THE THIRD REPORT
OF THE
EXTERNAL EVALUATION PANEL

SMALL RUMINANT
COLLABORATIVE RESEARCH SUPPORT PROGRAM

OCTOBER 1981

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SECTION I

INTRODUCTION

1. The External Evaluation Panel (EEP) of the Small Ruminant Collaborative Research Support Program (SR-CRSP) held its annual meeting October 19-22, 1981. All members participated. The major objectives were to 1) Finalize host country site visit reports. 2) Evaluate Annual Reports, Workplans and other documents. The materials reviewed are listed in Annex I.

2. The interim activities of the EEP of the SR-CRSP since the second report in July 1980 consisted of:
   - -- Visit to Kenya (McDowell - September 1980); Indonesia (Pope - September 1980); Peru (Fernandez-Baca, 1980) in connection with other business and without travel expense to the SR-CRSP. The opportunity was provided to meet with the site Coordinators, some PIs and Co-PIs to discuss projects and future plans.
   - -- Attendance of R.E. McDowell at the BIR Meeting October 27-28, 1980.
   - -- On-site reviews of the Ohio, Tuskegee and Texas A&M Systems and Breeding projects in January 1981.
   - -- Attendance of A.L. Pope at the Technical Committee Meeting April 27-29, 1981 and the BIR Meeting June 23-24, 1981.
   - -- Visit to Kenya by three EEP members to observe and evaluate the seven projects August 2-15, 1981.
   - -- Visit to Brazil by three EEP members to observe and evaluate the eight projects August 22-September 4, 1981.
   - -- Meeting October 19-21, 1981 to prepare this report.

3. Upon evaluating the reponses to previous recommendations, the EEP wishes to make the following comments:

   The standardization and scheduling of reporting has considerably augmented the efficiency of program review efforts. PIs and the ME are congratulated.

   Attention to the further development of existing resources rather than establishment of new structures has generally resulted in constructive accomplishments.

   Whereas the functions of Site Coordinators have been described and presumably agreed upon, closer synchronization of the interdisciplinary activities carried out within a collaborating country is needed.

The training activities of the majority of the projects is commendable.

While the need to assign long term senior scientists is recognized as highly essential by collaborating institutions, some projects have not conformed. It is difficult to assure continuity of long range research without this investment in personnel commitment.

The increased commitment of resources - financial, institutional and personnel on the part of collaborating governments is a tribute to the quality of scientific staff being committed by US institutions.

Considerably greater emphasis is being directed to the needs of the smallholder in identifying program objectives in some countries. This is in keeping with original SR-CRSP concepts.

With greater movement of people and materials between host countries and US agricultural institutions, close attention to the potential of introducing hazardous pathogens to the US or to collaborating countries must receive high priority.

The incorporation of collaborating country representatives in identifying SR-CRSP program direction is highly constructive and warrants continuity.

4. The EEP continued its on-site visits to participating US universities in line with the high priority given to this activity in its previous report. Ohio State University, Tuskegee Institute, Texas A&M University and Texas Agricultural Experiment Station at San Angelo were visited in January 1981. The procedure for these visits was the same as described for previous visits in the Second Report of the EEP.

   The visits gave the opportunity for direct interaction between the scientists and EEP members and proved useful in clarifying several issues. Each one of the visits was the subject of a specific report. The EEP greatly appreciated the full cooperation of all those involved in the site visits.

5. During the past year, the EEP began its visits to the collaborating countries to obtain first hand impressions on achievements and constraints at the host country level. A team of EEP members evaluated the SR-CRSP activities in Kenya and another team visited Brazil. In both countries, the EEP members were very well received by senior counterparts. Valuable exchanges of views took place about the strengths and weaknesses of the individual projects and the overall program. Discussions were also held with USAID personnel, the Site Coordinators and with individual SR-CRSP scientists

and national staff. Opportunities were taken to see existing research facilities and ongoing experiments. The EEP very much appreciated the time and efforts of those involved and the constructive views expressed. In the view of the EEP, the host country visits are indispensable elements of the evaluation process.

SECTION II

GENERAL RECOMMENDATIONS

Recommendations developed following EEP deliberations directed towards more than one project, or to the SR-CRSP as a whole, follow. The order of listing is not intended to coincide with order of priority. Following these general comments is a section drawing attention to more specific points of the individual projects.

1. Budget Planning

The EEP has been informed that the total annual budget available for the SR-CRSP after September 1983 may not permit the same level of expenditure as at present. As animal experiments and research generally are long term in nature, a sudden budget squeeze could have a very negative effect on the overall scientific output from the investments made in the SR-CRSP. Although on the whole, the SR-CRSP program has progressed very well, some projects have undoubtedly developed much better than others. Equal budget cuts over all the program would surely be the be most uneconomic and even unfair.

The EEP therefore recommends that the Technical Committee and the Board of Institutional Representatives begin giving serious consideration to how future funding allocations and the necessary savings may best be accomplished. In the view of the EEP, it may be useful to scale down unsuccessful projects from October 1982 (program year four), which would allow the successful projects to develop further and continue with full strength into the new program cycle.

2. Site Coordination

In each of the collaborating countries, the inputs to the SR-CRSP come from a number of sources; the many participating US institutions and various national staff and institutions. This multitude of inputs, thoughts and ideas is a tremendous source of strength for the programs while at the same time it can become a weakness. It is therefore imperative that the individual projects are well coordinated at the national level.

The EEP is of the opinion that on-site coordination can be improved and recommends that:

a. The PIs synchronize their visits to any given country and work more than heretofore through the Site Coordinator/national counterpart offices concerned in order that joint activities to service several projects be carried out whenever feasible and beneficial.

b. PIs and other staff concerned should always copy correspondence regarding projects in a given country to the Site Coordinator, the other PIs working in that country and to the ME.

c. As the ultimate product of the research should be "developmental packages" useful to smallholders, the PIs, Site Coordinators and national staff should give serious considerations to the development of such packages taking due regard to the whole production system. (See also more country recommendations on Coordination of Disciplines in the Brazil and Kenya site visit reports).

3. Animal Health

In order to develop momentum and to coordinate animal health related activities, the EEP recommends that Washington State University, Colorado State University and the University of California-Health projects convene a workshop or seminar of PIs, their CoPIs and senior project staff. The Winrock Economics project should participate.

This recommendation repeats General Recommendation No. 5 in the Second Report of the EEP. The Nutrition workshop has been accomplished.

4. Introduction of Experimental Material

A. International movement of animals and animal products, including semen.

The procedures necessary for bringing into the US animals and animal products were described in the EEP's Initial Report, February 1980, beginning on page 7. These requirements were recently reviewed with USDA and are currently valid for SR-CRSP purposes.

Similarly, projects considering the importation of animals or animal products, including semen, into countries participating in SR-CRSP related activities, must obtain written authorization for such importations from the Chief Veterinary Officer of the country of destination. If other countries are involved in in-transit movement of these materials, similar authorizations from each are necessary.

The Import/Export Staff of Veterinary Services, Animal Plant Health Inspection Services, USDA, Hyattsville, Md. 20782, telephone 301-436-8530 will assist US exporters in expediting the import requirements of the countries of destination.

B. Importation to the US of plant materials obtained from animals.

Samples of plant materials obtained from animals such as rumen contents or intestinal contents for laboratory analysis, are subject to the same permits for importation to the US as those for animal products and the permits are issued by the same office referred to above.

Unless special conditions of treatment are requested, the permit will require rumen and intestinal contents to be diluted with equal parts of 50% formalin in the country of origin and secure packaging. If this treatment is destructive for the purpose intended, the receiving laboratory should make an alternative proposal to the USDA for their consideration.

*Plant materials imported into the U.S. may require a permit if they are to be used for seed or planting. Such a permit is requested by the receiving U.S. institution prior to the proposed importation. Requests for such permits should be directed to:

Frank Cooper, PPQ
Animal Plant Health Inspection Service
Hyattsville, MD 20782
Tel. 301-436-8248*

Permits may be issued for a year duration and the USDA will provide the number of official shipping labels required for that period.

Materials arriving without prior permits will be confiscated by USDA at ports of entry.

PIs are also cautioned that their procedures for handling, storage and disposal of materials under the permits to US institutions are subject to unannounced inspection by USDA personnel.

With the amount of international travel of people and materials related to the SR-CRSP, the EEP emphasizes the urgency for US institutions to assist fully by participating in these defensive procedures. US agriculture is highly vulnerable.

It is obvious that violation of USDA's defenses for US agriculture could result in serious repercussions on the availability of US funds for work on foreign-based acitivites.

5. Workplan presentation

The EEP is concerned by the vagueness and generality of several workplans. Therefore, to ensure continuity and usefulness of research results in line with the spirit of the SR-CRSP, it is essential that realistic annual workplans be formulated and that due consideration be given to interdisciplinary relationships. Further, the activities of the projects should adhere, as much as possible, to the original plan so that the evaluation process can compare performance and output with the original objectives.

6. Publications

During the foreign site visits, the EEP found sensitivity on the part of the countries to procedures on publications of SR-CRSP work. This is an important feature of collaboration and therefore it is recommended that the ME and the Technical Committee immediately give attention to the distribution of the existing overall guidelines. Any special requirements for the individual countries should also be included.

Graduate student theses are suitable for recording research and findings, but are of limited value for international or country use, unless published. Hence, PIs should assume responsibility for preparation, jointly with local counterparts, of practical publications and secure governmental clearance thereof.

The collaborating country authorities have expressed concern over the failure of SR-CRSP personnel who have conducted research there to fully brief them on the findings or intended plans for analysis before leaving the country. The EEP recom-

mends that the Site Coordinator ensure that an in-country reporting session be arranged before these SR-CRSP personnel leave the country.

7. Language Training

An on-site, part-time linguist to help the training of nationals preparatory to going to the US for training and assisting in language proficiency of expatriates, has worked exceedingly well in Brazil. Corresponding arrangements at other sites should be explored.

8. Laboratory Analysis

The progress in sampling of range plants, forages, feedstuffs, animal digestive tract contents and blood is commendable. Of concern however, is the volume of samples in relation to the capacity of the laboratories and funding available to cover costs of analyses. Few of the SR-CRSP budget submissions reflect funding in proportion to the needs for laboratory analyses. The EEP recommends that the PIs carefully review their plans for sampling in relation to resources, especially where analyses will be made in the collaborating countries.

9. Evaluation of the SR-CRSP

Recognizing that the SR-CRSP under Title XII is a new mechanism for international programs delivery and that the SR-CRSP has been functioning for the longest period of the Title XII CRSP programs, the EEP recommends to USAID that an evaluation be carried out to compare the usefulness and cost effectiveness of the SR-CRSP. Such an evaluation should be made by a panel including specialists on:

a. international technical program administration
b. international animal production
c. agricultural economics

SECTION III

EEP REPORT ON INDIVIDUAL PROJECTS

ANIMAL HEALTH

Washington State University - Kenya

Improvement of Sheep and Goat Production by Reduction of Disease Loss

The section of the report dealing with the Kenya site visit provides project details.

While serological sampling of goats is nearly completed, the EEP expresses concern over the potential of processing the samples as proposed. There is no single laboratory in the world capable of conducting the serology for the multiplicity of diseases that have been listed. The EEP recommends the list be reestablished acknowledging technical resources and competence available, not only in Kenya or at Washington State, but also at other institutions with special capability in serology.

Research priorities need to be identified.

Colorado State University - Peru

An Investigation of Small Ruminant Health Problems

This project has been effective in identifying research priorities. Its activities in training and laboratory development are commendable.

Workshops in laboratory techniques as well as long term training for Peruvians would be helpful.

Considerable budget is utilized in multiple short-term travel. The Program would benefit from the presence of a long term senior professional in Peru.

University of California, Davis - Brazil

Small Ruminant Flock/Herd Health Program in Smallholder Systems

The section of this report dealing with the site visit to Brazil provides project details.

In spite of considerable effort to develop disease survey data, research priorities have not yet been identified and development of an approved workplan has not been accomplished.

ANIMAL BREEDING

University of California, Davis - Kenya and Indonesia

Genetic Improvement of Sheep and Goats for Smallholder Production

Indonesia. In Program Year Two (1980-81) work was initiated in Indonesia. Emphasis was given to the characterization of local breeds and types of sheep and goats in close collaboration with the Indonesian counterpart organization, LPP. Systematic recording is being undertaken at two LPP stations and in one village. During the initial year, the project arranged several training activities both in Indonesia and at Davis. A full-time US scientist was recruited for work in Indonesia but resigned at the end of 1980.

Two reports have been prepared for presentation at the Indonesian Animal Science Seminar, one of which gives some interesting data on the highly prolific Javanese thin-tailed sheep.

For Program Year Three (October 1981-September 1982), research work will continue at the two experimental stations and in the village involving comparison of fat and thin-tailed sheep types and goats. More detailed studies will be initiated on the reproductive efficiency of sheep. The project seems to be progressing well.

Kenya. The project was included in the on-site evaluation carried out by three EEP members in August 1981. Reference is made to the site review report (Section IV). The Breeding Project has been experiencing difficulties due to disease outbreaks in the experimental flocks beyond the control of the project leadership.

Davis, California. The US component of the Project has arranged for the analyses of US DHIA data from goat herds, the training of several graduate students from developing countries and the analyses of sheep and goat data from Latin America. The results of a study of the effect of parity, age and season on milk and fat production of US goats were reported at the ADSA Meeting in 1980. A graduate student from Latin America has analyzed data from a long-term crossbreeding experiment in the semi-arid parts of Venezuela. Results will be presented at the forthcoming International Goat Confer-

ence in 1982. Data on lamb and wool production of Criollo sheep in Colombia and four imported sheep breeds are being analyzed by a MS student. This latter work is carried out in cooperation with the Montana project in Peru, and has already yielded results. The Criollo type sheep has higher overall reproductive efficiency than the imported breeds, which indicates the need for putting more emphasis on the Criollo in the breeding studies in the Peruvian Highlands.

The EEP finds the activities undertaken at UCD to be valuable and useful for the overall SR-CRSP program. The close cooperation with the Montana Breeding Project for the analyses of Colombia sheep data is commendable.

Montana State University - Peru

Evaluation & Genetic Improvement of Sheep & Goats in Extensive Management Systems

Sheep breeding studies have been initiated at two locations in the Central Highlands of Peru and production data are being collected. Some results have been reported. The EEP noted with satisfaction that studies on reproductive efficiency of native sheep are included in plans for 1981/82.

Studies of coat color and fiber characteristics of crosses between two types of alpaca are underway at the La Raya Station. Very little is presently known on the genetics of fiber quality in the alpaca, therefore the EEP endorses more investigation on this subject. The EEP has noted however, that fiber studies were also planned in the Texas A&M Systems Analysis Project. In its recommendations on the latter project, after a site visit in January 1981, the EEP pointed out that the fiber studies more logically should be carried out by the Montana Breeding Project.

As mentioned above, the Montana and UCD Breeding Projects have jointly undertaken to analyze sheep breeding data from the highlands of Colombia, which will be of relevance to other countries of the Andean area. The EEP considers this a commendable initiative. It was also noted that there was a good balance in the budget proposal between expenditures in the US and in Peru. There seems, however, to be no provisions for bringing Peruvian graduate students to Montana or Montana students to Peru. The Montana State PI may like to consider arranging some exchange of graduate students between the two countries.

Texas A&M University - Brazil

Evaluation of Meat Goats and Hair Sheep

In connection with a site visit (January 1981) to the Systems Analysis Project at Texas A&M University, the EEP was also requested to visit the above project. The EEP summarized its findings in the following statement which was mailed by the ME to the PI, on February 13.

"The EEP made a site visit to this project on January 16 and 17, 1981 at Brady and San Angelo experiment stations, respectively. The facilities and work in progress with sheep and goats at both stations were demonstrated by the PI, Dr. Maurice Shelton, and his collaborators. A summary of the work being carried out at Sobral and Quixada in Brazil was also presented.

"Prior to the trip to Brady on the morning of January 16th, a presentation was made on the work in progress at College Station with the cooperation of staff members of the Department of Animal Science and the College of Veterinary Medicine. A visit was also made to the meat laboratory where carcasses of experimental goats were being evaluated.

"The EEP considers that the facilities and genetic resources available at the experiment stations are unique and may provide great opportunities for generating information relevant to the needs of the LDCs. The EEP compliments the PI on the research work being developed.

"The EEP furthermore considers it necessary to point out the following aspects regarding the development of the project.

1. The project should emphasize the aspect of breed characterization. In doing so, the different parameters used to evaluate breed and species differences, such as hormonal profiles as related to reproductive performance, feeding habits in various ecosystems, carcass quality and composition, parasite resistance, resistance to infectious diseases et cetera, should be considered as parts of the overall project.

2. In reporting the progress of the project, those activities supported by the SR-CRSP funds should be clearly identified. It would also be desirable to include in the report all those activities funded from other sources but closely related to the project.

3. The current budget (June 1, 1980 - September 30, 1981) reflects a heavy expenditure in the US (75%) as compared to the LDC site (25%). Even though this could be justifiable at this stage because of the need to provide research resources, the EEP expects a sizeable increase in funds allocated to LDC in the next budget. The EEP furthermore expects the early generation of research results which could be of practical application in LDC sites.

4. The present training component of the project is very weak. The EEP urges that appropriate action be taken in this regard. Different alternatives for achieving this purpose have been discussed with the PI. The EEP further points out that on site training of counterpart personnel is required to ensure program continuity. This could well be achieved by the presence of senior research staff in the host country for long periods of time rather than just paying short visits.

5. Recognizing that data collection for breeding programs is long term in nature, for protection of both parties, proper documentation should be assured regarding collection and publication of data.

6. The EEP again emphasizes the need for a closer collaboration with other SR-CRSP projects in Brazil. It also points out the need to take into consideration that research results must be related to the needs of small farmers to comply with the spirit of the SR-CRSP.

7. Other points covered in the Second Report of the EEP still need attention. (end quotation)

A group of EEP members made a site visit to Brazil in August/September 1981 (Section IV). In addition, the report for the second project year and the proposals for 1981/82 have been reviewed and assessed. In Brazil, a good cooperative relationship has been established between CNPC and the PI. Experimental work has been initiated at Quixada Station and data is being collected on the productivity of meat goats and hair sheep. At Texas A&M University, San Angelo, flocks have been established of meat goats, hair sheep and fat-tailed sheep. Data on production traits and grazing behavior are being collected.

The EEP was disappointed that when planning for the third project year, the PI had paid little attention to the suggestions made in the EEP report following the Texas A&M University site visit. Thus, the project budget continues to be heavily biased towards expenditures in the US (68%). There are no definite plans for training Brazilian graduate students through the project at Texas A&M and there is no clear delineation in the project report/proposal between activities financed by the SR-CRSP and by other sources of funding. This lack of precision applies both to activities at Texas A&M and in Brazil. There is also a need for the project to give more emphasis to the presence of a Texas A&M scientist in Brazil. The sharing of such a scientist with the other Texas A&M project (Systems Analysis) should become a reality.

ECONOMICS

Winrock International Livestock Research & Training Center-Brazil, Peru, Kenya, Indonesia

Economic Analysis of Small Ruminant Production Systems

The EEP compliments the PI and his co-workers on the progress of work, with at least one baseline survey completed in each of the focus countries. Actions on staffing, the PI making himself available for consultation with country staff and participation in country training courses are commendable. A great deal of emphasis has also been put in training, participation of national counterparts and collaboration with other SR-CRSP projects. Comments relating to site visits and this project in Kenya and Brazil will appear in Section IV.

The baseline surveys made to date are enlightening and should prove helpful to both PIs and country personnel in planning research and farm validation, but quite an education process will be needed. The PI has many obligations with the SR-CRSP and other activities and most of the field personnel are limited in experience. These handicaps should be appreciated by the ME. The EEP recommends the ME give special attention in meetings of PIs to creating opportunities to interact on findings from the baseline surveys to characterize traditional systems. The ME should also heed the need to encourage national agencies to strengthen the staffs of the cooperating institutions in the economics area.

It now appears that most of the data collected are being brought to the US for analysis and will be reported as graduate student theses. Transport of data is no doubt required at this stage, but of concern to the EEP is the usefulness of thesis reporting for

country use. Seemingly, broader and more practical interpretations will be needed. Documentation is looked upon by the EEP as crucial to this phase of the SR-CRSP. The PI's attention is drawn to the section of this report on the EEP's visit to Brazil, dealing with coordination and publications.

The baseline surveys are viewed by the EEP as dealing principally with farm and market statistics, with emphasis on input/output relationships. Of interest to the EEP is whether the surveys adequately depict the dynamics of the operations of potential target farms. If not, are further studies planned on the dynamics? This concern was discussed with the PI during the EEP visit to Brazil. Actions have been taken by the PI to attend to the concern.

The EEP takes note of collaboration of the Economics Project in the farm surveys in Kenya on farming systems (Missouri Sociology, Winrock Management and WSU Animal Health). The ME should encourage opportunities of this nature to insure interdisciplinary cooperation whenever possible.

FORAGES

Ohio State University - Peru

Intensive Forage Production Systems for Smallholder Sheep and Goat Production

The EEP made a site visit to Wooster, Ohio on January 11-12, 1981. Of major concern to the EEP was the pace of progress, especially in Kenya. Afterwards, Ohio withdrew from Kenya. Progress in Peru is considered satisfactory; nevertheless, a number of concerns expressed during the visit to Wooster remain.

The workplan for 1981/82 is in general, satisfactory. While work on genetic resistance to gastrointestinal parasites in sheep is an interesting and important aspect of sheep production systems, it remains to be proven of importance to less intensive systems as per conclusions from the site visit. Currently, there seems little relation between the research activities at Wooster and that planned for Peru.

The stated objectives in the workplan for Peru appear satisfactory. To complement the Texas Tech Program and other projects, the EEP recommends including as an objective, the evaluation of native feeds which may have potential as supplements during the dry season. The EEP believes this type of research is needed before a complete feeding strategy for small ruminants can be recommended.

No specific program for training of Peruvians is described in the workplan. This should be resolved immediately. The Project in Peru continues to rely on one counterpart. This is of concern to the EEP.

Ohio State should improve its reporting on activities at Wooster versus Peru and demonstrate it has a coordinated work program. The current relationships are vague.

Winrock International Livestock Research & Training Center - Kenya

Feed Production Systems for Dual Purpose Goats on Small Farms

The project proposal seems well planned. The PI is commended for the expediency in initiation of the research in nutrition. As pointed out in comments on the Production Systems Project, the PI should, as rapidly as possible, be more definitive on the goals for the 'dual purpose' goat alluded to in the project proposal.

The EEP has reservations on the value of the proposed feeding trials comparing goats and cattle discussed during the site visit. Such experiments may have validity in temperate areas but are of much less value using tropical forages due to species differences in their ability to select and utilize forages. Comparisons based on Napier grass will thus be misleading. Development of feeding strategies for lactating does producing 100 liters of milk per lactation to meld into small farm systems would appear more productive.

Inclusion of a resident forage agronomist at the Maseno Station is commendable.

PRODUCTION SYSTEMS

Winrock International Livestock Research & Training Center - Kenya

Dairy Goat Production Systems for Smallholder Agriculturists

The progress observed by the EEP on this project is discussed in the section on site visits to Kenya. The monitoring of the 80 farms in Kakamega and Siaya Districts appears to have gone well the first year. The EEP concurs that continuation through a second year is desirable in order to increase the confidence in describing the traditional farming systems in these districts. The amount of time spent by the PI in Kenya is also worthy of note.

Of considerable importance to this program is to determine a set of parameters for the 'dual purpose' goat continuously mentioned in the project documents. Is a viable goal for a dual purpose goat for the two districts one which produces 50,100, or 200 liters

of milk per lactation and kids that will gain 100, 150 or 200 g per day? If the goal is 100 liters of milk and 125 g of ADG, will this require a change in genotype? If so, collaboration with UCD Breeding Project should be initiated immediately. Will traditional feeding systems on farms support the goals of performance? If not, possible augmentations should become the basis of investigations in nutrition. The EEP strongly recommends the PI give attention to attainable goals and build research accordingly.

Plans for a training component are needed, as well as plans for dissemination in Kenya of results from the farm surveys.

MANAGEMENT

Tuskegee Institute - Brazil

Expansion and Intensification of Goat Production in Northeast Brazil

During a site visit at Tuskegee Institute in January 1981, the project performance was discussed and among the disappointments to the EEP was the lack of an approved project. A revised proposal has now been approved by CNPC Brazil. The EEP still has serious concerns over the objectives of the project proposal, slow pace of recruitment of personnel for Brazil and budget allocations. These concerns are described in the Section of this report on the Brazil visit by the EEP. Tuskegee must show more action and more visible returns from the use of the SR-CRSP funds. Tuskegee has not demonstrated appropriate progress in initiating work in Brazil in spite of the EEP's concern expressed in January 1981.

NUTRITION

North Carolina State University - Brazil and Indonesia

Byproduct and Crop Residue Utilization in Intensive Sheep and Goat Production Systems for Limited Resource Farmers

While satisfactory progress is being made, the EEP emphasizes once again that this research demands an intensive interdisciplinary approach with the range, health, reproduction, breeding, management and economics disciplines. Likewise, it would be advisable for the personnel of all nutrition related projects in the SR-CRSP to correlate such factors as forage analysis methodology, priority of analyses and the parameters to be used in animal evaluation of feedstuffs. This will require an organized communication system.

The EEP suggests a full-time, well qualified, long-term nutritionist in Indonesia as this project has in Brazil. His guidance will be helpful in deciding on priority of analyses to evaluate feedstuffs as the research in Indonesia progresses. This project is building up an unrealistic number of samples and proposes too many laboratory analyses to determine feed composition. Priority must be given to selection of samples and to those analyses that are absolutely essential. It appears that only in this way can the laboratory work be done efficiently and at a realistic cost.

RANGE MANAGEMENT

Texas Tech University - Peru

Improving Small Ruminant Nutrition, Management and Production

Program planning and progress achieved thus far are considered very satisfactory. Efforts to establish good research facilities in the host country (Peru), thus strengthening the local institutions, is highly commendable and in line with former EEP recommendations. There is good involvement of national counterparts and a satisfactory training component already in action.

The EEP is encouraged to see collaboration with the Ohio Forage and the Montana Breeding Projects and the projected collaboration with Utah State/Cal Poly on male reproduction behavior. The EEP compliments the PI on identifying an excellent group of collaborators and moving forward with a sound training program both within the host country and at Texas Tech University. There is good distribution of funds domestically and in Peru.

The plan of work to determine the nutritional requirements of alpaca (1980/81 object #7) needs definition. A description of the nutrition of free-ranging alpaca, and identification of seasonal diets and diet preferences would seem more accurate than the term nutritional requirements.

It would be helpful if the research plans and results were reported by species and geographic location. There is an error in the budget figure (1981-82) for LDC Technicians, Graduate Students and Labor in the LDC column.

Utah State University - Brazil

Rangelands Research for Increasing Small Ruminant Production

The progress of this project is satisfactory and the section of this report dealing with the site visit of the EEP to Brazil provides project details.

REPRODUCTION

Utah State University and Cal Poly - Brazil and Peru

Improving Male and Female Reproductive Performance

This review refers only to work carried out in Peru. Review of activities in Brazil are included in the report of the site visit of the EEP to Brazil.

The development of a standardized Reproduction Data Collection Form for gathering information on reproduction in all SR-CRSP projects, as recommended in the Second Report of the EEP, is commendable.

The overall progress in research on female reproduction in Peru is satisfactory taking into consideration the delay in the initiation of the program. The EEP has also noted with satisfaction the emphasis in the training of Peruvian counterparts.

Taking into account that the location of the goat project will very likely be far away from that of the sheep and alpaca work, the EEP again recommends that efforts should be concentrated on sheep and camelidae research.

The proposed studies on male alpacas comprise such a diversity of aspects that it is extremely difficult to evaluate the merit of each of them by the sketchy information presented. Further analysis of each aspect to be studied may be necessary to formulate a research proposal in male alpacas that will lead to fruitful results.

In general, the research programs in males to be carried out in Peru require a more precise definition in terms of intended objectives, location, prospective collaborators; also male studies will very likely be closely related to, or in many cases go along with, studies of the female. A clear cut separation of activities financed by SR-CRSP funds from those sponsored by other institutions, such as attendance of counterparts to international meetings or training programs, should be made in the reports.

The EEP further recommends that in the title of the project, the name of the countries involved should be specified rather than the general designation of LDC.

SOCIOLOGY

University of Missouri - Kenya, Peru, Brazil and Indonesia

Sociological Analysis of Small Ruminant Production Systems

Reviews of the Sociology work in Brazil and Kenya are included in the EEP reports on the site visits to those two countries.

The report on the work in Peru indicates that numerous activities have taken place in quite different locations which have undoubtedly provided interesting information. However, the work so far does seem to be completely isolated from the rest of the SR-CRSP projects being executed in Peru. The EEP recommends that efforts should be made to concentrate the sociology work as much as possible to the sites where the other SR-CRSP projects are located. In this way, it may be more feasible to interrelate the findings and get a more integrated view of the whole production systems with their important sociological component.

The participation of the Sociology Project in a multidisciplinary production system baseline survey in Indonesia is recommended by the EEP.

The standardization of work procedures would be highly desirable to facilitate evaluation of results in different countries.

The EEP again emphasizes the recommendation in its Second Report regarding the necessity for sustained programs of study in order to adequately characterize small ruminant production systems.

Also, as indicated in the Second EEP Report, details on the nature of the reports to be published should be provided. No provisions for future publications are made in the 1981/82 budget.

SYSTEMS ANALYSIS

Texas A&M University - Brazil, Peru, Kenya, Indonesia

Systems Analysis and Synthesis of Small Ruminant Production

The Project operates in all the four foreign sites and at Texas A&M. The PI has delivered almost identical Annual Reports for 1980/81 and proposed workplans for 1981/82 for the four sites. It is intended that the project will provide 'a method for increasing the effectiveness of research by establishing research priorities' and 'effectively evaluate application of research results and recommend practices in the LDCs as

well as in the US'. This is a very ambitious goal, indeed. So far, most of the activities have focused on the work of a sheep production model at Texas &M. It is stated that this sheep model has been developed and programmed but is not yet operational.

The EEP has been informed through technical reports that the ILCA team working on livestock production systems modeling in Africa has reached the conclusions that, while mathematical models of a general type can be useful, information on various locally important production factors, e.g., feed availability across the year, is essential for the modelling to yield feasible results. (See Anderson, F.M., Trail, C.M. and Konandreas, P.A., 1981. Mathematical Modelling Activities of the International Livestock Centre for Africa, (ILCA), 1977-81. ILCA, Addis Ababa, Ethiopia, 1981.) The EEP therefore repeats the recommendations from earlier reports that the project become more actively involved in cooperation with the other SR-CRSP projects in the collection of site specific information on feed availability, disease occurrence, management practices, breed characteristics, et cetera. So far the project has only one scientist placed in one country (Kenya). In earlier discussions with the PI, the EEP was given to understand that the placing of a Texas A&M scientist in Brazil and in Indonesia was imminent. This has, however, not materialized.

The project is engaged in graduate training of students from Kenya, Peru and Indonesia. The training program is thus well underway.

During the EEP site visit to Texas A&M in January 1981, the Project's intention to start work in Peru on the evaluation of fiber quality in the alpaca was discussed. In the ensuing report, the EEP stated that such work would more logically be carried out in the Montana State Breeding Project. The EEP was dismayed to find that contrary to the recommendations, the Texas A&M Project has gone ahead with the fiber studies. The ME is requested to arrange for discussions between the Texas A&M and Montana State PIs to sort out these matters.

It is too early to evaluate the results of the project. However, considering the large input of manpower (3.28 scientist-man years for 1981/82), the EEP feels that some tangible results should soon be forthcoming.

Additional comments on the project are made in the Kenya and Brazil site visit reports.

SECTION IV

REPORT ON OVERSEAS SITE VISITS

Since its initial meeting in December 1979, the EEP has reviewed Program Plans, Annual Reports and visited six institutions involving eight sites. These visits made possible a more in-depth study and review since considerable discussion was possible and the opportunity to observe facilities was provided.

Towards the end of Project Year Two, it seemed appropriate to visit overseas sites so that direct contact could be made with on-site coordinators, co-managers and Co-PIs. The EEP would be especially interested in learning how they viewed project progress, training accomplishments and overall cooperation and progress. The abilities of long-term personnel assigned to the different projects could be assessed.

The Kenya and Brazil sites were selected and it was decided to divide the Panel into two teams in the interest of saving time and funds. Dr. Pope, as Chairman of the EEP, accompanied both teams in order to provide continuity to the missions. The team of Moulton, Rendel and Pope visited Kenya August 2-14, accompanied by the Program Director, Dr. Robinson and Dr. Haines, SR-CRSP AID Program Manager. McDowell, Fernandez-Baca and Pope visited Brazil August 24-September 3 accompanied by Dr. Weir, Associate Program Director of the SR-CRSP. The itineraries of these visits are included in this report.

BRAZIL

BACKGROUND OF SR-CRSP IN BRAZIL

When the Executive Committee of the Technical Committee met in Washington DC, October, 1978 to discuss potential overseas sites, Brazil was ruled out by AID because of its "graduate status". In December of that year, however, a site selection team of the SR-CRSP was allowed to visit Brazil. This permission was largely the result of a cable to AID from Frank Campbell, AID Affairs Officer, US Embassy, Brasilia emphasizing EMBRAPA's enthusiasm for the project and its established infrastructure for research in semi-arid tropics which could be used as a model for other semi-arid areas of the world.

In 1972, the Federal Government founded the Brazilian Agricultural Research Corporation - EMBRAPA, in order to assume the overall responsibility for promotion and coordination of agricultural research in the country. The Center National Pesquisa Caprinos - CNPC, an EMBRAPA facility, was established in 1977 at Sobral and research was started that same year.

In January 1979, W. Johnson, B. McGowan - representing the SR-CRSP and R. Hughes, then with the Latin America Bureau, AID visited Brazil. Research institutions at Sobral, Quixada, Fortaleza, Petrolina and Salvador were observed and a meeting was held with the staff at EMBRAPA headquarters in Brazilia where the Technical Director gave an enthusiastic response to the concepts of the SR-CRSP and issued a formal invitation to collaborate. In February 1979, the PIs voted to include Brazil as a major worksite.

Robinson and Johnson visited Brazil in May 1979 to meet with the staff at CNPC. The following projects were requested: Health/UCD, Reproduction-Utah/Cal Poly, Nutrition/NCSU, Breeding/Texas A&M, Management/Tuskegee, Economics/Winrock, Sociology/Missouri, Systems/Texas A&M, Range/Utah State. All objectives of the SR-CRSP were seen to be part of CNPC's five-year plan. The result of a meeting at EMBRAPA headquarters was an MOU draft agreed to in principle and permission for first program visits by PIs was granted.

From August through October 1979, the PIs involved visited Sobral to elaborate workplans with CNPC co-workers. These plans were accepted in early 1980 as part of the MOU. The Utah State Range Project was accepted in September 1980. Other events of that year were:

-- Nestor Gutierrez arrived in Sobral to begin work on the Economics Project.
-- CNPC headquarter building inaugurated in March.
-- Johnson and Miller travelled to Sobral in June to establish office of Site Coordinator.
-- In the fall, R. Kirmse, J. Pfister and J. Queiroz arrived to work on Range Project (USU).
-- The first Reproduction Short Course was held (USU/Cal Poly).
-- Facilities developed with the help of SR-CRSP included:
    a. intensive nutrition feeding pens (NCSU)
    b. land clearing, fencing and animal facilities at Quixada (TAMU)
    c. pens for reproductive research (USU)
    d. health laboratories (UCD)

e. nutrition laboratory (NCSU)

f. herbarium (USU-Range)

Robinson and Johnson made a second administrative visit to CNPC and Brasilia in January 1981. The SR-CRSP agreed to support the First National Symposium on Goat and Sheep Production in the Tropics at Fortaleza, Brazil in May. PIs Foote, Shelton and Johnson and long-termer Gutierrez delivered invited papers. PI Nelson was a member of a commentary panel. Three hundred and fifty people registered for this Symposium.

Dr. Ederlon R. de Oliveira, Technical Adjunct Chief of CNPC attended the Brazil PI Meeting at Denver, Colorado in February 1981. He also visited SR-CRSP Projects at Utah, Texas A&M, Winrock, Tuskegee and North Carolina. Drs. Elino-Chief CNPC, Fonseca-EMBRAPA Director for the Northeast and Santana-EMBRAPA, Livestock Director, attended the Technical Committee Meeting at Davis, California in April 1981. They visited SR-CRSP projects at Utah, Texas A&M and Winrock.

Long term personnel who have arrived in Brazil in 1981 include Drs. Hansen, Health Project; Robb, Nutrition; and Primov, Sociology. Mavis Knight came in August as a Portuguese/English instructor. Linda Howell will arrive in the fall to work on weed control on the Range Project. Projects without long term personnel on site are Management (Tuskegee), Breeding/Systems (Texas A&M) and Reproduction (Utah/Cal Poly).

The office of Site Coordinator has been strengthened this year by the employment of Joao Conrado as an assistant plus a full-time typist.

Future graduate study plans include Aurino Simplicio and Roberto Mesquita both of whom will be going to Utah in 1982 with the SR-CRSP Reproduction and Range Projects, respectively. EMBRAPA will be paying the cost of their education. At least three additional CNPC personnel are planning to come to the States to continue their graduate programs in 1983.

ITINERARY OF EEP BRAZIL VISIT

August 24

-- Arrived in Sobral

-- Initial conference with Dr. Valter Vieira Gomes, Acting Chief of the CNPC and Dr. Ederlon Ribeiro de Oliveira, Technical Chief.

-- Open session with the CNPC and SR-CRSP scientific staff. Dr. Ederlon R. de Oliveira gave introduction to NE sheep and goat production in Brazil and structure of EMBRAPA.

-- Dr. W. L. Johnson, PI Group Leader for Brazil, reviewed background of SR-CRSP development in Brazil.
-- Field visit of animals.

August 25

-- Individual project presentations:

Utah Range by R. Kirmse, Joao Queiroz, J. Pfister.

North Carolina Nutrition by Dr. Ederlon R. de Oliveira.

California Health by Dr. Don Hansen.

Utah-Cal Poly Reproduction by Dr. Simon Riera.

Winrock Economics by Nestor F. Gutierrez.

Missouri Sociology by Dr. G. Primov.

Texas Breeding by Elsio A. Figueiredo.

Tuskegee Management discussed by Dr. Ederlon R. de Oliveira.

Texas Systems discussed by Elsio A. Figueiredo.

August 26

-- Visited two collaborating goat producer farms:

Owner: Francisco Motta Lima

Farm: Floresta

Location: Taua, Ceara

Owner: Francisco Feitosa Moura

Farm: Muquem

Location: Taua, Ceara

August 27

-- Visited breeding and selection experiments (TAMU Breeding Subproject) at EPACE Station, Quixada, F. Helio Ferreira Machado, Chefe.
-- Visited Jose Ismar G. Parente, Director, EPACE Headquarters at Quixada.

August 28

-- Field and laboratory visits at the CNPC.
-- Meeting with Drs. Valter Viera Gomes and Ederlon R. de Oliveira.
-- Open meeting with the CNPC and SR-CRSP scientific staff.

August 29

-- Field visits at the CNPC.
-- Individual meetings with Primov, Miller and Johnson.
-- McDowell departed.

August 31

-- Fernandez-Baca met with Reproduction group.
-- Pope met with Nutrition group.
-- Final meeting with Drs. Valter Vieira Gomes and Ederlon R. de Oliveira.
-- Departed for Fortaleza.

September 1

-- Visited Universidad Federal Do Ceara in Fortaleza; held discussion with Dr. Jose Ambrosio, Zootecnia Department.
-- Travelled to Brasilia.

September 2

-- Meeting held at EMBRAPA headquarters with:
    Dr. Raymundo Fonseca Souza, Director for North and NE Region
    Dr. Odon Santana, Livestock Advisor
    Dr. Jose Crespo Ascenso, Acting Head of International Relations Office
    Mr. Silvio Carvalho, Public Relations Officer
-- Held separate meeting with Dr. Eliseu de Andrade Alves, President of EMBRAPA.
-- Met with Mr. Samuel Taylor, Title XII Officer at US Embassy.

September 3

-- Departed Brazil.

FINDINGS

1. General Observations

The CNPC (Centro Nacional de Pesquisa en Caprinos), the counterpart institution to the SR-CRSP, is one of the 14 production Centers* of EMBRAPA. Its objective is to carry out research in goats and hair sheep production. It was established in 1977 with provisional offices located in the town of Sobral. In March 1980 new buildings were inaugurated on the 1200 ha experimental farm, some 5 km from Sobral. Even though the original plans were to have a team of 36 research workers, budget limitations have restricted staff to 14. In addition, there are three experts (two in animal breeding and one in reproduction) provided by IICA through a special agreement with EMBRAPA who form part of the scientific personnel of CNPC.

The Center is headed by a Chief, Dr. Luis Carlos Lopes Freire, supported by one Administrative and one Technical Head.

Research areas in the Center are: soils, range, nutrition, management, breeding, reproduction and health. Some areas such as health are reasonably well staffed while others such as soils, sociology, economics and range management are understaffed.

Research work at the Center is limited at present to meat goats and hair sheep. However, there is interest in expanding research to dairy goats. Plans are to establish a dairy goat research project at Sobral and a similar project at Pendencia Station in the State of Pariaba.

It is estimated that there are 8 million goats and 6.7 million sheep in the NE of Brazil. Neither sheep nor goat production are specialized enterprises; in the majority of cases, they are complementary to cattle and other agricultural activities. However, there seems to be some tendency to favor goats because of their ability to resist long drought periods which usually cause severe losses in cattle and sheep.

The State of Ceara, where the CNPC is located, is not the most important state in goat population (the State of Bahia has the largest goat population in Brazil). For the Center to have the impact on the whole area, collaborative work with other State Organ-

*EMBRAPA has 14 Production and 3 Resource Centers throughout the country. The difference between the two is the scope of their activities; while production centers limit their activities to a certain product only, resource centers have a broader scope dealing with research on whole farming systems. The National Resource Centers are located (1) in the humid tropics, (1) in the semi-arid region, and (1) in the Cerrado.

izations and Universities located throughout the NE should be ensured. Even so, operation costs of programs outside Sobral will necessarily be high due to long travel distances involved, which could be a limitation in the long run.

At present, the National Goat Research Program, which is coordinated by the CNPC, has the participation of several state organizations, such as EPACE (Empresa de Pesquisa Agropecuaria do Ceara), EBAPA (Empresa de Pesquisa Agropecuaria de Bahia), and some Federal Universities (See: EMBRAPA, Program Nacional de Pesquisa en Caprinos, Brasilia 1981, 47pp).

Attitude of the host institution (CNPC) towards the SR-CRSP seems to be quite positive. It appears that good working relations have been established between SR-CRSP personnel and the national counterparts. It is considered by CNPC that the SR-CRSP plays a very important role in the training of the national staff through the association of young Brazilian scientists with more experienced SR-CRSP personnel, and through formal graduate training of Brazilians in US universities. The provision of equipment is another aspect in which the SR-CRSP contribution is considered useful.

In spite of some initial problems from both sides, it appears that a good degree of collaboration has been reached between the SR-CRSP and the CNPC. With the recent arrival of long-term US scientists and the proposed hiring of additional counterpart personnel, it is expected that a true collaborative and interdisciplinary program will be established shortly.

Good working facilities for the nutrition, reproduction, range and animal breeding projects have been developed with contributions from SR-CRSP funds. Provision of equipment to some laboratories such as nutrition, health, and reproduction is also underway. However, it has been pointed out that some difficulties have been faced in the purchase of equipment regarding both technical specifications and shipping arrangements.

A site visit was made to two farms near Independencia and Taua which are part of the 20 farms where the effects of different technological changes on the level of production of goats are being evaluated. This is an interesting project and the enthusiastic cooperation of the farmers is even more interesting, at least of the two that were visited. However, some shortcomings should be pointed out.

a. The collaborating farmers are by no means smallholders; they own quite a sizeable land area where they produce cattle, sheep and crops. Goats, as it seems to

be true in most cases, are just part of the farming system. Evaluation of the impact of the technological innovations under these circumstances may therefore be heavily influenced by changes in the other components of the farming system.

b. The distance from Sobral to these farms (more than 500 km) may be a limiting factor for frequent visits and no doubt will add a great deal to the research costs.

In spite of these shortcomings, the experience will be valuable for future work with farmers in the area. The participation of other SR-CRSP disciplines in this type of farm study, especially health, nutrition, economics and sociology, is strongly recommended. This is an opportunity for truly interdisciplinary work.

SR-CRSP Spirit. Under the present circumstances, it is evident that research being carried out by the SR-CRSP program is not oriented directly to provide help to smallholder operations (families with 20-30 goats who may or may not own land, according to CNPC definition). However, the information being generated through research on the various components of production systems, such as the best utilization of feed resources, disease control and prevention programs, reproductive management, et cetera, should be applicable to farming systems regardless of size. Research on economics and sociology will very likely bring about the non-technical limitations to smallholder production systems and hopefully the alternative means to overcome them.

2. Specific Observations on Projects

Utah State University/ Logan/California State Polytechnic University/Pomona

Improving Male and Female Reproductive Performance in Brazil

Female Reproduction

The facilities developed for work on female reproduction are quite adequate and without doubt will serve a long-term useful purpose.

The work being carried out at CNPC, Sobral, on the measurement of reproductive capabilities of different genotypes of goats under two feeding-management systems (grazing and confinement) is progressing satisfactorily and has started to yield useful data.

Mention was made of work on the effect of supplementation before and after parturition on productive and reproductive performance of goats, being carried out in a private farm jointly with the Department of Animal Husbandry of the Federal University of Pernambuco. This kind of collaborative work must be encouraged as it may open avenues for more active interinstitutional cooperation and also for the involvement of graduate students in research programs as part of their training.

Male Reproduction

Laboratory facilities and equipment for work on male reproduction at CNPC are adequate. A semen collection room with proper facilities will become available shortly.

Two studies were being carried out with males: a) semen characteristics of Somali rams throughout the year, initiated two years ago, and b) puberty and sexual maturity of male goats of the Moxoto breed initiated in June, 1981. Work aimed at a comparative evaluation of reproductive performance of different genotypes of sheep and goats, (Objective VI of the 1980-81 plan) is not yet underway.

In general, the progress of research in reproduction is commendable. However, staffing may be insufficient in the future. Three persons are working in the area at present: Aurino Simplicio (Veterinarian), Jose Ubiraci (Extensionist) and Simon Riera from IICA. Aurino Simplicio will be leaving early 1982 for graduate work at the PhD level and Jose Ubiraci will very likely need further graduate training. Jose Ferrera Nunez, currently working in France, is expected to return in June, 1982.

The collaboration of Dr. Riera has been quite valuable for the development of the reproduction program. An experienced long-term SR-CRSP scientist should be provided.

North Carolina State University

Byproduct and Crop Residue Utilization in Intensive Sheep and Goat Production Systems for Limited Resource Farmers

This project is making satisfactory progress to characterize the nutritional value of byproduct and crop residue feedstuffs that could be used for dry season supplemental feeding. Pens for confined feeding, feed storage space, animal weighing scales have been provided and jointly financed from CNPC and SR-CRSP funds. A long-term NCSU animal nutritionist has arrived and will greatly aid the completion and operation of the nutrition analytical laboratory. It is worthy to note that the training component of this program includes a Brazilian who is working towards his MS degree at the Federal Uni-

versity of Ceara, Fortaleza. The final phase of his research will be conducted at the CNPC.

According to the national team leader, (Ederlon), the present research at the CNPC is aimed at developing feeding strategies for the dry season. Work is being done in four States (Ceara, Pernambuco, Piau and Rio Grande do Norte) on the use of crop residues such as corn, beans and cotton. Preliminary results are promising with daily gains of 143 g/day per goat using these feeds as supplements. Higher dressing percentages also have been obtained.

The possibilities of utilizing native legumes such as 'Mata pasto' (Cassia tor) for feeding during the dry season is being explored. This legume has 20-26% crude protein and the hay (but not the green material of this plant) is readily eaten by small ruminants. Experiments on the effect of supplementation to the onset of puberty in Morada Nova ewe lambs are underway in collaboration with the reproduction project.

Future work will be concentrated on:

1. Utilization of Mata pasto hay as a feed supplement.
2. Performance of goats under confinement.
3. Utilization of some trees as feed supplements.
4. Functioning of the analytical nutrition laboratory.

Utah State University

Rangeland Research for Increasing Small Ruminant Production in Brazil

Drs. Malechek and Norton made their first site visit to Brazil in March, 1980. This represented a late start for the project since it was originally designed for Morocco. Furthermore, it was initially to be located at the CPATSA Station, Petrolina, some distance from Sobral. In the Second Report of the EEP, concern was expressed regarding this location and it was suggested that serious consideration be given to establishing the project at the CNPC, Sobral. This was in agreement with an administrative decision of EMBRAPA and the project has been located there.

This project is the most active SR-CRSP project in Brazil. The researchers are to be commended on their accomplishments the first year. Data on plant species preference by browsing animals is being collected with esophogeal-fistulated goats; progress is well along on preparation of the first volume of a series of handbooks on important Caatinga species; soils and plant communities are being characterized for later correlation with satellite imagery. The long-term team from Utah State University working

at Sobral consists of a Research Associate and two PhD candidates. They are collaborating with a member of the CNPC staff who is collecting data for his MS thesis at Utah. Forty hectares of land have been assigned and fenced at CNPC and 30 esophageal fistulated goats prepared as collector animals. Excellent results are anticipated from this well coordinated effort.

Three areas will need to be addressed to an even greater extent in the future.

1. Closer collaboration with the North Carolina-Nutrition Project. This is desirable because of the complementary aspects of the research. Completion of the nutrition analytical laboratory and the addition of a PhD long-termer on the latter project should aid in accomplishing this goal.

2. Training of Brazilian personnel so that this type of research relatively new to this country can be long term. A shortage of staff at the CNPC has made this difficult to date. However, two candidates are planning graduate study at Utah State University in 1982 and 1983. Future training should go beyond this and include technicians and graduate students at Brazilian Universities.

3. The need for coordination with other disciplines and species is described later under Coordination of Disciplines.

University of California, Davis

Small Ruminant Flock/Herd Health Programs in Smallholder Systems

Even though the animal health program is underway, and the recommendation of the EEP for emphasis on farm health programs has been taken by UCD personnel, the EEP senses potential conflicts on priorities. The Brazilian Animal Health group at Sobral appear inclined toward giving high priority to development of laboratory facilities and training in laboratory techniques. The differences in general approach to the research activities became apparent in the information given to the EEP since the beginning of the project. The EEP was also informed that no approved workplan existed in the area of animal health in Brazil. Furthermore, some concerns were expressed by CNPC personnel about the quality of laboratory equipment to be provided with SR-CRSP funds as well as the long delay in its delivery. They have been waiting for the arrival of central laboratory equipment for more than a year. Concerns were also expressed by the health group about the qualifications of scientists to be selected as residents.

Dr. Hansen, who arrived at Sobral in May 1981, has been appointed as resident for a two year period. He has prepared a workplan that has been submitted to EMBRAPA and it is expected to be approved at the September meeting.

The first step, according to the workplan, will be a baseline survey on the incidence and economic importance of the different diseases in NE Brazil. It is intended that the survey will include the same farms where the economics and reproduction studies are being carried out. Through visits at given intervals, they intend to also evaluate the seasonal variations in health problems.

Since field work will require good laboratory diagnostic support, the SR-CRSP will provide a resident bacteriologist. The name of Dr. Daley was mentioned as a potential candidate.

In general terms, the progress achieved in the area of animal health is almost negligible up to now except for the appointment of the resident. The national team composed of four scientists (two with PhD and two with MS degrees) seems to be strong. However, strong leadership may be necessary to properly define research priorities and guide efforts to the solution of the most relevant disease problems. For example, mention has been made of a very serious abortion problem in goats (more than 50% of goats aborted last year). It is claimed that no infectious agents are involved as indicated by results of laboratory work done in Fortaleza. More in-depth studies will be necessary to confirm this. In view of variations on order of priorities, the EEP recommends close liaison to avoid conflicts.

Texas A&M University

Evaluation of Meat Goats and Hair Sheep

A visit was made to Fazenda Experimental Iracema (EPACE) located at Quixada, south of Sobral. Good facilities for breeding work have been developed (fences, corrals, et cetera) for which the SR-CRSP has provided both financial and technical help.

The CNPC has several projects in progress at Quixada, two of which are 1) selective breeding in Morada Nova sheep, and 2) crossbreeding of goats. Both seem to be progressing satisfactorily.

Two animal breeding specialists (K.P. Pant and A.F. Ponce de Leon), employees of IICA, have been assigned to EMBRAPA and stationed at Sobral. They, together with two Brazilians (Elsio Figueiredo and Francisco de Asis Melo Lima), form the animal breeding team. No long-term resident has been appointed by Texas A&M.

A short course on animal breeding and systems analysis to be given jointly by CNPC/SR-CRSP is in the planning stage.

The EEP found that the PI had excellent rapport with the CNPC group who welcome his consultation in planning all their breeding projects. Although the relationships are most commendable, confusion arises over Texas A&M's SR-CRSP commitment in Brazil. The EEP was provided with a project outline for a subproject entitled, 'Selection criterion for Morada Nova sheep adapted to production conditions of Northeast of Brazil', with the Texas A&M PI listed among the leaders. It was not made clear whether this is the emphasis for the SR-CRSP. Neither can the relationship be discerned from the Annual Report or the subgrant request. In subsequent reports, the PI should identify the SR-CRSP activities at both San Angelo and Brazil with separate identification of 'allied studies' or ones where the PI serves as a consultant. Attention was drawn to this point in earlier EEP reports.

Sr. Elsio Antonio Pereira de Figueiredo, presently serving as project leader in Brazil, expects to begin training in the US in early 1983. Is Texas A&M preparing to supply a replacement? Texas A&M relations appear very informal. Seemingly, there are hazards to such general arrangements.

University of Missouri

Sociological Analysis of Small Ruminant Production Systems

The EEP commends the University of Missouri for moving an experienced Sociologist (Dr. G. Primov) to Brazil, since the Sobral staff does not have this area of expertise. The first research phase proposed by Primov placed high emphasis on pattern of ownership of goats by smallholders and determination of the role of goats in the subsistence strategy of smallholders. In view of the emphasis of the CNPC and the SR-CRSP towards producers falling outside the usual context of small farms (< 5 ha) - small producers average 172 ha and large 1,165 ha - the sociology studies will be most useful with focus on a portion of the 127 farms used in the 'Economic's Survey'. Primov accepted the EEP's recommendations in this regard. With Brazil being new to Primov who has a limited period of assignment (4-5 months), the EEP recommends that the University of Missouri appoint an additional experienced person to insure continuity and effectiveness of sociology inputs into the total program.

Winrock International Livestock Research & Training Center

Economic Analyses of Small Ruminant Production and Marketing Systems in Brazil

A survey involving 127 farms has been completed by Nestor Gutierrez, a PhD graduate student supported with SR-CRSP funds. The objective of the survey was to characterize production systems of sheep and goats and the marketing of their products. The survey was carried out in the State of Ceara because of the location of the CNPC and not necessarily because it is the most important sheep and goat area. Results of this study have been presented at the First National Symposium on Goat and Sheep Production in the Tropics held at Fortaleza.

In a second stage, a dynamic study on goat and sheep production is being carried out in 32 farms with a total population of 4,200 head of sheep and goats. These farmers are surveyed four times a year: at the beginning and middle of the dry season, and at the beginning and middle of the rainy season. First year periodic observations have already been completed.

Since there is no EMBRAPA counterpart, the work has been carried out entirely by SR-CRSP personnel. Some students from the Department of Agricultural Economics of the University of Ceara have participated.

Authorities have already decided to hire one person on a permanent basis for the area of economics at the CNPC which is most commendable.

Tuskegee Institute

Intensive Management of Goats

The general plan submitted by Tuskegee Institute in early 1981 was accepted by EMBRAPA. Recruitment was initiated for an Associate Investigator to locate in Brazil (Annual Report 1980/81). Due to current restrictions in staffing at the CNPC by EMBRAPA and limited experience in goat husbandry at Tuskegee, an experienced person is needed. Assuming success on personnel, decisions on priorities of effort and location of work are needed. In the Annual Report 1980/81, the objectives included reproductive performance, assistance in establishment of a nutrition laboratory, and evaluation of management systems to rear young kids for meat production. Seemingly, these objectives tend to overlap projects already underway. It is not clear how Tuskegee's plans complement or supplement other projects.

The staff at the CNPC appear committed to developing a dairy goat unit at the Station. Simultaneously, they want to initiate work at the Goat Center at Pendencia, Pariaba. The EEP has serious reservations about moving into both locations with such limited resources in both personnel and funding. The Pendencia Center is estimated to be a 16 hour drive from Sobral and even a 4 hour drive from Recife. Should the Tuskegee Investigator locate at Pendencia, he will be isolated from the other SR-CRSP activities. If he works out of Sobral, travel costs will be excessive.

Budget allocations by Tuskegee are deemed inadequate for support of a program in Brazil. Of the $47,218 allocated in the budget, all but $3,800 will be "fixed costs", ie, salary and benefits of an investigator, contribution to Site Coordinator, language training and international travel. The residual $3,800 is far from adequate to support the research activities suitable for a long-term investigator. The Sobral station does not appear to have sufficient funds for the short-fall. Up to this time, SR-CRSP funds have largely been spent at Tuskegee. The EEP insists that the ME require immediate action on a program in Brazil and that Tuskegee allocate funds for adequate support of a long-term scientist.

Texas A&M University

Systems Analysis and Synthesis of Small Ruminant Production

At the Brazil Principal Investigator Meeting (February 19-20, 1981), Ederlon Oliveira, Technical Director at the CNPC stated: "EMBRAPA feels there is a lack of communications with the Texas A&M Systems Project. We want to know more about what is going on - what is the progress of the program?" Among the statements made by the Host Country Representatives at the Technical Committee Meeting April, 1981 was: "Programs based entirely on collection and analysis in the USA of data gathered from host countries were considered not to be collaborative research support programs and a thorough review of their approach is strongly recommended." The CNPC reported to the EEP that they still felt these two criticisms toward the Texas A&M Systems Project were valid.

Evidently, Mike Boyd will not be moving to Brazil, which is disappointing to the Brazilians. Even with this turn of events, Texas A&M Systems could be more effective in communication. For instance, why has Dr. Sanders not written periodically to the CNPC advising how their data is being used; why has Texas A&M not at least publicized some of the 12 literature reviews which they report as completed for information and use by all

countries? These could serve as communication media. The 1981/82 budget submitted by Texas A&M Systems did not include allowances for staffing in Brazil. Only $6,550 was designated for project activities. This does not indicate a strong commitment for the Brazil Project. The EEP considers collaboration in Brazil far from satisfactory and urgently recommends immediate actions by Texas A&M Systems to improve working relationships.

3. Administration

Site and Program Coordination

Both the CNPC and SR-CRSP personnel complimented the efforts of T. Miller (Site Coordinator) and William Johnson (PI Group Leader-Brazil). These men felt they had received good support from both the CNPC and SR-CRSP personnel. As a tribute to their efforts, and the SR-CRSP, EMBRAPA's matching funds have risen to about $250,000 per year. Praise is also in order for enlisting the help of an on-site part-time linguist to assist both Brazilians, who will be going for training, and expatriots. At present,the SR-CRSP/ME is supporting an Administrative Assistant in the Site Coordinator office and a bilingual secretary, although these positions were to be supported by EMBRAPA. The Technical Director assured the EEP that these responsibilities will be taken over as soon as possible.

There is general agreement that the CNPC Center is not centrally located for a research program on small ruminants. Much of the work is conducted some distance from the Center, resulting in high costs for transportation and significant staff time on the road. The EEP feels that further efforts should be made to utilize farms nearer Sobral to improve overall efficiency.

Although a number of frustrations had arisen over administration during the first two years, the PI Group Leader expressed the view that data accumulation will lead to interactions and closer collaboration among PI's and sites. The need for more Brazilian counterparts, particularly in the social sciences, was viewed as urgent; however, Johnson expressed the view that projects without counterparts should be encouraged to proceed since their findings are important to the total program.

RECOMMENDATION

With the expansion of program activities which is expected in the near future, the increasing number of long-term residents and less time available on the part of the PI group leader, concomitant administrative adjustments will be required to assure program efficiency. The question is whether there is a need for splitting the responsibility between two persons as it is at present or a Site Coordinator with a wider technical background and experience. This person would be responsible for both administrative and scientific coordination at the host country level. The EEP recommends that the ME make an in depth evaluation of the present administrative arrangement in light of the experience so far accumulated, and the alternatives that exist for change in the near future to cope with the growth of the program and the need for proper synchronization of research activities.

Coordination of Disciplines

A concern for the SR-CRSP, especially in planning for subsequent years, will be mechanisms for putting together "package programs" and farm validation of technology. The EEP views the research underway in Brazil as designed to be scale-neutral, if not biased towards smallholders, at least not away from them. Most of the scientists appear to recognize the three normal stages in the research process: a) scientific research and technology development, b) site-specific testing, and c) farm adaptation. The major thrusts at present are viewed as being in stage (a), which is acceptable if the primary role of the SR-CRSP is to expand the horizons of science leaving the details of application to others. As implied by the program objectives (Integrated Program Plan, Part II, Brazil), the SR-CRSP is also committed to the "development business." Scientists want to produce "the best technology" for which concentration on stage (a) is a "safe position." Seldom is the best technology achieved; thus the SR-CRSP and the CNPC are confronted with producing something that is "better," but this will be subject to conjecture unless validated with farmers.

The EEP sees the traditional farming systems in NE Brazil as rather stable and centered on subsistence food crops, cotton and livestock, with sheep and goats subordinate to cattle in the livestock sector. Thus far, the research has not indicated that marked changes in the system is likely to occur. To separate sheep and goats from the system seems rather unrealistic for a "development approach."

The EEP is not fully aware of the EMBRAPA mandate for the CNPC, but the Brazilian staff appears highly oriented towards studies of single species, with little attention to species interactions. The resulting technology may not, therefore, be applicable to the clientele the CNPC intends to serve. Excluding studies of multi-species interactions appears to external reviewers as inconsistent with the objective of developing technology applicable to existing systems. Time and experience may bring the Center staff to recognize the need for a more holistic approach, but it is the consensus of the EEP that the SR-CRSP should endeavor to hasten the process through closer coordination of disciplines. How best to accomplish the objective is unresolved but should be examined.

The PI Group Leader has proposed an "International Outreach Coordinator" whose responsibilities would include attention to coordination among disciplines. The Site Coordinator intimated the need for this type of focus and pointed out that it was difficult to coordinate with SR-CRSP researchers as they are largely graduate students with focus on their own project. The Technical Director at the CNPC was not overly concerned with someone having responsibility for program coordination, nevertheless he did express concern over the limited time experienced personnel, such as PIs, were spending in Brazil.

RECOMMENDATION

Even though progress in some areas of research under SR-CRSP in Brazil has been adequate, there is generally a lack of coordination among disciplines. The EEP feels strongly about the need to properly coordinate the activities under the different projects in order to obtain more meaningful results and make more efficient use of resources. The administrative adjustments suggested above will be instrumental to the achievement of this purpose.

The EEP considers closer coordination among disciplines as essential and strongly recommends that the Brazil PI Committee give the matter attention by, for example, creating a new post as recommended by the PI Group Leader or filling the Site Coordinator post with an experienced technical person.

Training

The EEP commends the SR-CRSP on their efforts in training Brazilian staff to include support of trainees at Brazilian universities. At a general meeting of the CNPC staff, the Brazilians expressed strong approval for staff training.

EMBRAPA has placed a freeze on hiring of staff at the CNPC. PIs will need to lend all support possible to expanding staff, especially for positions such as in economics and sociology, otherwise returns from training will be low if the trainees go elsewhere.

Conferences and symposiums held during the past 12 months, along with subject matter and participants, were described. As might be expected at this early stage, training was oriented almost wholly towards other scientists. The EEP gained the impression that "group training of scientists" will be the major focus over the next few years.

RECOMMENDATION

The role of SR-CRSP in the training of Brazilian scientists at U.S. institutions and in the host country is of paramount importance. While it appears that training of scientists will be the major focus over the next few years, the EEP feels the need to define at an early stage whether training programs at other levels, such as producers, will be within the scope of SR-CRSP activities. The direct participation of national scientists and graduate student in the research programs under way is, without a doubt, one of the most effective ways to provide on-site training for national staff. The EEP strongly feels that cooperation with other national universities should be encouraged in order to provide training opportunities for graduate students along with EMBRAPA policies on the matter.

Publications

RECOMMENDATION

In view of the expected increase in the number of publications in the near future, and in order to avoid misunderstandings, the EEP recommends that a publications policy be defined as soon as possible. In doing so, due consideration should be given to the publications policy of EMBRAPA (see meeting at EMBRAPA headquarters) and to the guidelines on publications prepared by the ME of SR-CRSP.

Agreed-upon guidelines must be documented. The Brazilians already appear sensitive on this issue. This is not unique, as the Host Country Representatives, at their meeting in 1981, recommended that "multilingual summaries of all major reports be made and distributed to all relevant investigators."

The EEP proposes that PI's consider:

a. Research results which will be viewed as making a contribution to sheep and goat husbandry, be published in refereed journals with all appropriate contributions fully recognized.
b. Mimeograph reports of all research for circulation among investigators.
c. All work done in Brazil should appear in Portuguese in one of the EMBRAPA Publications: Technical Circular, Technical Bulletin or the journal "Pesquisa Agropecuaria Brasileira".

OTHER RECOMMENDATIONS

Technical

While some participating U.S. institutions have achieved commendable progress in their research activities and have established collaborative programs through long-term residents stationed at the host institutions, others have failed to do so or have had a slow start. It is very unlikely that any real progress in collaborative work can be achieved without a direct and continuous interaction between U.S. and host country scientists. The EEP urges that collaborating U.S. institutions make every effort to appoint experienced scientists on a long-term basis at CNPC.

Applicability of Research Results (Spirit of SR-CRSP)

Research work being carried out at present is basically oriented toward the development of technology for goat and hair sheep production which can be applied to any farming systems regardless of their size. However, the Panel cautions that goat and hair sheep production in the target area (N.E. Brazil) are not specialized activities but rather a complement to other activities such as food crops, cotton and cattle. The resulting technology based on single species approach may not, therefore, be applicable to the clientele the CNPC intends to serve. Furthermore, in developing technological packages for farm use due consideration should be given to the needs of small holder operations (families with 20 to 30 goats who may or may not own land) in line with the spirit of SR-CRSP.

MEETING AT EMBRAPA HEADQUARTERS

A meeting was held on September 2nd with EMBRAPA officers at its headquarters in Brasilia.

The following EMBRAPA officers were present:

Dr. Raymundo Fonseca Souza, Director; in charge of North and NE region

Dr. Odon Santana, Livestock Advisor

Dr. Jose Crespo Ascenso, Acting Head of International Relations Office

Mr. Silvio Carvalho, Public Relations Officer

Visitors present were: EEP members, A. Pope and S. Fernandez-Baca, and W. Weir, Associate Program Director of SR-CRSP.

A brief visit was also paid to Dr. Eliseu Roberto de Andrade Alves, President of EMBRAPA who gave a summary of the objectives of his Institution, its goals and the role of the SR-CRSP within that framework of activities. His remarks about the development of SR-CRSP activities at the CNPC were quite positive and optimistic.

The following is a summary of the viewpoints and comments of Dr. Fonseca:

1. Development of the CNPC. The Center is still in the process of implementation; there are therefore several deficiencies in terms of personnel, equipment and physical facilities. About 40% of what was originally planned is still lacking. The Center is in the "take off" stage; they expect to reach full speed soon.
2. Personnel. The aim is to complete a team of research workers of the highest quality in the area of Sobral. However, the limitation is the scarcity of well trained scientists willing to work and live in Sobral. That is why in certain instances they are forced to lower the standards of excellence in order to fill the existing posts. Since EMBRAPA has a large number of people doing graduate work at universities in several countries, they expect to continually raise the quality of their staff. Because they are so concerned about this process of continuous academic improvement, they consider that SR-CRSP cooperation should always be maintained at a very high level. They recognize that in some areas such as animal health, the Center has high quality personnel. Even though EMBRAPA is facing serious financial limitations at the present time, high priority is being given to the hiring of personnel in order to meet their commitments to the SR-CRSP. The following posts will be filled:

a. Chief, to replace Dr. Elino who is now in Texas A&M working for his PhD.

b. Economist. A person from the Federal University of Ceara, who has previously worked with Nestor Gutierrez, will be hired.

c. Bacteriologist. No candidate available so far.

d. Pasture agronomist, botanist and statistician. No candidates identified thus far.

3. Training of personnel. EMBRAPA has a large training program at the graduate level with proper funding; the difficulty is finding good candidates. In addition to this program, there is great interest in short term training of Brazilian scientists in specific areas such as laboratory techniques, either in the USA or in Brazil. SR-CRSP can play a very important role in this. Also it would be very useful to prepare laboratory manuals, etc. Since they are interested in language training, EMBRAPA is making every effort to get the necessary visa for the English teacher.

4. Cooperation with Universites and participation of students in research projects at the CNPC. EMBRAPA has agreements with several universities to carry out research and training programs. Students may also participate in the research work at EMBRAPA Centers. The usual procedure for the student's participation is the signing of an agreement between EMBRAPA and the National Research Council of Brazil whereby the latter provides financial support to the students. In the case of the CNPC, this type of collaborative work has been so far very limited. With the expansion of working facilities and the increase in the number of senior staff members, collaborative work with universities, including student participation, will be increased.

5. Dairy goat program in Pendencia. Since the CNPC is a National Goat Center, there is great interest in the development of a dairy goat program. Pendencia, located in the State of Pariaba, will be a Satellite Center for dairy goats. The aim will be to develop production systems suitable for small farmers in order to provide milk for family consumption, especially in drought areas where poor people have a very low nutritional level. The program has a social, rather than an economic, orientation. It is considered that SR-CRSP collaboration on this program is needed.

6. Extension of research results. The Brazilian organization officially in charge of extension is EMBRATER (Empresa Brasilelra de Asistencia Tecnica y

Extension Rural). In the NE of Brazil, there is a Committee of five Institutions (including EMBRAPA, EMBRATER and the Bank of the NE). The functions of this Committee are to evaluate the technology generated through research, and to provide necessary funds for the execution of programs based on that technology (extension of results to farmers).

Other means of extension are "field days" for farmers and training of extension workers at EMBRAPA Centers. In some regions there are special training centers, with proper facilities for trainees, located near the research centers. There will be one in Petrolina for the NE region. The publication of technical bulletins, organization of seminars and symposia, participation in livestock shows, are other means of extension of research results utilized by EMBRAPA.

7. Publications. EMBRAPA has a very well defined policy on publications. Scientific papers are usually published in the journal "Pesquisa Agropecuaria Brasileira," in Portuguese with English summary.

Specific research findings which may be of immediate interest, may be published in the form of Technical Circulars or Technical Bulletins.

When the amount of knowledge available on a specific subject or product is such that it can be integrated in the form of a technological package, including practical recommendation, then this may be published as a Technical Circular.

Finally, when the volume of information is large enough and reliable on a specific product in a given geographical region, then a Bulletin on Production Systems can be published; for example, systems of goat production, systems of beef production. This type of Bulletin is prepared jointly by research workers, extensionists, bank representatives and farmers. EMBRAPA hires these personnel for a certain length of time thus providing them with the opportunity to interact.

According to EMBRAPA, research results from the SR-CRSP program could be published both in English in the USA (for example in the Journal of Animal Science) and in Portuguese, in the EMBRAPA Journal. A footnote indicating the publication in another journal should be included to avoid double reference quotation. The aim of this policy is to ensure a widespread circulation of the research findings among both English-speaking and Portuguese-speaking people.

8. Site Coordinator. The work of Tom Miller is considered satisfactory; what is needed in a site coordinator is leadership more than a strong person who may want to impose his viewpoints. The leadership should encourage interdisciplinary work.

9. General impressions on SR CRSP Cooperation. The program is developing satisfactorily. There have been some difficulties at the beginning of the program in both sides. They have been overcome. After their visit to different institutions in the US, Dr. Fonseca believes that the direct cooperation of these institutions will be valuable for speeding up the development of research activities at the CNPC. Cooperation with similar programs in other countries should be encouraged and implemented.

KENYA

BACKGROUND OF SR-CRSP IN KENYA

Prior to the University of California at Davis being asked to assume the responsibility of Management Entity to the SR-CRSP, an approach had been made to every USAID division in the world regarding their interest in the SR-CRSP. This was done by Dr. Ned Raun who was at that time the Washington DC Project Officer.

The criteria used in short listing countries for SR-CRSP participation were a positive response from the host government and from the USAID Mission. Kenya was positive on both counts.

Early in 1979 technical teams consisting of two PIs and one Washington DC based USAID staff, were set up to visit each of the following regions -- Asia, Africa, Near East and Latin America. The team for Africa consisted of Dr. Burzlaff (Texas Tech -- a range scientist), Dr. Nolan (Missouri -- a sociologist), and Dr. Butchart (USAID -- a veterinarian). They went to Sudan, Mali and Kenya and took into consideration the extensive travels of PIs Bradford and Fitzhugh at the same time (not on SR-CRSP resources) in West Africa; eventually Kenya was selected. Simultaneously, but not known to the SR-CRSP, was pressure coming from the Ambassador onto the Mission Director to reduce US personnel in Kenya. Suddenly, and without warning, a cable from the Mission Director to Washington DC stated that Kenya was off limits. SR-CRSP Program Director Robinson learned of this at the Miami airport en route to set up the Memorandum of Understanding with Brazil. Numerous telephone contacts from Miami to PIs resulted in the suggestion that after visiting Brazil, Robinson should proceed to Peru to guage their interest in being the Tropical Highland site. Robinson proceeded to Peru and received enthusiastic support for this idea. On return, all PIs were contacted about exchanging Peru for Kenya and the decision was to go ahead with this plan. This course was vigorously pursued for over three weeks and it was then learned that the Africa Bureau was protesting the absence of a site in Africa. Glen Roane, the Mission Director, was recalled on other business to Washington DC and the opportunity was taken to meet with him. To ensure that everyone heard the same message, Robinson invited Dr. Lassiter (Board), Dr. Kiehl (BIFAD), and Dr. Johnson (PI) to the meeting. Roane agreed to a limited program in Kenya, confined to intensive production areas, and based out of Nairobi. Kenya was therefore reintroduced as a site in addition to Peru.

In September 1979, Robinson visited Kenya to discuss a Memorandum of Understanding and reported back to the PIs and the Board. From September 1979 to September 1980, PIs who had selected Kenya as a worksite travelled there to establish their programs, and were able to place several students on-site (Amanda Noble, Dana Mortimer, Morgan Job, Tim Quick and Mike Sands). In November 1979, Dr. Owiro attended the Joint Technical Committee and Board meetings in Texas A&M and made a valuable contribution to the deliberations, including strong encouragement to have the Universities included. Traumatic events during the year were the reorganization of Ministries in the Government of Kenya. A new Ministry for Livestock Development (MLD) was formed and the SR-CRSP was assigned as a research project to interact with Dr. Chema. Mr.Berger was appointed as part-time Site Coordinator in July 1980 and became the main contact with the MLD working specifically with Dr. Chema. In September 1980, a seminar was arranged in Kenya at which each project would report, be scrutinized, evaluated and approved by the Program Administration Committee (PAC) which was to be jointly chaired by Dr. Chema and Mr. Owiro.

Dr. Fiester arrived for an impromptu visit in November and returned to Washington with criticisms of the SR-CRSP. This prompted a letter from Robinson to both Drs. Chema and Fiester requesting a meeting in Washington to discuss the problems. This meeting never materialized. Therefore, in March, Robinson visited Kenya and completely redrafted the terms of reference of the PAC, assured Chema that longer term people were being sought and that students would go home in an orderly manner, and urged him to attend the Technical Committee Meeting. A special PAC meeting was convened at which Ohio was removed from the Kenya site. At the meeting, it was confirmed that Dr. Chema should be sole chairman of the PAC since Owiro had never been to a PAC meeting. Dr. Chema came to the SR-CRSP Technical Committee Meeting in April 1981. He was frank and outspoken but did get a sense that PIs were sincere in trying to make the changes he required, and that he was part of a larger worldwide program. He returned to Kenya and began to work diligently on implementing the SR-CRSP program, and relations with the Site Coordinator improved. By August 1981 the ME felt optimistic about the SR-CRSP in Kenya because in a very short time, the PIs had complied with most of Dr. Chema's objectives. The EEP review took place during this month.

ITINERARY OF EEP KENYA VISIT

August 2

-- Arrived in Nairobi.

August 3

-- Discussion held with Dr. Chema, Deputy Director of Livestock Development. Research Division and Chairman of the PAC.

August 4

-- Met with Dr. Allonby, Manager of FAO Sheep and Goat Development Project (SGDP); Mr. Kitivo, SGDP and SR-CRSP Co-Manager; Mrs. Chavangi of the Animal Production Division of MLD sitting in for Mr. Bartilol; Mr. Angwenyi, Officer in Charge, SGDP; and Dr. Fitzhugh, PI Group Leader for Kenya. Mr. Owiro, Deputy Director of Livestock Development, Animal Production Division was absent.

-- Projects discussed individually included:

Animal Health - WSU

Dr. Kariuki - Co-PI, Head of Veterinary Research, Kabete.

Dr. Sayer - SR-CRSP resident long-termer.

Dr. Sherafeldin, FAO/SGDP.

Systems Analysis - TAMU

Dr. Carles-Co-PI & Lecturer, Animal Production, University of Nairobi.

Mr. Blackburn, short-termer and Research Associate TAMU.

Breeding - UCD

Dr. Kimenye-Co-PI & Lecturer, Animal Production Dept., University of Nairobi

Mr. Berger - SR-CRSP Site Coordinator and long-termer on this project.

-- Visited with Professor Ngugi, Dean of the Faculty of Agriculture, and Professor Said, Head of Animal Production Department.

August 5

-- Met with G. Lewis and D. Christiansen, USAID Mission, Nairobi.

-- Held discussion with Mr. Owiro and Dr. Allonby.

-- Visited National Animal Husbandry Research Station at Naivasha and OL Magogo Station where facilities for UCD Breeding Project were observed. Met with Mr. Kamaw, Director and Mr. Chemitei, Research Officer.

August 6

-- Visited Maseno Station with Dr. Fitzhugh and discussed Production Systems Project with SR-CRSP long-termers Mr. Sands and Mr. Brown.
-- Travelled to typical farms surveyed by M. Job on Economics Project.
-- Travelled to vicinity of Busia to visit three sites where goats were maintained on the SGDP.

August 7

-- Enroute to Nairobi.

August 9

-- EEP held final meeting with Dr. Chema.
-- Robinson and Berger joined meeting later.
-- Robinson held an exit session with USAID.

August 10

-- Rendel and Robinson departed.

August 10-12

-- Moulton visited: Muguga laboratories for meeting with technical staff including senior scientists from the International Center for Insect Physiology primarily on vector-borne disease research; Kabete laboratory to review serological work done there on goat arthritis and on caprine pneumonia; the International Laboratory for Research on Animal Diseases to learn their trypanasome research program.
-- Pope, Haines, Berger and Angwenyi travelled to Mombasa to visit Matunga and Ukunda Stations as possible future SR-CRSP project sites. A dairy goat farm was also observed. On the return trip to Nairobi three stops included the Buchuma Station, the Kiboka Station cooperating with Winrock International Livestock Research and Training Center and the Kitengela Sheep and Goat Station.

August 13

-- Held exist session with USAID personnel.

August 14

-- Departed Nairobi.

FINDINGS

1. General observations

The counterpart organization of the SR-CRSP in Kenya is the Research Division, headed by Dr. Chema, of the MLD. This Ministry is relatively new. It was formed through a reorganization of the former Ministry of Agriculture about two years ago. Before the reorganization, the official contacts between the SR-CRSP and the Kenyan Government had been with the Division of Animal Production which is supported by a UNDP/FAO Project for the SGDP. As the SR-CRSP is a research project, it was decided by the Ministry to attach it to the newly formed Research Division.

Dr. Chema has shown great interest in the development of the SR-CRSP, and to utilize the resources made available through it, for the development of an efficient program on small ruminant research in Kenya. As the SR-CRSP covers a wide area of disciplines, close contacts have been established also with other relevant bodies inside and outside the MLD. This applies in particular to the Animal Production and Animal Health divisions within the MLD and to the University of Nairobi. Working relations have also been established with the Kenyan Central Bureau of Statistics. In order to coordinate inputs from various sources, the PAC was established, with Dr. Chema as chairman. (See Recommendations-Administration and Background of SR-CRSP in Kenya).

The EEP found some difficulty in the cooperation between the SR-CRSP and the SGDP of the Animal Production Division. Through discussions with the parties concerned, positions were clarified. Obviously the SGDP was not (and should not be) involved in research. It should concentrate on development activities while the SR-CRSP is engaged in research and survey work. As a reminiscence from the time the SR-CRSP was attached to the Animal Production Division, the SGDP and the SR-CRSP shared the official Kenyan counterpart officer, Mr. Kitivo, who was stationed at Naivasha. Due to his large workload, the involvement of two different divisions and the distance between Naivasha and Nairobi, where SR-CRSP had its headquarters, the arrangement with a shared counterpart has not worked well. In the EEP's view this should be changed immediately so that the SR-CRSP Site Coordinator would have a specific counterpart within the Research Division.

The SR-CRSP Site Coordinator, Mr. Berger, presently has the dual role of being Site Coordinator (50 percent of his time) and technical leader for SR-CRSP work in Kenya on the UCD Breeding Project. He wishes to work full time in his technical field when the breeding experiments come into full operation in October 1981. The EEP has sympathy for Mr. Berger's views. A change proposed by him would, however, require

changes also with regard to site coordination. It is noted that the SR-CRSP will soon have seven full-time specialists working in Kenya. In addition, there will be several short-term consultants. The PIs and other staff from the universities involved would make a number of visits to Kenya. All these activities will require strong site coordination.

2. Specific Observations on Projects

For all the projects, information was available to the EEP prior to the visit in Kenya with respect to objectives, achievements during 1980-81 (Annual Reports) and plans for 1981-82 as outlined in the 1981-82 subgrant requests.

University of California, Davis

Genetic Improvement of Sheep and Goats for Smallholder Production Systems

The project intends to study the productivity of East African and Galla goats and their crosses with two improved dairy breeds, Nubian and Toggenburger. After thorough discussions in a workshop between Kenyan specialists and project staff, sound plans have been drawn for the experiments and facilities have been made available by the Kenyan counterpart at Ol Mogogo, Naivasha. The initiation of the actual experiments has been delayed because of the outbreaks of two different diseases. The most serious problem seems to be the occurrence of caprine arthritis encephalitis in a large portion of the dairy goats imported from the US prior to the SR-CRSP activities. Project staff and the Kenyan veterinary authorities are looking into a solution of this problem. The project has a well-trained Co-PI, Dr. David Kimenye, University of Nairobi. He spent the winter 1980-81 in Davis, California on study leave funded by UCD funds (not SR-CRSP funds).

One Kenyan student from the SGDP is undertaking MS studies in Davis; data from the SGDP are used for his thesis work.

In the view of the EEP, the project is progressing as well as possible under the circumstances (the uncertainty due to the presence of caprine arthritis encephalitis).

Washington State University

Improvement of Sheep and Goat Production by Reduction of Disease Loss

To meet parts of the objectives of the project and to obtain baseline information on the disease situation in smallholder communities, a survey of 70 farms in the Siaya and Kakamega districts in Western Kenya was undertaken. The same farms have also

been used by the Economics Project (Winrock), to study the economical importance of disease. So far two visits have been made to each farm and a third is under way which should be completed by the end of October. Over half of the blood and tissue samples collected are still in frozen storage and in need of processing. On the whole the goat health situation was rather good. Trypanosomiasis was not considered a problem in the survey area. The diseases were largely associated with poor management (parasites) and low level of feeding. The survey has indicated several management problems which could be corrected through extension activities. One open question is how improved dairy goats would cope with the management conditions in this type of small farming community.

There was interest within the project in developing an ELISA test for contagious caprine pleuropneumonia as well as conducting further studies on caprine arthritis encephalitis that had been identified in Kenya and believed to be similar to that reported at WSU. The intention is to continue the program to augment competence in specific technology, calibration and maintenance of scientific instrumentation and in the specific disciplines of virology, bacteriology, biochemistry, helminthology, laboratory animal management and protozoology.

The project has had from the beginning a full-time veterinarian, Dr. Paul Sayer (UK National with long-term African experience) and a well-qualified counterpart, Dr. Kariuki. Two Kenyan veterinarians are undergoing MS training at WSU and two WSU technicians spent six weeks in June/July 1981 at the MLD Veterinary Research Laboratories in Kabete to train Kenyan colleagues in various techniques and to up-date methodologies. This type of training was much appreciated by the Kenyan leadership.

Dr. Sayer has resigned and will be replaced by Dr. Bell of WSU. The EEP noted with some surprise that he is an MD -- not a veterinarian. It was also pointed out to the EEP that there was little contact between the Animal Health project and most of the other SR-CRSP projects in Kenya. For instance, different farms were used in this animal health survey and in the small ruminant production systems survey (Winrock/Production Systems, Missouri/Sociology).

Winrock International Livestock Research & Training Center

Economic Analysis of Small Ruminant Production and Marketing Systems

This project has been engaged in two surveys; the economics of animal health and production systems. For the former survey, the same farms were used as in the animal health project (see above). The two sets of data are being pooled for analysis. The

material is being used for an MS thesis by a US student, who is expected to submit a thesis in September 1981 to the Department of Agricultural Economics, Washington State University. Dr. Chema informed the EEP that no progress report on the study had yet been given to his office or the PAC. He was particularly concerned that not even an oral account had been given to the Kenyan project authority before the graduate student left Kenya.

The Small Farm Systems Survey is designed to describe biological, economic and social aspects of small farms. It is a joint undertaking by the Economics (Winrock), Production Systems (Winrock) and Sociology (Missouri) projects. Close collaboration has been established with the Kenyan Bureau of Statistics. Eighty households in each of the Western and Nyanza Provinces are included. The forms and techniques developed for the survey will be used by the Bureau in other areas. Information is collected monthly over a full production year and will cover all aspects of farming, animal husbandry and socio-economics. Preliminary results indicate the constant shortage of feed and the important role crop residues must play in any expansion of livestock production.

A graduate student (Trinidad nationality) has participated in the survey on a full-time basis and will use part of the data for a PhD thesis at Purdue University.

University of Missouri

Sociological Analysis of Small Ruminant Production Systems

Two specific topics have been taken up, viz. the general social organization in the agricultural communities of Western Kenya which is studied through the joint Small Farm Systems Survey and the role of women and women's groups which has been studied through a survey in and around the town of Sio Port close to Lake Victoria. The latter survey was completed in early 1981. The data analysis are nearly completed and the results will be used in an MS thesis by the US student who made the survey. Some concern was expressed by Dr. Chema that no written or oral report had been given to his office or the PAC before the student returned to the US.

Through the project, two Kenyan students are receiving training at the University of Missouri.

Winrock International Livestock Research & Training Center

Dairy Goat Production Systems for Smallholder Agriculturalists

The overall project objective is to develop and adapt goat production systems to the needs of smallholders in the humid/sub-humid tropics through the use of dual-purpose goats for the production of milk and meat. To fulfill this objective, the project is involved in (and evidently the prime organizer of) the production systems survey mentioned under the Economic Analysis of Small Ruminant Production and Marketing Systems Project. It is also engaged in experimental research at the Maseno Station in Western Kenya both with regard to production systems research and nutritional/forage research.

As mentioned under the Economic Analysis of Small Ruminant Production and Marketing Systems the production survey has made a good start. The EEP has taken special note of the close integration/collaboration between the economics, sociology and production systems projects. The work at the Maseno Station has just started, so it will take some time before results can be forthcoming.

The project has used a graduate student from Cornell University on a full-time basis for a year. He will utilize survey data for his PhD thesis. A fellowship is being arranged to undertake MS studies in the US for a MLD officer.

Ohio State University/Winrock International Livestock Research & Training Center

Intensive Forage Production Systems for Smallholder Sheep and Goat Producers

Ohio State initiated work in 1980 with the objective of characterizing available forages and to develop a suitable forage/animal production system. A graduate student was placed in Kenya and work was initiated at Maseno. For various reasons the project did not develop satisfactorily and in early 1981 OSU withdrew from activities in Kenya.

As the forage/nutrition aspects are of crucial importance to the development of feasible goat production systems, the BIR and ME, after consultations with potential collaborators, agreed this project should continue and that Winrock should be given the task of developing the forage/nutrition project further. The EEP concurs with this decision and considers that the production survey will give useful information on the overall feed situation, identify the feeding practices among small farmers and yield information that will indicate what type of experiments should be given priority at the Maseno Station.

Texas A & M University

Systems Analysis and Synthesis of Small Ruminant Production

Dr. Carles at the Animal Science Department, University of Nairobi, serves as Co-PI; Dr. Blackburn of Texas A&M is presently working at the University of Nairobi to assist in developing the production systems models. They are currently engaged in developing a sheep model. The EEP noted that no disease data had yet been put into the model, in spite of the fact that disease is one of the major constraints to production. Drs. Blackburn and Carles assured the EEP that this would be done. It was pointed out by the EEP that a certain amount of disease/productivity data had been collected in the SGDP of the Animal Production Division and might be of interest. The SR-CRSP in Kenya does not work with sheep. The EEP was informed that work on the goat model would start in about six months.

RECOMMENDATIONS

Administration

The PAC is chaired by Dr. Chema and is composed of representatives of the University, the Ministry of Livestock Development, the Sheep and Goat Project of FAO, USAID and the Co-Manager and Site Coordinator from the SR-CRSP. The purpose of the PAC is to review research proposals and requirements for resources to carry out approved research proposals.

While there is a provision for two additional committees to make submission to the PAC, they have as yet been non-functional. They are: a Research Committee to review research proposals for submission to the PAC, and an Operations Committee to identify the physical resources for carrying out the research scheduled.

Site Coordinator

With the level of commitment and the number of persons being assigned to the Kenya SR-CRSP, a senior scientist with experience in administration of research programs is essential to carry out the full-time activity of Site Coordinator. While the current Site Coordinator is committed to this activity on a 50% service basis and has done an outstanding job, the additional burden will make it unreasonable to expect one individual to cover a specific research discipline as well as the coordination and administration required for a cohesive SR-CRSP Program in Kenya. The desired qualifications for such an individual would include research experience in identifying, developing and reviewing research proposals; experience in evaluating multi-disciplinary research; the administrative experience necessary for carrying out animal related activities and the astuteness to recognize but avoid involvement in political forces and restraints.

Project Co-Manager

With the very considerable increase in full-time project personnel and administrative as well as technical details to be initiated and completed with the Kenya Government's various Departments and Agencies, a senior level Project Co-Manager on a full-time basis is essential. This individual should be a Kenyan and, insofar as possible, meet the qualifications described for the Site Coordinator and be a full-time staff member of the Research Division of which Dr. Chema is Director.

Support Personnel

In order to assure that the Site Coordinator and Project Co-Manager are able to direct their interests, efforts and skills to the requirements of the project, it is essential that support personnel be provided to do routine activities of an administrative and purchasing nature. The individuals should be assigned to the SR-CRSP Program and the line of communication and responsibility should be to the Site Coordinator and Research Division.

Communications

Emphasis has already been placed on the need to maintain the line of communication from project support personnel through technical staff to Research Officers to the Site Coordinator and to the Director of the Research Division in order to be effective in the use of available resources toward the research objectives of the program.

In addition, US-based persons that are project related, including PIs, administrative and fiscal officers supporting PI activities and the Management Entity should copy all communications that relate both to budget activities and technical programs to the Site Coordinator in Kenya. For example, budget commitments being made in a US-based institution against the project budget for Kenya must be reported by copy of the Purchase Order to the Site Coordinator as these commitments are being made. Similarly, recommendations or communications from the US-based institution to the respective technical officer representing that discipline in Kenya need to be copied to the Site Coordinator.

Technical

The ongoing program of Washington State University on animal health relates to conducting a survey on disease deterrents to smallholder goat production. Thus far, the survey findings imply that research could be directed to determining the degree of tolerance of goats to disease and parasitism. The appearance of caprine arthritis encephalitis in goats in Kenya is believed to be due to a shipment of goats from the United States.

Because of the presence of a virus-induced arthritis reported from Pullman, Washington, a research project should be considered if the disease is determined to exist in Kenya. Little is known relative to its pathogenesis, mechanism of transmission, as well as several other details of the disease that would be of value to both the livestock industries of Kenya and the United States.

It is recommended that the animal health component of the SR-CRSP identify a consultant to proceed to Kenya as soon as possible to determine the presence, significance and distribution of the disease in Kenya and develop experimental protocols that would be supplementary to work currently scheduled for Kenya and Pullman, Washington. Should such an activity appear indicated, this would require the development of an animal isolation facility in Kenya that would be vector proof, and the assignment of supplemental technical staff by Kenya to the activity. It is likewise recognized that supplemental funds would be required for Washington State University to pick up this additional responsibility. Since research work on the disease has been limited to the Pullman Campus, this appears to be a unique opportunity to develop a research activity of value not only to Kenya and the United States but also to other goat rearing areas of the world.

Coordination of Disciplines

With the multiplicity of sponsoring institutions and disciplines supporting the overall objectives of the SR-CRSP in Kenya, providing coordinated direction becomes a major responsibility. The implementation of the recommendations heretofore identified: the functions of the PAC and its two supporting committees for operations and research; establishing a full-time experienced scientist as Site Coordinator; selection of a senior Project Co-Manager; recruiting supporting personnel; the routing of communications between US-based institutions and the Site Coordinator will help considerably to enhance the coordination required and which is currently unsatisfactory.

It is likewise noted that, as yet, the Systems Analysis Project has no provision for the incorporation of animal health. It is again recommended that this activity be included in Systems Analysis as well as in Economics.

The Panel endorses the decision of the Kenya Government to carry out development of forage and other activities of the SR-CRSP at the Maseno Station of the MLD Research Division. Because of the major emphasis on the development of sheep and goat production by the Kenya Government as well as support for the project activity by the Food and Agriculture Organization of the United Nations, a major responsibility will be to maintain active coordination of the SR-CRSP with the overall objectives of the national SGDP. This reiterates the need for coordination of disciplines.

Interpretation/transmission of research findings applicable to Kenya.

While much of the current activity has been in conducting surveys to indicate directions for research activities to be undertaken, it should be acknowledged that research must have direct application to the livestock production of Kenya; as well as interest to US collaborators. Consequently, consideration needs to be given to training personnel in mechanisms for identifying components of research that have application to the livestock industry of Kenya. Assistance in preparing this information for transmission on a level that can be applied will need attention.

Summary

The EEP considers that the SR-CRSP in Kenya has undergone a series of positive changes and developments during the period September 1980 to August 1981. An energetic and capable Site Coordinator-cum-animal genetics officer has been hired; the intended survey work has been started successfully and work at the Maseno Station has been initiated. The integrated budget (1980-81) reveals the Kenya Government contributed approximately one-quarter of a million dollars nearly matching the SR-CRSP input. This is most encouraging. There are, however, a number of matters which will require attention more or less immediately. A permanent solution to the site coordination must be found as the present Site Coordinator (50 percent) will need to work more or less full time in his technical field. The problem with caprine arthritis encephalitis must be redressed. The system of reporting results to the Kenyan project leadership needs improvement as well as the overall coordination of the activities in Kenya. In the view of the EEP, the PAC could play a more active role in these regards.

SECTION V

EEP WORK PLAN - PROGRAM YEAR THREE

The contemplated work schedule for the year will include review and evaluation of reports and continuation of the review of the US and overseas work sites.

The next EEP meeting is tentatively scheduled for the period July 7-17, 1982. During this time, site visits are planned for Washington State University (Health), Montana State University (Breeding) and preparation of the annual report. During May or June, a team of three panel members will review the SR-CRSP program in Indonesia.

The EEP also will have representation at the meeting of the Board as desired. One of the EEP members will represent the panel at the meeting of the Technical Committee and the Third International Goat Conference in January 1982.

SECTION VI

ACKNOWLEDGMENTS

The EEP is grateful to all personnel of the SR-CRSP for continual support and collaboration. We thank the Management Entity for their able assistance in arranging the site visits and making documents and services available. Also the Site Coordinators, PI Group Leaders and Host Country Representatives in Brazil and Kenya who were tireless in making local arrangements for our visits. We are especially grateful to Brazilian and Kenyan staff personnel. Because of their generosity of time and open discussion, our visits were both informative and productive.

SECTION VII

ANNEX I

Documents Reviewed

1. Small Ruminant Collaborative Research Support Program
   Annual Report 1980/81
   - Part I Statement of Goals
   - Part II Summary of Accomplishments
   - Part III Summary of Country Activities
   - Part IV Participating Institution Annual Reports
   - Part V Budget - Past, Present and Future

2. Project Budgets and Plans of Work 1981/82

3. Minutes of BIR Meeting - October 1980

4. Proceedings of the Nutrition Seminar - December 1980

5. Minutes of the Special BIR Meeting - February 1981

6. Minutes of the Brazil Principal Investigator Meeting - February 1981

7. Newsletter of the SR-CRSP - Issues II, III, IV

8. Minutes of the Technical Committee Meeting - April 1981
   - -- Review of SR-CRSP Activities & Recommendations of Host Country Representatives
   - -- Evolution of the Morocco Site
   - -- Activities to be Accomplished by the SR-CRSP, Proposed by EMBRAPA

9. Informational Pamphlet of the SR-CRSP - June 1981

10. Minutes of the BIR Meeting - June 1981

11. White Paper Summary of Accomplishments by D. W. Robinson--July 1981

12. Selected Research Reports from the SR-CRSP