Escueta at the CRSP Review (see trip report) through the working groups and in personal talks with MM, proposed some new research ideas in the area of food science and technology. These included:

- Study and testing for effectiveness of inert gas packaging of peanuts in various plastic containers following hot water blanching, followed by storage at normal ambient temperatures
- Improvement of the quality and storage stability of traditional peanut products
- Development of a multipurpose device for village processing of peanut
- Development of new food products from peanut
- Microbiological study of peanuts
- Aflatoxin decontamination of peanut and peanut products.

Studies of even longer range proposed by Dr. Escueta included:

- Development and evaluation of technology for production of peanut protein concentrates and isolates (such processes have been previously developed in India and the U.S.)
- Extrusion processing of peanut foods (this technology has similarly been developed elsewhere).

Implementation and Management: The commitment, understanding and performance of the PI and his colleagues are of a high order. The overall administrative supervision of PCARRD is helpful and effective. These factors deserve high rating. The primary concern of this EEP reviewer was with the relevancy of the work so far completed to the priority needs for achieving increased peanut production and utilization in the Philippines. This question should be discussed and sorted out as soon as possible with the U.S. collaborators in the Department of Food Science, UGA.

Changes that Might Improve the Project: It seemed to this EEP reviewer that the optimum food science research involvement in improving the quality of peanut and peanut foods in the Philippines lies in study of means to minimize or remove aflatoxin contamination at various stages in the production, marketing and processing chain, including the development of improved peanut post-harvesting technology and related practices. Development of new food products and related processes is important but seems of lower priority at this time. In any event, in this regard, this EEP reviewer observed a considerable variety of obviously popular peanut foods, some of considerable sophistication, being sold in the shops, even in small villages.

Summary: This reviewer was impressed with the competence and productivity of the Filipino Principle Investigator and his colleagues, as well as with their accomplishments in the inert gas storage research activity. However it is his opinion that food science research more pertinent to the production of nutritionally safe peanut and peanut products, such as that dealing with control or elimination of aflatoxin should be the primary objective at this time.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: GA/FT/TP

Project Title: "Appropriate Technology for Peanut Storage and Utilization"

Overall Recommendation Rating: The work completed is interesting and may have application to seed distribution programs in the tropics. It has less pertinence to the production, harvesting and distribution of nutritionally safe peanuts in the Philippines. Control or elimination of aflatoxin seems a greater priority at this time. This reviewer recommends that these research activities should be reoriented accordingly.

Summary Assessment Ratings¹

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: S

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Administrative management appears O.K. but research more pertinent to urgent problems in the Philippines should be identified and initiated.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: S

1.22 Administration of program-government of institutional level: HS

1.23 Fiscal management.....: S

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans....: HS

1.25 Attitude toward U.S. participants and their involvement.....: HS

1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: The Filipino PI and his colleagues are bright, diligent people, thoroughly convinced of the importance of the overall objectives.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: S

1.312 Adequacy of number and capability to function.....: S

1.313 Involvement of Women.....: S

1.314 Overall effectiveness of program personnel: HS

1.315 Summary Comments: The Filipino PI and his colleagues are well trained and committed to the program.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: Basic equipment in the department is adequate. Some specialized equipment will be needed as the program progresses.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: HS

2.2 Progressiveness and innovativeness of research.....: HS

2.3 Appropriateness of research - basic and adaptive.....: HS

2.4 Adequacy of social science/economic perspective/sensitivity.....: HS

2.5 Summary Comments: The Filipino group appears to be good scientists but the project chosen seems not entirely appropriate in terms of current problems with peanuts in the Philippines.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: IE

3.2 Complementarity to ongoing peanut research activities in-country.....: S

3.3 Responsiveness to perceived producer and consumer needs: S

3.4 Communications with other in-country entities.....: S

3.5 Does location impact regionally as well as in-country.: S

3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: S

3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: Food science research in the Philippines should produce data or results beneficial and applicable to all tropical environments.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities).....: S

4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS

4.3 Training progress-short term, post graduate training.: IE

4.4 Summary Comments: Good possibilities for the future.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: IE

5.2 Impact of research on institution and government priorities and policies.....: S

5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: IE

5.4 Potential of research for success in alleviating production and utilization constraints.....: S

5.5 Impact of research on Women in Development.....: HS

5.6 Summary Comments: Progress with project chosen is good; however little positive application in the near future can be foreseen.

6. SUMMARY

6.1 Specific Strengths: Good research personnel; strong institutions/environment and support; desire for continuing involvement with U.S. institutions.

6.2 Specific Weaknesses: Inappropriate project; closer and more frequent UGA involvement needed.

NARRATIVE REVIEW

External Evaluation Panel In-Country Project Review

September 21-28, 1985

By Pierre Gillier and D. C. Pickering

Host Country: Thailand

Peanut CRSP Code: GA/FT/TP

Project Title: Appropriate Technology for Storage/Utilization of Peanut

Introduction

Peanut CRSP activities in Thailand are an integral part of the Thailand Coordinated Groundnut Improvement Program. EEP members therefore decided that, in view of the apparently close coordination of the relevant Thai agencies, namely the Department of Agriculture, which is also the lead coordinating agency, with Khon Kaen and Kasetsart Universities, it would be repetitious to present the section on Implementation and Management separately in respect of each project. Rather, and since there was manifest full involvement of the USAID Mission with the Peanut CRSP in Thailand, it would be preferable to present separate reports on each of the four projects concerned, only regarding sections 2, 3, 5, 6 and 7 of the In-Country Project Review Agenda. Sections 1 and 4 therefore, which appear below in the Project Profile Summary format, reflect panel members views of the generic situation and applies equally to each project. This review takes account of individual project reports, the Progress Report for 1984 of the Thailand Coordinated Groundnut Improvement Program, and discussions with key collaborators interviewed in the course of our Thailand visit. The latter included:

John Foti:	Agricultural Officer, USAID Mission, Bangkok
Roger Montgomery:	Evaluation Officer, USAID Mission, Bangkok
Vichitr Benjanil:	Coordinator Peanut CRSP, Thailand and Director, Field Crops Research Institute, Dept. of Agriculture, Bangkok, also Coordinator of project NCSU/BCP/TP in Thailand
Aree Waranyuwat:	Peanut Breeder, NCS/BCP/TP, Kasetsart University.
Aran Patanothal:	Peanut Breeder, NCS/BCP/TP, Khon Kaen University
Manochai Feerati- Kaikorn:	Collaborator, Entomologist, NCS/IM/TP, Khon Kaen University
Sathorn Sirisriingh:	Collaborator, Entomologist, NCS/IM/TP, Dept. of Agriculture

Chintana Oupadissakoon: Principal Investigator, GA/FT/TP, Kasetsart University
 Yenchai Vasuvat: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Rhizobia).
 Omsub Nopamornbodi: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Mycorrhizae).

The generic views presented below are reflected in the overall recommendation rating for each project, and should be regarded as implicit in sections 6 and 7 of the reports on each project reviewed.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Understanding of and support is excellent as a result of thorough prior briefing by and good linkages with CRSP Management, and perceptions of clear relevance to Mission goals.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: HS

1.22 Administration of program-government and institutional level: HS

1.23 Fiscal management.....: HS

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS

1.25 Attitude toward U.S. participants and their involvement.....: E

1.26 Commitment of governments and/or institutions to program-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

^{1/} Code: E - Exceptional; HS - Highly Satisfactory; S - Satisfactory; NS - Not Satisfactory; IE - Inadequate Evidence for Evaluation; NA - Not Applicable

1.27 Summary Comments: Strong interest in and commitment to the program because of its perceived relevance to national goals and its complementarity to the national groundnut improvement program whereby additional resources can be utilized to strengthen, particularly, the research programs of the two universities primarily concerned with peanuts in their agricultural mandates. Slightly longer visits by US scientists to review activities and advise on methodology would be welcomed by Thai collaborators and should be supported by CRSP management.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: HS

1.312 Adequacy of number and capability to function.....: HS

1.313 Involvement of Women.....: HS

1.314 Overall effectiveness of program personnel: HS

1.315 Summary Comments: As noted above the CRSP is seen as an integral part of national peanut improvement efforts. Consequently it receives a fully adequate share of dedicated personnel who value the CRSP as a means of strengthening the resource base available to them for their chosen work. This is a view shared by senior research managers in Thailand.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: HS

1.322 Adequacy-reason for inadequacy.....: HS

1.323 Summary Comments: The Food Technology program is developed in the Department of Product Development Faculty of Agro Industries in Kasetsart University of Bangkok. The laboratories used by this program are well equipped and all additional needs (Sheller and Grader, Gaze Chromatograph and Peanut Butter Mill) have been provided in good time for a normal execution of the work. Some fields in Suwan Farm are used for field crop destined for aflatoxin tests and for production and storage quality evaluation in connection with gypsum application. Rooms with temperature and moisture regulation for storage experiment are also existing.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: HS

2.2 Progressiveness and innovativeness of research.....: HS

2.3 Appropriateness of research - basic and adaptive.....: HS

2.4 Adequacy of social science/economic perspective/sensitivity.....: HS

2.5 Summary Comments: This program uses basic knowledge on aflatoxin problem to develop adapted system of visual inspection in order to eliminate aflatoxin contaminated kernels, peanut butter and peanut butter bar (20% Protein, less than 10% Sugar) are the main ways of utilization of safe peanut. The public health and the attitude on use of these new products by sample households are a constant preoccupation. New varieties are tested for susceptibility to A. flavus contamination.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals.....: HS
- 3.2 Complementarity to ongoing peanut research activities in-country.....: HS
- 3.3 Responsiveness to perceived producer and consumer needs: HS
- 3.4 Communications with other in-country entities.....: HS
- 3.5 Does location impact regionally as well as in-country.: HS
- 3.6 Relationship to other international research efforts - ICRISAT, IKRI.....: HS
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: This program is perfectly adapted to National goals. It is complementary of program developed by other department as Food Science and Technology, Biotechnology and packaging technology. A good connection is existing with processors and consumers (visit of processing plant by Dr. Nakayama and households tests). Contact are maintained with Asian Institute of Technology and Institute of Food Research and Product Development. The characteristics of this program are not specific to this country and results can have a large impact at regional level when the work is advanced in substantial steps for implementation.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Thailand has already established a coordinated groundnut improvement program in collaboration with the Peanut CRSP and IDRC of Canada into which CRSP activities are fully integrated. The CRSP is playing an important part in strengthening Thai research capabilities and appears to be doing this job well by interaction between U.S. and Thai scientists. Training progress is good but could perhaps be improved by the expansion of training for Thai scientists at the MS and doctoral levels in collaborating U.S. institutions, given allocation of priority for this type of training by the Thai government through DOA.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: HS
- 5.2 Impact of research on institution and government priorities and policies.....: HS
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: HS
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: HS
- 5.5 Impact of research on Women In Development.....: HS

5.6 Summary Comments: Some interesting results were obtained in a consumption survey, in study of alternative storage methods with shelled and unshelled peanut, and in elimination, by hand sorting, of contaminated peanut kernels, in peanut butter and peanut butter bar fabrication and evaluation of their acceptability. This program drew attention of authorities to the aflatoxin problem which became the first constraint to peanut product development. Annual Groundnut Research Workshop promotes at the national level, a good flow of information on the results obtained by this program. If the elimination of contaminated peanut could be developed on large scale, the major constraint will be done away with and the impact on the production and consumption will be very important (Processors are ready to pay 30% more for peanut seeds of good quality). Many women participate in this program and several other women are concerned in household test. The impact on women's work in food preparation can become important.

If the program of elimination of Peanut damaged Kernel must be developed an experimental electronic sorter will be useful (utilization at industrial level).

6. SUMMARY

6.1 Specific Strengths: The Thai program is characterized by strong commitment of US based collaborating research institutions, the USAID Thailand mission, and Thai agencies. In-country competence regarding the projects is of a generally satisfactory nature, and the objectives of the research projects are relevant to mutual needs. Their specific strengths relate to their relevance to Thai policy for crop diversification, in this respect concerning the peanut crop, increased

small farmer productivity, and poverty alleviation especially in N.E. Thailand. From a U.S. standpoint the CRSP activities are perhaps most directly valuable because of the opportunities they afford for research on the peanut stripe virus. Finally, the CRSP program has had a most useful impact in demonstrating to the Thais the benefits to be gained by Thai agency interaction.

6.2 Specific Weaknesses: This is overall a very strong program with relatively few weaknesses, and those noted could be remedied by relative "fine tuning" of activities. Some limitations in contact between collaborating Thai and U.S. scientists in the field could be a constraint on effective implementation of projects in Thailand. The technical assistance potential of such visits can hardly be underestimated, especially from the standpoint of application of appropriate research procedures and hence the validity of research results. Research planning and implementation in Thailand could proceed more smoothly by a clearer advance indication of available CRSP resources together with prompt release of funds. Thai agency research plans and estimated calls on CRSP resources might profitably be advanced and refined to permit earlier review by collaborating U.S. scientists and institutions, thus optimizing resource obligation.

7. Reviewers Recommendations: As noted above, the Thailand CRSP program is proceeding well and no major changes are called for. Continuing collaboration, via an extension of the CRSP should lead to the production of viable research results of mutual benefit derived from the generally excellent groundwork established to date.

The proposed sabbatical of Dr. W. V. Campbell (MCSU) would improve the technical assistance component of the program, especially were he to be based in Thailand. Some slight prolongation of in-country visits by U.S. scientists would also have a disproportionate beneficial impact on the quality of Thai research and hence the validity of its results.

More and better advance planning in Thailand of research activities with CRSP funded resource implications and the early conveyance of this information to collaborating U.S. scientists would facilitate greater efficiency in project implementation and resource utilization. Such planning will need to take into account the anticipated diminishing role of IDRC in Thai peanut related research, and the probable cessation of this avenue of assistance in 1988.

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NARRATIVE REVIEW
External Evaluation Panel Review of U.S. University Projects

By M. Milner and D.C. Pickering (EEP), at Alabama A & M University (AAMU), April 4/5, 1985.

Peanut CRSP Code: AAMU/FT/FL/CAR

Project Title: Peanut Utilization in Food Systems in Developing Countries

Discussion With: Dr. B.O. Okezie, Principal Investigator.

Recommendation Rating: Due to problems and delays encountered in coordinating this research between the AAMU Management Entity and the Sub-grantees (University of Florida, University of West Indies, the Caribbean Agricultural Research and Development Institute, CARDI, and the Jamaican Food Technology Institute) work on this project has been started only recently. Indeed the agreement with UWI was not yet signed at the time of the EEP review. An initial survey of peanut consumption and postharvest practices is now in progress, and chemical and nutrient analysis of Jamaican peanut butter products is underway, with a view to strengthening the technology transfer component. EEP felt that the project management personnel are unquestionably competent but that surveillance of this project is inadequate, apparently due to the heavy current workload of the Principal Investigator. EEP recommends that the project should continue but with some adjustment at AAMU accordingly.

Panel Members' Narrative Review: The review was conducted by means of presentations from and discussions with the Principal Investigator. It appeared that a variety of frustrating management problems have developed, primarily due to differences in outlook and priorities between the unusually large number of subgrantees involved. Nevertheless some progress is reported, including formulation and initiation of a survey on consumer peanut product consumption, and post harvest handling of peanut, quality analysis of locally produced peanut butter in Jamaica and Belize, and experimental evaluation of utility of microwave energy for aflatoxin decontamination. Training needs are currently under study.

2. Implementation and Management: The preliminary status of the work reported makes it difficult to fully evaluate the progress in terms recommended by the Project Profile Summary. The AAMU group understands and supports the project objectives, and has a positive, cooperative attitude toward international programs of this kind.

3. The PI involved with this project is widely known among his scientific colleagues for international involvement in food science research. Notwithstanding his positive attitudes and intentions, however, it appears that his other numerous international program responsibilities at AAMU have made it difficult for him to be sufficiently involved. Commitment is excellent but follow-through has not been optimum.

4. Adequacy of Science: The initial plans and activities are relevant to the problems of peanut harvesting, utilization and consumption in the Caribbean region. It is too early to identify significant social science and economic implications which may develop from this work.
5. Geographic Coverage and Applicability of Research: The information being generated will doubtless be applicable to the entire Caribbean region. Perhaps the social science/economic implications, once identified, may have relevance to U.S. interests.
6. Institutional Development: This is a strong positive component of this program, since two U.S. universities, AAMU and UFLA have leadership roles. Similar future developments in the host countries will be watched accordingly.
7. Research Progress and Application: In terms of progress in this project, it is too early to comment on the contributions and applications from this research.
8. Summary: The unusual number of U.S. and host country institutions involved in this project makes it a challenge to management and coordination. Nevertheless, the diversity of scientific, economic and social outlooks involved, if carefully coordinated and encouraged, may yet provide valuable information for the host country scientists and their U.S. counterparts. EEP believes that these desirable outcomes will be hastened by establishment at AAMU of more effective management and monitoring procedures.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: AAMU/FT/FL/CAR

Project Title: Peanut Utilization in Food Systems in Developing Countries

Overall Recommendation Rating: Initiation of this project has been delayed by difficulties encountered in coordinating the activities of the numerous subgrantees (U. of Florida, U. of West Indies, Caribbean Agricultural Research and Development Institute and the Jamaican Food Technology Institute). EEP recommends that the project should be allowed to continue, but only with assurance from AAMU that more effective management, coordination and monitoring procedures will be instituted.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

- 1.11 Understanding and support of project objectives and the collaborative mode.....: S
- 1.12 General attitude towards international programs and support of researchers involved.....: HS
- 1.13 Logistical and fiscal support.....: S
- 1.14 Perceived relevancy of collaborative program to U.S. research interests.....: IE
- 1.15 Status of CRSP in relation to earlier industry reaction to funding.....: IE
- 1.16 Resource commitment to project.....: IE

1.17 Summary Comments: The AAMU group understand. and supports the project objectives, and has a cooperative attitude toward such international programs. The University administration is fully supportive. However, the management of this project needs to be strengthened by means of more effective coordination and monitoring.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

1.21 Understanding and support of project objectives and the collaborative mode.....: S

1.22 General attitude toward international program: HS

1.23 Logistical support..... : S

1.24 Perceived relevance of collaborative program to U.S. research interests.....: S

1.25 Status of CRSP in relation to earlier industry reaction to funding.....: IE

1.26 Overall commitment to project.....: S

1.27 Summary Comments: Attitudes and commitments at AAMU are sensitive to the needs of the project. Researcher interaction needs better coordination among the various institutions involved.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and innovation of research.....: IE

2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: IE

2.4 Local science and economic perspective.....: IE

2.5 Summary Comments: Programs which have been planned appear to be appropriate, but it is too early to judge the scientific worth or productivity at this early stage.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevance to host country/U.S. goals.....: S

3.2 Complementarity to ongoing research efforts, demands on time and resources.....: IE

3.3 Transferability of research results to U.S. programs...: IE

3.4 Summary Comments: Doubtless the information generated by this research, once it gets under way, will be useful in the entire Caribbean region.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: S

4.2 Extent of development of collaborative mode.....: S
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: IE

4.4 Summary Comments: The strong commitment to collaborative international research which is already evident in the two major U.S. universities involved, will doubtless strengthen their institutional capabilities. This trend should become stronger as the program develops.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: IE

5.2 Impact on research priorities.....: IE

5.3 Potential of research results for application to U.S. needs.....: IE

5.4 Summary Comments: The program is just getting under way. The institutions involved now have an understanding of what their commitments and responsibilities should be, and useful results will doubtless follow.

6. SUMMARY

6.1 Specific Strengths: The diversity of scientific, economics and social outlooks involved, if carefully coordinated and encouraged, may provide valuable information for the host country scientists and their U.S. counterparts.

6.2 Specific Weaknesses: To achieve adequate progress, AAMU will need to reorganize the management and monitoring of this project.

NARRATIVE REVIEW

External Evaluation Panel (EEP) Review of Host Country Projects

by M. Milner (EEP), following visits to CARDI (Antigua, Trinidad, Jamaica), the Food Technology Institute, Dept. of Agriculture, Jamaica; U. of West Indies Food Technology project, Trinidad (Dr. George Sammy); and the AID Mission, Jamaica, September 1-7, 1985.

Host Countries: Trinidad and Jamaica

Peanut CRSP Code(s):

1. AAMU/UFL/CARDI (Involving the Food Technology Institute, Mona, Jamaica)
2. AAMU/UFL/UWI (Dr. George Sammy, Univ. of West Indies, Trinidad).

Project Title: Peanut Utilization in Food Systems in Developing Countries (Caribbean Region)

Discussion With:

St. Claire Forde, CARDI, Trinidad, September 3, 1985
Don Walmsley, CARDI, Trinidad, September 3, 1985
George Sammy, UWI, Trinidad, September 3, 1985
Shirley Johnson, UWI, Trinidad, September 3, 1985
Selwyn Campbell, Jamaica Frozen Goods, Kingston, Jamaica, Sept. 5.
Althea Townsend, Food Technology Institute, Jamaica, Sept. 5.
Gladstone Taylor, Scientific Research Council, Jamaica, Sept. 5.
Anthony S. Johnson, Deputy Minister of Agriculture, Jamaica, Sept. 5.
Leland Voth, AID Mission, Jamaica, Sept. 5.

Recommendation Rating: The report of a study titled "Caribbean Peanut Production and Post Harvest Survey", representing a cooperative effort between CARDI and AAMU/UFL, was completed during the last week of August, 1985. It remains to be analyzed and evaluated. A preliminary reading suggests that it will provide useful guidance to future post harvest and food product development and testing studies. The two additional collaborative studies, recently initiated, dealing primarily with peanut food product development, which are based on separate MOU's and POW's between AAMU/UFL/UWI (with Dr. Sammy) and between AAMU/UFL/CARDI involving the Jamaican Food Technology Institute, are still in the planning stage. The EEP member's interview with all the parties and institutions concerned, provided favorable impressions of the competence and initiative of the investigators involved. It is clear that these efforts will be primarily developmental in nature rather than of a research character, although stronger research emphasis can be anticipated in the future. CRSP should favor continuation of both projects accordingly.

Panel Member's Narrative Review:

1. This report is based on a large series of MOU's, POW's and trip reports prepared by the AAMU/UFL PI's as well as Dr. Cummins, beginning in September, 1982, and culminating in a site visit by the EEP member between September 1 and 7 1985, when all relevant locations were visited and the individuals listed above were interviewed following the usual CRSP format.

2. The Caribbean Peanut Production and Post Harvest Survey which has been in progress for two years was presented to me in final report form by Dr. Don Walmsley of CARDI HQ, Trinidad, the principal leader of the study. Considerably more CARDI resources seem to have been invested in this study than were supplied by CRSP. The results will be analyzed by AAMU/UFL and by CARDI in order to provide guidance to the continuing program.

3. CARDI is the primary conduit for CRSP funds directed to the Food Technology Institute, Department of Agriculture, Mona, Jamaica. This project under the leadership of Dr. Althea Townsend is just getting under way. It will involve aflatoxin analyses to be carried out by the Jamaican Bureau of Standards, as well as laboratory studies to improve the quality of commercially manufactured peanut butter, including technical means to retard oil separation, development of a peanut drink and of peanut soup, as well as improved commercial methods for roasting peanuts.

4. In Trinidad, plans for Dr. George Sammy's food technology studies, administered through the University of West Indies Bursar's Office (Mrs. Shirley Johnson) are in the formulation stage only, the MOU and POW with AAMU/UFL having been drawn up and signed only recently. This POW will apparently include post harvest studies aimed at identification of an appropriate index for harvest maturity of peanuts. Also to be investigated is the keeping quality of peanuts harvested at different moisture levels, the development of a rapid presumptive screening test for aflatoxin, dependably related to the more accurate but time-consuming chemical methods (thin layer and short column chromatography), as well as development of novel peanut food products, and simple but more efficient roasting techniques.

5. The Project Profile Summary accompanying this EEP review, rates performance for each of the points raised under various headings such as Scope of Work, including Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability, Institutional Development, Research Progress and Application, and Summary. Ensuing paragraphs refer to these topics.

6. Implementation and Management: Except for the inordinate delay in securing completed MOU's and POW's for Dr. Sammy's project at UWI, Trinidad, a highly satisfactory rating seems warranted. Dr. Okezie of AAMU has recently surrendered his position of Principal Investigator and has assigned to Dr. Bharat Singh of that institution the role of Project Coordinator. Dr. Singh and his collaborator Dr. E. M. Ahmed of UFL have been making frequent and effective visits to both the UWI/Trinidad-and CARDI/Jamaica - administered projects, and seem to have established an excellent working relationship with their Caribbean counterparts. Mrs.

Shirley Johnson, Bursar's Office, UWI/Trinidad acting on behalf of Dr. Sammy's project, and Dr. Don Walmsley and his colleagues at CARDI/Trinidad and Jamaica, have indicated warm support for and full cooperation with their respective projects. In Jamaica, Dr. Gladstone Taylor, an official with the Jamaican Scientific Research Council (the agency to which the Jamaican Food Technology Institute formerly reported), and Mr. Anthony Johnson, Deputy Minister of Agriculture, Jamaica, emphasized to the EEP representative that the peanut testing, production and food technology programs carry a high priority under their government's food sufficiency program.

7. Adequacy of Science: The technical competence of the U.S. based PI's and their host country collaborators appears to be of a high order; nevertheless a "satisfactory" rather than "highly satisfactory" rating predominates in the accompanying Project Profile Summary, because of the EEP perception that the work appears to have a strong technology transfer rather than a research bias. It may well be that as the program develops, the PI's, Drs. Singh and Ahmed will be able to identify significant research problems which are within the capabilities of the host country collaborators. The U.S.-based PI's should be challenged on this point.

8. Geographic Coverage and Applicability: Relevance of the program to host country needs and goals is obvious; less clear is the reciprocal relevance to U.S. scientific information and peanut food production knowledge. Nevertheless it can be visualized that improvement of edible peanut products marketed in the Caribbean region will lead to increased consumer demand and thus stimulate not only local production of peanuts but also the import of peanuts from the U.S.

9. Institutional Development: As indicated in the April 1985 EEP Review of the U.S. University Project at AAMU, this collaborative activity has already had a strong positive impact on this U.S. university, with respect to its competence in peanut food technology, and in its commitment to and expertise in international programs. A similar increase in institutional competence and scientific capability in the Caribbean can be anticipated as a consequence of this collaborative activity.

It may be noted that although there is now no CRSP-supported peanut food technology effort in Antigua, the recent EEP visit there identified a government scientist who seems obviously competent in such activities, Dr. Hayden Thomas, a Ph.D. graduate from the University of London. His group has already shown considerable expertise in developing appealing consumer products from Antiguan fruit and vegetable crops. It has demonstrated effectiveness in analytical chemistry basic to the support of food quality and safety regulatory activities, including aflatoxin surveillance in peanuts. Dr. Thomas would welcome CRSP assistance to develop improved peanut processing methods, as well as support for an aflatoxin surveillance program. He indicated that he would initiate discussions in this regard with Dr. Laxman Singh of CARDI, Antigua. It is also of interest to report that in Dr. Thomas's laboratory we met a visiting food microbiologist, Mrs. Chen, from the Peoples Republic of China, which is providing laboratory equipment and technical support for Dr. Thomas's program.

10. Research Progress and Application: The recent timely completion of the Caribbean Peanut Products and Post Harvest Survey, the first effort under this project, speaks well for the future progress of the balance of the technical program. Early and useful application of the survey findings to the continuing program is foreseen.

11. Summary

Specific Strengths: The commitment and competence of the U.S. based PI's and their Caribbean counterparts is highly encouraging. The extensive and timely collaboration between the two groups is commendable. Commitment to and support of this project by the governmental agencies is of a high order. A similarly supportive attitude was strongly expressed by the AID Mission in this region.

Specific Weaknesses: Following the unjustifiable protracted time taken by AAMP to secure the necessary MOU's and POW's to initiate these programs, no problems of consequence have appeared more recently. Nevertheless the CRSP administration must continue to exercise close surveillance of these programs to insure that no significant problems develop.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: AAMU/FL/CARDI and AAMU/FL/UWI

In-Country Project Review

Project Title: Peanut Utilization in Food Systems in Developing Countries (Caribbean Region)

Host Countries: 1. Jamaica (Food Technology Institute, Mona)
2. Trinidad (Dr. George Sammy, UWI)

Overall Recommendation Rating: Inasmuch as the MOU's and POW's for both projects were signed only recently, it is too early to provide a critical analysis or judgement of these programs. However this EEP member received a favorable impression of the competence and professional zeal of the investigators involved, and the pertinence of the work programs proposed. Administrative support seems optimum, the AID Mission is supportive, and the responsible government officials expressed approval. Accordingly, both projects should be allowed to continue.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative Involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Mr. Leland Voth, AID Mission, Jamaica is highly supportive of the CRSP Caribbean peanut research program and the related administrative arrangements.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: HS

1.22 Administration of program-government of institutional level: HS

1.23 Fiscal management.....: HS

^{1/} Code: E - Exceptional; HS - Highly Satisfactory; S - Satisfactory; NS - Not Satisfactory; IE - Inadequate Evidence for Evaluation; NA Not Applicable

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS

1.25 Attitude toward U.S. participants and their involvement.....: HS

1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: Government and CARDI officials pledged full support to these programs and to their technical and research objectives. Administrative arrangements involving supervision and transfer of CRSP funds appear satisfactory.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: HS

1.312 Adequacy of number and capability to function.....: S

1.313 Involvement of Women.....: HS

1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: The PI at the Jamaican Food Technology Institute is a qualified Ph.D. woman scientist, Dr. Althea Townsend. She may leave this position soon for family reasons, but it is likely that her replacement will be a female member of the staff. Dr. George Sammy at FWI, Trinidad hopes to recruit a qualified technical assistant, a lady with an MS degree in food science from the University of Florida.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: Laboratories were observed to be reasonably well equipped. The U.S. collaborators AMU/UFL will shortly deliver additional equipment and supplies as needed for these projects.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and Innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: S

2.4 Adequacy of social science/economic perspective/sensitivity.....: S

2.5 Summary Comments: An HS rating cannot be assigned until more evidence of performance becomes available. However, the outlook is favorable. It is anticipated that the present technology transfer emphasis (i.e. adaptive research) will in due course stimulate more basic studies.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: S

3.2 Complementarity to ongoing peanut research activities in-country.....: S

3.3 Responsiveness to perceived producer and consumer needs: S

3.4 Communications with other in-country entities.....: S

3.5 Does location impact regionally as well as in-country.: S

3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: S

3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: S

3.8 Summary Comments: It is too early to effectively judge these qualities of the research since it is just getting started.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS

4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS

4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: The probability is excellent that these projects will lead to effective institutional development. The training program is not yet active but plans seem appropriate.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: IE

5.2 Impact of research on institution and government priorities and policies.....: IE

5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: IE

- 5.4 Potential of research for success in alleviating production and utilization constraints.....: IE
- 5.5 Impact of research on Women in Development.....: IE
- 5.6 Summary Comments: These attributes cannot be judged at this early stage, although the prognosis is favorable.

6. SUMMARY

6.1 Specific Strengths: The competence, experience and initiative of the U.S. and the host country PI's is impressive. Excellent working relations have been established with frequent visits by the U.S. collaborators. Effective progress is anticipated.

6.2 Specific Weaknesses: Success, if ultimately achieved by this research, may have secondary influence in stimulation of production and consumer use of peanut products, inasmuch as in the Caribbean, economic, political and agricultural policy considerations may be primary determinants.

7. Reviewers Recommendations: These projects are just getting started and useful progress is anticipated. The work should continue.

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NARRATIVE REVIEW

External Evaluation Panel Review of U.S. University Projects

By Dr. K. H. Garren and D. C. Pickering (EEP) with Dr. F. Johnson (BIFAD) at North Carolina State University, Raleigh on April 1/2, 1985.

Project Code: NCS/TX/SM/TP

Project Title: Rhizobia and Mycorrhizae Influence on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines

A. Rhizobium Considerations

Discussion with: Dr. Gerald H. Elkan, Principal Investigator; Dr. Thomas Schneeweis, Co-Investigator; plus Senior Administrators at NCSU, Raleigh.

Recommendation Rating: On the basis of evidence presented and discussed, including a field visit to Philippines by Dr. Garren at which collaborating country impact was examined, the reviewers received a highly favorable impression of the project. They recommend that it should continue, largely as conceived, and that the possibility of broadening its scope to Cameroon should be examined positively, but in the light of demands on existing managers, funds and facilities.

Panel Members' Narrative Review: The review was conducted on the basis of a presentation by the P.I. and his colleague, Dr. Schneeweis, in the context of the NCSU involvement in Peanut Varietal Improvement via the Peanut CRSP. In addition to perusal of documentation, the review involved frank discussions with the P.I. for a two hour period at NCSU, collaborating investigators at NCSU, and a meeting with the Dean of Agriculture, his associate, in North Carolina Agricultural Research Services, and Dr. Billy Caldwell, Head of Department and Peanut CRSP Board Member.

2. As with other EEP Reviews the Raleigh meetings on this project took the Scope of Work for review of U.S. universities as their agenda. The procedure followed was to invite project staff to present their work and to respond to questions designed to throw light on the extent to which project activities were responsive to the aims and objectives of the Peanut CRSP as defined in the Scope of Work of the EEP.

3. As with other evaluations this Narrative Review is based on a Project Profile Summary which rated performance to date^{1/} on each of the points raised under the main headings of the Scope of Work, i.e. Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These items are considered in more detail in ensuing paragraphs.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NA = Not Applicable; IE = Inefficient Evidence for Evaluation; NS = Not Satisfactory

4. Implementation and Management: As with other projects at NCSU the reviewers felt that a High Satisfactory rating was warranted on the key components of this section of the review. It was difficult to disaggregate the project from its close "relative" on varietal improvement in NCSU, (which is in itself a point in its favor) on the question of relevance to US research interests and its status in relation to earlier industry reaction to funding of the CRSP. But there is no reason to assume any other than fully satisfactory level of commitment to US research interests, together with action by relevant senior NCSU managers to maintain open and frank lines of communication between US industry and project activities.

5. The Panel Members could find no fault with Researcher Involvement in the project. The evidence indicated total and sympathetic commitment to the CRSP in general and the project in particular. Linkages to collaborating scientists and institutions appeared to be well developed and fully viable. If anything Panel Members wondered if the personalized nature of the P.I.'s involvement was not a little excessive, in light of the need to maintain involvement of P.I.'s and other US based staff at a sustainable level concomitant with other, non CRSP, commitments. However, this is recognized to be an area relating closely to individual personalities, and in this case the P.I. is singularly committed to his general mission of which the Peanut CRSP forms an important part.

6. Adequacy of Science: Received a Satisfactory rating on all scores and should perhaps be rated Highly Satisfactory overall in light of the perceptions of the P.I. in respect of the economic perspectives of the project. As designed the project cannot measure the economic benefits to be derived from Improved BNF by peanut cultivars but the fact that these considerations are in the front of the mind of the P.I. indicates a wider view than one would normally expect in a project of this kind. Thought needs to be given in future phases as to how findings from this project may be incorporated into wider focussed investigations on farming systems, and the extent to which appropriate peanut varieties impact on subsequent mineral fertilizer needs for other crops in peanut farming systems.

7. Geographic Coverage and Applicability of Research: Was rated highly in respect of relevance to collaborating countries and applicability elsewhere in the East Asia Region. Despite its relative immaturity there is evidence of relevance displayed by the establishment of networking linkages between host countries, and Malaysia and Indonesia. While commending the initiative taken by the P.I. to carry out pilot studies in Cameroon in association with ongoing USAID financed activities pertaining to peanut research, the Panel suggests a formal submission to the CRSP Board of a proposal for involvement of this project in that country and that region. We recognize fully its potential value but we counsel caution on the grounds of implementability.

8. Institutional Development: Was rated highly by both reviewers, in no small measure due to the personality and drive of the P.I. and the perceived mutual respect developed between the P.I. and his collaborators in Thailand and Philippines. In the latter country the project is fortunate in being administered through the University of the Philippines

at Los Banos (UPLB) as administered by the Philippine Council for Agriculture and Rural Research and Development (PCARRD). In the former there appears to be a clear realization at the official level of the need for collaboration between the Department of Agricultural Research and the University of Khon Kaen in the context of the Peanut CRSP. In both cases, however, some improvements in communications and facilitations of the flow of funds to collaborating investigators would not come amiss.

9. Research Progress and Application: Although essentially long term, the project has made good progress in its planned first phase activities, including identification and evaluation of rhizobia that are effective with collaborating country cultivars, whilst testing the BNF and yield potential of crosses from locally adapted cultivars, and evaluating BNF capacity and yield potential of germplasm tolerant to acid soil conditions. The scope of the project, and the breadth of peanut production areas in terms of soil and climatic conditions are such that potential application outside the immediate project area appears promising. However, with regard to application there appears to be a need for reconsideration of means to ascertain the socio-economic relevance of this, and other Peanut CRSP interventions, and to incorporate such considerations within the scope of the CRSP. Panel members and investigators recognize the importance of this perspective but are unable at this stage to incorporate its investigation into ongoing research projects.

10. Summary: As indicated above the reviewers conclude that this project is well conceived, closely linked to the basic question of peanut varietal improvement, excellently managed and fully supported by NCSU. Panel members are concerned that continuity of management is maintained, that proposed phasing is sustained, and that the Cameroon initiative is reviewed carefully by the Technical Committee and Board to ensure a) its relevance to CRSP objectives, and b) its implementability in light of staff and other resource constraints within the Peanut CRSP, and more importantly in Cameroon itself.

PROJECT PROFILE SUMMARY

Peanut CRSP External Evaluation Panel Review

Peanut CRSP Code: NCS/TX/SM/TP

Project Title: Rhizobia and Mycorrhizae Influence on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines

Overall Recommendation Rating: The EEP feels that the project warrants a Highly Satisfactory rating on the basis of its management, its implementation, and its relevance to both US and collaborating country interests. The Panel cautions however against premature broadening of geographic coverage in light of a perceived highly personalized management by the P.I.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative involvement

- 1.11 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.12 General attitude towards international programs and support of researchers involved.....: HS
- 1.13 Logistical and fiscal support.....: HS
- 1.14 Perceived relevancy of collaborative program to U.S. research interests.....: S
- 1.15 Status of CRSP in relation to earlier industry reaction to funding.....: IE
- 1.16 Resource commitment to project.....: HS

1.17 Summary Comments: As for the project NCS/BP/TP, the administrative involvement of the NCSU is fully satisfactory. This project is clearly seen as part of an integrated effort which receives the full support of the agricultural research administration of the university. Logistics and finance for the project are handled satisfactorily and linkages with other Peanut CRSP activities at NCSU are highly commendable.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support.....: HS
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: HS
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: HS
- 1.26 Overall commitment to project.....: HS

1.27 Summary Comments: The Principal Investigator is clearly committed to the project; interest in international programs is evidenced by proposals for further expansion. Whilst of little interest in the short term to the US industry, the Project could well provide results of great relevance to US growers in future, hence also its relevance to US research interests.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: HS
- 2.2 Progressiveness and innovation of research.....: S
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: S
- 2.4 Local science and economic perspective.....: IE

2.5 Summary Comments: The project has been designed and is being implemented in such a way as to generate information leading to relevant technology for improving the productivity of peanuts especially in collaborating countries. It also has the potential for improving the productivity of peanuts especially in collaborating countries. It also has the potential for improving the productivity of other crops in the farming systems of these countries, in particular, and perhaps also in the US. Although the P.I. is clearly interested in the economic perspectives of his project, the Panel is unable to do more than comment on the fact.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: HS
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: HS
- 3.3 Transferability of research results to U.S. programs...: S

3.4 Summary Comments: The project is clearly relevant to the goals of both host countries and the US; it is also fully complementary to ongoing research on improving peanut productivity. Its regional relevance in East Asia is illustrated by the interest displayed by peanut researchers in Malaysia and Indonesia with whom a coordinating network has been established, outside of CRSP funding. Further evidence of research relevance is the success attending pilot studies in Cameroon for which limited CRSP funding has been used.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: HS

4.2 Extent of development of collaborative mode.....: HS
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: HS

4.4 Summary Comments: This aspect of the project has made good progress with the development of close and productive working relations between collaborating scientists in Thailand and the Philippines as evidenced by the established network of cooperators for collection and transmission of nodules from native tropical cultivars and the distribution of promising Rhizobium strains and potentially useful cultivars from NCSU to collaborating countries. Training courses on BNF technology have been conducted for extension staff in Thailand and for both researchers and extension staff in the Philippines.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: HS

5.2 Impact on research priorities.....: S

5.3 Potential of research results for application to U.S. needs.....: S

5.4 Summary Comments: Although the project has been operational for no more than two years, good progress has been made in the first phase in identifying rhizobia effective with local peanut cultivars; evaluating inoculation needs for locally adapted peanut cultivars, determining the efficacy of inoculants from strains effective with local peanut cultivars; and with project NCS/BP/TP, testing the BNF and yield potential from crosses of locally adapted cultivars and cultivars with high BNF ability, and in evaluating BNF capacity and yield potential of germplasm tolerant to acid soil conditions.

6. SUMMARY

6.1 Specific Strengths: The project is characterized by a highly dedicated and competent P.I. who has developed excellent working relations with his collaborators in Thailand and Philippines. Design is such that its relevance in other peanut producing countries is already perceived - as demonstrated by the interest in networking shown by Malaysia and Indonesia. The economic potential of the project, i.e. in improving BNF and thereby lowering mineral fertilizer need in cropping

systems, is a particular strength of the project.

6.2 Specific Weaknesses: Whilst perhaps arguable, involvement in pilot activities in Cameroon could be regarded as a weakness because of its potential diluting effect on impact in Asian collaborating countries. Staffing of the project - by an ebullient and forceful P.I. with only limited professional backup - could be a weakness if the former were to move. In other words one wonders the extent to which the project is perhaps excessively personalized in its management.

PEANUT CRSP

External Evaluation Panel Review of Host Country Projects

By Drs. Max Milner and Kenneth H. Garren at at US AID Mission, Manila, PCARRD (Philippine Council for Agriculture & Resources Research & Development, Los Banos, and UPLB (University of the Philippines at Los Banos) on February 5 - 12, 1985.

Peanut CRSP Code: NCS/1E/SM/TP

Project Title: "Rhizobia and Mycorrhizae Influence on Nitrogen Fixation and Growth of Peanut In Thailand and the Philippines"
"A. Rhizobium Considerations"

Host Country: PHILIPPINES

Discussion with: 1) At US AID, Philippines - Dr. James Beebe, Agricultural Program Officer.
2) At PCARRD - Dr. Ramon V. Valmayor, Executive Director & Dr. Dely P. Gapasin, Director, Crops Research Department.
3) At UPLB- Dr. Erlinda S. Paterno, Principal Investigator, Ms. Maria L. Sison, Research Associate (in field plots) & (briefly), Dr. R. Nunes, Chairman, Dept. of Agronomy & Soils.

Recommendation Rating: On the basis of evidence presented and discussed and of visits to laboratories, greenhouses, and field plots the reviewers received a highly favorable impression of the project. They recommend that it continue, largely as conceived, with some thought given to correcting weaknesses in: 1) post-graduate training; 2) perhaps overly-ambitious reach as expressed in stated objectives and plans; and 3) flow of funds to researchers.

Panel Members' Narrative Review: The review was conducted on the basis of:

- 1) A discussion of about two hours in length with Dr. Beebe, at US AID, Manila, Feb. 6.
- 2) A discussion of about a half hour in length with Dr. Valmayor, at PCARRD, Feb. 6.
- 3) Discussions of about one hour in length with Dr. Gapasin, Feb. 6 & 11.
- 4) A round table discussion--presided over by Dr. Gapasin--with most of the UPLB researchers assigned to the Peanut CRSP, four visiting N.C. State Pls of the Peanut CRSP, and Dr. Cummins, NE of the Peanut CRSP, at PCARRD, Feb. 8.
- 5) Hearing oral reports and studying written handouts plus participating in workshops that were parts of First National Peanut Consultation & Peanut CRSP Review at PCARRD, Feb. 7 & 8.
- 6) Visit to field plots at UPLB with Dr. Cummins with explanation and discussion by Ms. Sison, Feb. 9.
- 7) Discussion of about two hours in length with Dr. Paterno in her office, laboratory, and greenhouse, Feb. 11.

The EEP, in meetings and discussions on this project, took two documents as its guide--namely "Peanut CRSP Scope of Work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review." The procedure followed was to listen to informal presentations of administrative and research personnel and then--when time permitted--to ask questions designed to throw further light on the extent to which project activities were responsive to the aims and objectives of the Peanut CRSP as defined in the "Scope of Work of the EEP."

As with other evaluations this Narrative Review is based on a Project Profile Summary which rated performance to date 1/ on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These items are considered in more detail in ensuing paragraphs.

1. Implementation and Management: As with other Peanut CRSP projects at UPLB/PCARRD, the reviewers felt that an overall Highly Satisfactory rating was warranted on the key components of this section of the review. Relations with the support of US AID, Manila are good, perhaps due partially to the groundwork laid by Dr. Beebe's predecessor in his post, the ME (Dr. Cummins) of the Peanut CRSP, and Dr. Gapasin of PCARRD. PCARRD, as the highest level of the host country's government that is directly involved, has taken all aspects of the Peanut CRSP as serious activities and assigned them high priorities. Perhaps it has placed a bit higher priority on this, the Rhizobium work.

In regard to the apparently lukewarm attitude of UPLB administration re the Peanut CRSP, the reviewers felt this might actually be a matter of inertia. Inertia brought on by three things - the unique nature of PCARRD as an administrative body; the location, physically, of UPLB and PCARRD adjacent to each other; and an apparently continuing reshuffling of UPLB administrators from department chairmen on up.

As to UPLB resources, including personnel, committed to the project, to the reviewers the most impressive and important aspect was the PI, Dr. Paterno. She started the CRSP project in July of 1983. She has teaching assignments and is Secretary of the Graduate School of UPLB. The latter position she estimates as taking about 10% of her work time. Dr. Paterno reports good relations with the Thailand counterpart of this Peanut CRSP project. The degree of her dedication to the CRSP project can perhaps be judged by her statement that, due to slow transfer of CRSP funds through the administrative chain, she has sometimes advanced hourly workers pay from her personal funds.

By way of constructive criticism, the reviewers make some observations on Dr. Paterno's "management" of the project. The reviewers had the impression, from reading a draft of the 1983 Annual Report of Peanut CRSP before going to UPLB that the research of this project is over-organized,

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unduly complex, has too many objectives, has too many plans for the future, and shows too little hope for medium-term practical application of research findings. After hearing Dr. Paterno's oral presentation to the Consultation, and after two discussions with the researchers, the reviewers saw most of the apparent faults with the project as "paper tigers" in that real research progress and real medium-term hope of practical application of research results is obscured by the written presentations of research findings and hopes and plans for the future. This, the reviewers feel, can be counteracted by submitting an annual report for 1984 that is not verbose, but that clearly and concisely states how the research of 1984 has expanded existing facets of knowledge of the peanut/Rhizobium symbiosis in the Philippines or added new facets of knowledge thereto. Perhaps then plans for the future can be reduced in numbers and better related to both promises of practicality and bases in existing research findings.

2. Adequacy of Science: The reviewers regard Dr. Paterno as a very competent scientist. Thus they regard progress reported, orally and written, as real. The nature of the Rhizobium/peanut root symbiotic relationship lends itself to innovative research and this is a situation Dr. Paterno, with some guidance from Dr. Elkans perhaps, has turned to the project's advantage. As stressed in the Profile, much of the drive and commitment of the US PI seems to have been transferred to the UPLB PI. Also, from the Profile the social science aspect is well served by the drive to enable Filipino peanut (and other legume) growers to achieve higher yields without resorting to the costly chemical sources of N and thus encourage more small and large scale production of peanuts for local consumption.

3. Geographic Coverage and Applicability of Research: This project is, by statements made in Dr. Paterno's handout at the Consultation, built on a strong base of two years' (1982-83) cooperative research with the NIFTAL project of the University of Hawaii. It is, at present, impossible to distinguish between those facets of the project's research progress attributable to the NIFTAL cooperative project and that attributable to the Peanut CRSP project activated July, 1983. This situation attests to good geographic coverage and good potential for applicability of research results. The prominent role played by this project in PCARRD's Consultation and PCARRD's sponsorship of a training course on biological nitrogen fixation and legume inoculation (February 11-20, 1985) attest to the project's role in other aspects of this main review category. (Dr. Paterno and Dr. Elkans played the predominant parts in this training course).

4. Institutional development: The reviewers feel that the best way to review the project's contribution to institutional development is to repeat, here, highlights of the summary on this category given in the Profile: The Panel feels that the Peanut CRSP, as an entity, has strengthened the agricultural research program and outlook at UPLB. It also seems to have given renewed impetus to PCARRD's interest in promoting peanut culture in the Philippines. The personality and drive of the US PI, and the general awareness of the important potential in bio-nitrogen-fixation may give more credit to the Rhizobium project for the reactions at UPLB and PCARRD than the project per se deserves, but nevertheless, Peanut CRSP apparently has contributed much to institutional development in the Philippines.

5. Research Progress and Application: Much of the heart of this category has been covered in the reviews of the first four categories (above). For example, the Consultation was a strong effort to promote flow of information to end users, and the entire project is aimed at alleviating an important production constraint. Surely to have this research at UPLB conducted by women, and to have most of the administration of the project at PCARRD in the hands of a woman will impact greatly on women in development.

Perhaps, then, this review should close with a summary of research progress in the Philippines as the reviewers saw it: Though only complete fertilizers (i.e. fertilizers containing N along with P and K) are generally available in the country, they are, first, too costly for Filipino peanut growers and, second, if a N-containing fertilizer is applied two weeks, or less, after planting the result is detrimental. In such cases nodulation of peanuts is poor. In the widespread acid soils of the Philippines biological N fixation is poor, hence there is a search for Rhizobium strains that form good nodules in acid soils. A few such strains have been found. "Native" (endemic) rhizobia compete strongly and effectively with introduced rhizobia. Less than 50% of the nodules in artificially inoculated plots are from the introduced rhizobia. There is a definite relationship between Rhizobium strain and host cultivar in regard to amount of nodulation. But it takes at least two years to check out these strain/cultivar relationships. In cooperation with Dr. Ilag (the PI at UPLB of part B (mycorrhizae) of this project) a search is underway for a combination of Rhizobium-strain inoculum and mycorrhizae inoculum that will enable peanuts to do well in soils deficient in both available N and available P.

Peanut CRSP: External Evaluation Panel Review

PROJECT PROFILE SUMMARY

Code: NCS/TX/SM/TP In-Country Project Review

Title: Rhizobia and Mycorrhizae Influence on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines.
A. Rhizobium Considerations

Host Countries: PHILIPPINES

Overall Recommendation Rating: On the basis of: 1) Management; 2) implementation; 3) relevance to both host country and U.S. interests; and 3) drive, dedication, and scientific acumen of its Filipino PI and its U.S. PI, the EEP feels this project warrants a Highly Satisfactory rating. The Panel cautions against permitting this drive and dedication to result in further expansion of the project's stated objectives--rather, the Panel suggests a temporary decrease in the number of stated objectives.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: S

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Dr. James Beebe, Agricultural Program Officer, US AID, Philippines, is "new" to the Philippines but not new to the post of Agricultural Officer of a US AID Mission. From experience in Sudan he is familiar with and very much in favor of CRSP projects. Relations, as Dr. Beebe sees them, are excellent between the HE of the Peanut CRSP and PCARRD. PCARRD (see footnote page 2) is the Philippine central government's administrative body for this type of R&D. US AID Mission, through Dr. Beebe, will cooperate with HE and PCARRD in maintaining these good relations.

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1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode.....: HS
- 1.22 Administration of program-government level.....: HS
- 1.22A Administration of program-institutional level.....: S
- 1.23 Fiscal management.....: S
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans.....: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: HS
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: EEP feels the project warrants an almost completely Highly Satisfactory rating in this category. Two top administrators in PCARRD^{1/} (Executive Director Valmayor, Crops Research Director Gapasin) are fully sold on the Peanut CRSP and very involved in it. Two EEP members attended (on February 7-8, 1985) a "National Peanut Consultation & Peanut CRSP Review." (The CRSP program had a half-day of this review.) At PCARRD's invitation and sponsorship Dr. Likens (US PI of NCS/TX/MS/TF - A) organized and directed a "Biological Nitrogen Fixation and Legume Inoculation Training Workshop." The involvement of administrators of the academic institution, Univ. of Philippines, Los Banos, seems minimal. So, also, their interest.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect & supportive.....: HS
- 1.312 Adequacy of number and capability to function: S
- 1.313 Involvement of Women.....: HS
- 1.314 Overall effectiveness of program personnel...: S

1.315 Summary Comments: UPLB personnel component on this project is led by PI Dr. Erlinda S. Paterno, a competent scientist with some teaching and major administrative duties but with, as far as the Panel could tell, no other research duties. Dr. Paterno steers a friendly but taut ship. One more research associate as good as the one now aboard might speed progress.

^{1/} PCARRD - Philippine Council for Agriculture & Resources Research & Development.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: The EEP could see no major stumbling block in the materiel aspect of the work at UPLB. Although few research scientists ever have enough space and enough materiel to make adequate use of additional space if it should be made available, the Panel saw no evidence that crowded labs and equipment spaced around in halls and shortage of modern, up-to-date equipment seemed to be impeding research on this project.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and Innovativeness of research.....: HS

2.3 Appropriateness of research - basic and adaptive.....: HS

2.4 Adequacy of social science/economic perspective/sensitivity.....: HS

2.5 Summary Comments: Perhaps due largely to the fact that much of the drive and commitment of the US PI appears to have rubbed-off on the UPLB PI, the EEP rates this project Highly Satisfactory as to its science. The socio-economic aspect is well served by the drive to enable small farmers (and large farmers, as well) to by-pass prohibitively expensive commercial fertilizers as sources of N and thus encourage more production of peanuts on small farms.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: HS

3.2 Complementarity to ongoing peanut research activities in-country.....: HS

3.3 Responsiveness to perceived producer and consumer needs: HS

3.4 Communications with other in-country entities.....: HS

3.5 Does location impact regionally as well as in-country.: HS

3.6 Relationship to other international research efforts - ICRISAT, IIRI.. ..: HS

3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: HS

3.8 Summary Comments: The EEP sees a Highly Satisfactory rating in this category as well deserved. Some of the reasons for this view have been given in summaries for 1.2 and 2 (above). Although the

EEP did not specifically address relationship with and coordination of effort with ICRISAT in regard to this project, it might be said that all peanut research in this geographical area seems automatically related to and coordinated with ICRISAT. The project also seems closely related to and coordinated with IRRI as well as NIFTAL. NIFTAL is an international institution dedicated to promoting nitrogen fixation in tropical legume crops.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS

4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS

4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: It was obvious to the EEP that the Peanut CRSP, as an entity, has strengthened the agricultural research program and outlook at UPLB. The personality and drive of the US PI, and the general awareness of the important potential in bio-nitrogen-fixation may give more credit for this to NCS/TX/SM/TP - A than is really deserved. Taking short-term training to PCARRD/UPLB in the person of Dr. Elkans is commendable. There seems a temporary lapse in post-graduate training in the US. This possible is a negative.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: HS

5.2 Impact of research on institution and government priorities and policies.....: S

5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: HS

5.4 Potential of research for success in alleviating production and utilization constraints--including small farm production constraints.....: HS

5.5 Impact of research on Women in Development.....: HS

5.6 Summary Comments: Though the success is, in part, based on research that preceded activation of the Peanut CRSP, the project has been successful in enough important research aspects that the EEP feels it warrants a Highly Satisfactory rating in this category. The following research examples may justify this rating: Demonstrating superior N-fixation ability as being a consistent characteristic of some Rhizobium strains and introduced exotic strains. Demonstrating that this competition may be partially overcome by use of easily prepared inoculum of the superior strains.

6. SUMMARY

6.1 Specific Strengths: The competence, interest, and drive of both PI's of this project certainly is an important factor in the success, to date, of this project. So, also, is the excellent collaborative working relations, not only within the Peanut CRSP, but also with other institutions not involved in the Peanut CRSP--including some international agricultural research organizations.

6.2 Specific Weaknesses: The first of the project's strengths (above) may eventually become a weakness. Contingencies are facts of research life, and there is an apparent lack of a plan for training at the post-graduate level of researchers who might then be able to take over and carry on the project. Another weakness is centered in the annual report to the Peanut CRSP. This report indicates the project's reach is in danger of exceeding its grasp. There are too many stated objectives, too many plans for the future, etc., for the current personnel's grasp. Also, the project's progress may be slowed a bit by a weak link in the flow of funds from Peanut CRSP ME through PCARRD and UPLB to the research benches and greenhouses.

7. Reviewers Recommendations: The EEP recommends this very promising project be continued at its current level of research (and extension) activity and at its current level of support. However, the EEP would like to see some thought given to strengthening the project by correcting the three weaknesses the EEP thinks it sees.

NARRATIVE REVIEW
External Evaluation Panel Review of U.S. University Projects

By Drs. Kenneth H. Garren and Pierre Gillier (EEP), and Drs. Fred Johnson and Carval Wiggins (US AID)

Texas A & M University, April 3 and 4, 1985

Peanut CRSP Code: NCS/TX/SM/TP

Project Title: Influence of Rhizobium and Mycorrhizae on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines. B. Mycorrhizal Considerations.

Discussions With:

- 1) Mrs. Ruth Ann Taber, Principal Investigator, Department of Plant Pathology, College Station
- 2) Dr. R.E. Pettit, Department of Plant Pathology, College Station, Plant Pathologist
- 3) Dr. J.S. Neck, Department of Plant Pathology, College Station, Plant Pathologist (Post Doctorate Appointment)
- 4) Mr. J.S. Newman, Texas A & M Research and Extension Center, Stephenville, Agricultural Engineer (Irrigation)
- 5) Mr. K.E. Woodward, Texas A & M Research and Extension Center, Stephenville, Plant Pathologist
- 6) Mr. T.D. Riley, Department of Plant Pathology, College Station, Graduate Student
- 7) Mr. K.E. Woodward, Department of Plant Pathology, College Station, Graduate Student

Recommendation Rating: On the basis of evidence presented, the reviewers received favorable impressions of the project and the Texas A & M staff charged with its implementation. These impressions were strengthened by a field visit to the Philippines earlier by one reviewer, Dr. Garren. The reviewers feel that the project as conceived is a sound approach to a type of research that is, at present, basic or speculative research. The reviewers feel that the project should continue as planned, but consideration should be given to any expansion of the project only if and when a real research break-through is achieved.

Panel Members' Narrative Review: The review was conducted on the basis of informal reports, with some viewing of appropriate laboratory and greenhouse displays, of the seven scientists listed above. Time permitted only a brief period of questions and answers. These took about four hours.

There was a helpful session of about one hour with the senior University officials responsible for scientific and administrative oversight of the project's work plan and budget.

One reviewer had participated, earlier in the week, in the review at N.C. State University. He brought a review report framework created at N.C. State by EEP Chairman, Don Pickering, after completion of the N.C. State review. This report framework can be traced back to the meeting of the CRSP EEP, Technical Committee, and Board of Directors, with the Program Director in Washington, D.C. on October 31, 1985 in which meeting the document "Scope of Work for the EEP" and adjunct documents were adopted as official guidelines for reports from the EEP. The general framework of this report and the final PROJECT PROFILE SUMMARY will reflect the five main headings in the "Scope of Work for the EEP" document. These headings are numbered 1 - 5 below and in the PROFILE SUMMARY sub-headings will be given a rating 1/.

1. Implementation and Management: This project is proceeding at an acceptable pace. The scientists devoting part (or all) of their time to it are competent researchers with a dedication and interest that seems to equal their competence. We feel the contribution to this project by Texas A & M researchers is above the level to be expected from the amount of time organization charts, etc. show these researchers (other than the PI and graduate students) should devote to this Peanut CRSP research. This reflects an excellent meshing of the CRSP work into an ongoing program of Texas A & M research on soil microbiology.

The Peanut CRSP Technical Committee feels Mrs. Taber, the PI of NCS/TX/SM/TP-B is spreading herself too thin. We could not see that this situation, if it exists, is hindering progress on the project.

The total Peanut CRSP program at Texas A & M obviously has dedicated support from the level of University administration immediately involved.

2. Adequacy of Science: The project received a Highly Satisfactory rating on three of the four scores. This project is, at this stage, largely in the area of basic biology. Basic research generally is innovative, and may tend to somewhat over-impress even those observers with long experience in research. However, Mrs. Taber seems of the type that does not hesitate to reverse field and try other tactics, other approaches, when such seems advisable. The socio-economic perspective, though long-range, is highly satisfactory.

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3. Geographic Coverage and Applicability of Research: In the Summary Comments in the GEOGRAPHIC COVERAGE section of the PROFILE, we have attempted to outline the potential for LDCs of the basic or exploratory biology that is being researched in this project. Everyone questioned on these lines at Texas A & M recognized both the potential for wide-range applicability of results as well as the long-range prospects for realizing this potential.

4. Institutional Development: Due largely to the enthusiasm and drive of the PI and some of the other researchers, this aspect was rated Highly Satisfactory. The reviewers recognized that training of U.S. as well as overseas personnel in this area of basic crop biology may have influenced their rating to a greater extent than any other factor. However, the interest showed in this project by Texas A & M personnel not directly involved in the Peanut CRSP would indicate a strengthening of research outlook within the institution that is not entirely attributable to the drive and personality of the PI.

5. Research Progress and Application: As noted before, this project is essentially long term, long range. Knowledge of the mycorrhizal symbiosis lags far, far behind knowledge of the rhizobial symbiosis--and much research time and resources are yet being devoted to study of the rhizobial symbiosis, including part A of this Peanut CRSP project. There seems to be good progress towards achievement of some of the project's objectives. Perhaps after the 1985 research season some thought should be given to reworking the projects objectives so as to narrow the aim of the project and make progress, or lack of progress, more clear cut. Application is the longest range of the long range aspects of the project and must await evidence of some research progress that has at least practical "fringes".

6. Summary: As indicated above the reviewers conclude that this project is well conceived, well managed, and has the support of Texas A & M administrators and other research personnel at Texas A & M. Everyone involved seems to be aware of the long range, speculative nature of the research, and, perhaps are, as a result, putting a bit more effort into the research than would be put into a project with more immediate promise of applicable results. The reviewers recommend continuation of the project with no changes other than perhaps some reworking of the current objectives. Expansion of the project, the reviewers feel, should not be considered at present.

Special Note: The visit of EEP members and U.S. AID representatives to Texas A & M was coordinated by Dr. Olin Smith, who is the Texas A & M representative on the technical committee of the Peanut CRSP. At the outset Dr. Smith gave each of us a ca. 35 page booklet with an agenda, and abstracts of all the reports that would be presented to the reviewers.

Since this review document is based primarily on material given in these reports, there not being enough time to do any in-depth questioning of those giving the reports, it seems well to list the nine reports for which abstracts are presented in the booklet:

1) Establishment of reference pot cultures of vesicular-arbuscular endomycorrhizal fungi; 2) Conservation of mycorrhizal fungus germplasm; 3) Vesicular-arbuscular endomycorrhizal fungi which inhabit weed seed: importance, characterization, and effect of plant water status on root colonization; 4) Colonization dynamics of indigenous and introduced endomycorrhizal fungi; 5) Influence of mycorrhizal fungi on reducing the activity of disease causing soil-borne fungi; 6) Design and installation of an irrigation system for monitoring field applications of irrigation water for mycorrhizae experiments; 7) Effect of cultivar and location on root infection by indigenous mycorrhizal fungi in Texas; 8) Mycorrhizal colonization of peanut roots in irrigated and non-irrigated low P soil in Texas; 9) Influence of saline soils on colonization of peanut roots by mycorrhizal fungi.

Hopefully a copy of this Texas A & M booklet will be appended to the final version of these review reports. This will show where personnel, other than those listed on page 1, are involved in the research.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: NCS/TX/SM/TP

Project Title: Influence of Rhizobium and Mycorrhizae on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines. B. Mycorrhizal Considerations

Overall Recommendation Rating: The EEP feels that the project warrants a highly satisfactory rating on the basis of its management, its implementation, its researcher involvement, and its scientific approach. The basic inquisitive subject matter--are there really beneficial effects of mycorrhizae in the roots of crop plants and, if so, are there means of manipulating the soil environment so as to increase the establishment in roots of crop plants of the more beneficial mycorrhizal fungi?--is a rather new field of research for crop biologists. Frankly, many crop biologists still regard this research as "speculative research"--having only recently downgraded it from "highly speculative research". The depleted wet season/dry season soils of Thailand and the Philippines are more "fertile" soils for research on possible beneficial effects of mycorrhizae on peanut than are the peanut soils of the U.S. This project should be continued as it is now constituted, but the EEP sees no reason to consider expanding it.

Summary Assessment Ratings^{1/}

I. IMPLEMENTATION AND MANAGEMENT

1.1 Administrative Involvement

- 1.11 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.12 General attitude towards international programs and support of researchers involved.....: HS
- 1.13 Logistical and fiscal support.....: HS
- 1.14 Perceived relevancy of collaborative program to U.S. research interests.....: HS
- 1.15 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.16 Resource commitment to project.....: HS

1.17 Summary Comments: Texas A & M Deans, Directors, Department Heads with whom we visited gave definite impression of being firmly in favor of international programs in general and of Peanut CRSP and other CRSPs in particular. Some of them have a background in international programs in agriculture--including research and development.

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1.2 Researcher Involvement

- 1.21 Understanding and support of project objectives and the collaborative mode.....: HS
- 1.22 General attitude toward international program: HS
- 1.23 Logistical support..... : S
- 1.24 Perceived relevance of collaborative program to U.S. research interests.....: HS
- 1.25 Status of CRSP in relation to earlier industry reaction to funding.....: S
- 1.26 Overall commitment to project.....: HS

1.27 Summary Comments: Mrs. Taber, the PI, is deeply involved in all aspects of this somewhat complicated research, and she motivates collaborative researchers and graduate students to be similarly involved and inspired. She and the Filipino PI, Dr. Ilag, have inspired and motivated each other to a remarkable extent, and, by hearsay, a similar situation exists between Mrs. Taber and Mrs. Yenchai Vasuvat in Thailand.

2. ADEQUACY OF SCIENCE

- 2.1 Level of science/research to generate new technology: HS
- 2.2 Progressiveness and innovation of research.....: HS
- 2.3 Appropriateness of research, basic and adaptive, and relevance to U.S. needs.....: IE
- 2.4 Local science and economic perspective.....: HS

2.5 Summary Comments: As noted in the overall rating, this project is, at this stage, largely in the area of basic biology or exploratory biology. Such research has to be innovative and generate new technology to survive. There is not yet time to see if the researchers are on the right track, the socio-economic perspective, though long-range, is highly satisfactory.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevance to host country/U.S. goals.....: HS
- 3.2 Complementarity to ongoing research efforts, demands on time and resources.....: S
- 3.3 Transferability of research results to U.S. programs..: S

3.4 Summary Comments: This project seeks to find a way, though stimulation of formation of mycorrhizae, of increasing the absorption by the peanut plant of certain minerals from rainy-season-leached soils in countries in which the high price of mineral fertilizers prohibits their use. Also, this project seeks, in the same way, to increase absorption and retention of water in the roots of peanut plants in the dry season. Obviously the research has more relevance to the host countries' goals than to U.S. goals. It fits in with and is complementary to the Rhizobium research that is part A of the same project but operating out of N.C. State University.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities.....: HS

4.2 Extent of development of collaborative mode.....: HS
(interaction with collaborators/enthusiasm for research)

4.3 Training progress.....: HS

4.4 Summary Comments: This project, by its very nature, must be considered as contributing strongly to institutional development, at Texas A & M and the several institutions involved in Thailand and the Philippines. There is something very "strengthening" about undertaking research that might bend natural processes to the will of man and to the benefit of man. Training of Filipino personnel seems highly satisfactory. By heresay, so also must be the training of Thai personnel.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact on research priorities.....: S

5.3 Potential of research results for application to U.S. needs.....: S

5.4 Summary Comments: The project, at present, must be rated Satisfactory in all of the above categories. A real break-through would be somewhat spectacular and have a marked impact on research priorities.

6. SUMMARY

6.1 Specific Strengths: The dedication and enthusiasm of the researchers involved is a definite strength. The Peanut CRSP Technical Committee thinks Mrs. Taber, the U.S. PI, is spreading herself too thin. The EEP reviewers consider her involvement in both of the other Texas A & M Peanut CRSP projects a strength.

6.2 Specific Weaknesses: Though it is was never expressed directly to him, the EEP reviewer who reviewed the Philippine Peanut CRSP work before going to Texas A & M found evidence that the splitting of U.S. administrative and fiscal oversight on NCS/TX/SM/TP between N.C. State University and Texas A & M University is causing some problems and thus undermining morale. Also the speculative nature of the research, while now a strength, would become a weakness if there is no detectable progress by the time for preparation of the next Peanut CRSP Annual Report.

NARRATIVE REVIEW
External Evaluation Panel Review of Host Country Projects

By Drs. Max Milner and Kenneth H. Garren at US AID Mission, Manila; PCARRD (Philippine Council for Agriculture & Resources Research & Development), Los Banos; and UPLB (University of the Philippines at Los Banos) on February 5-12, 1985.

Peanut CRSP Code: NCS/TX/SM/TP Host Country: PHILIPPINES

Project Title: Influence of Rhizobium and Mycorrhizae on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines.
B. Mycorrhizal Considerations

Discussions With:

- 1) At US AID, Philippines - Dr. James Beebe, Agricultural Program Officer.
- 2) At PCARRD - Dr. Ramon V. Valmayor, Executive Director, and Dr. Dely P. Gapasin, Director, Crops Research Department
- 3) At UPLB, Dr. Tiburcio Reyes, Head, Department of Plant Pathology, and Dr. Lina Ilag, Principal Investigator of NCS/TX/SM/TP - B.

Recommendation Rating: On the basis of evidence presented herein the reviewers received favorable impressions of the project and of the UPLB researcher, Dr. Ilag, charged with its implementation. The EEP considers this project at present an exercise in basic research. As such, the EEP feels it should continue with perhaps some adjustments in training program for Filipino researchers and in objectives of the research.

Panel Members' Narrative Review: The review was conducted on the basis of formal (scheduled) discussions and visits to laboratories and greenhouses, with discussions therein, as follows:

- 1) A discussion of about two hours in length with Dr. Beebe, at US AID, Manila, Feb. 6.
- 2) A discussion of about a half-hour in length with Dr. Valmayor, at PCARRD, Feb. 6.
- 3) Discussions of about one hour each in length with Dr. Gapasin, Feb. 6 & 11.
- 4) A round table discussion--presided over by Dr. Gapasin--with most of the UPLB researchers assigned to the Peanut CRSP, four visiting NC State PIs of the Peanut CRSP, and Dr. Cummins, ME of the Peanut CRSP, - at PCARRD Feb. 8.
- 5) Hearing oral reports and studying written handouts plus participating in workshops that were parts of First National Peanut Consultation & Peanut CRSP Review at PCARRD, Feb. 7 & 8.
- 6) A brief discussion at lunch with Dr. Ilag, Feb. 9.

- 7) A very brief discussion with Dr. Reyes, Feb. 11.
- 8) A discussion of about one and one-half hour in length with Dr. Ilag in office, laboratory, and greenhouse, Feb. 11.

The EEP, in meetings and discussions on this project, took two documents as its guide--namely "Peanut CRSP Scope of Work for the External Evaluation Panel (EEP)", and "EEP Review Agenda--In-Country Project Review". The procedure followed was to listen to informal presentations of administrative and research personnel and then--when time permitted--to ask questions designed to throw further light on the extent to which project activities were responsive to the aims and objectives of the Peanut CRSP as defined in the "Scope of Work for the EEP".

As with other evaluations this Narrative Review is based on a Project Profile Summary which rated performance to date 1/ on each of the points raised under the main headings of the "EEP Review Agenda--In-Country Project Review" (main headings of the "Scope of Work" with points under each as delimited in the "Review Agenda"). These main headings are: Implementation and Management, Adequacy of Science, Geographic Coverage and Applicability of Research, Institutional Development, and Research Progress and Application. These items are considered in more detail in ensuing paragraphs.

1. Implementation and Management: As with other Peanut CRSP projects at UPLB/PCARRD, the reviewers felt that an overall Highly Satisfactory rating was warranted for the key components of this section of the review. Relations with and support of US AID, Manila are good, perhaps due partially to the groundwork laid by Dr. Beebe's predecessor in his post, the ME (Dr. Cummins) of the Peanut CRSP, and Dr. Gapasin of PCARRD. PCARRD, as the highest level of the host country's government that is directly involved, has taken all aspects of the Peanut CRSP as serious activities and assigned them high priorities.

In regard to the apparently lukewarm attitude of UPLB administration re the Peanut CRSP, the reviewers felt this might actually be a matter of inertia. Inertia brought on by three things - the unique nature of PCARRD as an administrative body; the location, physically, of UPLB and PCARRD adjacent to each other; and an apparently continuing reshuffling of UPLB administrators from department chairmen on up.

The reviewers noted in the Profile that this project seems to be, at present, a one-researcher, bench-research project. Until there is a basis for taking part of the research to the field (as has been done in the Texas A & M part of the project) the reviewers consider the UPLB commitment of resources as personnel and material to this project as adequate. The reviewers do note that for this mycorrhizae project only,

1/ Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable.

there was reported an apparent fault or shortcoming in management--namely the inability to communicate by mail between the UPLB part of the project and the Texas A & M part.

2. Adequacy of Science: The reviewers consider Dr. Hag a competent scientist. Her training in the scientific method prior to the activation of the Peanut CRSP must have been such that she was able to quickly absorb, through direct contacts with Mrs. Taber, the latest developments in application of the scientific method to this specialized field of biological research.

3. Geographic Coverage and Applicability of Research: The reviewers have stated in the Profile their case for finding this mycorrhizae project satisfactory in this category, but with a good potential for upgrading. Should findings emerge that are of value and/or interest to agricultural researchers working where there are climatic and environmental characteristics closely similar to those of the Philippines, this upgrading will surely follow. Dr. Hag says she has had little contact with her Thai counterparts. The reviewers found no evidence of any links of this project with ICRISAT.

4. Institutional Development: The Panel feels that the Peanut CRSP, as an entity, has strengthened the agricultural research program and outlook at UPLB. It also seems to have given renewed impetus to PCARRD's interest in promoting peanut culture in the Philippines. All of the Peanut CRSP projects at UPLB, in the view of the reviewers, seem to be strengthening the research and the collaborative mode of PCARRD/UPLB. But, as noted in the Profile, in the case of this mycorrhizae project there is an opportunity to strengthen the UPLB staff by some advanced training in this specialized field.

5. Research Progress and Application: In addition to the comments on this category in the Profile, the reviewers would list some highlights of the research progress as they perceived them to be: When nine species of VAM (vesicular arbuscular endomycorrhizal mycorrhizal fungi) were used as inoculum, only one species, Glomus deserticola, gave promising results in (a) development of mycorrhizae on inoculated peanut plants and (b) better peanut plant growth than that of uninoculated controls. But inoculum of G. deserticola was 2 g/peanut plant of colonized roots, whereas inoculum for the other eight species was 50 lab-grown spores per size B pot. Three peanut cultivars tested showed differing levels of favorable responses to inoculation, as described, with G. deserticola. Mycorrhizae of G. deserticola seemed to greatly enhance nodulation in peanut. One cultivar tested showed a nodule dry weight increase of 36% over nodule dry weight of controls.

Dr. Hag seemed to take kindly to the reviewers' suggestion that she soon make a study with five or so species of VAM (including G. deserticola) in which she compared the effectiveness as inoculum of colonized roots with laboratory-grown spores of the fungi.

PROJECT PROFILE SUMMARY

Peanut CRSP Code: NCS/TX/SM/TP

In-Country Project Review

Project Title: Influence of Rhizobia and Mycorrhizae on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines. B. Mycorrhizae Considerations

Host Countries: PHILIPPINES

Overall Recommendation Rating: On the basis of: 1) Management; 2) implementation; and 3) progressive ("newness") of the basic inquiries of the research (i.e. are there really beneficial effects of mycorrhizae in the roots of crop plants and, if so, are there means of manipulating the soil environment so as to increase the establishment in roots of crop plants of the more beneficial mycorrhizal fungi?); the reviewers feel this project should continue. However, the reviewers feel a streamlining of the plans to make the research more compact (i.e. with fewer stated objectives) is in order.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: S

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Dr. James Beebe, Agricultural Program Officer, US AID, Philippines, is "new" to the Philippines but not new to the post of Agricultural Officer of a US AID Mission. From experience in Sudan he is familiar with and very much in favor of CRSP projects. Relations, as Dr. Beebe sees them, are excellent between the ME of the Peanut CRSP and PCARRD (Philippine Council for Agriculture & Resources Research & Development). PCARRD is the Philippine central government's administrative body for this type of R&D. US AID Mission, through Dr. Beebe, will cooperate with ME and PCARRD in maintaining these good relations.

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA Not Applicable

1.2 Host Country

- 1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode...: HS
- 1.22 Administration of program-government level....: HS
- 1.22A Administration of program-institutional level...: S
- 1.23 Fiscal management.....: S
- 1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS
- 1.25 Attitude toward U.S. participants and their involvement.....: HS
- 1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

1.27 Summary Comments: The EEP felt the project warrants an almost completely Highly Satisfactory rating in this category. Two top administrators of PCARRD (Executive Director Valmayor, Crops Research Director Gapasin) are fully sold on the Peanut CRSP and very involved in it. On February 7-8, 1985 two EEP members attended a Philippine "National Peanut Consultation & Peanut CRSP Review". The CRSP program had a half-day of this review, and the EEP members, and others, were given a 151 page mimeo "Progress Report" on the Filipino part of four Peanut CRSP projects. Involvement in and interest in the Peanut CRSP on the part of the academic institution (Univ. of Philippines at Los Banos or UPLB) as displayed to the EEP seemed minimal.

1.3 Resources committed to program

1.31 Personnel

- 1.311 Directly committed/indirect & supportive....: S
- 1.312 Adequacy of number and capability to function.....: S
- 1.313 Involvement of Women.....: HS
- 1.314 Overall effectiveness of program personnel: S

1.315 Summary Comments: This was presented to the EEP reviewers as a one-researcher-only project. None was noted as a research associate of Dr. Ilag, the PI. Dr. Ilag's time is divided on an approximately 1 : 1 : 1 basis between this CRSP project, a research assignment of IRRI, and classroom teaching. This is a rather new field

of crops research (perhaps even classifiable as "speculative" research). At UPLB the research seems not to have progressed to the point where some of it can be moved from the laboratory bench and the greenhouse to field plot tests.

1.32 Equipment/Facilities/supplies

1.321 Availability-reason for unavailability.....: S

1.322 Adequacy-reason for inadequacy.....: S

1.323 Summary Comments: At present all the research activities of this project may be classified as typical routine mycological and other botanical "bench" research--isolations, inoculations, reisolations, measurements of plant growth, etc. For this the EEP reviewers felt the material support from UPLB was Satisfactory.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: S

2.2 Progressiveness and innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: S

2.4 Adequacy of social science/economic perspective/sensitivity.....: S

2.5 Summary Comments: The EEP reviewers felt the scientific acumen of the UPLB PI, Dr. Ilag, coupled with the enthusiasm and drive of the U.S. PI, Mrs. Taber, makes for a potential for a Highly Satisfactory rating in this category. In this exploratory phase which the project seems now to be engaged, the science seems, to the EEP reviewers, to draw only a Satisfactory rating. The reviewers hesitate to suggest anything that would lead to an expansion of this "exploratory" research, but they will suggest, in section 7 of this Profile a modification of the current research that might add more than a touch of progressiveness and innovativeness to the science of the project.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

3.1 Relevancy to national goals.....: S

3.2 Complementarity to ongoing peanut research activities in-country.....: S

3.3 Responsiveness to perceived producer and consumer needs: S

3.4 Communications with other in-country entities.....: HS

3.5 Does location impact regionally as well as in-country.: S

3.6 Relationship to other international research efforts -
ICRISAT, IRRI.....: S

3.7 Transferability of research (in-country, regionally,
internationally) for implementation.....: S

3.8 Summary Comments: The EEP in its review of the U.S. (Texas A & M) part of this project stressed the speculative or exploratory nature of the research of this project. Also, this review (U.S. University) noted that the nature of the objectives of this project has more relevance to the host country's goals than to U.S. goals. Nevertheless, as this category is broken down in the outline "EEP Review Agenda--In-Country Project Review" the EEP reviewers could find the project only Satisfactory.

4. INSTITUTIONAL DEVELOPMENT

4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS

4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS

4.3 Training progress-short term, post graduate training.: HS

4.4 Summary Comments: This project, by its very nature, must be considered as contributing strongly to institutional development at UPLB. There is something strengthening about undertaking research that might bend natural processes to the will of man and to the benefit of man. Training of Filipino personnel (Dr. Ilag) up to the time of the review (February, 1985), the reviewers classified as highly satisfactory. But, as we saw it, it consisted entirely of some visits by Mrs. Taber (the U.S. PI) to UPLB where she stayed long enough to train Dr. Ilag in techniques and phases of mycological taxonomy with which Dr. Ilag apparently was not familiar. The EEP reviewers saw no evidence of a plan for training beyond that described in the preceding sentence.

5. RESEARCH PROGRESS AND APPLICATION

5.1 Achievement of research objectives.....: S

5.2 Impact of research on institution and government priorities and policies.....: S

5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: S

5.4 Potential of research for success in alleviating production and utilization constraints.....: S

5.5 Impact of research on Women in Development.....: HS

5.6 Summary Comments: The project, at present, must be rated Satisfactory in all divisions of this category except, of course, 5.5. Dr. Ilag's conducting of a virtually one-women research project certainly makes a marked impact on the development of women. As was stated under this category (5) in the U.S. University (Texas A & M) review of this project "A real break-through would be somewhat spectacular and have a marked impact on research priorities". The reviewers will cite under 7 (below) one such break-through they feel might easily be achieved at UPLB.

6. SUMMARY

6.1 Specific Strengths: The dedication, drive, and enthusiasm of the PI, Dr. Ilag, is a definite strength. Also, the fact that the research is now entirely "bench" (as opposed to having a "field" phase) is a strength. Dr. Ilag can check on everything between classes, etc. with greater frequency than if there were field plots to be examined.

6.2 Specific Weaknesses: The highly basic nature of the research must be considered a weakness. After another year some administrator or EEP (or other reviewer) will say - "Very interesting, but where is the progress you have made towards helping to increase peanut production"? A major weakness, the EEP reviewers feel, is the lack of a defined training plan for the Filipino scientists. A visit to the U.S. to attend a conference on mycorrhizae and present a poster is a horizon-broadening activity but, in the reviewers' opinion it is not "training" in the Peanut CRSP sense of "training". Only through real training can the remaining weakness the EEP reviewers thought they saw be corrected. This weakness is that, despite those listed in '83 Peanut CRSP Annual Report (pages 193, 194) as being on this mycorrhizae project in the Philippines, there appears to be only one scientist doing real work on it--namely Dr. Ilag.

7. Reviewers Recommendations: The EEP recommends that this project be continued at its current level of research activity and its current level of support. The EEP recommends that no consideration be given to expanding the research or increase the funding until there is evidence of an effort to train Filipino scientists to be capable of assisting Dr. Ilag without her direct supervision and to be capable of taking over the project if a contingency should remove Dr. Ilag from the project.

Special Recommendation: In plant disease (the U.S.-published "International journal of applied plant pathology"), Vol. 69, No. 5, May 1985, pages 445-447 there is reported a stunting disease of tobacco for which in etiological studies "...the endogonaceous mycorrhizal fungus Glomus macrocarpum...was implicated as the primary pathogen...". Several Glomus spp. including G. macrocarpum, are under study in this project. The EEP feels that a laboratory and greenhouse study in the Philippines involving peanut and a Glomus sp. close to G. macrocarpum could be a real "breakthrough" for this project if it were aimed at determining under what, if any, conditions a Glomus sp. can induce symptoms that would classify the Glomus sp. as a "pathogen".

NARRATIVE REVIEW

External Evaluation Panel: In-Country Project Review

September 21-28, 1985

By Pierre Gillier and D. C. Pickering

Host Country: Thailand

Peanut CRSP Code: NCS/TX/SM/TP

Project Title: Influence of Rhizobia and Mycorrhizae on Nitrogen Fixation and Growth of Peanut in Thailand and the Philippines

Introduction

Peanut CRSP activities in Thailand are an integral part of the Thailand Coordinated Groundnut Improvement Program. EEP members therefore decided that, in view of the apparently close coordination of the relevant Thai agencies, namely the Department of Agriculture, which is also the lead coordinating agency, with Khon Kaen and Kasetsart Universities, it would be repetitious to present the section on Implementation and Management separately in respect of each project. Rather, and since there was manifest full involvement of the USAID Mission with the Peanut CRSP in Thailand, it would be preferable to present separate reports on each of the four projects concerned, only regarding sections 2, 3, 5, 6 and 7 of the In-Country Project Review Agenda. Sections 1 and 4 therefore, which appear below in the Project Profile Summary Format, reflect panel members views of the generic situation and applies equally to each project. This review takes account of individual project reports, the Progress Report for 1984 of the Thailand Coordinated Groundnut Improvement Program, and discussions with key collaborators interviewed in the course of our Thailand visit. The latter included:

John Foti:	Agricultural Officer, USAID Mission, Bangkok
Roger Montgomery:	Evaluation Officer, USAID Mission, Bangkok
Vichitr Benjasil:	Coordinator Peanut CRSP, Thailand and Director, Field Crops Research Institute, Dept. of Agriculture, Bangkok, also Coordinator of project NCSU/BCF/TP in Thailand
Aree Waranyuwat:	Peanut Breeder, NCS/BCP/TP, Kasetsart University.
Aran Patanothai:	Peanut Breeder, NCS/BCP/TP, Khon Kaen University
Manochai Keerati- Kasikorn:	Collaborator, Entomologist, NCS/IM/TP, Khon Kaen University
Sathorn Sirisingh:	Collaborator, Entomologist, NCS/IM/TP, Dept. of Agriculture

Chintana Oupadissakoon: Principal Investigator, GA/FT/TP, Kasetsart University
 Yenchai Vasuvat: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Rhizobia).
 Omsub Nopamornbodi: Collaborator, NCS-TX/SM/TP, Soil Microbiologist, Department of Agriculture (Mycorrhizae).

The generic views presented below are reflected in the overall recommendation rating for each project, and should be regarded as implicit in sections 6 and 7 of the reports on each project reviewed.

Summary Assessment Ratings^{1/}

1. IMPLEMENTATION AND MANAGEMENT

1.1 U.S. AID Mission Involvement

1.11 Mission understanding and backing of project objectives. Complementarity to mission programs.....: HS

1.12 Mission logistic, programmatic and financial support of project. Attitude toward U.S. personnel traveling in-country.....: HS

1.13 Mission interest for project future.....: HS

1.14 Summary Comments: Understanding of and support is excellent as a result of thorough prior briefing by and good linkages with CRSP Management, and perceptions of clear relevance to Mission goals.

1.2 Host Country

1.21 Understanding and acceptance of program by administrators and scientists. Concept of collaborative mode..: HS

1.22 Administration of program-government and institutional level: HS

1.23 Fiscal management.....: HS

1.24 Relevancy of program to country research needs. Direction of projects relative to original plans...: HS

1.25 Attitude toward U.S. participants and their involvement.....: E

1.26 Commitment of governments and/or institutions to programs-researcher level and above - resource commitment. Importance of peanut research in development goals.: HS

^{1/} Code: E = Exceptional; HS = Highly Satisfactory; S = Satisfactory; NS = Not Satisfactory; IE = Inadequate Evidence for Evaluation; NA = Not Applicable

1.27 Summary Comments: Strong interest in and commitment to the program because of its perceived relevance to national goals and its complementarity to the national groundnut improvement program whereby additional resources can be utilized to strengthen, particularly, the research programs of the two universities primarily concerned with peanuts in their agricultural mandates. Slightly longer visits by US scientists to review activities and advise on methodology would be welcomed by Thai collaborators and should be supported by CRSP management.

1.3 Resources committed to program

1.31 Personnel

1.311 Directly committed/indirect & supportive.....: HS

1.312 Adequacy of number and capability to function.....: HS

1.313 Involvement of Women.....: HS

1.314 Overall effectiveness of program personnel: HS

1.315 Summary Comments: As noted above the CRSP is seen as an integral part of national peanut improvement efforts. Consequently it receives a fully adequate share of dedicated personnel who value the CRSP as a means of strengthening the resource base available to them for their chosen work. This is a view shared by senior research managers in Thailand.

1.32 Equipment/facilities/supplies

1.321 Availability-reason for unavailability.....: HS

1.322 Adequacy-reason for inadequacy.....: HS

1.323 Summary Comments: The existence of an important laboratory subsidized formerly by USAID for working on rhizobia, mainly in soybean, mungbean etc.--- and a workshop specialized in inoculum production, gave a good basis in Bangkok to this program. Equipment are already existing, and facilities and supplies are devoted to this project without difficulty. Field experiments are realized in several locations, mainly near Bangkok and in the Northeast near Khon Kaen. Different soils and different cultural systems are tested, including peanut after flooded paddy crop.

2. ADEQUACY OF SCIENCE

2.1 Level of science/research to generate new technology: HS

2.2 Progressiveness and innovativeness of research.....: S

2.3 Appropriateness of research - basic and adaptive.....: S

2.4 Adequacy of social science/economic perspective/sensitivity.....: S

2.5 Summary Comments: Classical scientific procedure for research on rhizobial peanut symbiosis and mycorrhizae activity and developed as strain selection, method of inoculation, interaction study microorganism x varieties, survival of inoculum in several condition, interaction rhizobia x mycorrhizae etc. Some adaptation have been necessary, linked to local condition. The socio-economic perspective, though long range, is important.

3. GEOGRAPHIC COVERAGE AND APPLICABILITY OF RESEARCH

- 3.1 Relevancy to national goals.....: HS
- 3.2 Complementarity to ongoing peanut research activities in-country.....: HS
- 3.3 Responsiveness to perceived producer and consumer needs: HS
- 3.4 Communications with other in-country entities.....: HS
- 3.5 Does location impact regionally as well as in-country?: S
- 3.6 Relationship to other international research efforts - ICRISAT, IRRI.....: HS
- 3.7 Transferability of research (in-country, regionally, internationally) for implementation.....: S

3.8 Summary Comments: As a part of national program elaborated during special annual peanut research workshop, this program is specifically relevant to Thailand and it is complementary of other projects existing for similar crops. A better nitrogen nutrition by rhizobia, and a good phosphorus absorption by mycorrhizae inducing higher yield with very low input are needed by farmers. They cannot buy high quantity of fertilizer. The impact of this research can be important in long term if they find strains adapted; good relations are existing with ICRISAT, NIFTAL, INTSOY etc.

4. INSTITUTIONAL DEVELOPMENT

- 4.1 Extent of strengthening research capabilities (scientist development, facilities).....: HS
- 4.2 Extent of development of collaborative mode-how are collaborators (U.S., host country) interacting? - enthusiasm for research.....: HS
- 4.3 Training progress-short term, post graduate training.: S

4.4 Summary Comments: Thailand has already established a coordinated groundnut improvement program in collaboration with the a Peanut CRSP and IDRC of Canada into which CRSP activities are fully integrated. The CRSP is playing an important part in strengthening Thai research capabilities and appears to be doing this job well by interaction between U.S. and Thai scientists. Training progress is good but could perhaps be improved by the expansion of training for Thai scientists at the MS and doctoral levels in collaborating U.S. institutions, given allocation of priority for this type of training by the Thai government through DOA.

5. RESEARCH PROGRESS AND APPLICATION

- 5.1 Achievement of research objectives.....: HS
- 5.2 Impact of research on institution and government priorities and policies.....: S
- 5.3 Sufficiency of training/encouragement for promotion of information flow to user.....: HS
- 5.4 Potential of research for success in alleviating production and utilization constraints.....: HS
- 5.5 Impact of research on Women in Development.....: S

5.6 Summary Comments: Some results are already obtained concerning identification of some rhizobium strains and some potential useful cultivars, good response to nodulation and N fixation are existing but yield response is variable following the situation. Similar results were obtained with mycorrhizae for growth, and an interaction rhizobia x mycorrhizae was found positive. It seems that poor soil in cassava North East area are giving better responses to pod yield than station where the level of natural inoculation is always high.

A training was organized by DOA and NSCU for 30 district extension agents so they can demonstrate the usefulness of inoculation to farmers.

Many women are implicated in this program at organization and at execution level.

6. SUMMARY

6.1 Specific Strengths: The Thai program is characterized by strong commitment of US based collaborating research institutions, the USAID Thailand mission, and Thai agencies. In-country competence regarding the projects is of a generally satisfactory nature, and the objectives of the research projects are relevant to mutual needs. Their specific strengths relate to their relevance to Thai policy for crop

diversification, in this respect concerning the peanut crop, increased small farmer productivity, and poverty alleviation especially in N.E. Thailand. From a U.S. standpoint the CRSP activities are perhaps most directly valuable because of the opportunities they afford for research on the peanut stripe virus. Finally, the CRSP program has had a most useful impact in demonstrating to the Thais the benefits to be gained by Thai agency interaction.

6.2 Specific Weaknesses: This is overall a very strong program with relatively few weaknesses, and those noted could be remedied by relative "fine tuning" of activities. Some limitations in contact between collaborating Thai and U.S. scientists in the field could be a constraint on effective implementation of projects in Thailand. The technical assistance potential of such visits can hardly be underestimated, especially from the standpoint of application of appropriate research procedures and hence the validity of research results. Research planning and implementation in Thailand could proceed more smoothly by a clearer advance indication of available CRSP resources together with prompt release of funds. Thai agency research plans and estimated calls on CRSP resources might profitably be advanced and refined to permit earlier review by collaborating U.S. scientists and institutions, thus optimizing resource obligation.

7. Reviewers Recommendations: As noted above, the Thailand CRSP program is proceeding well and no major changes are called for. Continuing collaboration, via an extension of the CRSP should lead to the production of viable research results of mutual benefit derived from the generally excellent groundwork established to date.

The proposed sabbatical of Dr. W. V. Campbell (NCSU) would improve the technical assistance component of the program, especially were he to be based in Thailand. Some slight prolongation of in-country visits by U.S. scientists would also have a disproportionate beneficial impact on the quality of Thai research and hence the validity of its results.

More and better advance planning in Thailand of research activities with CRSP funded resource implications and the early conveyance of this information to collaborating U.S. scientists would facilitate greater efficiency in project implementation and resource utilization. Such planning will need to take into account the anticipated diminishing role of IDRC in Thai peanut related research, and the probable cessation of this avenue of assistance in 1988.

EEP REVIEW REPORT
for

Management Entity.....270

PEANUT CRSP

MANAGEMENT ENTITY REVIEW

By Dr. Max Milner and D. C. Pickering (EEP) with Dr. Loren Schulze, USAID, Program Manager at University of Georgia, Athens, GA April 3, 1985, accompanied by Dr. David Cummins, Program Director.

Discussion with: 1/ Dr. W. P. Flatt - Dean, College of Agriculture
Dr. N. W. Dean - Executive V.P. Research Foundation and V.P. for Research
Ms. Linda Allen, Asst. V.P. for Research
Mr. Hubert Parker, Director Accounting Division
Mr. Robert Wallace, Contracts/Grants Dept. Manager
Dr. Darl Snyder, Director International Development
Dr. Eugene Younts, Vice President for Services
Dr. Wiley Garrett, Dr. W. L. Colville, Dept. head and Division Chairman of Departments of Plant Pathology and Agronomy respectively
Dr. Louis Boyd and Ms. Gina Fain, Agriculture Sponsored Programs and Agriculture Business Office Accountant.

Framework of Review: Based on relevant sections of the Scope of Work for the EEP and incorporating, as perceived to be appropriate, sections of the outline for USAID reports on CRSPs discussed by Dr. Garren and Mr. Pickering with Fred Johnson of BIFAD in Raleigh, North Carolina on April 2, 1985.

Summary Recommendations:

The University of Georgia, as represented by the senior administrative staff interviewed, is clearly and strongly committed to efficient administrative and management support of the Peanut CRSP. The Program Director has close and harmonious relations with relevant Georgia University staff. These should be maintained. The Management Entity should now, and as a matter of priority take steps to publicize, to those relevant sections of the U.S. peanut industry and the general public, the impact of the CRSP with reference to U.S. interests, especially concerning virus diseases and their control.

Panel Members' Narrative Review:

1. Reference to the list of persons with whom panel members met at Athens, Georgia indicates the breadth and depth of coverage of review of the Management Entity (ME). These impressions were further tested in meetings with scientists and senior administrators at all collaborating U.S. Universities in early April.

1/ The EEP review of the Management Entity also took into account discussions with a range of scientists and administrators, and EEP members held over a period of several months in early/mid 1985.

2. Panel members reviewing the ME sought to obtain clear information on such topics as the organizational structure, its mode of operation, financial management reporting requirements, relationships with Principal Investigators of Research projects, and participation in work planning with U.S. and collaborating country institutions. They also reviewed relationships with USAID and the Program Manager responsible for the Peanut CRSP in USAID Headquarters. Attention was paid to the attitude of the Program Director to facilitating prompt and effective operation of the CRSP through the ME, USAID, and collaborating U.S. and overseas institutions.

3. Overall the EEP gives the ME and its appointed Program Director, Dr. Cummins, very high marks for an efficient and economically operated management program for the Peanut CRSP. All the evidence presented and reviewed points to a high degree of efficiency and effectiveness from the standpoint of fiscal responsibility. University of Georgia staff concerned with providing support to, and oversight of, the program are fully familiar with its characteristics. Dr. Cummins has clearly established lines of communication and understanding that have led to the minimization of bureaucratic delays in program implementation.

4. The panel commends the preference of the ME to strengthen professional staffing in the Director's Office on a part-time basis if approved - a step that is warranted by the progress being made by the CRSP, the need to ensure prompt editing and resubmission of program reports to USAID, and for wider distribution. The panel recommends that the Program Director develop and distribute an annual calendar of activities planned for, and required of, CRSP collaborators. This would provide the latter with a clear indication of what is required of them sufficiently far in advance of deadlines to permit appropriate time allocations. The panel recommends further that such an annual calendar should be developed in consultation with the relevant officer in USAID, Dr. Schulze, and that the draft should be reviewed with the CRSP Technical Committee and approved by the CRSP Board of Directors.

5. Further consultation is required between the ME and USAID to finalize requirements for audit arrangements in collaborating countries that are acceptable to both USAID and ME staff. Additionally, action is required on the part of the Program Director to clarify USAID policy on foreign country travel clearances for U.S. scientists, and its subsequent dissemination to those concerned. The panel gained the impression of some lack of clarity in the minds of certain investigators on this point, and perhaps the use of this lack of clarity as an excuse for less than fully adequate project visit arrangements.

6. Notwithstanding the foregoing, the Panel is convinced of the efficient management of the CRSP by the Program Director through the ME. Accumulated experience over the past three years is clearly being put to good effect and, given continued attention to the importance of maintaining program perspective in relation to such matters as minor monetary savings on temporary support staff when required, and the general question of delegation of authority to permit adequate focus on key issues, the panel rates Peanut CRSP management at a highly satisfactory level.

RESPONSE TO EEP ISSUES

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RESPONSE TO EEP ISSUES

Project: GA/INPEP/N, BF, CAN
Principal Investigator: W. D. Branch

DOMESTIC

1. Issue: Failure of PI to visit host countries.
2. Issue: Project needs Co-PI to assist with project.
3. Issue: The INPEP concept has been difficult to achieve because of number of sites and seed multiplication and distribution problems.
4. Issue: Advance line testing would be more feasible through linkage with a more in-depth breeding project.

Response: (Statement applies to all questions, since project was restructured).

The INPEP project was terminated by the Board of Directors on October 4, 1985. The INPEP concept was not practicable for the following reasons:

(a) Too many sites geographically separated in different world regions making travel for contact with the host country collaborators according to the CRSP concept excessively time consuming.

(b) Seed multiplication and timely transfer proved difficult and

(c) ICRISAT test programs in Africa tend to fulfill some of variety test needs. Advance line testing is more feasible through linkage with strong/indepth breeding programs in the respective regions that also include cultural practice investigations where needed. Initial testing of material would have already been done in the region at the primary location. Therefore, a new project that develops a more indepth breeding/cultural practice effort in Caribbean was initiated. The African testing program was linked with the TX/BCP/S. This would complete a tri-regional program in the CRSP.

BURKINA FASO

1. Issue: There is a lack of clear understanding between U.S. PI and BF researcher on research direction and plans.
2. Issue: There is a slow response from U.S. PI on results of tests, data analysis and work plans.
3. Issue: The project has inadequate equipment.
4. Issue: The U.S. PI has not visited the field site.

NIGER

1. Issue: There is a lack of direction from U.S. PI.
2. Issue: There has been little contact with U.S. PI.
3. Issue: There is a slow response from U.S. PI in data analysis and work plans.
4. Issue: Collaborator needs further training.
5. Issue: The collaborator does not have adequate transportation to visit field sites.

Responses for both Burkina Faso and Niger: Retirement of Co-Principal Investigator left one person with excessive travel in two regions. The PI felt that there was not a need for an annual visit in such a cultivar test program. More frequent contact would have solved most issues in Burkina Faso, Niger, and the Caribbean.

CARIBBEAN

1. Issue: More contact by U.S. PI is needed.
Response: Concentration of project to the Caribbean will lower time constraints on PI.
2. Issue: More indepth pathology and physiology, the "why" of research is needed.
Response: Addition of these components are planned in the new project.

RESPONSE TO EEP ISSUES

Project: TX/BCP/S
Principal Investigator: O. D. Smith

DOMESTIC

1. Issue: Some minor modification in the project is needed to compensate for the lack of well-trained personnel in Senegal.
Response: A Senegalese student, graduate of the University of Dakar, has been selected for plant breeding training and is currently in language training at Texas A&M University. M.S. program is scheduled to begin in January, 1986.

SENEGAL

1. Issue: Difficulty in movement and use of funds to purchase needed supplies, equipment and other resources.
Response: Wire transfer of funds to the Senegal bank account has been accomplished. Previous attempt had been unsuccessful. The newly identified routing should expedite future transfers. Efforts are also being concentrated on providing more timely accounting of expenditures so that fund transfers can be initiated prior to depletion of Senegal account.
2. Issue: There is a need to find a simple system for spending funds as needed by the collaborator without intervention of the administration.
Response: We are aware of this problem and have tried to impress upon the administration the urgency of timely availability of funds. Hopefully the newly appointed administration and new procedures will aid in this matter. The new ISRA Director General has been informed and indicated a willingness to help.
3. Issue: There is a refusal to extend the project into Casamance.
Response: Agreement has been made and tests were conducted in the higher rainfall regions of Burkina Faso in 1985. This alleviates the need for tests in the Casamance region which has rainfall similar to that of the Burkina Faso test sites. An energetic, well trained native peanut pathologist is our collaborator in Burkina Faso. No trained pathologist was available for disease evaluation in the Casamance.

RESPONSE TO EEP ISSUES

Project: TX/MM/S

Principal Investigator: Robert E. Pettit

DOMESTIC

1. Issue: There is large, perhaps disproportionate, emphasis on speculative, basic research.

Response: We agree, in part, that the research program at Texas A & M has been directed towards gaining a better understanding of the fundamental processes related to Aspergillus flavus activity, means of detecting aflatoxin in peanut, and in potential detoxification procedures. We believe that there is a sound basis for this approach and that we have a good blend of both basic and applied research underway. A review of the extant literature indicated a lack of fundamental information and understanding regarding procedures to control aflatoxin contamination and divert contaminated products without excessive costs to the industry. We are unable to develop successful, practical, applied, and meaningful management procedures with the current scientific knowledge. We need to develop: (1) a better understanding of the ecology of A. flavus in the soil, (2) ways to screen peanut cultivars for levels of resistance, (3) a knowledge about how various mycotoxins interact when consumed, (4) methods of detecting aflatoxin more rapidly and economically, (5) more reliable ways of destroying or removing aflatoxin from contaminated peanut products, and (6) methods of utilizing mold damaged foods without risk of causing disease in animals and man. The basic discovery that bentonite clay can bind aflatoxin has led to the development of an improved minicolumn detection system and a potential means of removing aflatoxin from peanut oil. Basic studies on the structure of A. flavus sclerotia is helping understand how the fungus lives in the soil. Understanding how the dielectric properties of moldy seeds differ from sound seeds is helping develop a measuring device similar to the moisture meter.

2. Issue: There is a lack of plans for simplification of some of the highly technical procedures so that they can be conducted "on site" in Senegal.

Response: Apparently the group of researchers at Texas A & M involved in the evaluation process failed to convey to the panel various plans and efforts to develop practical research approaches and to train the Senegalese in using technical procedures.

Many of the currently known procedures for reducing the incidence of mold damaged peanut during production, harvest, curing, storing and processing peanut are being tested for their practical use in Senegal. We must research new procedures for mycotoxin prevention, detection procedures for more accurate detection and diversion of contaminated products out of food and feed channels, and develop a means of utilizing contaminated products with minimal risk to animal and human health. We believe the scientists and technical staff working on the project in Senegal are capable of using sophisticated technical procedures in an effort to discover solutions to the mycotoxin problem. For example, Dr. Amadou Ba is as qualified as any scientist in the world in terms of his knowledge and abilities. Mr. Amadou Kane, with ITA, is highly qualified. He has spent several years training under the FAO program and is in Europe currently for advanced training in chemistry and mycotoxicology. Where a need has existed we have helped in the training in chemistry and mycotoxicology. Where a need

has existed we have helped in the training program in Senegal and at Texas A&M and plan to continue the training program. Simplification of some technical procedures have been accomplished for use by all scientists.

SENEGAL

1. Issue: There is difficulty in movement and use of funds by collaborator.
Response: We agree that there has been great difficulty in the movement and use of funds to and in Senegal. Unfortunately, given the nature of the Senegalese system, some of these problems will continue long after the AID programs have ceased. This problem is not unique to the Peanut CRSP program. The Senegalese government has been warned by several funding agencies, e.g. French, World Bank, Belgium, Canada, AID, etc. to revise their system or funds will be withheld in future funding programs. As project leader, every time I have been in Senegal I have mentioned the problem to various Senegalese administrators. In August, 1985 I discussed the problem in the office of the General Director of ISRA. The Director of Research, Mr. Tourie stated "We are well aware of the problem, please remember we inherited a system from the French which differs from the American system. We are working on the problem. Be patient, as it will take time to make significant changes. We cannot make drastic changes overnight because they could cause greater problems." We are aware of some proposed changes that may help resolve the problem. I will make every effort possible to encourage the scientists to follow up on administrative requests to ask that they are handled as quickly as possible.
2. Issue: There is need to encourage collaborator to initiate onsite correction of problems impeding research.
Response: The collaborators have at times placed their professional creditability in jeopardy with their superiors by continuing to complain about the administrative bottleneck. They have made many attempts to help solve the problem. Some progress has been made. We must remember that the Mycotoxin Management project has brought together several research groups in a collaborative research effort in Senegal. Previously each researcher was working more independently. We believe much progress has been made in developing a team approach to aflatoxin research in Senegal. Together these researchers may be able to have a positive influence on the administration.
3. Issue: There is need for additional training of Senegalese researchers in experimental design and related research techniques.
Response: We agree that additional training of Senegalese researchers and technicians is needed. We have had individuals in training activities at Texas A&M in the past and have plans for other to train at Texas A&M. In addition we have gone to Senegal and worked with individuals on specific experimental procedures. Plans have been completed for Mr. Amangone N'Doye, animal physiologist to spend one month at Texas A&M designing experiments and learning the techniques in animal research. Additional plans are being completed for Mr. Bachir Sarr to come to Texas A&M to begin a two year master's degree program in mycotoxicology. In the past we have also requested that the Senegalese administration select a student to obtain advance graduate training in Plant Pathology and Microbiology. Currently the priority is to train a Peanut Breeder, improve the quality of research conducted in the Animal Science Department and provide additional training for the staff in the Mycotoxicology laboratories.

Additional training efforts will depend on the availability of funds for the 3 year extension, 1987-1990.

4. Issue: There is need for training and/or desire to see that CRSP purchased equipment is properly maintained.

Response: A reasonably good effort has been put forth to provide training of Senegalese researchers in the maintenance of equipment. During the review the recently purchased HPLC was inoperative because of a malfunction in the originally purchased component and a recorder problem. The Waters Company in France had shipped a new recorder that was held at the airport for payment of an airport tax. The malfunction of the new HPLC component was totally out of the ordinary and covered by the warranty. The problem of maintaining our equipment in Senegal is not a problem of training, rather a problem of spare parts. We are attempting to resolve this problem by providing additional spare parts for the HPLC. Dr. Amadou Ba has done an excellent job in maintaining his equipment.

5. Issue: Unawareness of importance of prompt reports of U.S. P.I. by some Senegalese researchers.

Response: Promptness of providing financial reports and the last progress report has been a problem. We have discussed the problem several times and believe we have made some progress concerning the importance of providing needed information on a time schedule. Within the original memorandum of agreement the Senegalese administration signed a document which requested that a quarterly financial report be furnished the Principal Investigator. To date the administration has been unable to meet this requirement within the memorandum. Again the problem appears to be primarily due to administrative procedures and the time required to gain approval of expenses and gaining approval for the submission of reports. Plans are to frequently request the needed reports to provide reminders of the due dates.

Responses to EEP Issues

Project: GA/PV/N

Principal Investigator: J. Demski

DOMESTIC

NONE

NIGERIA

1. Issue: A relatively small amount of necessary equipment and maintenance for it is lacking.

Response: A special request has been made to the Peanut CRSP to fund a centrifuge and spectrophotometer. Correspondence is underway to have personnel at IITA in Ibadan service the equipment.

2. Issue: There is an inability of the Nigerian collaborators to obtain support for travel outside Nigeria.

Response: Recent information from the business office (Ted Proffer) at the University of Georgia indicates changes will relieve this issue.

3. Issue: There may be too many research areas described for the Nigerian researchers during years 4 and 5.

Response: Meetings in September 1985 cooperators Misari, Ansa, Kuhn, and Demski were completed. Cooperators are only working on projects or areas on which they volunteered. All of Misari's and 50% of Ansa's research efforts are on the peanut program which should allow ample time to accomplish objectives.

RESPONSE TO EEP ISSUES

Project AAMU/FT/SU

Principal Investigator: B. Singh

DOMESTIC

- Issue: There is a need to identify research projects of high priority to improve food utilization in conjunction with the collaborators.

Response: Principal Investigator, US collaborators and host country collaborators have reviewed the progress of research, including consumption and post-harvest data and have identified priority areas of basic and applied research. This has been included in the plan of research for 1985-1989. Areas of research include: research for improvement of roasted peanut processing and packaging, peanut paste processing and packaging, incorporation of peanut flour in sorghum-based foods and wheat bread, and improvement of post-harvest handling and storage. Studies will include work on (a) variations in fatty acids at different stages of maturity and environment, (b) changes in fatty acids profile during storage, (c) isolation and identification of goiterogenic compounds, (d) changes in oxidative enzymes during storage and processing of peanut, (e) effects of processing on phytic acid and phytase, protease inhibitors and lipoxidases, (f) nutritional evaluation of peanut products, (g) role of women in processing and utilization, (h) socioeconomic impact of improvement of peanut products (i) socioeconomic impact of introduction of new techniques in storage or introduction of a new peanut based food.
- Issue: In formulating future projects, there is a need to make use of the extensive British and U.N. technical assistance activities in Africa.

Response: The Principal Investigator visited FAO, Rome and consulted with Nutrition Division phase of the research. Three collaborators (Drs. B. Onuma Okezie, G. C. Wheelock, and D. R. Rao) visited ICRISAT and collected information on utilization of peanut in various countries. Additionally, Drs. Singh, Wheelock, Jones, and Caples visited the FAO in 1984 and consulted nutritionists and economists. For the future, trips have been planned to visit British scientists at TDRI and Canadian scientists at IDRC working in Africa. The Principal Investigator has also established contact with the US Sudano-Sahelian Office in New York to get additional information on Sudan and other SAT countries.

SUDAN

No review possible because of lack of clearance for travel to Sudan. The mission did not give clearance in July or October.

Response to EEP Issues

Project NCS/BCP/TP

Principal Investigator: J.C. Wynne

DOMESTIC

NONE

PHILIPPINES

1. Issue: There is a need to coordinate the Filipino and Thai breeding projects by interaction between personnel of the Thai and Filipino projects.
Response: Plans are being developed for a regional workshop for 1986 to allow for enhanced cooperation among Thai, Filipino, USA and ICRISAT breeders.
2. Issue: There is a need to determine the quality of promising new germplasm lines.
Response: The lack of research on the quality new peanut germplasm is a weakness of the project that was recognized before the review. Work was initiated on the fatty acid composition (storage quality) of germplasm at North Carolina State University in 1984. Continuation of this work and expansion of quality research has been proposed to the technical committee for consideration.

THAILAND

1. Issue: There is a need for more post-graduate training and longer visits by the U.S. investigators.
Response: Plans are being made for longer units in 1986, and to increase post-graduate training opportunities.

Response to EEP Issues

Project NCS/IM/TP

Principal Investigator: W.V. Campbell

DOMESTIC

1. Issue: Post harvest pests should be included in the project.
Response: Funds will be requested from CRSP for a U.S. graduate student to conduct research on post harvest pests. Specifically, to evaluate a large collection of peanut germplasm (with emphasis on international benefits) for resistance to a cosmopolitan insect, the Indian meal moth. This research will include preference for feeding and oviposition as well as tolerance of peanut to infestation and damage. This research may be conducted at the M.S. level. Additional research may be conducted on the use of sex pheromones in a closed system (bin) for the potential management of the Indian meal moth.

General monitoring of post-harvest pests will be discussed with collaborators in Southeast Asia on my planned trip in January, 1986. I will furnish pheromone probes and pheromones initially for their use to assess their values and use in Thailand, Philippines and Burma.

PHILIPPINES

1. Issue: There is an apparant lack of plan for training at the post graduate level of researchers to assist or eventually assume responsibility for the project.

Response: Presently, I have one Thai graduate student (Ph.D.) in my program. All of her financial support is coming from my U.S. budget. I would welcome training a post graduate student from the Philippines (M.S. or Ph.D.) in my program, but my present budget will not permit the support of another host country student.

If funds were taken from the Philippines Entomology budget provided by CRSP, 80 percent of Dr. Eliseo Cadapan's annual budget would be needed to support one graduate student at North Carolina State University.

If other sources of funds were available to the entomologists (either CRSP or outside support), I would be pleased to train an entomology post graduate researcher.

2. Issue: Working arrangement between entomologist (IPB) and Entomology Department (IPM) clarification.

Response: The relationship and coordination appeared quite simple and straight forward to me. Dr. Adalla would evaluate breeding lines and plant introduction of IPB for resistance to the complex of insects. When she identified and verified insect-resistant germplasm, this would be incorporated into the breeding program(s) as time permitted. This research would be closely associated with the disease resistance and perhaps incorporated together as multiple pest resistant germplasm (disease plus insect).

Dr. Cadapan (UPLB Entomology) is concentrating his effort on the management of arthropod pests by all methods (cultural practices, thresholds, minimum rates of pesticides, beneficial organisms and the utilization of the most insect resistant cultivars and advanced lines). It is this last item of the IPM research of Dr. Cadapan that overlaps into Dr. Adalla's research. Dr. Cadapan is including only cultivars and Philippine Plant Industry advanced peanut lines in his tests. When IPB develops an advanced line(s) with insect resistance, then this advanced line may be incorporated into the best established IPM program of Dr. Cadapan's. At this point the IPB and UPLB-Entomology researchers should be working closely together.

To initiate cooperation between IPB and UPLB (Entomology) I will include both Dr. Adalla and Dr. Cadapan in the research as well as the expected publication of the research I plan on the international evaluation of peanut germplasm for pest resistance that I will conduct on sabbatical leave (1986-1987).

THAILAND

1. Issue: Longer visits by U.S. collaborator is desirable.
Response: The proposed sabbatical of Dr. Campbell for six months divided between Thailand and the Philippines will help in this area.

Responses to EEP Issues

Project: GA/IM/BF

Principal Investigator: R. E. Lynch

DOMESTIC

None

BURKINA FASO

- Issue: Equipment and facilities are inadequate to accomplish proposed research.

Response: For the most part, equipment and facilities are adequate. New equipment is being ordered as required. The major equipment constraint has been a reliable vehicle. A US-AID, Washington waiver to purchase a Peugeot truck was obtained and the vehicle has been ordered. While in BF in August, the truck was to arrive any day.
- Issue: Supplies do not arrive in Burkina Faso when needed.

Response: Most supplies have been mailed directly to US-AID, Ouagadougou, and have arrived before needed. Insecticides were not mailed because of potential legal problems, as encountered by the Cowpea CRSP. Dow Chemical and Union Carbide International offices agreed to ship the needed insecticides in March but they did not arrive by August. IBRAZ, the Burkina research organization, has access to some insecticides. Cooperation and communication with IBRAZ will be attempted. However, it is most likely that the needed insecticides will have to be shipped directly from the U.S. since only limited types are available through IBRAZ.
- Issue: Administrative support of IBRAZ in Burkina Faso is inadequate.

Response: The University of Ouagadougou has been extremely supportive, providing two faculty members, laboratory space, equipment and land on the Gampala Research Station. When the program was initiated, cooperation was initiated with the University and not IBRAZ, the research organization in Burkina Faso. Every effort will be made to communicate and cooperate with IBRAZ, but without financial support, I am not sure how successful the attempt will be. IBRAZ and the University are now in same ministry; programs should become better coordinated in the future.

Responses to EEP Issues

Project: GA/FT/TP

Principal Investigator: T. Nakayama

DOMESTIC

- Issue: The PI needs to review and identify with his Thai and Filipino collaborators priority food science research objectives that relate to peanut utilization in Thailand and the Philippines.

Response: Since the meeting with the EEP, the PI has conferred and met with the Thai and Filipino collaborators in Experiment, GA. and an overall research plan has been formulated. The first priority is given to eliminating aflatoxin as a responsibility for all three groups. Since that time progress has been made in manual sorting after blanching and peanut butter made in order to transport representative samples across the ocean has been analyzed in the Georgia laboratories, and was shown to have eliminated aflatoxin. The infected nuts sorted out were subsequently shown to contain high levels of aflatoxin. Emphasis will be placed on the development of acceptable products such as snack foods, butter, milk, and flour.

PHILIPPINES

1. Issue: There is a need for closer involvement of the researchers in the research planning and implementation.

Response: As stated above, we have tried to rectify this by meeting with the principal investigator. There will similarly be further travels as the budget allows. Three University of Georgia co-investigators will become more active in the project.

2. Issue: Progress with project chosen is good but there is a need for the research to emphasize production, harvesting and distribution of nutritionally safe peanuts.

Response: This objective has always been understood, although perhaps not explicitly stated as such. A test to see whether sorting after skin removal and heating would eliminate aflatoxin has been entirely successful in that resulting products sent to Georgia have been shown to be aflatoxin-free (0 ppm). The defective nuts have been shown to have a high level of aflatoxin (800 ppm). The farmers stock originally began with 125 ppm. Further work to delineate the extent and efficiency of the procedure is proceeding.

THAILAND

1. Issue: There is a need for longer visits by UGA collaborators.

Response: Efforts are being made to correct this problem of visits within budget and time constraints.

RESPONSES TO EEP ISSUES

Project: AAM/FL/FT/CAR

Principal Investigator: B. Singh (originally B. O. Okezie)

DOMESTIC

1. Issue: The management and monitoring of this project need to be reorganized.

Response: US and host country collaborators have jointly planned the research objectives to address the perceived constraints on utilization of peanut. The revised plan based on consumption and post-harvest surveys and reorganization of the relationship have defined the role of each entity. The present plan includes research on post-harvest handling and storage, and improvements or modifications in peanut processing (roasted peanut, peanut butter, new peanut-based foods, decontamination of aflatoxins by microwave energy, quality evaluation for utilization of peanut). The plan is relevant to research and development and will ultimately lead to relieving the constraints of increased peanut utilization in Caribbean countries and enhance capability in research and teaching programs at Alabama A&M University and the University of Florida.

CARIBBEAN

1. Issue There is a need to exercise close surveillance of the programs to insure that no significant problems arise.

Response A project coordinator has been appointed that has more time to supervise the program. Alabama A&M has rearranged the management of the project which will lead to coordination among Alabama A&M and the University of Florida and the host country collaborators. The role of Dr. Okezie, (original PI) and Dr. Cummins established and defined relationships of a very complex nature. Under this mode, the food technology project at Alabama A&M and the University of Florida and the

production project at the University of Georgia will complement each other. A plan has been formulated where researchers on quality and food product development and production work in the field will collaborate in solving the immediate problems in production, storage, and processing of peanut in the Caribbean region.

Response to EEP Issues

Project NCS/TX/SM/TP (Rhizobium)
Principal Investigator: G.H. Elkan

DOMESTIC

1. Issue: Involvement in Cameroon may dilute program in Asian countries.
Response: We will be terminating the Cameroon pilot project in May 1986. This project has been quite successful but we want to concentrate our efforts in Southeast Asia as suggested by the EEP.

PHILIPPINES

1. Issue: Post-graduate training of personnel to assist and/or assume responsibility of present collaborator is needed.
Response: There was a suggestion that more post-graduate help is needed to assist the Philippine PI. We are doing two things in this regard. First, Dr. Paterno's chief assistant will come to NCSU for two semesters to take course work not available at UPLB. She will then return to complete her studies at UPLB. Secondly, we are asking for an HC budget increase to allow us to bring over a Ph.D student who will return to work with Dr. Paterno.
2. Issue: The project has too many stated objectives and too many plans for future for number of personnel involved.
Response: As to the comment that there are too many objectives for the work in the Philippines, the complete EEP report stated that this was a first impression and after visiting at UPLB they found this was not the case.
3. Issue: There is a need for funds to move from CRSP to PCARRD to IPB to the researcher in a more timely manner.
Response: The problem with moving funds more rapidly lies with PCARRD. We have held a meeting with all PI's and PCARRD to try to expedite the transfer and hope the problem is resolved. However, part of the slowness in moving funds results from the good management carried out by PCARRD and I would not like to see this changed.

THAILAND

1. Issue: There is a need for more post-graduate training and longer visits by the U.S. investigators.
Response: We planned to spend our time last year principally in Khon Kaen since we recognized the same problem. However, we did not get permission to visit Thailand last year. Instead, we had the PI's from Bangkok (Nantakorn and Yenchai) and Khon Kaen (Banyong) visit our lab at NCSU last August. We then held a joint planning session during the Rhizobium conference in Hawaii with the Thai and Philippine (Paterno) collaborators. During future trips we plan to spend more time in Khon Kaen. We are asking for a budget supplement to train additional personnel specifically to assist Banyong Toomsan and Dr. Aran at Khon Kaen University.

Response to EEP Issues

NCSU/TX/SM/TP (Mycorrhizae)

Principal Investigator: Ruth Ann Taber

DOMESTIC

1. Issue: The splitting of U.S. administrative and fiscal oversight between NCSU and TAMU creates some problems for the PI.
Response: We agree with EEP that there has been an oversight in splitting the administrative and fiscal responsibilities between NCSU and TAMU. There is no doubt that direct communication between TAMU and the host countries would facilitate equipment and supply activities, travel schedules, and lessen paperwork since it would not require an intermediary agency to accomplish transactions.
2. Issue: The speculative nature of the research, while now a strength, may become a weakness if progress in application is not made.
Response: Part of this project, we agree, is necessarily basic. Considerable emphasis has been placed on experiments designed to gain new fundamental information about the relationship of different mycorrhizal fungi from the U.S. and the host countries. Built into the original document were plans for greenhouse and field experiments for years 4 and 5. We accelerated this part of the project by going to the field last year and have found root stimulation in inoculated peanut. Similar results (indicating our research is no longer speculative) were obtained in the host countries. There is still a need for simultaneous basic and applied experimentation with mycorrhizal fungi, just as there is for Rhizobium.

PHILIPPINES

1. Issue: The highly basic nature of the research may not aid in improving peanut production.
Response: We agree that much basic research is conducted in the Philippines. This work has been necessary in all three countries. In the Philippines, the lack of equipment to separate spores from substrates was a hindrance at the start of the project. This has been corrected and Dr. Ilag has made amazing progress now in spore collections and pot culturing. She has already demonstrated differential growth responses in the greenhouse. It will not be long before we are able to go to the field there.
2. Issue: There is no plan for training of Filipino scientists.
Response: We agree that locating qualified graduate students in the Philippines and in Thailand has been slower than anticipated. We have encountered problems with acceptance of students having language difficulties at Texas A & M, but these are currently being worked out with the graduate college. Dr. Ilag and I plan to meet in February with Dr. Nopamornbodi in Thailand with the express purpose (among other items on the agenda) of discussing exchange of graduate students exchanging mycorrhizal isolates, and finalizing plans for field trials. It is planned that J.S. Neck, graduate student at TAMU will spend several months in the Philippines next year.

THAILAND

1. Issue More time should be spent in-country by the U.S. collaborator.
Response Efforts will be made to honor this request.