

**THE ASIAN GRAIN LEGUME PROGRAM
PROGRESS AND OUTLOOK**

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Legumes Program**

12 November 1986



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**The Asian Grain Legume Program
Progress and Outlook**

Seminar, 12 November 1986

**D.G. Paris
Coordinator AGLP**

SUMMARY

The activities of the Asian Grain Legume Program (AGLP) are reported in relationship to the 8 recommendations given at the AGLP seminar in February 1986. In carrying out these recommendations the AGLP Coordinator has been away from ICRISAT 106 days and concerned ICRISAT staff have spent in addition over 350 days travelling in AGLP countries. A proposal is made for rationalizing the visits to these countries and for assigning responsibilities for certain countries or disciplines to specific ICRISAT staff members. Activities included having two MOU's signed and developing 3 others, making contacts with donor organizations and research groups, in organizing an entomologists travelling seminar in Thailand, and participating in several meetings and workshops.

A major part of the time has been spent in accumulating a large information bank about the researchers, their activities, and the agriculture and other information about each country. These researchers have been provided with information about various ICRISAT activities including training, information dispersal, GRU, and the Legumes Program material, and they have been assisted in obtaining material and information from ICRISAT.

A set of objectives is listed for the AGLP and future activities discussed. Top priority has been given to develop and put in place a Management Information System essential for the effective operation of the program. There is also discussion on the possible establishment of networks and on special research projects.

Special thanks is given for the support afforded to the program by staff in the AGLP countries, donor groups, and ICRISAT staff.

PROGRESS

Background:

It is nine months since I last spoke to you as a group just after the conception of the AGLP. With the gestation period over the AGLP has progressed to a form which I want to tell you about today.

This period has been one of making contacts and for assessing the situations in AGLP countries, for acting as ICRISAT's representative in many meetings in the region, for developing an information bank about grain legume research and researchers in AGLP countries, for looking for a focus for the AGLP activities, and for planning future activities.

You will remember that at the last seminar I stated that the basic purpose of the AGLP was as follows:

"Through personal contact between ICRISAT scientists and national scientists in countries of Asia, outside India, to exchange material and information of groundnut, chickpea, and pigeonpea", and the method given was as follows:

"To identify needs and put national scientists in touch with appropriate ICRISAT staff members or identify ways to meet their needs."

I also stated at the earlier Seminar that the general directions for doing this was laid out in the recommendations put forward by the Asian Regional Program Meeting held at ICRISAT in December 1985 (ICRISAT 1986 and Appendix 1). These recommendations in themselves have formed an excellent natural division of the various activities of the AGLP and have been used in developing the plan of action for getting the program started.

Briefly these recommendations were as follows:

- Identify and utilize links with donor groups in the region.
- Survey to identify yield limiting stresses and suggest control measures.
- Collect and preserve germplasm.
- Participate in a G x E study involving ACIAR.
- Carry forward socioeconomic research on grain legumes.
- Support joint special basic research projects.
- Identify training needs.
- Collect agrometeorological data to identify agroecological needs.

Activities:

In carrying out the activities of the AGLP this year, these recommendations have for instance been used as an outline while planning trip itineraries and while discussing the AGLP with grain legume workers in Asia. For this reason, the trip highlights have been classed under the various recommendations. A sample of these highlights is given in Appendix 2, sections 1-8. This sampling of trip highlights give some indication of the progress made under the different recommendations. The details can be found in the various trip reports that have been circulated (Section II of References).

In addition to following the direct recommendations listed above, I have identified and sought solutions to problems in communication between national scientists in AGLP countries and those at ICRISAT to facilitate ICRISAT's activities in the region (Appendix 2, sections 9-12). In each case I have attempted to send memos on my return to ICRISAT to the scientists concerned with any item, usually requesting a specific action. The response to these memos have been excellent although there is no formal follow-up system. A major portion of the AGLP correspondence has been concerned with following up these points or with other communications and problems that are directed my way by ICRISAT staff.

An important part of the program has also been the collection of data and information about each country such as who are the scientists working on grain legumes, what is the organization of each research system, what are the most effective means of communication and ways of getting seed material to national scientists, and what literature is available about each country?

Travel:

Travel by ICRISAT staff to AGLP countries is essential to maintain close personal contact with scientists, administrators and representatives of donor organisations who are associated with research on groundnut, chickpea, or pigeonpea in countries of South and Southeast Asia. To provide this service I will have made 14 trips into the region being away for total of 106 days (Appendix 3).

In addition several other ICRISAT staff have travelled to AGLP countries sometimes to attend meetings and sometimes to fulfill consultancies such as was done L.J. Reddy in Bangladesh and M. von Oppen in Indonesia. These meetings and consultancies have been excellent for developing close contact with legume scientists in the region. In addition many trips were made to monitor the condition of ICRISAT trials or to identify yield limiting stress factors in AGLP countries. In all I will have spent 82 days in these countries while the total spent by all ICRISAT staff will about 450 days (Table 1).

Table 1: Approximate number of days spent by the AGLP Coordinator and ICRISAT staff in AGLP countries during 1986 (less travel time)

Country	AGLP - Coordi nator	Other ICRISAT Scientists	Total	Less conference and consultancies
Bangladesh	9	LDS 2 JK 8 LJR 180	199	19
Burma	3	LDS 2 SCS 7	12	12
China	0	JPM 6	6	0
Indonesia	3	DVRR 9 MJVR 12 MvO 20	44	24
Korea (south)	2		2	2
Nepal	17	OS 11 DMO 6	34	34
Pakistan	6	CP Sci. Meet 36, CLOG 2	44	8
Philippines	(10)	SMV 6	16	12
Sri Lanka	(5)	(DMO 5)	10	10
Taiwan	3		3	3
Thailand	24	ACIAR Workshop 30 Travelling Seminar 12 DVRR Virus Conf. 7 SMV IBSRAM Workshop 7	80	17
Total	82		450	141

A significant portion of my time (28 days) was spent in participating in 9 meetings and workshops away from ICRISAT often as ICRISAT's sole representative (Appendix 3). These meetings have given me a good chance to meet grain legume workers and to develop contacts for the AGLP.

I have also spent a total number of 8 days in other countries for discussions with donors two days in each of the following places : Delhi, India; London, England; Singapore; and Tokyo, Japan.

On the whole the total length of time spent visiting each country is fairly well balanced once the time for consultancies and conferences are excluded. China, with no nonconference visits, and Nepal, with 34 days, are anomalies. As a result of these visits good contacts have been made with each country for starting to build an AGLP membership.

For next year an overall travel plan for ICRISAT staff is being proposed to permit the visiting of as many AGLP countries as possible at an appropriate time to monitor grain legume trials send out from ICRISAT. This plan will be based on the "best time" for seeing each crop (Appendix 4).

Country and regional "experts":

In conjunction with this travel plan is a proposal that, where appropriate, ICRISAT scientists, particularly breeders will be identified as the "expert" for their crop in specific countries. It is envisaged that these scientists would be expected to visit "their" country perhaps once or twice a year. Repeated over years this arrangement will permit these staff members to become well acquainted with the appearance and performance of their crop and of specific varieties over locations and years within their country. These repeated visits will also permit these staff members to become familiar with the staff in their country working on their crop which can lead to closer cooperation. While making the travel plans arrangements will be made for scientists to monitor more than their own crop when they visit "their" country so that each crop can be seen as many times as possible.

This proposal will work best for chickpea and pigeonpea where there is a limited number countries (Appendix 5). However, in the case of groundnut is an important crop in virtually every country there may be more difficulty in making definitive assignments. A possible alternative is to assign countries to staff other than breeders. It should be mentioned here that it is not intended that chickpea and pigeonpea that only breeders should visit. Especially, if specific problems are identified scientists of the appropriate disciplines should also visit the country in place of the breeder.

Another alternative for groundnut is to assign scientists to a group of countries based on the major problem area in those countries. It is possible then for a trip to cover more than one country. It is also possible to have overlap of country experts so that they can cover for each other.

If the general system is adopted so that scientists become especially knowledgeable about one or more countries by being assigned special responsibility for specific countries and being expected to visit their countries on a regular basis, these scientists can become excellent resource personnel for the AGLP, backing up the Coordinator, especially when the Coordinator is absent on other duties. These country experts also become a useful asset for assisting in workshops and especially in planning meetings.

It is also important that Principal Staff members associated with grain legumes should also travel extensively in AGLP countries to become familiar with the problems and the staff in each country. This familiarity will permit ICRISAT to send appropriate material, but more importantly suggest appropriate solutions to the problems in each country.

Memoranda of Understanding (MOU):

An important accomplishment of the AGLP was the development and signing by the Director General of two Memoranda of Understanding one in Dhaka, Bangladesh, signed on 9 September by Dr. M.M. Rahman the Director General of the Bangladesh Agricultural Research Institute and one in Rangoon, Burma, signed on 10 September by U Khin Win the Managing Director of the Agriculture Corporation. The one in Burma is of particular importance as it is expected to permit much easier movement of scientists between ICRISAT and Burma.

There are also MOUs in the process of being developed with three countries, Nepal, Sri Lanka, and Indonesia. When these have been signed we will have an MOU with all active AGLP countries except China (Appendix 6).

These MOU's are designed as general umbrella agreements that show a willingness by each country to accept ICRISAT, allow easy movement of people, material, and equipment, and permit the sharing of results and varieties arising from collaboration. Specific projects such as networks or trials can then be developed under the overall MOU. These agreements do indicate that ICRISAT is interested in providing assistance to research on its crops in each country and it is important that we appropriately honor these commitments. These agreements also let donors know that these countries are interested in having ICRISAT come and work in their country which is usually a prerequisite for funding special activities.

Travelling Seminar:

Another activity of the AGLP was the organization and funding in cooperation with the Department of Agriculture in Thailand of a Legume Entomologists' Travelling Seminar in the northern part of Thailand. Two entomologists from ICRISAT travelled with about 16 scientists from Thailand, one from North Carolina, and two from Australia (G.V. Ranga Rao and S.S. Lateef, 1986). They surveyed groundnut and pigeonpea to determine what pests are important, exchanged information, and developed a list of recommendations. This type of seminar (tour) is a good way of determining biotic stresses affecting crops in a specific area and in suggesting solutions or recommendations for research.

Donor organizations:

Donor organizations contacted in the region working on grain legumes have all been keen to know about the AGLP and there seems to be a general interest in coordinating with our activities to make the best use of resources. Some of the major organizations interested in working with the AGLP are listed in Appendix 6.

The ADB has also expressed interest in supporting AGLP activities. A proposal has been prepared and negotiations are still active. The results of these negotiations can have an important impact on the future activities of the AGLP. We will discuss these later.

Summary of progress on recommendations:

I have discussed the activities of the AGLP. The progress made on the recommendations put forward at the Asian Regional Legumes Program Meeting at ICRISAT, 1985 can be summarized as follows: (More details are available in Appendix 2 and in the References).

Donor organizations have been contacted in all AGLP countries visited and proposals for collaboration suggested. A proposal for funding by ADB has been prepared.

Monitoring tours in several AGLP countries have been made and reported and an Entomologists' Travelling Seminar organized in Thailand.

Contacts have been made in all countries visited concerning germplasm collection and preservation.

ACIAR is presently in the process of hiring someone to conduct the G x E study.

Plans have moved forward with COPRT to conduct a

socioeconomic survey of groundnut in Indonesia and Thailand and funding has been identified. Many discussions have been held about developing research into alternative uses of grain legumes.

Contact have been made with labs in Japan, England, and Thailand regarding conducting special basic research projects.

Information on ICRISAT's Training Program has been taken to all countries visited, assistance offered for getting trainees to ICRISAT, and help from ICRISAT is being arranged for regional training courses.

Information sources have been identified on agroclimatic data and contact encouraged with KKU to collaborate in the Peanut Grow computer model. Contact is being made to bring in a consultant from CIAT to demonstrate their agroecological computer model.

OUTLOOK

Before we go into some future plans of activities for the AGLP, I would like to present a proposal of objectives for the program.

AGLP objectives:

The objectives that I am presenting are based on the original proposal made for setting up the program (ICRISAT 1983) and the recommendations of the two meetings held at ICRISAT to discuss the establishment of the program (ICRISAT 1984, and 1986).

Definitions: For these objectives some of the terms I am using are defined as follows:

Grain legumes are groundnut, chickpea and pigeonpea unless otherwise stated.

AGLP members refer to all personnel identified as being associated with grain legume research in AGLP countries who wish to be included in the Program's membership. They include the following main groupings:

- legume scientists in national programs
- administrators in national programs
- personnel in regional and international organizations
- ICRISAT trainees present and past
- ICRISAT staff

AGLP countries are those in South and Southeast Asia growing AGLP grain legumes. These include the following:

Presently actively involved

South Asia

Bangladesh
Burma
Nepal
Sri Lanka
Pakistan

Southeast Asia

China
Indonesia
Philippines
Thailand

Presently with little or no connection

Afghanistan
Bhutan
Fiji
Kampuchea
Korea (North)
Korea (South)
Malaysia
Laos
Taiwan
Vietnam

AGLP Trainees are grain legume workers in AGLP countries who have received or are receiving ICRISAT training.

The overall purpose of the AGLP is:

To facilitate the testing and dissemination of appropriate material and technology concerning ICRISAT's grain legumes through national scientists to farmers in AGLP countries.

The specific objectives are:

1. To produce a directory for AGLP members by:
 - identifying for inclusion in the directory administrators, scientists, regional and international organizations, trainees, and ICRISAT staff working on grain legumes in AGLP countries.
 - identifying the specific disciplines, research interests, and responsibilities of each AGLP member.
 - identifying news items and notices of importance to AGLP members.
 - entering the above information on a computer data base

for easy access.

- printing a directory and information of interest for distribution to AGLP members once or twice a year.

2) To operate an information bank for AGLP members by:

- collecting and classifying reports and literature about such topics as the geography, demography, climate, and agriculture for each AGLP country.
- arranging and making tours of AGLP countries by the AGLP Coordinator and ICRISAT staff associated with the AGLP to identify stresses affecting the yield of grain legumes within each country and identifying concerns within national programs requiring attention by ICRISAT.
- arranging consultancies for in-depth study of and for making recommendations concerning grain legumes in AGLP countries.
- holding meetings, travelling seminars, and workshops for AGLP members to exchange information and identify and develop answers to problems associated with grain legumes in AGLP countries.
- classifying information by topic in such documents as correspondence, tour reports, and workshop proceedings to be entered in a project management program.
- distributing information contained the information bank to AGLP members to support their programs and the activities of the AGLP.
- identifying and providing special funding where needed and appropriate for the operation of the information bank.

3. To support identification of adapted grain legume lines and the appropriate agronomy for their cultivation in each AGLP country by:

- assisting the Legumes Program in the distribution of germplasm and breeding material of grain legumes to AGLP countries.
- encouraging and assisting ICRISAT scientists in providing agronomic trials on grain legumes for AGLP countries.
- organizing or assisting the organization of meetings to discuss plans, monitoring tours, and the analysis and

discussion of results of ICRISAT grain legume trials conducted in AGLP countries.

- encouraging the release to farmers of ICRISAT grain legumes and cultural packages demonstrated in AGLP trials and networks to be clearly superior to those already existing.
- organizing and operating formal AGLP networks where necessary.

4. To promote the training of legume scientists from AGLP countries by:

- identifying legume scientists in AGLP countries requiring training.
- identifying special training courses required by AGLP members and if necessary arranging to have the training offered at ICRISAT.
- assisting in the organization and presentation of appropriate courses in AGLP countries.
- identifying and providing funding where necessary for the training of AGLP members.
- following-up AGLP trainees to utilize their training in AGLP activities.

5. To foster special research projects to support the AGLP by:

- identifying what projects are required.
- identifying and collaborating with the appropriate organization, agency, or program to conduct each research project.
- identifying and providing special funding for these projects when needed.

Project areas that have been identified include the following:

- Socioeconomic surveys of grain legumes in AGLP countries.
- Development of alternative uses for AGLP grain legumes.
- G x E study of AGLP grain legumes.
- Germplasm collection and preservation of grain legumes in AGLP countries.
- Agroecological mapping and studies for AGLP countries.

- Development and testing of equipment for the cultivation, harvesting, and threshing of grain legumes in AGLP countries.

Future activities:

Based on these objectives the AGLP must continue to identify scientists for membership in the AGLP, identify ways to cooperate with them and with donor organizations in AGLP countries, collect and distribute information for an about grain legumes in AGLP countries, identify training needs and be involved in organizing special training and workshops, identify yield reducing stresses affecting grain legumes in each country, develop testing networks and special projects to deal with these stresses, and identify sources of funding to support the activities of the AGLP.

Personal contact is an important part of the program so travel by the Coordinator and other scientists will be planned for and carried out (see sections above on Travel and Country and regional "experts"). Special emphasis will be given to contacts with China.

We will complete arrangements for signing MOU's in all countries to show our interest in working there.

An essential component to be able to keep track of the large amount of information collected for the AGLP and make it available and useful for running the activities of the AGLP is a data based management information system.

Another essential component is the development and operation of appropriate networks in conjunction with the grain legume research programs in each country.

Before I discuss these, I would like to give a brief summary of the production statistics of grain legumes in AGLP countries as they are one of the factors that must be considered in developing priorities for each country.

Production of grain legumes:

The area from which grain legumes are harvested and the amount produced in each AGLP country is overshadowed by India and China (Fig.1). The differences are very dramatic when these area and productions statistics are graphed. The similarity of groundnut production in India and China is noteworthy in view of the much smaller area of production in China.

The importance of groundnut in Indonesia and Burma should be noted and the importance of chickpea in Pakistan (Fig.2). The low production of these crops in Bangladesh should also be noted. Groundnut is shown to be produced in all AGLP countries except

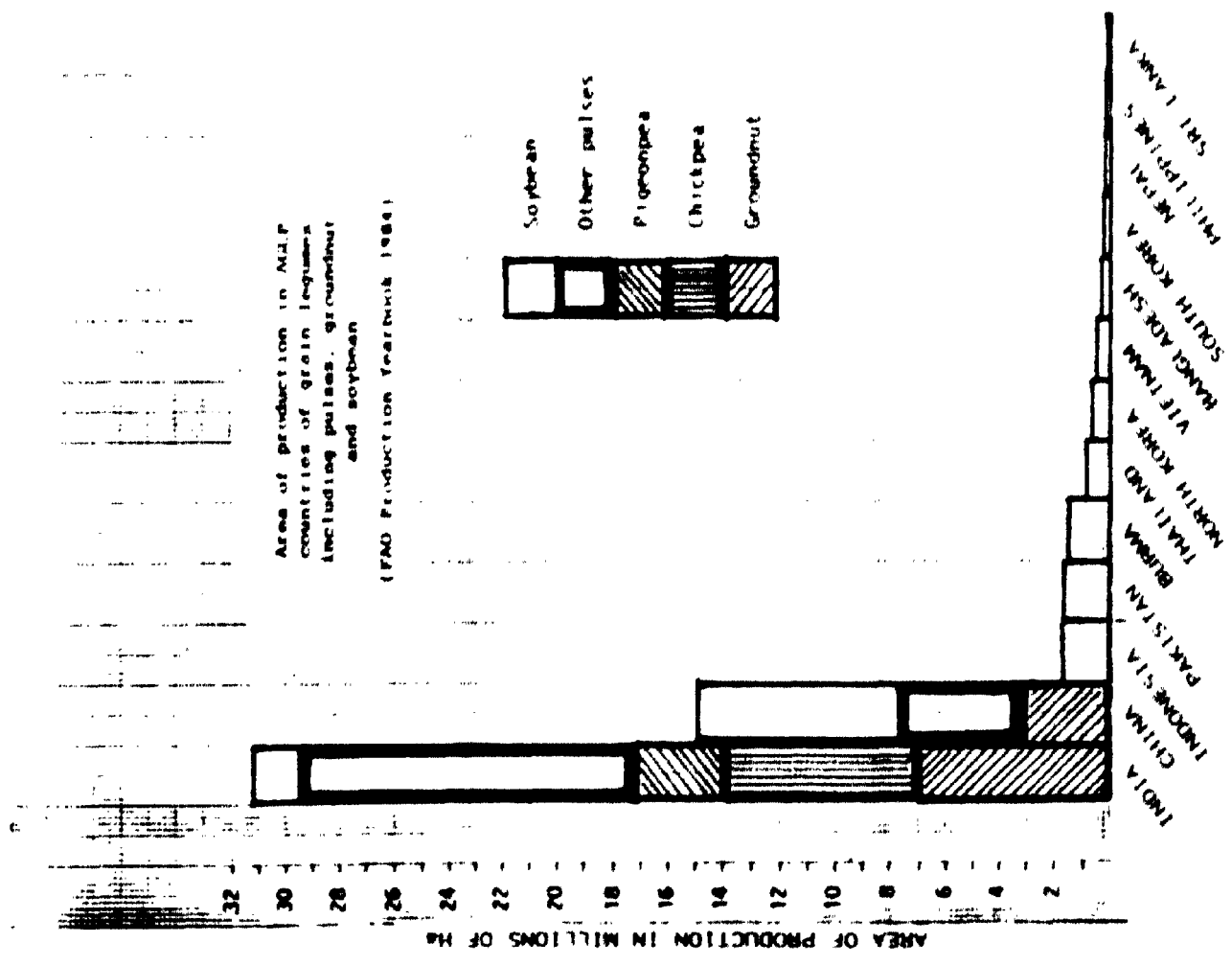
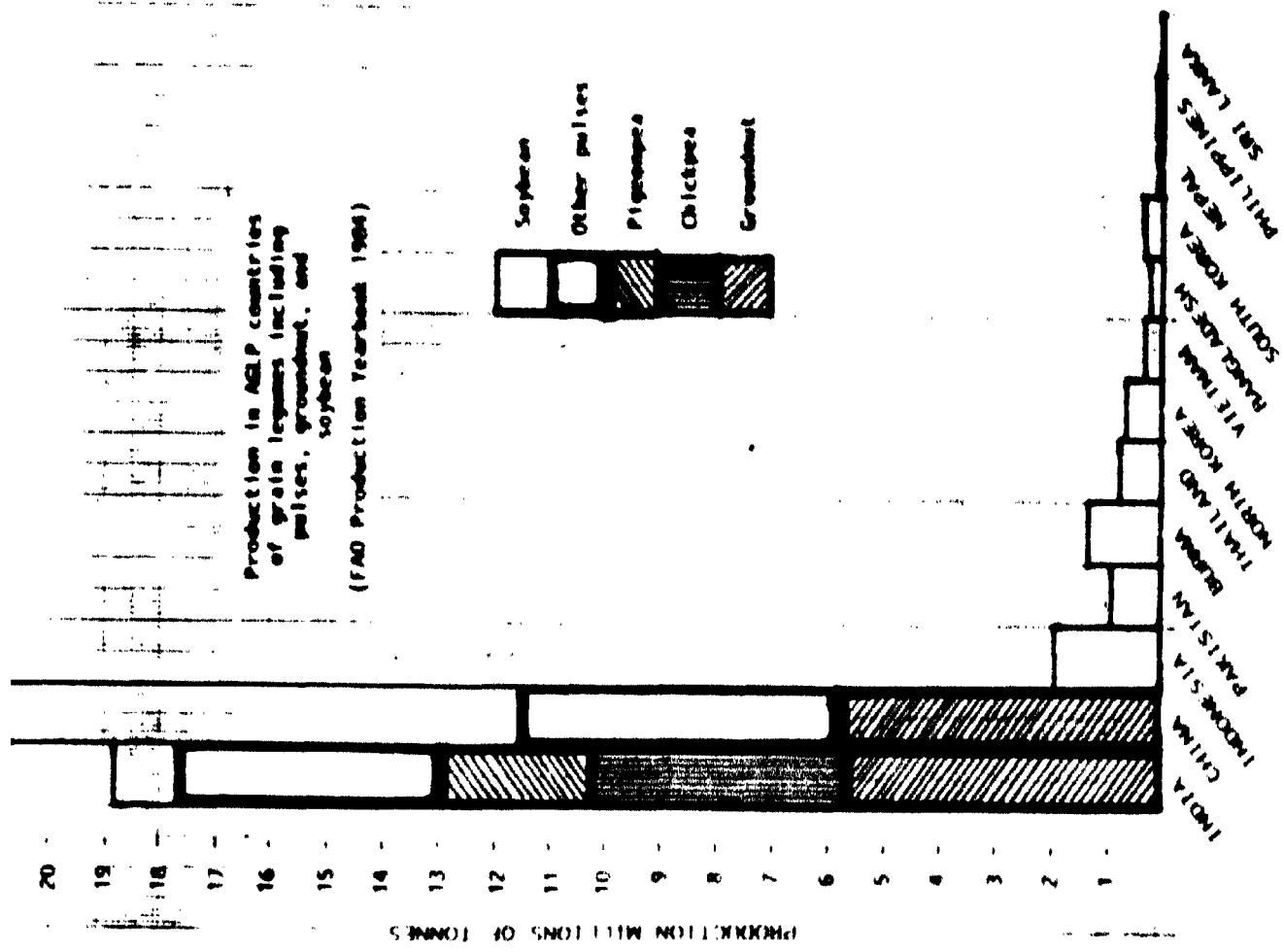


Fig. 1. Area and production of grain legumes including pulses, groundnut and soybean in Asian countries (FAO, 1984 Production Yearbook).

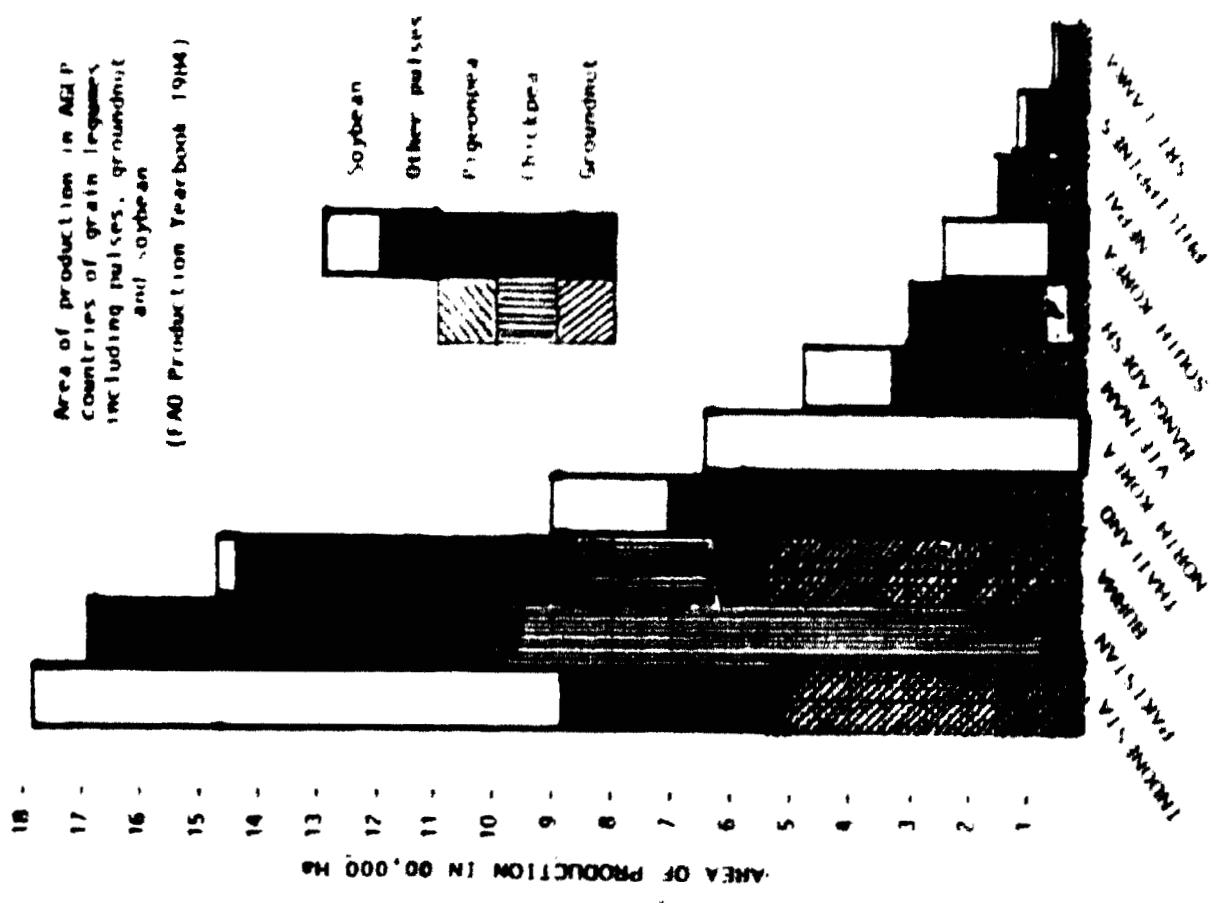
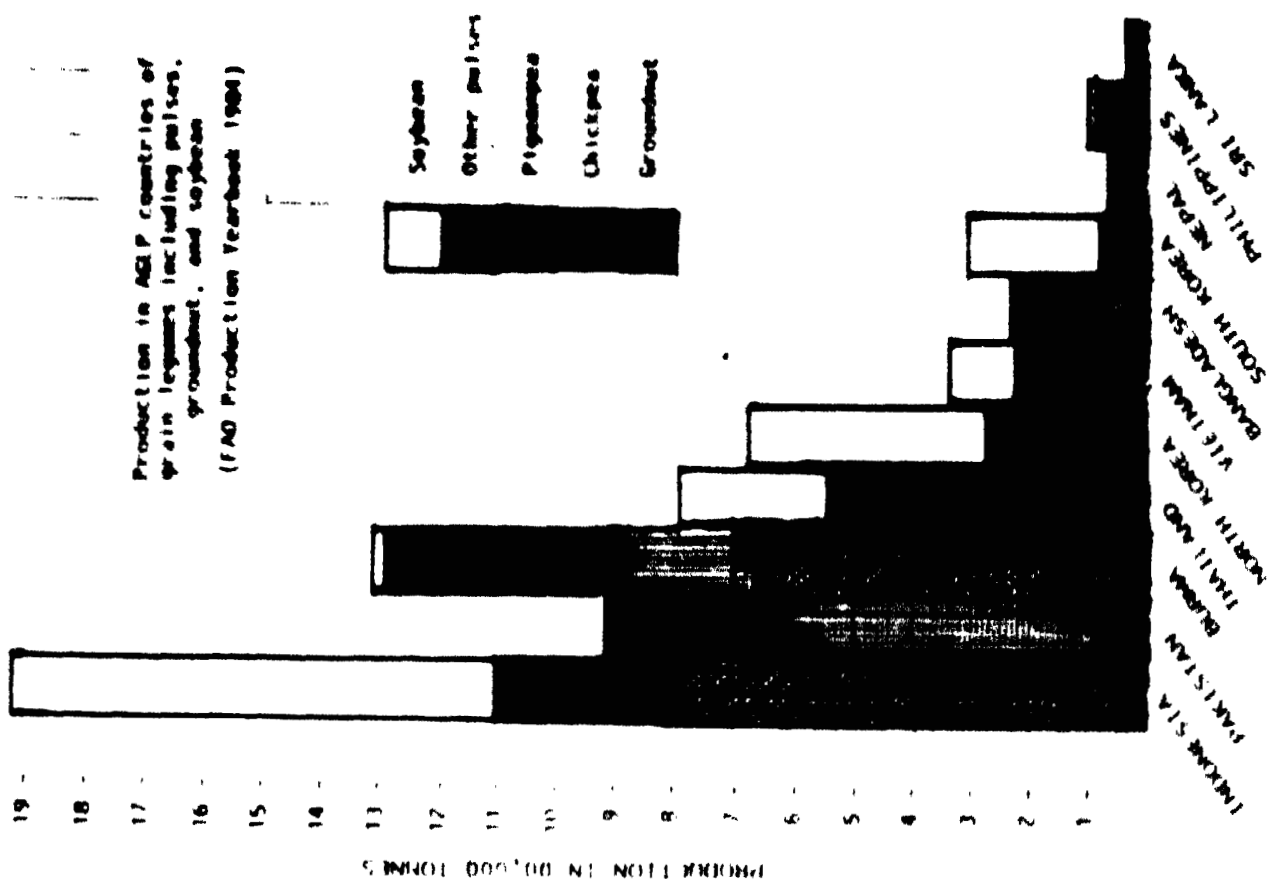


Fig. 2. Area and production of grain legumes including pulses, groundnut, and soybean in Asian countries with India and China deleted. (FAO 1984 Production Yearbook).

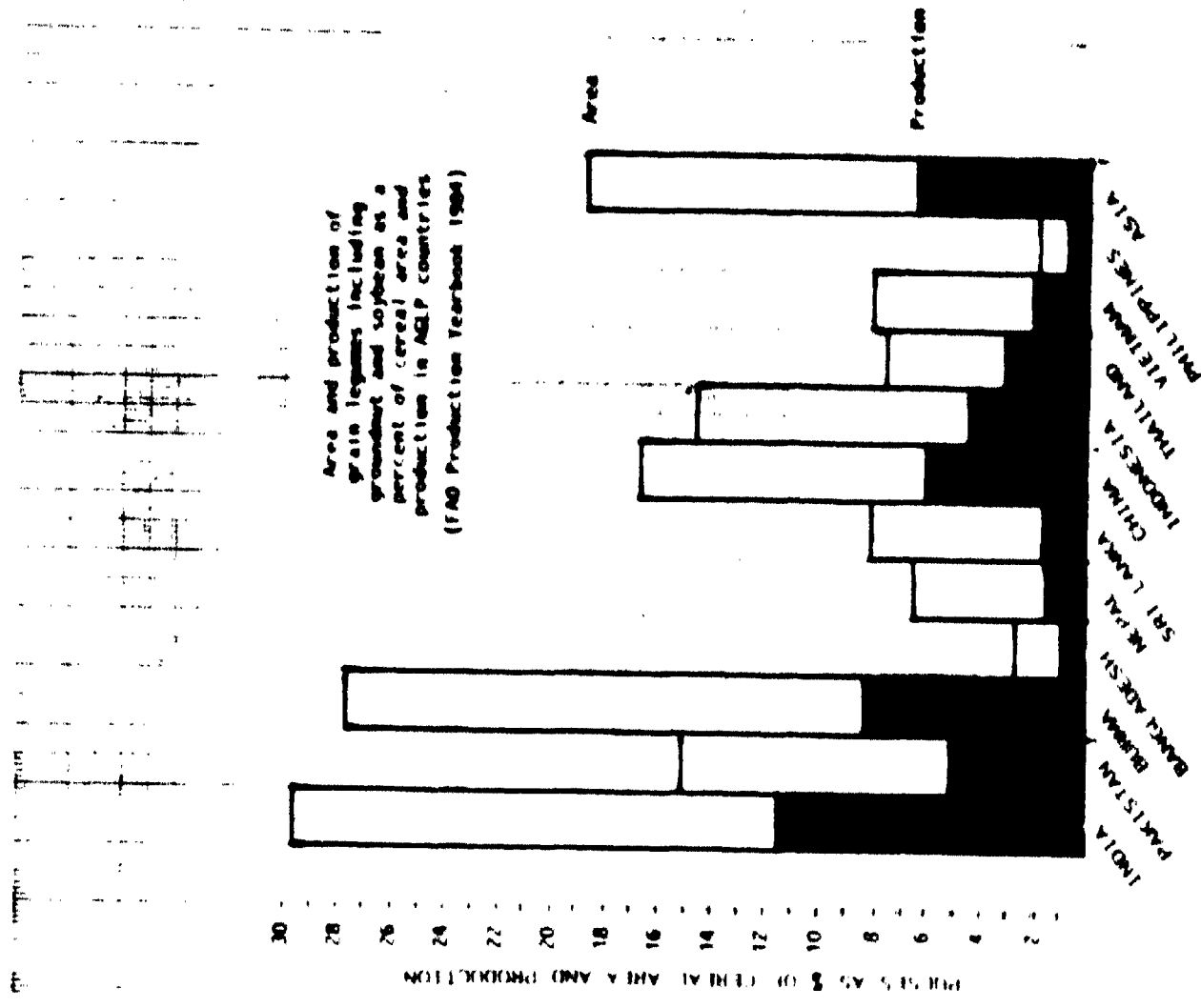
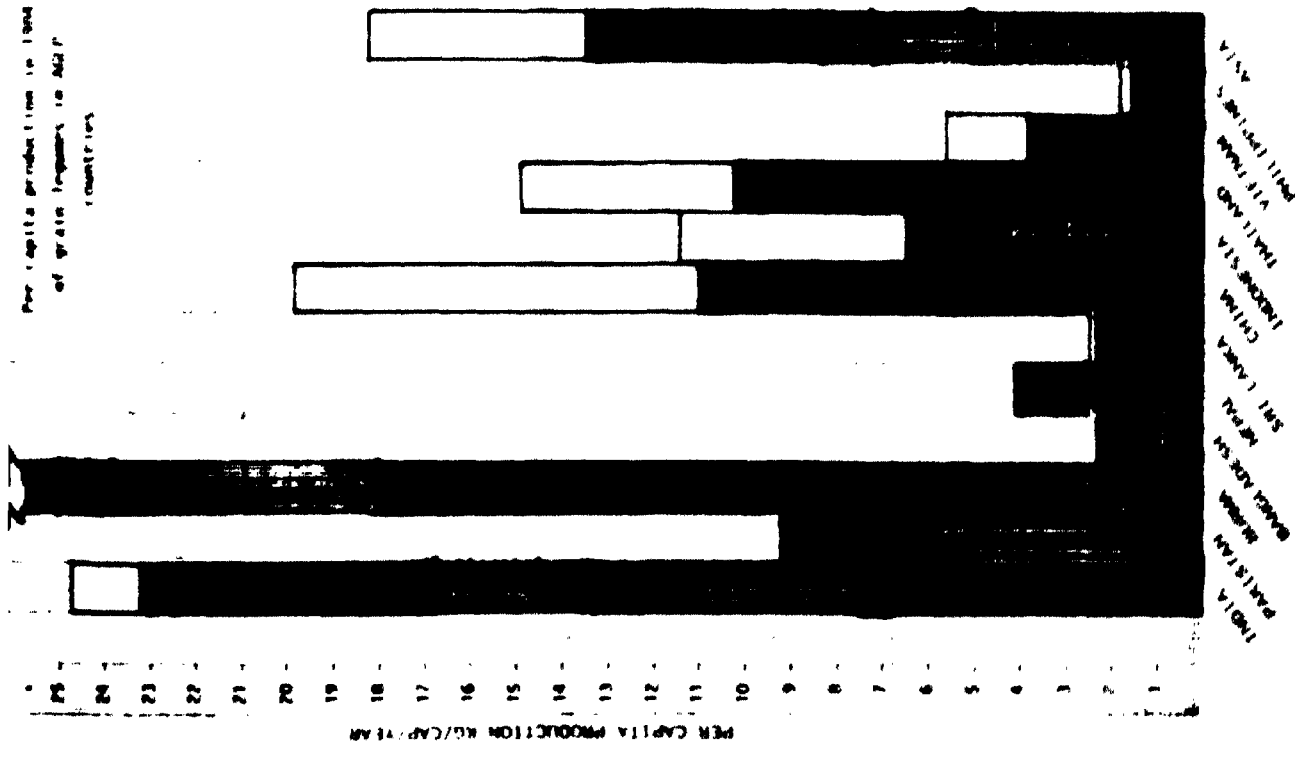


Fig. 3. Per capita production of various grain legumes and area and production of grain legumes including groundnut and soybean as percent of cereal in AGLP countries (FAO 1984 Production Yearbook).

Nepal. Pigeonpea and chickpea are only shown in South Asian countries and soybean is important almost exclusively in Southeast Asian countries.

The per capita production and the production of pulses as a percent of cereal production in each country (Fig. 3) shows the great importance of grain legumes in Burma and India followed by China, Indonesia, Thailand, and Burma. The low level in Bangladesh should be of particular concern. These figures along with information gathered during visits, concerning the importance each country places on research on each crop, has been used to produce the importance-interest priority given in Appendix 6.

Management information system:

You will have become aware by this time that one of the major roles I am developing for the AGLP is for it to act as an information bank about and for grain legume scientists in AGLP countries. The information bank will also contain a store of knowledge and data about the countries and about the grain legume crops there. The information in this bank must be readily accessible.

In addition, to operate the AGLP track must be kept of plans for travel, workshops, and meetings so that they can be integrated with the plans of AGLP members.

The large size of the information bank, the need to quickly draw information together and cross reference it depending on who requires the information, and the need to tie it in with similar information banks that already exist at ICRISAT makes it virtually an impossible task for any one person to handle. I am already encountering problems in knowing where I have filed information and in keeping track of whether jobs have been completed.

Given the proper programing to run a management information system and the ability to use it, the computer can easily manipulate the data in the bank and provide the required compilation of information for me to take action, to make reports, and to keep track of what needs to be done.

For these reasons I consider it essential to have as soon as possible a properly designed program to manage the AGLP activities. For this reason, I have given the development of such a program top priority. As Computer Services already have a long list of high priority jobs to be done and other ICRISAT staff, who might be able to develop such a program, are otherwise committed to other projects, permission has been given for the AGLP to call a consultant to provide a proposal for developing the required softwear. It is expected the system will be in operation before the end of April 1987.

Another reason that permission has been given to develop this program for the AGLP is that it can be used as a prototype for developing a more comprehensive system for wider application at ICRISAT.

The system being proposed consists of seven integrated modules, one module to meet each of the following goals:

- to maintain AGLP membership profiles;
- to create and modify country profiles;
- to maintain a record of communications by correspondence, phone or personal consultation;
- to maintain information on the status of AGLP funds;
- to process requests for seed distribution; and
- to prepare and analyze trip report summaries.

It is possible to add modules to these as needed.

This system is being designed to be integrated into existing data base systems at ICRISAT with the eventual aim of it being part of a micro-computer network at ICRISAT.

Networks:

Although many of the subjects that I discussed today, such as membership or information, might be considered to be types of networks I have refrained from using the term network for these partly because it can mean so many things and because of this can mean nothing specific. However, I have mainly saved it to be used to specify testing networks which I expect will be evolved in various AGLP countries or regions. Thus if we developed a program to test groundnut varieties with the scientists in China we might call it the China-ICRISAT Groundnut Variety Testing Network.

These testing networks can take on many forms in response to the needs of the scientists in each country. However, according to A.D.R. Ker (1985) networks have certain key organizational components in common:

- Common objectives agreed to by all network participants.
- Willingness by all participants to adjust research programs and to invest resources into network activities.
- A level of interaction among participants appropriate to the complexity of the research being undertaken and the needs of the participants.

- An appropriate level of coordination by a coordinator possessing unusual qualities.
- Linkage mechanisms which may include planning meetings, advisory committees, consultants, monitoring tours, training programs, workshops, and publications.

ICRISAT scientists have made big advances in breeding high yielding groundnut, chickpea, and pigeonpea lines. However, the essential step of identifying selections of these crops from ICRISAT that are adapted to local conditions must be done by scientists working in national agricultural research organizations. The role that ICRISAT can play is to provide the backup of material and technical assistance to support the activities of the national programs. ICRISAT, through the AGLP, must come into these countries as a partner at a level acceptable to each program and country.

We all know the type of difficulties that scientists in countries of Asia must contend with. These can include limited equipment, staff, operating funds, and information. Also scientists in these countries often find themselves working in isolation.

It should be noted that one of the reasons for the enormous acceleration in the rate of scientific progress in recent years has been the opportunity for scientists, in addition to reading literature, to meet together to exchange information and update their own skills. In some of the larger AGLP countries the internal networks may be adequate to meet the needs of their scientists. However, in the smaller AGLP countries there is often only one or two scientists working on each of our crop, so effective interchange for them needs to be at a regional or international level.

In some AGLP countries there is a relatively strong program already in place or one being well supported by donor organizations. An example is the groundnut program in Thailand. On the other hand there is a relatively weak or non-existent improvement program in many countries, and here the AGLP can play an important role.

The networks in which ICRISAT scientists can become involved can be organized for one or more of several purposes. These could include testing of breeding material, testing of agronomic packages, or testing of material for stress resistance.

In the past most yield trials have been sent to scientists in AGLP countries in response to their requests sent to ICRISAT. Often we have sent this material with little knowledge of the conditions it would be grown under and the stresses it would be expected to face. Sometimes ICRISAT scientists have visited the trials but their going is by no means certain. Sometimes our

scientists have seen good trials being grown but sometimes the trial was poorly planted and suffering from stress, or it may not even have been planted, perhaps because the seed never arrived. Sometimes results have been returned to ICRISAT, but in some of our crops a much larger proportion were not received than were received. Often, even when the results have been returned, we know that the good material has not been followed-up for further testing or for final release to farmers.

All these factors would seem to indicate that in many instances that lack of planning, resources, and manpower has led to wastage of the few resources that were available.

What is needed in order that ICRISAT can provide appropriate assistance to national programs in the AGLP countries, is an examination of the situation in each country for each crop, including what program is in place, what staff is available, what are the problems, what assistance is being provided, and the interest in the country for assistance from ICRISAT (Appendix 6).

The formation of the data bank with this information has been a major part of the work in the AGLP during 1986. Other important components have been to meet the workers and administrators in each country, to develop agreements to indicate each country's interest in working with ICRISAT, and to identify special funds, an essential component for supporting the activities of networks.

Another component to be considered is the relationship of AGLP networks with other networks such as the Rice Cropping System Network at IRRI. Indeed this network or others like it can form useful models for organizing the AGLP networks.

The next step to establishing networks, now that funding appears to be possible, is to continue our contacts with the research organizations, the researchers, and donor organizations in each country to determine the interest for networks in grain legumes in each AGLP country.

Special research projects:

The initiatives on these projects, many of which have come from the recommendations of the 1985 meeting (ICRISAT 1986), will be carried forward. In many cases they can be linked with work under other objectives. An example is the G x E study which will eventually need to be linked to the variety testing networks. Others, such as alternative utilization, will continue to be separate.

One project which will need attention is germplasm collection and preservation. An indication of the priorities for collecting grain legumes germplasm in AGLP countries is given in Appendix 7.

Thanks:

I want to thank the administrators and researchers in the AGLP countries I have visited for the superb way they have looked after me while travelling in their countries. The AGLP has been well received everywhere I have gone. I am also thankful to the staff of donor organizations who have never stinted in ensuring that all arrangements are looked after. I want to thank the scientists and administrators at ICRISAT who have responded so well when I have needed assistance. A program with one principal staff member and one administrative officer is very small, but given the backing of all concerned staff the AGLP will have an impact on grain legume research in AGLP countries far out of proportion to its size.

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REFERENCES

I. Consultancies and Proposals

Faris, D.G. 1986. Asian Grain Legume Program: Proposals and Prospects. Seminar, 14 February 1986, ICRISAT Center, Patancheru, A.P., India.

ICRISAT 1983. Proposal for an Asian Regional Legume Program. Patancheru, A.P., India: ICRISAT.

ICRISAT 1984. Grain Legumes in Asia: Summary Proceedings of the Consultative Group Meeting for Asian Regional Research on Grain Legumes (Groundnut, Chickpea, Pigeonpea), ICRISAT Center, 11-15 December 1983. Patancheru, A.P., India: ICRISAT.

ICRISAT 1986. Coordination of Grain Legume Research in Asia. Summary Proceedings of the Review and Planning Meeting for Asian Regional Research on Grain Legumes (Groundnut, Chickpea, and Pigeonpea), 16-18 December 1985, ICRISAT Center, Patancheru, A.P., India.

Reddy, L.J. 1986. Status and strategies for groundnut improvement in Bangladesh. A consultancy report for BARI and Winrock International, Bangladesh Agricultural Research Project Phase II. 267 pp.

II. Trip Reports

Bangladesh

Faris, D.G. 1986. Trip report, Bangladesh, (17-24 February 1986).

Faris, D.G. 1986. Trip report, Bangladesh and Burma (7-13 September 1986). 10 pp.

Kumar, Jagdish 1986. Trip report, Ranchi, Berhampore and Bangladesh, March 10-24, 1986. 7 pp.

Swindale, L.D. 1986. Notes on visits to Bangladesh and Burma, 7-12 September 1986. 4 pp.

Burma

Faris, D.G. 1986. Trip report, Bangladesh and Burma (7-13 September 1986). 10 pp.

Sethi, S.C. 1986. Tour report, Burma (4-13 February 1986). 3 pp.

Swindale, L.D. 1986. Notes on visits to Bangladesh and Burma, 7-12 September 1986. 4 pp.

China

India

Paris, D.G. 1986. Trip report, AICPIP Kharif Pulses NWPZ Regional Workshop, BAU, Raohi, (21 April 1986). 5 pp.

Paris, D.G. and Singh, Onkar 1986. Trip report, Delhi and Nepal, (13-25 March 1986). 23 pp.

Indonesia

Paris, D.G. 1986. Trip report, Indonesia and Thailand, (18-28 January 1986). 11 pp.

Reddy, D.V.R. 1986. Tour report, Report on a visit to Thailand and Indonesia, August 30-18 September 1986. 32 pp.

Vasudeva Rao, M.J. 1986. Tour to Indonesia - 26 July 1986 to 9 August 1986. 3 pp.

von Oppen, M. 1986. Tour report by Dr. M. von Oppen, visit to Indonesia, 24 Feb - 17 Mar 1986. 4 pp.

Japan

Paris, D.G. 1986. Trip report, Japan, Korea and Taiwan, (3-16 August 1986). 18+2 pp.

Korea (South)

Paris, D.G. 1986. Trip report, Japan, Korea and Taiwan, (3-16 August 1986). 18+2 pp.

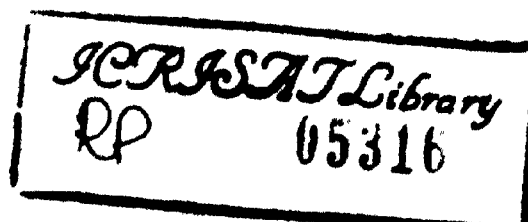
Nepal

Paris, D.G. and Singh, Onkar 1986. Trip report, Delhi and Nepal, (13-25 March 1986). 23 pp.

McDonald, D., and Paris, D.G. 1986. Trip report, Nepal, 13-19 September 1986. 9 pp.

Pakistan

Paris, D.G., Gowda, C.L.L., and Nene, Y.L. 1986. Trip report, Chickpea Scientists' Meet, Islamabad, Pakistan, 3-10 April 1986. 9+1 pp.



Philippines

Virmani, S.M. 1986. Trip report, visit to IRRI - International Rice Research Institute, 7-12 April 1986. 2 pp.

Singapore

Paris, D.G. 1986. Trip report, Thailand and Singapore, (10-24 May 1986). 13+11 pp.

Taiwan

Paris, D.G. 1986. Trip report, Japan, Korea and Taiwan, (3-16 August 1986). 18+2 pp.

Thailand

Paris, D.G. 1986. Trip report, Indonesia and Thailand, (18-28 January 1986). 11 pp.

Paris, D.G. 1986. Trip report, Thailand and Singapore, (10-24 May 1986). 13+11 pp.

Paris, D.G. 1986. Trip report, Thailand, (2-5 July 1986). 2 pp.

Paris, D.G. 1986. Trip report, Peanut CRSP Workshop, Thailand, 18-21 August 1986. 11 pp.

Paris, D.G. 1986. Trip report, Thailand (30 Aug. - 6 Sept., 1986). 5+6 pp.

Lateef, S.S. 1986. Report on the Entomologists Travelling Seminar in Thailand organized by AGLP-ICRISAT in collaboration with the Director of Agriculture, Thailand, from Sept. 6-12, 1986. 3+2 pp.

Ranga Rao, G.V. 1986. Report on Entomologists Travelling Seminar in Northeastern and Northern parts of Thailand, 6-11 September 1986. 7+3 pp.

Reddy, D.V.R. 1986. Tour report, Report on a visit to Thailand and Indonesia, August 30-18 September 1986. 32 pp.

Reed, W. 1986. Summary report of travel, April-May 1986. 2pp.
Reed, W. 1986. Travel report - conferences in Khon Kaen, Thailand and Rome, Italy (Sept. 1986). 3 pp.

Virmani, S.M. 1986. Trip report, IBSRAM Workshop: Thailand 13-20 October 1986. 3pp.

Williams, J.H., 1986. Tour report, Asian Grain Legumes Workshop,

Khon Kaen, Thailand, 1-5 September, 1986. 3 pp.

III. Workshops

ACIAR 1986. Food Legume Improvement for Asian Farming Systems Workshop, Khon Kaen, Thailand, 1-5 September 1986 (in press).

Invited Papers

Buddenhagen, I.W., Wongkaew, S., Gibbs, A.J., Reddy, D.V.R., and Persley, G.J. 1986 Limits imposed by biological factors: Diseases.

Campbell, W.V., and Reed, W. 1986. Limits imposed by biological factors: Pests.

Ong, C.T., and Patanothai, A. 1986. Limits imposed by management in rainfed farming systems.

Parthasarathy Rao, P., and von Oppen, M. 1986. Grain legume production in Asia: Factors affecting demand and supply, and implications.

Contributed Papers

Chauhan, Y.S., Venkataratnam, N., and Johansen, C. 1986. Agronomy of multiple harvest pigeonpea.

Paris, D.G., Saxena, K.B., Singh, U., and Reddy, L.J. 1986. The promise of high protein pigeonpea.

Gowda, C.L.L. 1986. The potential of chickpea after rice.

Gupta, S.C., Saxena, K.B., Paris, D.G., and Sharma, D. 1986. Promising pigeonpea varieties from ICRISAT.

Jain, K.C., and Paris, D.G. 1986. The potential of medium-duration pigeonpea.

Lateef, S.S., Sithanatham, S., and Reed, W. 1986. Insect resistant pigeonpea is feasible.

Raju, T.N., and Nene, Y.L. 1986. The value of disease resistant pigeonpea.

Remanandan, P. 1986. Genetic variation in pigeonpea germplasm.

Saxena, K.B., Paris, D.G., and Gupta, S.C. 1986. The potential of early maturing pigeonpea hybrids.

Singh, U., Jambunathan, R., Saxena, K.B., and Paris, D.G. 1986. Nutritive value of green and mature pigeonpea seed.

BARC 1986. Second National Symposium on Agricultural Research, BARC, Dhaka, 11-13 February 1986 (in press).

Reddy, L.J., Kaul, A.K., and Alam, M.S. 1986. Present status and future research strategies for increased groundnut production in Bangladesh.

IRRI 1986. Proceedings of Workshop on Crop-Livestock Systems Research, 7-11 July 1986, Khon Kaen, Thailand. Sponsored by IRRI and Department of Agriculture, Thailand (in press).

Wallis, E.S., Paris, D.G., Elliott, R., and Byth, D.E., 1986. Varietal improvement of pigeonpea for small holder livestock production systems.

Peanut CRSP 1986. Proceedings of Peanut CRSP Workshop, 19-21 August 1986, Khon Kaen, Thailand (in press).

Paris, D.G. 1986. The Asian Grain Legume Program in relation to the Peanut CRSP program in Southeast Asia.

APPENDIX 1

Review and Planning Meeting for Asian Regional Research on Grain Legumes 16-18 December 1985, at ICRISAT Center, India

RECOMMENDATIONS

Preamble

These recommendations arise from plenary discussion of presented papers that described national and regional progress in the research and development of groundnut, chickpea, and pigeonpea, outlined research needs, and proposed new emphases in the coordination of research within South and Southeast Asia. They are based on the two stated objectives of the meeting, namely

1. to assess progress in research since the 1983 Consultative Group Meeting for Asian Grain Legumes; and
2. to develop plans for future cooperation.

An additional objective, included at the request of ADAB, was

3. to identify cooperative links between ACIAR, ICRISAT, IRRI, and other organizations concerned with legume research in the region, and propose projects for adoption and funding.

The recommendations take the form of a general plan of action and a list of specific activities to be undertaken under the guidance of the Coordinator of the Asian Grain Legume Program, appointed by ICRISAT on 1 January 1986.

General Plan

Since 1972, ICRISAT has carried out intensive plant breeding and related research into the improvement of the legume crops chickpea and pigeonpea, and of groundnut since 1976. It has built up a large collection of germplasm and breeding material, and its staff have developed research expertise in these crops derived from studies in many countries in the semi-arid tropics. ICRISAT will make this material and expertise available to the Program in the best possible way, within the constraints of its resources. The expertise relating to these crops that ICRISAT has to offer includes breeding and cytogenetics, pathology, virology, entomology, physiology, microbiology, economics, food quality, agrometeorology, and training.

ICRISAT will provide administrative support for the Coordinator at ICRISAT, and travel funds so that the Coordinator and ICRISAT scientists may visit countries in the region to monitor research progress, act as consultants, make surveys, and collect germplasm. ICRISAT will also sponsor a limited number of workshops or other specialist meetings, and support training at ICRISAT of appropriate national staff in the region.

Steps will be taken to develop close working relationships with a research working group in each country, in order to develop a plan of work for ICRISAT's involvement in national research on each of the three crops. Such plans will include the identification of the role ICRISAT can usefully play, including the arranging of visits by scientists from ICRISAT, assistance in planning trials, and the supply of appropriate germplasm and breeding material.

The degree of ICRISAT's participation in national research on each crop will naturally vary greatly among countries, depending on national priorities and research policies, and on collaboration with donors and international agencies. The type of research and the nature of ICRISAT's involvement appropriate to the three crops in each country will also be influenced by how well each crop is established, either as a traditional crop with known marketing outlets, or as a "new" nontraditional crop that requires concurrent marketing, consumption, and crop improvement research.

A central feature of the plan will be to ensure direct personal contact between ICRISAT scientists and the concerned scientists in each country. These will include monitoring tours for observing material growing in the field and assessing production and research problems on the spot.

Specific Recommendations

1. Identify and utilize possible operational links between such organizations as ICRISAT, ACIAR, IRRI, Peanut CRSP, or PAO, in order to integrate research efforts and reduce duplication as much as possible.
2. Continue to conduct surveys of growing crops to determine the importance of disease incidence and insect pest attack, to obtain data on the basis of which recommendations can be made concerning the breeding of resistant cultivars and/or the implementation of control measures.
3. Make tours to collect and preserve germplasm before landraces become lost as a result of the introduction of new cultivars. Make arrangements to conserve the collected material at ICRISAT Center and in its country of origin.
4. Plan multilocation trials under collaborative guidance from ICRISAT and ACIAR to generate information about genotype and environment (G x E) interactions. The resulting data will be made available within the region, and are expected to be of particular value to plant breeders.
5. Undertake socioeconomic research on nontraditional crops within selected countries, to determine their present and future

marketing potential and identify possible ways of utilizing them, e.g., as new food products after appropriate processing, as a vegetable, or as animal feed. Such research might involve the Resource Management Program and the Biochemistry Unit in ICRISAT, ACIAR, TDRI (UK), Peanut CRSP, and national agricultural research organizations.

6. Explore the possibility of developing joint special projects between national programs and ICRISAT, to constitute the research needed to support the improvement of the three legume crops. Such projects might involve research in laboratories located outside the region.

7. Identify the training needs of research personnel in the countries of the region and select appropriate people for training in special courses at ICRISAT. Such training might include instruction in the use of equipment or in screening procedures, or it might take the form of participation in an in-service fellowship course, or taking advanced degrees in cooperating universities.

8. Supplement the agrometeorological data on countries in the region that are already available within ICRISAT, to identify agroecological zones in Asia based on ICRISAT criteria, and thus to facilitate the transfer of plant material and improved technology. This work will include testing the groundnut simulation model "Peanutgrow," running special training courses in the use of agrometeorological models, and supporting the multilocational trials and G x E analyses mentioned in recommendation 4.

APPENDIX 2

Summary of a sample of trip highlights by recommendation and country.

1. Interaction with donor organizations.

- Bangladesh**
- CIDA multimillion \$ program in legumes and oilseeds
 - IDRC Delhi office responsible
 - ODA's Bangkok office responsible
 - Contacted CIMMYT and Winrock International
 - (possible liaison office)
 - IDRC support to grain legume research phasing out
- Burma**
- FAO - Food Crops Development Project
 - USAID ARPP have programs on pulses and oilseeds
 - IRRI Palis (liaison)
 - UNDP Liaison for ICRISAT
 - ODA's Bangkok office responsibility
- Indonesia**
- IDRC Food Legume & Legume Processing Projects
 - ACIAR pigeonpea and groundnut projects
 - ODA's Bangkok office responsible
- Japan**
- Foreign Affairs supporting ICRISAT
 - International Cooperation Division only interested in Soybean
 - TARC has interest in legumes
 - NFRI has contact with CFTRI (Mysore) and NDRI, Karnal
- Korea**
- RDA testing chickpea, pigeonpea and groundnut for ICRISAT
- Nepal**
- IDRC's Delhi office responsible
 - IDRC support of GLIP & NODP possible
 - ARPP (Liaison office) supporting buildings for GLIP, NODP
 - ODA visited project growing g'nuts
 - ODA Bangkok office responsible
- Pakistan**
- ADB/ICRISAT chickpea project
 - CIDA G'nut program support
- Philippines**
- IDRC supporting IRRI Rice Cropping System
 - IDRC Legumes program UPLB

- ODA's Bangkok office responsible
- Sri Lanka**
 - IDRC Delhi office responsible
 - ODA's Bangkok office responsible
 - IDRC supports g'nut program
- Taiwan**
 - AVDRC Veg Int Prof Service for consultant's list Outreach coordination program of interest to AGLP
 - Asian Soybean Network good model
- Thailand**
 - ACIAR Pigeonpea program support
 - ACIAR participated in Food Legume Workshop
 - IDRC Groundnut program support
 - IDRC Legume processing program support
 - Peanut CRSP Groundnut program support
 - Peanut CRSP participated in G'nut Workshop
 - EEC Oilseed project and support of trainees
 - CIDA has no projects in Thailand of interest to ICRISAT
- Regional**
 - FAO Collaborate with CGFC network possible
 - FAO Has Chickpea network
 - FAO Main interest soybean, but maybe g'nut interest
 - FAO Has regional rhizobium trials
 - FAO wants contact with our GRU
 - FAO wants training program at ICRISAT for g'nut stress screening
 - Peanut CRSP wants better coordination with ICRISAT in several ways
 - ODA may support socioeconomic survey
 - ODA has few regional projects of interest to ICRISAT
 - IRRI need involvement in Rice Cropping Systems Network
 - IITA withdrawing position from IRRI
 - IRRI-IDRC discuss collaboration

2. Stress surveys

- Bangladesh**
 - Monitored grain legumes
 - Identified possible biotic stresses on chickpea
 - Interested in dryland research input from ICRISAT
 - Suggested interdisciplinary survey team to identify problems
- S. Korea**
 - Leaf spotting appears serious on groundnut
 - Serious disease observed on pigeonpea

- Nepal
 - Monitored grain legumes
 - Early and late leaf spot on g'nuts
 - Botrytis and stunt on chickpea
 - Sterility mosaic on pigeonpea
 - Bud necrosis on groundnut
- Pakistan
 - Chickpea monitored
 - Aschochyta severe
- Thailand
 - Entomology travelling seminar identified several insect problems
 - Severe peanut strip virus seen
 - Severe bud necrosis at Suwon Farm
 - JICA drought project in Khon Kaen
- Regional
 - Common regional interest among Peanut CRSP participants resistance in groundnut to rust, late leaf spot, insects, aflatoxin,
 - *Sclerotium rolfsii* and drought.

3. Germplasm

- Bangladesh
 - Contacted germplasm group
- Burma
 - Interest in collection, but must deal with some difficulties
- Korea
 - Have 50-60 local entries in groundnut germplasm collection
- Nepal
 - Contacted germplasm group
 - FAO wants contact with GRU
 - FAO want ICRISAT to contribute to Asian Variety Data Bank

4. G x E study

- ACIAR still trying to hire staff member to conduct study

5. Socioeconomic survey and alternate utilization

- CGPRT discussed socioeconomic survey of groundnuts in Indonesia and Thailand
- Regional discussed alternative uses of pigeonpea at ACIAR Workshop need to identify alternative uses
- ODA may supply funding for survey

- Japan
 - NFRJ has contacts with CFTRI and NDRI in India
 - NFRJ might use CP and PP for protein extraction groundnut might be used for tofu and panier

6. Special basic research

- University College, London studies on diseases of grain legumes
- TDR interested in cooperative projects Cooke visiting ICRISAT
- Washington State Basic studies on *Aschobrya*

7. Training

- Bangladesh, Burma, Indonesia, Nepal, Pakistan, and Thailand all expressed interest in sending trainees.
- Burma FAO wants to send trainees
- Indonesia and Thailand want training in pathology and entomology
- Pakistan want training in quality, utilization, agrometerology and more PDFs at ICRISAT
- Thailand EEC wants to send trainees
- Thailand Ran Entomology Travelling Seminar
- Regional FAO wants ICRISAT to run 34 week course in screening groundnut
- Rana in Pakistan suggests regional training course

8. Agrometerology

- Good information in Thailand and Indonesia for agroecological map
- Thailand discussed "Peanut grow" program

9. Relations with countries

- | | |
|------------|--|
| Bangladesh | <ul style="list-style-type: none">● Signed MOU 9 Sept● Senior staff invited to visit ICRISAT● Room for increased involvement by ICRISAT |
| Burma | <ul style="list-style-type: none">● Signed MOU 10 Sept● Senior staff invited to visit ICRISAT● Seed despatch discussed |
| Indonesia | <ul style="list-style-type: none">● MOU discussed |
| Nepal | <ul style="list-style-type: none">● MOU discussed two visits for signing early 1987● Need identified for g nut staff to visit (done)● Chickpea now at Parwanipur to be moved to Rampur |
| Taiwan | <ul style="list-style-type: none">● Good groundnut breeding project |

Thailand

- No land at Suwon Farm for chickpea and pigeonpea
- KU has more plot land
- Discussed despatch of seed

Regional

- ICRISAT scientists should attend national planning meetings
- Need more information on how to communicate

10. Literature exchange

Bangladesh

- Drought publication on groundnuts

Burma

- Request for literature about ICRISAT (sent)

Thailand

- Discussed translation of groundnut disease handbook into English

Regional

- Took publications catalogue and training pamphlets to all countries visited

11. Meetings and Workshops

Nepal

- Need for annual monitoring tour for grain legumes

Pakistan

- Chickpea scientist meet summary

Thailand

- ACIAR Workshop Planning Meeting
- ACIAR Workshop summary
- ICRISAT Entomology travelling seminar plans
- IRRI Paper delivered by ESW
- Peanut CRSP Workshop Summary
- Peanut CRSP Need for more ICRISAT scientists

Regional

- Need for Scientist Meet to chalk out regional research

12. Trials

Bangladesh

- request for groundnut seed

Korea

- Crop Experiment Station has grain legume + Sorghum trials from ICRISAT
- Want large seeded disease resistant groundnut
- Chickpea being grown at 600M
- Millet a possible substitute on 30,000ha grass sorghum

- Nepal
- Monitoring tour reports on chickpea, groundnut and pigeonpea
 - Only local pigeonpea germplasm being tested in 1986
- Thailand
- Request for insect resis and high protein pigeonpea lines
 - Request from KKU for early, leaf spot resistant g'nut for boiling
 - Request from KU for late leaf spot and aflatoxin confectionary g'nut
 - Clarification for sending material through Thai quarantine
 - Need identified for early generation material for KKU
- FAO
- Has regional chickpea and sorghum trials
 - Has regional rhizobium trials

13. General Information

- Burma
- demonstrated interest in cooperation by welcome to DG
 - results to farmers as quickly as possible
- Korea
- groundnut important program
 - pigeonpea has potential
 - half g'nut crop under plastic mulch
- Nepal
- research young (30 years)
 - finger millet very important crop
- Pakistan
- Need chickpea for direct sowing in sand dunes
- Taiwan
- 60,000 g'nut, no chickpea, very little pigeonpea
- Regional
- Need to develop more programs like ADB chickpea in Pakistan
 - Spoke on AGLFin Indonesia, Nepal, Pakistan, Thailand
- Peanut CRSP
- frequent mention of ICRISAT material
- EEC
- obtained annual report of Thai oilseed project
- Delhi
- discussed project management system twice discussed cooperative projects with IDRC thrice

APPENDIX 3

Trips by ICRISAT staff to AGLP countries during 1986

By the AGLP Coordinator:

Date	Country	Purpose
18-28 January	Indonesia and Thailand	To participate in national pigeonpea planning meeting (ACIAR)
17-24 February	Bangladesh	To discuss cooperative arrangements and monitor chickpea and pigeonpea trials
13-25 March	Delhi and Nepal	To discuss cooperative arrangements and monitor chickpea and pigeonpea
03-10 April	Pakistan	To participate in Chickpea Scientists' Meet
20-22 April	India (Ranchi)	AICPIP Kharif Pulses NWPZ Regional Workshop
10-24 May	Thailand and Singapore	To participate in FAO/DANIDA Regional Seed Seminar
02-05 July	Thailand	To attend planning meeting for ACIAR Workshop
07-08 July	England	To visit TDRI and University College
03-16 August	Japan, Korea and Taiwan	To discuss possible cooperative arrangements and to monitor groundnut, pigeonpea and chickpea
18-21 August	Thailand	To participate in Peanut CRSP Workshop
01-05 September	Thailand	To participate ACIAR Food Legume Workshop
06-11 September	Bangladesh and Burma	To accompany D.G. for signing of MOUs
11-20 September	Nepal	To monitor groundnut trials
28 Nov.-10 Dec.	Philippines	To monitor p.pea, g.nut trials
15-22 December	Sri Lanka	To monitor groundnut trials

by other ICRISAT staff:

Date	Staff	Country	Purpose
11 Jun 1985- 10 Jun 1986	L.J. Reddy	Bangladesh	To conduct a consultancy on groundnut improvement.
14-13 Feb.	S.C. Sethi	Burma	To monitor chickpea trials
14 Feb-17 Mar	H. von Oppen	Indonesia	Review of Research at MORIP
13-25 Mar.	Onkar Singh	Nepal	To monitor chickpea
15-24 Mar.	Jagdish Kumar	Bangladesh	To monitor chickpea trials
13-10 Apr.	J.S. Kanwar	Pakistan	To participate in Chickpea Scientists' Meet
"	Y.L. Nene	"	"
"	B.C.O Gunasekera	"	"
"	W. Reed	"	"
"	H.A. van Rheenen	"	"
"	C. Johansen	"	"
"	C.L.L. Gowda	"	"
"	M.P. Saxena	"	"
"	O.P. Rupela	"	"
11-12 Apr.	C.L.L. Gowda	Pakistan	To monitor chickpea trials
7-10 Apr.	S.M. Virmani	Philippines	WMO/IRRI Workshop on Weather impact on Rice Yield
1-12 Apr.	S.M. Virmani	Philippines	IRRI Cropping Systems and Climatic Units
6 Jul-09 Aug	M.J.V. Rao	Indonesia	To monitor groundnut trials
1-05 Sept.	C.K. Ong	Thailand	To participate ACIAR W.shop
"	P. P. Rao	"	"
"	D.V.R. Reddy	"	"
"	W. Reed	"	"
"	T.S. Walker	"	"
"	J.H. Williams	"	"
5-11 Sept.	G.V.Ranga Rao and S.S. Lateef	Thailand	To help coordinate and to participate in Entomologist Travelling Seminar
7-12 Sept.	L.D. Swindale	Bangladesh and Burma	To sign MOUs

Date	Staff	Country	Purpose
08-18 Sept.	D.V.R. Reddy	Indonesia	To survey groundnut diseases
13-19 Sept.	D. McDonald	Nepal	To monitor groundnut
13-20 Sept.	S.M. Virmani	Thailand	To participate in IBSRAM Workshop
20-25 Oct.	J.P. Moss	China	To participate in Symposium on Chromosome Engineering
05-15 Dec.	D.V.R. Reddy	Thailand	To attend Conference on Virus Diseases in Asia
15-20 Dec.	D. McDonald	Sri Lanka	To monitor groundnut trials

APPENDIX 4

Growing periods and suggested best time for visiting each legume crop in ACP countries

Country	Crop	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Bangladesh	DN		← winter crop →						← main crop →					
	CP								← →					
	PP								← early →					
Borneo	DN		← Control →						← Delta →					
	CP								← →					
	PP		← early →						← mid-late →					
China	DN	← main crop →						← main crop →						
	CP		← seed prod →						← main crop →					
	PP	← →						← →						
Indonesia	DN	← →						← →						
	CP	← →						← →						
	PP	← →						← →						
Nepal	DN	← →						← →						
	CP	← →						← →						
	PP	← →						← →						
Pakistan	DN	← →						← →						
	CP	← →						← →						
	PP	← →						← →						
Philippines	DN	← wet season →						← dry season →						
	CP	← →						← →						
	PP	← →						← →						
Sri Lanka	DN	← (yala) →						← (maha) →						
	CP	← →						← →						
	PP	← →						← →						
Thailand	DN	← 80% wet season →						← 80% dry season →						
	CP	← →						← →						
	PP	← →						← →						

APPENDIX 5

Possible assignment of ICRISAT Scientists for technical responsibility in AGLP countries

Country	Groundnut	Chickpea	Pigeonpea
Bangladesh	L.J. Reddy	Jagdish Kumar	S.C. Gupta
Burma		S.C. Sethi	K.C. Jain
China	D. McDonald M.J.V. Rao		
Indonesia			D. Sharma
Nepal		Onkar Singh	K.B. Saxena
Pakistan		C.L.L. Gowda	S.C. Gupta
Philippines			
Sri Lanka	D. McDonald		
Thailand			

APPENDIX 6

**Summary of importance-interest priorities, programs,
and associated donor support for grain legumes in AGLP countries.**

Country		Importance- interest priority (1 - 5)	Program in place	Donor support	MOU
Bangladesh	GN	1	BARI	CIDA	Yes
	CP	1	BARI	CIDA IDRC	
	PP	4	BARI	CIDA	
Burma	GN	1	ARI ARD	USAID FAO	Yes
	CP	1	ARI ARD	FAO	
	PP	2	ARI ARD	FAO	
China	GN	1			No
	CP	5			
	PP	4	Guangzhou		
Indonesia	GN	1	AARD	ACIAR	Negot.
	CP	5			
	PP	3	AARD	ACIAR	
Nepal	GN	1	NORP	IDRC Winrock	Negot.
	CP	1	GLIP	IDRC Winrock	
	PP	3	GLIP	(IDRC)	
Pakistan	GN	1	BARD	CIDA	Yes
	CP	1	PARC	ICRISAT(ADB)	
	PP	4			
Philippines	GN	1	PCARRD	P.CRSP IRRI	Yes
	CP	4		IRRI	
	PP	3		IRRI	
Sri Lanka	GN	1		IDRC	Negot.
	CP	4			
	PP	4			
Thailand	GN	1	KKU,KU,DOA	P.CRSP IDRC EEC	Yes
	CP	5	DOA	ACIAR	
	PP	4	DOA	ACIAR	

APPENDIX 7

Tentative priority as of November 1986 by country of need for
germplasm collection of ICRISAT's legume crops and minor millets
(1=top priority; 4=bottom priority)

Country	G'Nut	Chickpea	Pigeonpea	Minor Millets
Bangladesh		3	2	2
Bhutan		2	2	
Burma	1	1	1	1
China	4	2	2 wild species	1
Indonesia	1		1	
Korea				2
Malaysia	3			
Nepal				1
Pakistan		1		2
Philippines	2		1	
Sri Lanka		2	3	2
Taiwan				2
Thailand	2		3	2
Indochina (Vietnam, etc.)	4		2 wild species	