

Review of Selected AID Bureau of Science and Technology

Office of Agriculture (S&T/AGR)

Centrally Funded Projects

Active in Thailand

for

USAID/Bangkok

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FORWARD

The review team wishes to express our appreciation for the strong support and friendly hospitality shown by USAID/Bangkok. The cooperativeness of the RTG staff and various contractors involved with the six projects was also outstanding. Their openness with their time, records, and constructive responses in our discussions made this report possible.

AID/Washington and S&T/AGR were also most helpful in providing information from records and by interviews.

Your friendliness and responsiveness made this a pleasant journey to Thailand.

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EXECUTIVE SUMMARY

The team was asked to evaluate the success of six S&T/AGR centrally funded projects^{1/} in providing technical assistance, training, and commodities to their Thai counterpart agencies. Of particular interest was:

1. The success in transferring knowledge by counterpart activity and training programs.
2. The use by the RTG agencies of transferred technology, commodities, training, and consultants.
3. The development of institutional and professional linkages between Thai, U.S., and international (IARCs) development agencies.
4. The strengthening of Thai counterpart agencies to perform sustained development activity.
5. Thai budget and administrative support.
6. Skills and support needed by Thailand and sources within AID/W to meet these needs.

^{1/} "Centrally Funded" connotes basic programming and management through S&T and/or regional bureaus but with the opportunity of mission buy-ins and shared financing of activities.

7. The advantages or disadvantages of various contracting modes in accessing centrally funded assistance.
8. Criteria for selecting and using centrally funded technical assistance.
9. Conclusions and recommendations for use by USAID/Bangkok.

It was determined that the centrally funded projects were equally successful with bilateral projects in accomplishing development tasks as just outlined above. They had advantages such as:

1. Lower cost and generally more readily accessible technical assistance for both long and short term assignments.
2. A much broader access to top level scientists in the U.S. and IARCs.
3. Reduced management and support services for the Mission.
4. A variety of access modes established and available to meet specific Mission needs.
5. Can more easily perform exploratory studies to determine future needs.

Disadvantages appeared in:

1. Long distance management. While this was not a problem in the six projects reviewed, the potential exists.

2. Communications are more difficult within country in keeping the Mission and other Thai agencies informed of project accomplishments and progress. On the other hand, international and U.S. technical exchanges and communications are better with centrally funded projects. Also the peanut CRSP, NIFTAL, and Small Scale Machinery have been particularly successful in developing cooperation between concerned departments in both the universities and ministries.

3. Contracting, either grant or loan, which is not covered by the bilateral agreement can cause problems with resident advisor's taxes, visas, and customs duties if not properly negotiated in advance.

Recommendations:

1. For Thailand:
 - a. The Mission should maintain oversight capability for centrally funded projects.

- b. Mechanisms should be provided to assure in-country technology exchanges.
- c. Procedures should be provided to all prospective contractors concerning visas, taxes, and duty free privileges as well as other advice on equitable contracts.
- d. Develop systems to maintain Thai, U.S. and international linkages subsequent to project completions.
- e. Continue to provide short and long term training with flexibility to cover unique cases.
- f. Encourage, particularly, administration and management training.
- g. Investigate the receptiveness of Thai policy makers to counsel with top U.S. and international scientists and policy makers on key problem areas; i.e., natural resource conservation, environmental protection, soil and water management.
- h. Other areas where future activity is needed is in soil management, irrigation research, potential future crops, hybrid seed, and regulatory services.

2. For Science and Technology Bureau, Office of Agriculture (S&T/AGR).

Basic elements to be considered in all new projects:

- a. Be prepared to accept "buy-in" as normal project policy.
- b. Have policies for dealing with host country agencies with little or no Mission contact, and maintain ease of access whether a Mission or host country contract.
- c. Be able to service high priority requests from host countries that are not of high priority in the Mission.
- d. S&T/AGR should have capability to do exploratory studies on future host country need.
- e. Plan for, in conjunction with the Missions and host countries, administrative and management training, broad communications within host country and worldwide, developing linkages during project that will be self-sustaining subsequent to project completion, knowledgeable contracting and timely evaluation during and at completion of the project.
- f. Work with Mission in maintaining oversight capability in host country.

g. Provide for short and long term academic and informal training.

There is generally available, or can be organized, centrally funded assistance that can be helpful to any of Thailand's agricultural development needs. Thailand now has the capability and resources to be an efficient user of technical assistance and manager of host country contracts. Furthermore, they are often a mutually beneficial partner in development research. USAID/Bangkok is in a position with their new strategy to go on to new development fields such as rural industry and employment generation, and environmental problems, which have been requested by the RTG. With the availability of centrally funded assistance, they can still maintain a position in previous development investments to help insure their continued success.

I. Introduction

A. Thailand has sustained an enviable economic growth rate over the past decades (4.6% average annual growth of GNP 1960-81). In this developmental process, 12,000 Thais have been trained in the U.S. and elsewhere resulting in technical and managerial skills considerably better than most developing countries. In development circles, Thailand is increasingly being recognized as a middle income country (IDA criteria for per capita GNP 1981, \$795, Thailand per capita 1981 \$770).

Recognizing U.S. development assistance to Thailand in money terms is a small percentage of that provided by all donors; however, the U.S. holds the edge in Thai acceptance of providing technical assistance and training. USAID/Bangkok, faced with further reductions in personnel, is seeking more effective ways to provide technical assistance and develop long term linkages between U.S. and Thai institutions. We were asked to do an assessment of six centrally funded S&T/AGR projects in an effort to determine the efficacy of accessing the technical skills available through various centrally funded contracts. The scope of work is included in Annex A.

B. S&T/AGR centrally funded projects reviewed in this report and the technology transferred and used are as follows:

1. Nitrogen Fixation by Tropical Agricultural Legumes (NifTAL)

Rhizobium identification, screening and production, azolla and blue green alga production, composting, and rhizobial/mycorrhiza symbioses. Rhizobium production management and distribution on a regional basis.

2. Peanut Collaborative Research Support Program (CRSP)

New germ plasm, plant breeding and screening techniques, food processing, nitrogen fixation, and entomology research.

3. Seed Program and Industry Development

Seed production, processing, quality control, storage and marketing; seed center management; equipment installation, operation and maintenance; foundation seed production.

4. Water Management Synthesis II

Canal layout and construction; water scheduling and delivery systems; water user organization development and management; computer simulation program for evaluating design, management and rehabilitation alternatives.

5. Extension of Small-Scale Agricultural Equipment

Blueprint interpretation and production, basic metallurgy, small machinery business management, machine development, and adaptive, demonstrative and sales technique.

6. Soil Management Support Service

Soil taxonomy classification system, soil survey mapping, land use planning, soil data base development, soil management for conservation, and erosion control.

II. Methodology

Contacts were made with AID/Washington project managers, and through them their project contractors, to discuss projects activity, problems and accomplishments. Reports and project files were also reviewed. In Thailand, projects monitors, contract staff, Thai officials and participants were interviewed, field activities assessed, and reports reviewed.

III. Project Activities

A. Professional Training

All of the centrally funded projects have included a training component. Most have been short term to attend conferences, workshops, visits to IARCs or U.S. institutions. Almost everyone feels this training is desirable and stimulates the professional flow of information.

Without exception the Thai agency wants more long term training for graduate degrees, usually in some specialized area. In the farm machinery project, people with practical training in designing and fabricating farm equipment are needed, but Thai engineering schools do not generally provide this type of training. As a result, most machinery fabricators do not have engineers on their staff to modify design for local farm conditions.

U.S. training is generally preferred, but the regular USAID participant training has become ridiculously expensive--now \$22,000 per year for graduate training! Mission experience is that graduate training can be provided through the centrally funded projects with university contracts for about half that amount.

While all want the long term training, each situation should be carefully assessed. Over 10,000 Thais have been trained by USAID in U.S. universities. Thai universities are also producing well trained graduates. Perhaps the most beneficial aspect of the centrally funded projects is the use of short-term training funds for project participants to attend professional meetings, and campus or IARC visits. Short-term training is perhaps a misnomer since their purpose is more for professional up-dating than training. Nevertheless, it is probably one of the most important aspects of the project in terms of facilitating a flow of information and spirit of cooperation. Graduate training should be provided where specialized skills are needed.

B. Institutional/Professional Linkages:

In nearly all cases both institutional and professional linkages are being forged. However, the relationship tends to be much more on the personal level than institutional. If the personalities change at either the U.S. or Thai institution, the linkage would be stretched if not broken. The centrally funded contract does encourage the continuity, but the continuation of the relationship after termination of the project would more likely be based on the personalities involved. The professional/institutional linkages are strengthened by U.S. university visits to Thailand and Thai visits to the U.S. university campuses.

C. Technology Being Transferred:

The technology being promoted by the CF projects is generally to increase production. However, half of the projects reviewed promoted agriculture based industries: most notably the Small Scale Farm Machinery project by encouraging local manufacture of farm equipment; the peanut utilization component of the Peanut CRSP may lead to the manufacture of peanut products and; the Seeds project, while promoting increased production, has removed seed production from the farm to an industry of improved seed distribution. The NifTAL project in cooperation with the Seeds project has established an RTG plant for producing rhizobium inoculant and will help promote a distribution system for both government and private sales. The primary project purpose, however, is to increase production of legume crops.

The WMS-II encourages the utilization of irrigation facilities to increase farm production.

The SMSS project does not provide direct on-farm benefit for increased production, but does indirectly promote increased production through better land use planning and utilization.

All indications are that the RTG has provided good counterparts and with USAID/Bangkok assistance is good in country support. There is evidence of the utilization of U.S. technical assistance and the Thai

officials interviewed indicated plans for additional services to be provided. One other consultant did indicate that too much effort was being planned for the staff and funding available.

2. In relation to the longer term centrally funded projects with in-country staff either centrally funded or USAID/Bangkok funded such as NIFTAL, Small Scale Machinery and MSU Seeds, a similar pattern exists; the RTG has generally provided good counterparts and utilization has been satisfactory. There have been service breaks in some counterpart positions in Small Scale Machinery but this has also been true of the advisor positions. These have not been major impediments to project activity. Short term consultants under these projects have been equally well used.

Commodity procurement has been more of a problem for these projects especially NIFTAL predecessor activity and to some extent seed center equipment. These problems, however, have not reflected on the use of service provided by the centrally funded projects.

The development of linkages with other than counterpart institutions has also been good. NIFTAL is working closely with the Seeds Division and Field Crops Division as well as with KU and KKU. The Small Scale Machinery project and their counterpart organization, the Agriculture Engineering Division of DOA have developed linkages with the DOAE, KU, KKU and Chiang Mai University, the private sector machinery manufacturers and the

Regional Departments of Agriculture. In addition to DOAE, MSU Seeds has worked with all of the universities listed above and the DOA.

E. Budgeting and administrative support to carry on project related field work activities

1. Administrative support has been highly praised by both short and long term consultants on the part of USAID/Bangkok and the various RTG entities. Problems do arise but the effectiveness, in country, of resolving these problems is excellent. They have arisen primarily in contracting. One current problem concerns taxes, visas and import privileges for long term advisors. However, all involved are assured of a reasonable settlement.

2. Budgeting: Budgets have been generally met as scheduled and have not been a deterrent in the use of short term consultants. Recommendations have been made by consultants that if implemented will require shifts or increases in budgets. This is especially true in the case of WMS-II activity.

Long term projects budgets are adequate and have not been a constraint to achieving project goals. Increased budgets would have meant more timely completions or increased accomplishment.

F. Maximizing training opportunities and utilization of centrally funded resources

1. Lack of language skills and the inability to release staff have caused some training opportunities to be missed. This has not been a major problem and advanced degree training with corresponding technical competence is high in Thailand compared to many other Asian countries.

2. Administration and management is an area where there has not been training opportunities and skills are not adequate. This problem was widely recognized and mentioned by many Thais interviewed. This is an area that should be investigated for possible centrally funded assistance as it is a world-wide problem in developing countries.

3. Utilization of centrally funded resources is high in Thailand. They not only call in assistance from this source but make good use of the assistance provided. The Thai scientists more than most seem able to develop rapport quickly with short term consultants and maintain these relationships when possible. When top level consultants are provided this has resulted in their recommendations being acted upon by their Thai counterparts. With this situation existing in Thailand central funding has the advantage of being able to contract for top U.S. scientists on a continuing basis for short time periods appropriate to Thai needs.

IV. Implementation Modes of the Six Reviewed

Centrally Funded Projects in Thailand

Centrally funded projects have generally complemented Mission projects and have been successful in meeting their goals. The six projects reviewed are a mix of various modes of operation of long and short term involvement.

Four of the six projects reviewed are closely linked with Mission sponsored projects. Perhaps the best example is the Mississippi State University involvement in both the Mission Seed II (and its predecessor) and the centrally funded Seed Program and Industry Development Project. Two MSU team members funded out of the Mission project are in-country and provide technical assistance and close liaison with their campus. In addition, TDY assistance is provided occasionally by MSU from the centrally funded project.

The NifTAL project also has an in-country Rhizobium specialist from the University of Hawaii on a 2-year contract to work with the Resource Center. The equipment for the production of rhizobium inoculant was purchased under the Seed I project. A resident representative plus occasional visits of centrally funded project personnel from NifTAL/Hawaii provides a close working relationship.

Both the NifTAL and MSU personnel are in Thailand on host country contracts. They have experienced difficulty with RTG income tax regulations,

duty free imports, visas, housing, etc. that have taken considerable time of both the contract persons and the cooperating Thai agency to resolve the issues. Most have been resolved satisfactorily though these problems raise the frustration level and deter the specialist from doing the professional assignment.

Under the Small Scale Farm Machinery Project, IRRI has the contract to provide a resident engineer to work with the Farm Mechanization Division of the Department of Agriculture. His contractual arrangements are handled under the IRRI/RTG agreement. The issues of income taxes, visas, etc. are somewhat of a problem, but the precedent has been set and procedures established to clear the issue.

In all cases the issue of Thai income tax is usually resolved by the Thai agency including the tax in their budget so the individual pays the tax and is reimbursed by the agency for whom he is working.

The IRRI engineer has to work between AID and IRRI administrative procedures. For example, when traveling in-country, purchase of gasoline is handled according to IRRI procedures while per diem is paid according to AID procedures. This process could be simplified by using one system, preferably an all-IRRI system that presumably follows acceptable accounting practices.

The Peanut CRSP, SMSS, and WMS-II do not have resident staff; they have not experienced the above problems. With the possibility of graduate students working in-country under the Peanut CRSP, these issues will again need to be resolved and may have to be resolved by more than one RTG agency. If a graduate student was working on peanut utilization, Kasetsart University would be the responsible institution, while other phases of research would be DOA with possible involvement of Kasetsart and Khon Kaen universities depending on where the research is done.

If the Mission and RTG wish to access centrally funded projects to a greater extent in the future, ways need to be explored of resolving the most troublesome issues of income taxes, duty free imports, and visas for long term contract personnel. Housing does not appear to be a problem since good housing is available, assuming adequate funds are provided. Centrally funded projects are administratively managed differently than Mission projects. The grant component of Mission funded projects is channeled through DTEC and resident staff are covered by the U.S./Thai bilateral agreement. Loan projects are administered through NESDB and resident staff are provided under a host country contract negotiated with the RTG. Such arrangements are not covered by the U.S./RTG bilateral agreement, therefore, the RTG agency or institution and the contractor have to resolve the issues of taxes, visas, etc. separately.

Some centrally funded grant projects are not channeled through DTEC, but rather are included under a memorandum of agreement between the contractor and the RTG department or institution. The advantage of DTEC clearance is their authority to waive income tax, customs and duty while the departments and universities cannot.

It would seem that at least two alternatives could be worked out: (1) a blanket arrangement could be developed with the RTG to cover technical assistance under all centrally funded projects; or (2) personnel could be administratively managed by the Mission just as they do direct hire staff. Either way seems preferable to working each situation separately with all the frustration and time loss from the primary assignment associated with these negotiations. For periods of less than 14 days, no visa is required. Visas for short term (up to 90 days) assignments are normally easy to obtain and an exit permit (showing payment of income tax) is not required. If technical assistance is restricted to this time frame then little difficulty should be encountered.

V. Centrally Funded Assistance Modes Available to Missions

A. Centrally funded agricultural projects provide a number of opportunities for the USAID/Thailand Mission to access technical assistance in support of Mission projects or developing professional relationships between Thai professionals and their institutions and U.S. and IARC institutions where little Mission funding or support is required. These projects can provide

access to technical resources from U.S. institutions and IARCs and promote long term institutional linkages. While centrally funded projects are not the best avenue for access to the private sector, they may allow U.S. institutions to provide a secondary linkage with the U.S. private sector.

Following are the modes of assistance available to Missions:

1. Direct Hire RSSA and PASA Staff Consulting. Direct hire and RSSA are for short term technical assistance and training assignments. PASA's can be used for both short and long term assignments. This is usually a quick response mode as staff are in place.

2. Collaborative Research Support Programs (CRSPs) provide specific commodity research assistance from U.S. universities. These can be long or short term research, technical assistance and training support plus commodity procurement for specific project needs.

CRSPs are characterized by long term institutional commitments and linkages development, with emphasis on research. A policy on "buy-in" is being developed.

3. Open Bid Contracting for universities, international Agriculture Research Centers (IARCs), private sector consultants, agri-business firms, and other service firms, e.g. PVO or other NGO. These contracts provide short and long term technical assistance and training plus commodity procurement.

4. Indefinite Quantity Contracts (IQCs) provide short term technical and training assistance from universities, private consultants and other NGO on short notice as the contracting arrangements are already made.

5. Mission "Buy-Ins" In any of the centrally funded projects, Mission may add more funds specifically for Mission oriented assistance. Central projects being worldwide in orientation provide more short than long term assistance. Occasionally, a long term advisor will be located in a Mission and be given regional responsibility. However, Missions can -- via their buy-in -- have both long and short term assistance, participant training and commodity procurement.

VI. Criteria for Centrally Funded Assistance

In accessing centrally funded projects through S&T/AGR, the following criteria should be taken into consideration.

A. Required Elements Specific to Thailand:

1. The RTG agency must have appropriate policy and professional and institutional capacity to utilize centrally funded project resources. The recipient agency should have a minimum of two or three professional officers with graduate degrees in the professional field of concern and be willing to cover all in-country expenses related to supporting Thai staff and research.

2. Graduate training is highly desired by Thai agencies and should be encouraged as appropriate. Given the generally high level of technical competence in the RTG agencies, considerable benefit can be gained through specialized short courses; attendance at conferences and workshops, visits to research centers, commercial production, marketing and processing facilities.

3. Technical assistance should:

- a. provide state-of-the-art skills development, information, and research materials;
- b. promote administrative and management skills;
- c. improve their ability to develop self-sustaining research and extension infrastructure;
- d. develop long term collegial and institutional interaction and linkages.

4. Policy development assistance should:

- a. focus on factors inhibiting the achievement of current goals and objectives;

- b. sensitize policy makers to potential future production and processing problems and opportunities, and on marketing alternatives.

B. Required Elements for S&T/AGR

1. Centrally funded projects and proposals should be primarily for policy development, and technical assistance in research, extension, institution building, and training. Only with developing specification and procuring very specialized equipment, or where a "buy-in" calls for commodity procurement, should centrally funded projects be considered as an avenue for procuring commodities.

2. The U.S. institutions providing the policy and technical assistance must be prepared to continue their relationship by providing follow-up services for periods of five or more years via regular short-term exchange visits in order to develop self-sustaining linkages and assure continued research and extension infrastructure development.

3. In project design and implementation, S&T/AGR should coordinate with the Mission and host country in the provision of appropriate academic and non-academic training.

4. Provision should be made for the required communication aids within the host country and worldwide. Also management and evaluation procedures should be joint planned.

5. In contracting, guidance should be requested from the Mission particularly in relation to income tax, visas, and duty free entry of project and personal goods.

6. Contracting modes should be such that:

a. "buy-ins" are standard policy.

b. exploratory assistance is available.

c. direct host country contracts and non-project assistance can be provided.

VII. Advantages of Central Funding

A. Centrally funded projects are generally no more successful in Thailand than bilateral projects in most of the development categories. The advantage of centrally funded projects, that will become even more important in the future, is that they have a broader base of resources at a generally higher scientific level than bilateral projects. Given Thailand's level of

technical competence, it is necessary for them to be able to interact and draw on the capabilities of the most relevant U.S. scientist. The development of linkages and broad accessibility are favored by central funding.

B. A wide range of modes detailed elsewhere in this report exists to access centrally funded projects. They do not require Mission funds, management, or support to the extent of bilateral programs. They are cost efficient in that most of the overhead costs of design and approval have been made. In most centrally funded projects, the initial four weeks per year is provided without cost or with only travel and per diem being paid by the Mission. If the Mission requires longer term specialized assistance, this can be procured with a Mission "buy-in" to cover additional short term or long term technical assistance and/or training. Even with "buy-ins" management and support remains the responsibility of the centrally funded projects.

C. Few developing countries are in the position of Thailand where most day to day management and implementation operations can be well handled by RTG staff. They need the interaction with scientists from other institutions for mature exchange, on a peer level, and mutually beneficial. Even where new technology and concepts are being introduced and a full-time foreign advisor is required, RTG's proven ability as a host country contractor reduces the need for Mission management and support and make centrally funded management possible.

D. The areas of communications, management, and support are usually complicated in direct ratio to the distance separating management and implementation. Where host country capability and responsibility is high, as in the case of Thailand, it is less of a problem. Nevertheless, Mission oversight should be exercised particularly with new initiations or where the RTG has not developed reasonable competence.

The communications problem works both ways in that due to broad associations both in the U.S. and worldwide the project has access to more of the latest information on a selected subject. However, at the country level, mechanism must be put in place by the project to assure that knowledge imported or developed is circulated in a timely way to other interested entities in Thailand. This can be accomplished by seminars, workshops, field days, newsletters or other methods appropriate to the country. Farmer or manufacturer's commercial adoption of new technology or research is a strong indication of its usefulness and success. Centrally funded projects in Thailand such as NIFTAL, the Peanut CRSP, and the Small Scale Farm Machinery projects have been more successful than most in host country agency coordination and communication.

E. In interviews with RTG staff, a common expressed need was for training in administration and management. Though there appears to be an abundance of such training by short courses in the private sector, it was not indicated that these were available to government staff particularly at

mid-levels. This is an area that requires further study and if a broad need is expressed, means should be found to provide the training. Likely there is in-country competence to provide most of the training. In designing projects, the provision of training in administration and management pertaining to that project should be fully explored.

F. Policy issues pertaining to natural resource conservation, environmental protection and soil and water management are not being resolved. This is particularly true in terms of deforestation, erosion, siltation, flooding, and on-farm water use. Top level policy makers and scientists in these fields could be made available under central funding to meet with RTG policy makers to discuss and counsel on these issues. While we are aware of the difficulties involved with these issues, no action is rapidly making the problem worse and in some cases causing damage that cannot be repaired. Centrally funded projects have the broad range of high level access to provide counselling on policy determination.

G. When Missions need non-project assistance such as the exploration of future needs or where host country entities wish to contract direct with U.S. resources centrally funded projects have the advantage. The recent contacts for fisheries assistance between the Department of Fisheries, Kasetsart University, and Oregon State and Michigan University was arranged through the Fisheries CRSP with USAID/Bangkok facilitating communications.

VIII. Recommendations

A. For USAID/Bangkok

1. Mission should take advantage of centrally funded projects in the modes that best suit specific problems, as follows:

- a. CRSPs are best for long term broad ranging research activities on a specific commodity. Specifically, there are CRSPs in small ruminants, beans and cowpeas, sorghum and millet, peanuts, nutrition, fisheries and soils management.
- b. "Buy-ins" for long term assistance, training, and commodity procurement are appropriate for most contract modes except for CRSPs where policies on "buy-ins" are still being developed.
- c. PASAs are suitable for specific technical assistance either short or long term.
- d. Direct hire or RSSA for a wide range of short term technical assistance.

- e. IQC for quick but expensive technical assistance on a specific problem.
- f. Open bidding where services are not otherwise available, long or short term technical assistance, training, and commodity procurement.

2. Develop mechanisms to provide continuous linkages and interaction between staff of important segments of the MOAC, and agricultural universities, and their international counterparts. Staff in the disciplines indicated below should have priority.

- a. Seed Development
- b. Major Crop Production and Processing
- c. Water Management Including Irrigation
- d. Soil Management and Conservation
- e. Livestock Development
- f. Farm Mechanization
- g. Forestry
- h. Fisheries

This is not an exclusive listing, but does indicate a reasonable order of priority for Thailand. Assistance in these areas should involve production, processing, and economics staff.

3. Continue the provision of degree and short term training and maintain the flexibility to provide non-project training for high priority cases.

4. Retain within the Mission the technical and managerial ability to provide Mission oversight for centrally funded projects and provide guidance to contractors in complete and equitable host country contracting.

5. Encourage administrative and management training for the RTG staff, especially research station and irrigation project managers.

6. Investigate the receptiveness of RTG policy makers to interaction and counsel with top U.S. and international policy makers and scientists on natural resource conservation, environmental protection, soil and water management.

7. Future Areas of Assistance. The technology is appropriate in the six projects reviewed. Some additional areas worthy of consideration for future activities include:

- a. Training in management is most often mentioned as a "needs" area-management of seeds centers, irrigation systems, research stations, etc.

- b. Soils management research particularly on soils of the Northeast.
- c. Irrigation research - RID has 7 stations that are not well utilized.
- d. Potential crops for future production.
- e. Hybrid vegetable and flower seed technology.
- f. Forward looking development policy issues.
- g. Identify areas where RTG agencies can and should provide regulatory services as opposed to producing a product; and provide training and long term guidance in development of regulatory laws and procedures.
- h. Make provision for exploratory studies to determine future technical assistance and research needs.
- i. Put in place policies that allow direct project planning and contracting between host country entities and S&T.

B. For S&T/AGR

1. Maintain broad range and ease of accessibility, particularly as pertains to:
 - a. initial four weeks free service for preliminary investigations and exploratory studies for future needs.
 - b. assistance to non-project activity of high priority to host country.
2. Develop and promote ability to provide high level scientists and policy makers for short term policy counseling.
3. Develop policy for dealing direct with host country entities with little or no Mission involvement.
4. Implement "buy-in" policy for CRSPs as is available with more technical service oriented projects.
5. In host country project design and implementation coordinate with Mission and/or host country in:
 - a. Management, oversight, and evaluations.

- b. Communication and extension in-country and internationally.
- c. Short and long term academic and non-academic training.
- d. Developing linkages during life of project that will be self-sustaining upon project completion.
- e. Providing for administrative and management training appropriate to the project.
- f. Insuring complete and equitable contracting with host country.

USAID/Thailand Evaluation of a Selected List of
Centrally-Funded Agricultural Activities

Background

USAID has had a bi-lateral program in Thailand for some thirty years. This bi-lateral program has been supplemented with activities and services from AID/Washington funded agriculture and rural development projects. Currently, the O/ARD staff spends between 10 to 15% of its staff resources in support of these projects. These centrally-funded activities have provided services and or relationships generally not available through the bi-lateral program thereby augmented and complementing the Mission's programs.

Evaluation Purpose

This evaluation takes place at an important cross-roads as USAID/Thailand rethinks its strategy. The strategy will focus on three or four major, non-traditional activities such as Science and Technology and Natural Resource Management. The Mission wishes to examine the validity and viability of expanding its access to centrally-funded agricultural activities to the point of possibly earmarking bi-lateral funds for that purpose. The key issues to be examined are:

- a. Are centrally-funded agricultural activities important to Thailand, if so, why? What are the benefits of centrally-funded projects vs. bilateral? What will USAID/Thailand gain by augmenting AID/W projects rather than initiating bilateral activities?
- b. Is the major role of centrally-funded activities in research? If so, how effective are centrally-funded projects in transferring research/technology and in strengthening Thai research capabilities?

- c. How effective are centrally-funded projects in developing long-term linkages between U.S. and Thai institutions?
- d. Is the mix of financial access and implementation modes (contracting, implementation, add-on/shared funding etc.) used by these projects most appropriate in Thailand or is one better than others? and
- e. What agriculture skills does Thailand now need and is the centrally-funded list of activities an effective/ efficient method to provide those skills?

Scope of Work

1. Review six (6) centrally-funded projects (NIFTAL, Peanut CRSP, Water Synthesis II, Mississippi State Seed Industry Project, IRRI Small-Scale Mechanization/Extension Project, and Soil Management Support Service (SMSS) to assess their relevances and relationship to the USAID/Thailand and Thailand's development objectives. Annex A gives a more complete description of centrally-funded projects to be reviewed. The report should detail specific activities under each project which have taken place in Thailand and their effectiveness in contributing to the achievement of objectives.
2. Review listed projects and their activities to determine whether:
 - a. strengthening of RTG implementing agencies is taking place;
 - b. financial access and implementation modes are appropriate or whether one mode is better than others with regard to project implementation, administration, etc;

- c. professional training (in-service, academic and or other types) is taking place and, if so, assess training impact on ~~implementaton activities as well as usefulness of project~~ activities in strengthening institutional capability;
 - d. technology is being transferred and, if so, assess nature of success and opportunities for additional interventions;
 - e. institutional and professional linkages are being strengthened.
3. Review USAID (or AID/W where appropriate) and RTG support to the accomplishments of the projects being reviewed in terms of:
 - a. utilization of TA consultants (e.g. counterparts and sufficient local staff to work with consultants once in place);
 - b. budgeting and administrative support to carry-on project related field work activities;
 - c. maximizing training opportunities available and utilization of centrally funded resources (if appropriate).
- ~~4.~~ Review and identify what kinds of skills/services and related support the RTG needs at this time and identify possible sources within AID/W's portfolio of projects and activities.
5. Review and discuss with key RTG, AID project officials and project field contactors draft findings and related recommendations. This is to be done prior to finalizing the report.
5. Final evaluation report shall take proper cognizance of suggested revisions from collaborative review and discussions with RTG and AID representatives.

Contractor Qualifications

Two (2) contractors will be necessary for a period of four weeks each. One is expected to be an agriculturalist and the other is an institutional development specialist. The contractors should have Masters level degrees in their field of specialization with extensive experience working overseas. Both should be familiar with AID field as well as central bureau functions and responsibilities. It would also be extremely desirable if the contractor had knowledge of Thailand and the Thai language but neither is required.

Report Requirement

To be provided to the Chief of Agriculture Division, USAID:

1. An outline of the evaluation plan describing methodology and proposed evaluation content on or before the fifth working day after arrival of the evaluation contractor.
2. A draft report within three (3) weeks or one week prior to the final day of evaluation.
3. 30 copies of the final report following AID/W review will be provided to USAID/Thailand.
4. A final report for reproduction will be provided before departure with the following as a suggested report outline:
 - I. (a) Executive Summary - (No longer than two pages, single spaced) includes: (1) a summary of the six centrally funded activities and accomplishments to date, (2) the effectiveness of the six centrally-funded activities and (3) the major recommendations for Mission consideration.
 - (b) Basic Program Data (one page) This item is optional.

- II. List of Conclusions/Findings and Recommendations
- III. Discussion of Findings, Conclusions and Recommendations
- IV. The Thai Context, emphasis on Thailand's agricultural needs and the potential for centrally-funded activities to full those needs.
- V. Appendices
 - (a) Scope of Work
 - (b) Persons Interviewed, Sites Visited
 - (c) Other Annexes as appropriate

Proposed Budget

Salary [\$200/day x 29 days x 2 persons (4-6 day weeks)]	\$11,600
International Travel (2,500 round trip)	5,000
Per Diem (\$78 x 30 days x 2 persons)	4,680
FICA Tax	700
Other Direct Costs/Contingencies	<u>\$2,020</u>
Total	<u>\$24,000</u>

Note: Contractors are authorized to spend two working days in AID/W to discuss the evaluation with appropriate S&T officials while also reviewing the project documents files, etc. prior to arriving in Bangkok and one day upon return to discuss findings and recommendations.

Nitrogen Fixation, Symbiotic (NIFTAL) [0613]

Contractor: University of Hawaii
 AID/W Project Officer: Lloyd R. Frederick, S&T/AGR/RNR
 USAID/T Project Officer: John Conje
 Duration: Start: FY 75; End: FY 89
 Counterpart(s): DA
 Technician in Country: Dr. Doug Beck
 Project Activities in Thailand: Cooperative research, training and extension on biological nitrogen fixation; establish a Regional Biological Nitrogen Resource Center for S.E. Asia.

Brief Project Description:

The project's purpose is to develop practical ways to enable tropical root-nodulated crops to capture nitrogen from the air and to increase food production by use of tropical legumes. The project can: (1) assist national biological nitrogen fixation (BNF) programs; (2) provide short-term, intern and graduate degree training programs for LDC scientists to work with the root nodule bacteria (rhizobia) and the application of BNF in cropping systems; (3) design and implement systems for legume inoculant production and distribution; (4) local scientist participation in legume inoculation trials; (5) provide selected rhizobial cultures for improved legume seeds; (6) link scientists through workshops, information exchange and the BNF Bulletin; (7) provide technical assistance in the optimum use of legumes in farming systems.

Peanut Collaborative Research Support Program (CRSP) [4048]

Contractor: University of Georgia, Experiment Station
 North Carolina State University
 Texas A&M University
 AID/W Project Officer: Loren Schulze, S&T/AGR/AP
 USAID/T Project Officer: John Foti
 Duration: Start: FY 82; End: Continuing
 Counterpart(s): DA, KKU, KU
 Project Activities in Thailand: Collaborative research programs on peanut production and utilization.
 Brief Project Description: The purpose of the Peanut CRSP is to bring together the resources of LDC and U.S. institutions into a long-term collaborative research program to relieve constraints that would enable an increase in production and utilization of peanuts in the LDCs. Work on applied research problems is undertaken to relieve such constraints. This involves research in areas such as drought resistance, rosette virus disease, aflatoxin resistance, improved varieties, economic analyses and surveys, improved pest management and improved cropping systems on small LDC farms, nitrogen fixation, and food production development.

Seed Program and Industry Development [0203]

Contractor: Mississippi State University
 AID/W Project Officer: Robert I. Jackson, S&T/AGR/AP
 USAID/T Project Officer: John Conje
 Duration: Start: FY 58; End: Continuing
 Counterpart(s): DOAE, DA, KU
 Project Activities in Thailand:----- Technical assistance in redesign of Thailand Seed I Project and preparation of Seed II Project Paper as well as short term technical expertise in support of RTG Seed Division.
 Brief Project Description: This project provides technical assistance in the planning, implementation and evaluation of seed programs and seed industry. The objective is the establishment of seed production industries capable of meeting LDC farmers' needs for improved seeds. Under the project, technical assistance is provided to LDCs in order to improve seed processing efficiency. An annual summer training course in seed processing is conducted and graduate training is offered.

Water Management Synthesis II [4127]

Contractor: Consortium for International Development
 AID/W Project Officer: L.W. Fitzgerald, , S&T/AGR/RNR
 USAID/T Project Officer: Richard Flaspohler
 Duration: Start: FY 82; End: FY 87
 Counterpart(s): RID
 Project Activities in Thailand:----- Technical assistance with farm irrigation problems of the Lam Nam Oon Integrated Rural Development Project.
 Brief Project Description: The purpose of this project is to strengthen the capability of LDC institutions responsible for irrigation development and improvement to promote and bring about better irrigation water management and, thus, the more efficient use of water and other irrigation resources. The ultimate objective is to bring about the improved performance and productivity of irrigation systems throughout the Third World. The project has three main activity components--(1) technical assistance to missions and host-countries; (2) training courses related to Water Management; (3) special studies to generate answers and information; the development of new technologies; and the testing of improved Water Management practices, and the start-up of an effective information dissemination network for facilitating the transfer of this knowledge (technology transfer). The project has a strong field-support orientation, especially with respect to mission requests for technical assistance and training. It is also designed to expand the pool of available technical expertise and to foster a multi-disciplinary approach to Water Management problems.

Extension of Small-Scale Agricultural Equipment [0265]

Contractor: International Rice Research Institute (IRRI)
 AID/W Project Officer: Pete Williams, ASIA/TR/ARD
 USAID/T Project Officer: John A. Foti
 Duration: Begin: FY 77; End: FY 85
 Counterpart(s): DA, Ag Engineering Division.
 Technician in Country: Dr. Cochran at Department of Agriculture, MOAC
 Dr. Bart Duff at IRRI

Project Activities
in Thailand:

Both objectives noted below have been widely pursued in Thailand. The industrial extension of small-scale machinery project has had an in-country technician for several years and the data collection effort has been followed up by IRRI with a sub-contract with Kasetsart University.

Brief Project
Description:

Project has two objectives:

- (1) Introduce IRRI developed small farm machinery for adaption by indigenous small manufacturers to LDC small farmer needs. Efficiency, durability and ease of manufacture and service are key elements in selection and developing machines for introduction.
- (2) Data collection from small farms with varying degrees of mechanization to provide a better understanding of the effect of farm mechanization on small farmers. This study of the economic effect of mechanization can assist in developing desirable policy programs in LDCs.

Soil Management Support Service [1229]

Contractor: USDA/SCS
 AID/W Project Officer: Raymond E. Meyer, S&T/AGR/RNR
 USAID/T Project Officer: John A. Foti
 Duration: Start: FY 79; End: FY 88
 Counterpart(s): DLD
 Project Activities in Thailand: Financial support to the Fourth International Forum on Soil Taxonomy and providing short term TA as requested by RTG.

Brief Project
Description:

The purpose of the project is to develop the pre-requisites for soil-based agrotechnology transfer to and among tropical and subtropical countries. The project provides field support assistance to AID and LDCs on programs or problems relating to land use and land use planning for food production. It also provides assistance to soil management programs relating to problems in agronomic production systems, soil erosion; and soil and water conservation. Other services are provided technical assistance and training in the use of Soil Taxonomy and a guide to improving Soil Taxonomy for more appropriate usefulness in tropical and subtropical areas.

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List of ContactsRTG

Dr. Douglas Beck	Director BNF Resource Center
Dr. Vichitr Benjasil	Breeder Agronomist, Khon Kaen Field Crops Research Center
Dr. Nantakorn Boonkerd	Head of Research, Soil Microbiology Branch
Mr. Chak Chakkaphak	Head, Research and Testing Agriculture Engineering Division
Dr. Bill J. Cochran	Agriculture Engineer and Project Leader, IRRI Farm Machinery Project
Mr. George M. Dougherty	Seed Processing Specialist (MSU Contract)
Dr. Billy Gregg	Senior Seed Specialist (MSU Contract)
Dr. Arwooth Na Lampang	Chief, Field Crops Division, DOA
Mr. Pirome Lochaiyakul	Chief, Chainat Seed Center
Dr. Samarn Panichapong	Director, Soil Survey Division, DLD
Mr. Phaibul Ploylearmsaeng	Chief, Lopburi Seed Center
Dr. Sanan Rimwanich	Deputy Director-General, DLD
Mr. Samnao Rugtrakul	Director, Agriculture Engineering Div., DOA
Mr. Soonthorn Runrongthanin	Chief, System Improvement & Maintenance Branch Operation & Maintenance Division, RID
Mr. Nukool Thongtawee	Director, Operation & Maintenance Div., RID
Mrs. Yenchai Vasuvat	Chief, Soil Microbiology Branch, DOA
Mr. Vira Vongsangnak	Field Director, NESSI Project, Khon Kaen
Mr. Joe B. Waddington	CTF Team Leader, Parsons Overseas Co., Khon Kaen
Mr. Petcharat Wannapee	Director, Seed Division, DOAE
Dr. Boonyok Watanaphuti	Director, Project Planning Division, RID
Dr. Sopon Wongkaew	Plant Pathologist, Khon Kaen University
Mr. Chalerm	Field Crops Station, Khon Kaen

Thai Private Sector

Mr. Sukasame Chitsing Research & Development Manager, Pacific Seeds Co.
Mr. Pisarn Laohachiraphand Chief, Seed Processing, Pacific Seeds

USAID/Bangkok

Dr. Charles Alton Project Manager, Khon Kaen
Dr. Jack Bond USDA Project Manager, Chiang Mai
Dr. Ernest J. Briskey Science and Technology Officer
Mr. Kamol Chantanumate Assistant Project Officer
Mr. David Delgado Project Manager, Chiang Mai
Mr. Thomas F. Fallon Controller
Mr. Richard E. Flaspohler Project Officer
Mr. John A. Foti Agricultural Development Officer
Mr. Robert Halligan Director
Mr. Peter J. Howley Area Contracting Officer
Mr. Thomas E. Johnson Project Development Officer
Mr. Thomas O'Connor Human Resource and Training Officer
Ms. Carol A. Peasley Deputy Director
Mr. Det Trisahd Project Officer
Mr. Jack Williamson Assistant Program Officer

Review Project Data

Type of Assistance: NITROGEN FIXATION BY TROPICAL AGRICULTURAL LEGUMES (NIFTAL)

Purpose: To develop practical ways to enable tropical root-nodulated crops to capture nitrogen from the air and to increase food production by use of tropical legumes.

Major Activities: Assist national BNF programs.
Provide training to LDC scientists to work on application of BNF in cropping systems.

Design and implement systems for legume inoculant production and distribution.

Link scientists through workshops, information exchange and the BNF Bulletin.

Provide technical assistance in the optimum use of legumes in farming systems.

Relationship to Other Projects: Ties in very closely with Mission Seeds project and with the centrally funded Peanut CRSP.

Technology being Transferred: Refining knowledge on use of BNF for increased production of leguminous crops and develop capability for production of rhizobium inoculum. Other sources of BNF will be studied.

Strengthening Activities: The NIFTAL Biological Nitrogen Fixation Resource Center for South and Southeast Asia has been established near Bangkok, Thailand. Regional aspects will relate to providing starter material for country production and training of personnel. Resource Center is staffed by capable personnel and a good working relationship exists between Thai professional staff and NIFTAL/Hawaii with a mutually valuable exchange of information.

Implementation: Equipment for the production plant was provided under the Seeds project. Considerable difficulty has been experienced in procuring and installing equipment over a six year period. Process was further complicated when a ship carrying commodities sank. Delays have resulted in loss of Thai budget for installation.

Center is producing small supplies of peanut, soybean, and mungbean inoculum used primarily in research and government demonstration programs with farmers. Some will be distributed in private channels.

**Utilization of
Technical**

Assistance:

A Rhizobium specialist from Hawaii is currently in-country on a two-year assignment. Periodic exchange visits maintain a communications link.

**Administrative
Support:**

Support from RTG/DOA has been good as well as from USAID/Thailand. Rhizobium specialist on a host country contract is experiencing difficulties over Thai income taxes, visas, duty-free imports.

Training:

Key personnel received U.S. graduate training under previous AID projects. 20 Thais have received short term rhizobium training under NIFTAL.

Comments:

Project appears to be accomplishing intended purpose. Institutional linkages are strong and the exchange of information strengthens the relationship. While the use of rhizobium inoculant on soy and mung beans appears promising, results to date are not so conclusive on peanuts. Naturally occurring rhizobium in Northeast Thai soil appears sufficient for peanuts.

Project fits well with Mission and Thai strategy to introduce high production increasing technology. Also have potential for new private sector industry of rhizobium distribution. The contract between the University of Hawaii and the Department of Agriculture gives the project control of funds and greater freedom of action than other modes. Problems stated above expect to be satisfactorily resolved.

Type of Assistance: PEANUT COLLABORATIVE RESEARCH SUPPORT PROGRAM (CRSP)

Purpose: To bring together the resources of LDC and U.S. institutions into a long-term collaborative research program to relieve constraints to increased production and utilization of peanuts in the LDCs.

Major Activities: Applied research includes: Improved varieties with emphasis on drought resistance, disease and virus resistance, aflatoxin resistance; economic analyses and surveys; improved pest management; improved cropping systems on small LDC farms; nitrogen fixation; and, food production development.

Relationship to Other Projects: Ties in with NIFTAL and the Mission Seed Project. Also supports mission efforts to strengthen research capability and linkages among DOA, KKU and KU.

Technology being Transferred: Project activities involve rather standard research procedures. Research will result in improved peanut production technology for farmers as well as utilization technology to provide better products for consumers as well as plant breeding and screening techniques for developing high yielding disease and insect resistant varieties.

Strengthening Activities: While the Peanut CRSP is only in its second year, valuable exchange of genetic materials, information and professional researchers is developing among DOA, KKU, KU and North Carolina State University, University of Georgia and Texas A&M. Thai research capabilities in peanut research are considerably enhanced by the availability of improved germplasm and information heretofore not easily available.

Implementation: Thai researchers have recieved about 1,000 peanut lines and have them in tests at Khon Kaen and Kasetsart Universities. When combined with Thai materials, the genetic diversity is great.

Utilization of
Technical
Assistance:

A number of professional exchange visits have taken place with a workshop scheduled in April for CRSP participants. Professional capability of Thai staff is such that both they and U.S. university staff can benefit from professional exchanges.

Administrative
Support:

For the most part, administrative support has been good. It appears, however, that DOA is not following through on paper work in a timely manner to obtain CRSP funding. The project was designed to use primarily existing research equipment and import only strategic items. A Ph.D. training grant is planned in Peanut Breeding and an M.S. in entomology at NCSU.

Short term training has been provided for Thai researchers to go to ICRISAT (2) and NCSU (3).

Comments:

Planned activities seem to be progressing very well. Thai researchers are very enthusiastic and place a high value on the breeding materials and information being provided under the CRSP. They would like more training slots.

The Peanut CRSP management entity, the University of Georgia has a blanket memorandum of agreement with the DOA for peanut research. Then involved U.S. universities sign memorandum of understanding with Thai institutions and develop programs of work for specific projects. Funds and services are channeled from the U.S. institution to the Thai agency with a minimum of red tape. As long as accounting procedures are adhered to, this has worked well. Delays in submission of accounts has delayed reimbursement to Thai institutions.

Type of Assistance: SEED PROGRAM AND INDUSTRY DEVELOPMENT

Purpose: To provide technical assistance in planning, implementation, and evaluation of seed programs in LDCs.

Major Activities: Assisting with the development and management of seven seed centers and increased cooperation with the private seed industry. Providing on the job, short term and degree training in seed production, quality and processing, and the management of seed centers.

Relationship to Mission Projects: The centrally funded project works closely with Seed II and indirectly with all crop production projects, particularly the Biological Nitrogen Fixation project. The staff have established good rapport and have strong support from related RTG institutions.

Technology being Transferred: Seed production, processing, quality control, storage and marketing; equipment selection, installation, operation and maintenance; seed center management, contract grower organization, and foundation seed production and distribution are technologies that have been transferred.

Strengthening Activities: This has been accomplished by developing a comprehensive national seed program complete with buildings and equipment and the trained staff to implement, operate and maintain the facilities as well as manage the seed production.

Implementation: Regular TDY assistance is provided on specialized problems.

Arrangements for in-service, short term, and academic training is provided.

Support has been provided to the private sector and foundation seed production programs.

Type of Assistance: WATER MANAGEMENT SYNTHESIS II

Purpose: To improve the technical efficiency, productivity, and economic performance of irrigated agriculture systems with emphasis on farm level applications.

Major Activities: Irrigation systems management, training needs, and strengthening water user group capabilities is the major focus of WMS II in Thailand.

Lam Nam Oon and NESSI projects have been surveyed and reports made on systems management and the development of water user groups. These reviews were made during 1982 and 1983.

Relationship to Other Projects: Activity supports Lam Nam Oon and NESSI projects and indirectly other production and extension projects involving irrigated crops.

Technology being Transferred: Canal layout and construction, water scheduling, and delivery systems, water user organization development and management, and computer simulation program for evaluating design, management and rehabilitation alternatives.

Strengthening Activities: Recommended procedures for on-going irrigation projects, multi-disciplinary approach to irrigation management.

Implementation: TDY reviews and reports, consultation with RID staff and provision of published data on new research and methods, plus long term training and technical assistance planning.

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Utilization of
Technical

Assistance:

WMS II staff have developed a great deal of rapport and respect within the Royal Irrigation Department. Consequently their reports and recommendations are given close attention by department staff. Long term planning to impact on problems of NESSI and Lam Nam Oon is being accomplished. Funding is seen as a major problem to implementation.

Administrative
Support:

No problems have been encountered in this area. Project and WMS II funds cover consultant costs, Mission and RTG have provided local support where needed.

Training:

No formal training has been provided under WMS II; however, a training plan is being developed and plans made for two Thai engineers-in-training to be enrolled in a 15-month Utah State University masters program in irrigation engineering.

In-service training was also planned for NESSI and Lam Nam Oon staff. Three Thai participants have been nominated for a CSU irrigation management short course in May 1984.

Comments:

Problems of management and utilization of irrigation resources in the Northeast are recognized but sufficient resources have not been made available to implement recommendations.

This is an S&T/ASIA Bureau funded project being implemented by the Consortium for International Development (CID). Colorado State, Utah State and Cornell Universities work with other institutions in carrying out technical assistance, training, technology transfer and special study activities. This mode of operation has been satisfactory and apparently causes no problems in Thailand.

Type of Assistance: EXTENSION OF SMALL SCALE AGRICULTURE EQUIPMENT

Purpose: Introduce and adapt to Thai small farm conditions, IRRI developed small machinery in conjunction with Thai manufacturers and engineering institutions.

Major Activities: A wide range of IRRI developed machines have been introduced to Thai institutions, manufacturers and farmers. The more popular have gone through adaptive procedures.

Considerable training of counterparts on the job and by short courses at IRRI has been accomplished.

Regular demonstrations of adapted equipment are made to mechanization projects, machinery fairs, and agricultural shows.

Relationship to Other Projects:

Results have broad application to production projects that have mechanization potential. Irrigation projects have particular application potential where the pressure of two or more crops requires quicker land preparation and harvesting techniques.

Technology being Transferred:

Blue print interpretation and production, basic metallurgy, small machinery business management, machine development and adaptation, demonstration and sales techniques.

Strengthening Activities:

Close associations are developed with the IRRI Engineering Department and relations established with U.S. institutions, international centers, and other regional country small scale machinery programs. Books, reports, and periodicals are provided and training given to all staff.

Implementation:

IRRI engineers have been posted with the Thai Department of Agriculture, Agriculture Engineering Division since 1976. There has been a continuing introduction of small scale machinery and provision of technical research material. Initial emphasis was on developing manufacturing capability in the private sector including not only engineering and metallurgy skills but business management as well.

Current emphasis is more on demonstration to Thai development projects and farmers of machinery developed to fit Thai conditions.

Two models of power tillers, a rice thresher, and trailer of IRRI design and project modification have been commercially successful and are widely available in the Thai market.

More emphasis recently has been placed on manual and animal drawn equipment. The weeders, seeders, and buffalo plow show promise of commercial success.

Utilization of
Technical
Assistance:

IRRI engineers both Thai posted and on TDY assignments have been fully utilized and made major contributions to machinery development. Close cooperation has been developed between the Thai Agricultural Engineering Division, the Agricultural Extension Department, the Engineering Departments of Kasetsart University and with the Regional Department of Agriculture. All major and many small machinery manufacturers have cooperated with project staff.

Administrative
Support:

The Agricultural Engineering Division has generally maintained a full complement of staff, have provided workshops and manufacturing equipment, and contacts with other Thai institutions. IRRI provides office facilities, transportation, and prototypes of equipment. USAID has also been very supportive when requested.

Comment:

This project has provided long term assistance to the RTG at a time when resources were not available through bilateral programs.

With the termination of ASIA/TR support for the IRRI contract in September of 1985, provision should be made for continued linkage with IRRI and other regional and international small machinery development entities. Agriculture mechanization is too important in Thailand both from a crop production as well as an industry and employment standpoint to allow the Agricultural Engineering Division to lose contact with state of the art innovations.

IRRI has in the past provided intermittent technical assistance on machinery to various Southeast Asian countries. This could likely be established by some contractual arrangement with Thailand.

This project fits well with USAID/Bangkok and Thailand's objectives of intensive farming and rural industry development.

A project sponsored by S&T/AGR involving IRRI and A/D/C is studying the consequences of small farm mechanization in South and Southeast Asia.

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Type of Assistance: SOIL MANAGEMENT SUPPORT SERVICE

Purpose: To develop the prerequisites for soil-based agro-technology transfer to and among tropical and sub-tropical countries.

Major Activities: The project provides assistance to AID and LDCs on:

- programs and problems related to land use and land use planning;
- soil management programs related to agronomic production systems;
- soil erosion and soil and water conservation and soil surveys;
- technical assistance and training in the use of Soil Taxonomy and improving its usefulness in tropical and sub-tropical countries for soil classification.

Relationship to Other Projects:

While the technology developed under this project activity has a broad agricultural base, it does not have a close working relationship with other projects covered in this review. Project development and soil surveys were conducted for a small irrigation project, Huai Aeng near Roi Et.

Technology being Transferred:

Information generated through this project will have primary benefit in land use planning, soil and water management programs and development of cropping systems.

Strengthening Activities:

The DLD Soil Survey Division is the primary recipient of the project benefits. Soil Taxonomy is being translated into Thai and will be an excellent reference for soil classification work. Six local, regional or international workshops have been held in Thailand since 1978.

Implementation:

Project is being implemented along lines planned. Thai counterparts attend workshops and project officers make occasional visits to Thailand. Major activity currently underway involves the translation of the Soil Taxonomy. The data base on soil related behavior has been improved and extended.

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Utilization of
Technical

Assistance:

Appears to be well received by Thai colleagues. Reports consultancies and workshop information are used in soil survey and mapping, soil management and land use planning. Soil taxonomy has been adopted as the soil classification system for Thailand.

Administrative

Support:

Administrative support appears adequate for the project activities involved. DLD has a good working relationship with S&T/AGR/RNR, and staff of the contractor, USDA/SCS.

Training:

Have had six regional or international workshops in Thailand attended by over 150 Thais. RTG personnel have attended three international meetings. No recent long term training has been undertaken.

Comments:

AID project management out of S&T/AGR/RNR has effectively served as the worldwide coordinator of soil survey and land classification activities. Project activities appear to be rather tightly held in the DLD Soil Survey Division and are not well recognized by others in DLD or other departments of MOAC. Activities should be initiated to broaden the base of knowledge about project activity within the concerned departments of the universities and ministries.

W1593e:5/21/84