AGENCY FOR AGRICULTURAL RESEARCH AND DEVELOPMENT

RMI

Narrative Report on the Applied Agricultural Research Project

FOR THE
MONTH OF OCTOBER 1982

TABLE OF CONTENTS

NARRATIVE REPORT
ON THE
APPLIED AGRICULTURAL RESEARCH PROJECT
OCTOBER, 1982

I. Introduction

The month of October 1982 was an active month for the AARP/RMI group. Not only were we involved in various research efforts and short-term training but also in assistance to the Director General of AARD in preparations for two major meetings in Jakarta. Our assistance in research station development accelerated with trips to several stations.

II. Personnel

During this month we did not add any new personnel to the AARP though efforts are continuing to fill the various positions. As mentioned in the last quarterly report Chhorn Lim will arrive March 1, 1983 as the Milkfish Nutritionist in Bogor. Dr. Anwar Rizvi has signed his contract and will arrive January 1, 1983 as the Plant Pathologist at the Maros Research Institute for Food Crops (MORIF). Although the arrangements are not yet completed, it is almost definite that Dr. Fritz Fleckenstein will take the agricultural economist position at MORIF and arrive in January or February 1983. Discussions are continuing on the appointments of Ms. Greta Watson as the Social Scientist/Agricultural Economist

and Dr. Kevitt Brown as the Deep Water Rice Breeder, both at the Banjarmasin Research Institute for Food Crops. We are preparing a proposal for a combination of a short-term consultant and a long-term consultant for assistance to AARD in tuber crops post harvest processing. We have tentative approval of Ms. Dianne Barrett as the long-term post harvest processing specialist. Plans have been made for her and the Chief-of-Party to visit the sub station in Krawang which is carrying out this research.

III. Staff Activities

1. The Chief-of-Party, William L. Collier assisted the Director General of AARD in preparing various materials for the conferrence on "Selected Issues in Agricultural Research" organized by the International Service for National Agricultural Research (ISNAR) and the International Federation of Agricultural Research Systems for Development (IFARD), and hosted by AARD in Jakarta. He also attended this meeting from October 24 to 29, 1982 and joined their two day field trip to several research stations in West Java.

   He made a trip to South Sulawesi to join Mr. Achmad Abdullah and Mr. Roland Harwood in their discussions with Dr. Farid Bahar, Director, Maros Research Institute for Food Crops. During this trip he also assisted Dr. I.T. Corpuz

and our local staff with the establishment of the AARP/RMI offices (see Appendix I).

He attended the IRRI-AARD collaborative meetings from October 23 to 25, 1982 in Jakarta. These meetings were to develop collaborative research between IRRI and AARD scientists at the various Food Crop Research Institutes.

Besides this, he met with the Director and staff of the Research Institute for Inland Fisheries and Dr. Chhorn Lim to develop his program.

2. The Administrative Specialist, Carl R. Fritz, participated, along with Messrs. Collier and Harwood, in preparations for the semi-annual review of the project to be conducted in early December, and continued his work on plans for short-term training, administrative and financial matters. Tentative expenditures under the project as of October 31 were $258,903 of grant funds, $212,936 of loan funds and Rp 55,704,215 of the counterpart rupiah budget.

3. The Research Station Development Specialist, Mr. Roland E. Harwood met with the three architectural firms working for AARD which have sent various construction plans to our office for study and comment. At least one meeting has been held with each group of architects and these meetings will continue.

Plans and procedures for construction have been discussed with the following USAID staff:

Mr. Irwan Surjadi - Civil Engineer

Mr. Robert Davis - Chief Engineer

Mr. Alan Hurdus - Project Leader

He attended two tender meetings and he has informed USAID of plan changes that were made to lower construction costs so as to stay within the available budget.

Four experiment stations have been visited. Discussions were held with directors, scientists, one station manager, and other personnel. Construction, shops, machinery, and fields were visited (see Appendix IIA and IIB).

Based on his visits, he felt that there is an urgent need to improve station management. The design of the service buildings (shops, warehouses) depends, in part, on the type of administration a station will have (see Appendix IIIA and IIIB).

Before trying to help with a station design, it is essential to visit the site, walk the land, and talk with people in the area who will work at the station. A site plan including the entire station should be prepared by the architectural firm handling the project. He suggested that if possible, these visits should be made in a group to include the architect, the station director, the station manager, and someone from AID. Both

the experiment station development person from GOI and from RMI should go together on these visits.

Together with his counterpart, he should be in constant contact with the various stations and with the architects.

After visiting a station and getting to know the proposed station activities, it should be possible to make a list of most of the field machinery and shop equipment that will be needed. This equipment could be ordered before all the laboratory needs are known. Work could begin in the fields before the labs are completed. In any case, until some work is done, the labs are of little use.

If a station is to have a manager, this person should be present during the construction of the station. This would be excellent training for a station manager and one that is not usually available.

His most urgent need is to have a counterpart who can travel frequently and visit almost constantly with the architects.

4. The Training Coordinator, Mr. James C. Myers, continued to work with the airlines, USAID and the participants to arrange for timely departures and changes in schedules as required, and communications with the Washington,D.C. based training Administrator, Mr. Walter Flinn.

5. The Farming Systems Specialist, Dr. Jerry McIntosh, attended the Indonesian Cropping Systems Working Group meeting held at Cibogo on September 30 to October 2, 1982. Discussions emphasized the necessity for cropping systems research to focus on problems that have been identified from previous research. He also participated in the Asian Cropping Systems Working Group Meeting in Thailand October 10-16, 1982. In the AARD/IRRI Collaborative meetings October 23-25, 1982 in Jakarta, he assisted in the development of collaborative research programs on (1) Upland rice breeding, (2) Hybrid rice, (3) Irrigation water management, (4) Farming systems, and (5) Research Management (see Appendix IV).

6. The Soil Scientist at Maros, Dr. Igmidio T. Corpuz, made three field trips to various sites in South Sulawesi in order to participate in the Institutes research projects. His main activities during the month were:
   a. Assisting in harvesting, gathering, and processing yield components and yield data on the experiment, "Liming NPK and Inoculation study on Soybeans";
   b. Assisting the Institute's staff in improving the set up of the soil analytical laboratory;
   c. Assisting the head of the Agronomy Department in the Lamtorozation project in South Sulawesi.

For more detailed information on his activities, please refer to Appendix V.

7. The Milkfish Nutritionist, Dr. Chhorn Lim, who will officially begin work with the project on March 1, 1983, visited Jakarta during this month. He met with the Director and staff of the Research Institute for Inland Fisheries to discuss his future program during his two year assignment. He prepared a "Brief Description of Research Activities in Nutrition and Feed Development" for the Director which will guide the Institute in the preparations for research in cooperation with Chhorn Lim (see Appendix VI).

IV. TRAINING

During the month three additional AARP participants departed for short term training in the US and two for training in other countries. The three in the US are attending a one-month procurement training program conducted by the TransCentury Corporation.

Mr. Mohamad Sirdan of the Center for Agricultural Research Programming is attending a one month program in Project Preparation and Evaluation in Agricultural and Rural Development conducted by the Statistical, Economic and Social Research Training Center for Islamic countries located in Turkey. The

Ankara Centre and the Turkish Ministry of Agriculture and Forestry are meeting all expenses except for round trip air transportation paid for by RMI under the AARP contract.

This is an illustration of four-way cooperation. The Centre offered a scholarship to the Government of Indonesia (GOI), AARP selected a candidate, Mr. Sirdan, asked RMI to make arrangements and requested USAID for concurrence. RMI alerted the Head of the Centre by telex regarding the probable nomination pending completion of GOI clearances and USAID concurrence. Final arrangements were also made by telex.

One additional participant, Dr. M. Ismunadji of the Bogor Research Institute of Food Crops, departed October 31 for the Asian Vegetable Research and Development Center (AVRDC) in Taiwan to pursue a one-month special training program in upland crops physiology with emphasis on physiological aspects of soybean production.

Four researchers from the Lembang Horticultural Research Institute were scheduled to depart the same day for the AVRDC to participate in a six-month program as an interdisciplinary team training in vegetable breeding. Unfortunately, GOI clearance could not be completed, and departure has been rescheduled for November 7.

Details of participant training to date are provided in Appendix VII.

AARP estimates its external short term training requirements during US fiscal years 1983 and 1984 as follows:

	FY 83		FY 84	
	No.	MM	No.	MM
U.S.	25	50	30	60
Third Country	34	100	30	90
	59	150	60	150

The US fiscal year differs from the Indonesian fiscal year. US FY83 began October 1, 1982 and ends September 30, 1983.

In addition, the Project is considering in-country training programs which include training of 30 laboratory assistants at the National Chemistry Institute in Bandung (15 each in financial years 1982-83 and 1983-84), 30 farm managers at a special course at Maros in 1982-83 and 30 additional farm managers at Bogor in 1983-84.

Appendix I

FIELD TRIP REPORT TO THE MAROS INSTITUTE FOR FOOD CROPS OCTOBER 12 TO 14, 1982

William L. Collier

The main purpose of this trip was for the team leader (Mr. Achmad Abdullah) and the Research Station Development Specialist (Mr. Roland Harwood) to discuss the architect's plans for the new buildings at the Maros Research Institute for Food Crops. I joined them a day later in order to join the duscussions on other topics about AARP assistance to this Institute.

In our discussions, Dr. Farid Bahar who is director of this Institute described the various substations that are part of his Institute. These are:

1. Bantobili, South Sulawesi. This station has 23 ha of land and is doing research on crops for non-irrigated agricultural areas.
2. Kalasey, North Sulawesi. This station has 50 ha of land, mostly in coconut tress. They are doing research on coconut based cropping systems which have food crops planted among the coconuts.
3. Makariki, Ceram. This station has 100 ha for food crop experiments in non-irrigated fields.

4. Mariri, South Sulawesi. This station has 50 ha of land and is for experiments on crops in lowland, non-irrigated areas.

5. Lanrang, South Sulawesi. This station has 43 ha of land. It's major purpose is for food crop experiments in irrigated, lowland regions.

6. Parigi, South Sulawesi. This station is for food crops in irrigated fields.

7. Jeneponto, South Sulawesi. This station has 50 ha of non-irrigated fields for research on fruit trees and food crops in unirrigated fields.

8. Nungkurus, Kupang,Timor. This station has 51 ha and is for research on food crops in unirrigated fields.

9. Wawotobi, Southeast Sulawesi. This station has 50 ha of land, though only 10 ha is being presently used.

After discussing these nine stations scattered throughout Eastern Indonesia, it was abundantly clear that the Director has a major communications problem. They need a radio telephone system. Actually, it is very difficult at the present time for them to telephone from Maros to Ujung Pandang. They could save their funds if there was a single band radio communications system rather than staff having

to travel between the stations to discuss their work and station operations. However, their may be a problem of getting clearance from the Directorate General of Telecommunications. It may be easier if the radio was only for use within the province.

At this station they also have a water problem and need to improve their wells.

We discussed their research budget and what would occur with the arrival of two more foreign experts. It appeared that their funds for research are satisfactory and they will have no problems including the experts in these research projects.

I also met with the AARP/RMI staff to discuss our office operations and I looked at several potential houses for our experts.

WLC:ib

Appendix II A

TRIP REPORT OCTOBER 11-14, 1982

R.E. HARWOOD

I went to Maros with Pak Abdullah and A. Hasanuddin. There we met with Dr. Farid A. Bahar and we spent the day looking at the existing buildings at Maros and discussing the preliminary plans for the new laboratory building and greenhouse that will be built soon at Maros. The following points were discussed concerning the new lab and office building:

1. While the USAID Project Paper shows the size of this building to be 1000 m^2, the proposed plan shows a building with over 1700 m^2. Future maintenance costs should be considered as well as construction costs in determining the final size of the building,

2. Each laboratory should have two exits opening to the outside and located one on each end of the laboratory.

3. Thought should be given to the volume of materials such as plant and soil samples that will move in and out of these laboratories in the future and it was suggested that there should be a service entrance into each lab.

4. The analytical lab should have a receiving and storage area for soil and plant samples that will come in from many different areas. They local sample preparation will be done in one of the existing labs so a washing and preparation room is not considered to be necessary for the new lab.

5. It was pointed out that about one third of the entire analytical lab wing will be occuppied by the lab director for his office, secretary,and waiting room,

The greenhouse plan was discussed and it was suggested that the greenhouses not be separated by 15 m but by approximately 8 meters thus shortening the head house which would be widened from 5.0 m to 7.0 m.

Need for access to the head house was suggested and head house installations were mentioned. Storage of pots, flats, soil, insecticides, etc. will be needed. The possible need for a soil sterilizer and a soil mixer was discussed.

The screen houses all have extensive screen damage and a new system of screen installation is needed. (Fine screen on inside of frame with ¼" hardware cloth on the outside). Tight fitting doors are another need.

The water supply at Maros presents a critical problem that needs to be resolved. Water samples must be taken from both wells and analyzed for both chemical and bacteriological properties. On the basis of these analyses a water treatment plant can be designed.

The water distribution system is inadequate and there is a large quantity of water being wasted due to faulty plumbing. A study of the water requirement for each installation must be made and, with this information, a water distribution system can be designed.

A dryer to handle small quantities of different experimental plot harvests is needed and a design for such a dryer will be given to the station director.

A plot thresher (Bill;s Welding) is needed. The IRRI designed rice dryer needs some modifications to the floor and also a better method should be found for emptying

this dryer. Two possibilities were discussed. The condition of the farm field machinery indicates that a better preventive maintenance is needed. It is hoped that this situation may be improved in the future. The hydraulic system (cylinder, hoses, and fittings) for the J.D. Land Plane will be priced in Jakarta. The number and location of the sub-stations that comprise group III were described and, given the distances involved and the need for communication among the stations, it was suggested that a radio communications system could be useful. Possible problems, including the necessity of obtaining government permission, were mentioned. Availability of equipment and prices will be checked in Jakarta.

In response to my question as to how research results move from the experiment stations to the farmers, Pak Abdullah explained the function of the extension system in AARD.

At 13:30 hrs I left for the station at Lanrang with staff members. There we met the director, Ir. Koesnang, who showed us the station.

The two drilled wells on the station are about 60 meters apart. The well driller's report indicates that both wells are cased to a depth of 12.0 meters with six inch casing, and from 12.0 m to 30 m with four inch casing. There are 9.0 meters of well screen in each well located at a depth of 12.0 to 21.0 meters. The water was analyzed but the results of this analysis were not available.

The wells were drilled in 1979. The reports and test information on the wells was well documented by the drilling contractor. The fact that the contractor disappeared before finishing the job would leave one

to wonder if the work described in the reports was actually done. The director will sound the wells for total depth.

The station needs to construct a reservoir of 46 m^3 to supply water for supplementary irrigation to 2 to 3 H. of experimental rice.

It is expected that the station will soon have electrical power and it is planned to install submersible pumps in the wells. The prices and availability of the needed pumps will be checked in Jakarta. Lanrang also needs dryers both for experimental lots and larger commercial harvests.

The warehouse was clean, all grain was off the floor on wooden platforms, and it was stated that, in holding the grain for a few months, there was no need to treat it for insects or fungi and that rats were not a problem.

The station could use an experimental plot thresher (Bill's Welding) and a rice cleaner.

We returned to Ujung Pandang at 22:00 hrs.

R.E. HARWOOD

Appendix II B

STATION MANAGEMENT TRAINING

R.E. HARWOOD

What kind of people do we need to train as Station Managers? First let's think what the work of a station manager is. The station manager will be responsible for all of the station activities supportive to the research programs. He must have a knowledge of building maintenance, irrigation and drainage, land management, electrical power distribution and use, budget management, record keeping, machinery management, and many other things. One of the most important aspects of management is to understand people and how to work with them. The station manager must be acquainted with and as knowledgible as possible with everything that is on the station. He should be a university graduate in agriculture and understand farming.

A station manager must enjoy field work as most of his time should be spent in the field or the shops. He should understand all the activities of his station and be able to keep them functioning or, at least, to recognize problems and to know where to go for help if necessary.

If, through error, a scientist loses his experiment, the loss may be serious but it is usually restricted to this one experiment. If an irrigation system were out of order due to lack of pump maintenance, the responsibility of the station

manager, all field experiments could be lost. The responsibilities of a station manager are critical to the research effort.

A station manager must have a strong desire to make his station the best one in the country and he must be willing to work hard to accomplish this.

While some short courses are taught at certain International Centers (IRRI-CIMMYT-CIAT) most training must be given at the experiment stations. There is no university degree in experiment station management. This profession is learned by experience.

What then in the future of station administration? Some of the best people in the country are needed to train in this profession if the large number of planned stations are to function properly.

What is the future for a station manager?

What are the incentives to enter this profession?

Will there be national meetings, foreign trips, and improved salary as one becomes better trained?

It will not be possible to get and keep people of the caliber needed as station managers if adequate incentives are not available to them.

WOODY HARWOOD
November 6, 1982

REH:ib

Appendix III A

TRIP REPORT
SUKAMANDI - OCTOBER 28-29, 1982

R.E. HARWOOD

I travelled with Mr. Terry Aggasid which was a great advantage as Terry knows the people and the station, is fluent in Bahasa Indonesia, and he had advised the director of the reason for our trip.

We met first with the director, four scientists, and the station manager. The director explained the administrative organization of the station and the scientists had no complaints about the services supportive to their research. We visited the station facilities with the farm manager. Following are some of my observations:

I. Farm Shop: This shop, which has one mechanic - foreman and several helpers, was built when the station was much smaller and the shop is much too small for present conditions. The organization could be improved and the following is needed:

   (a) At least double the present space

   (b) Install the electric grinder and drill press that are presently unused

   (c) Enlarge and reorganize the tool room

   (d) Improve the record keeping

   (e) A separate washing and greasing area for machinery

   (f) A separate stall for welding

(g) Sheds to house all of the field machinery in the shop area. It is presently scattered around and maintenance is poor.

(h) Fuel storage and pumps

(i) One more good mechanic

(j) A carpenter shop.

II. Warehousing. There are at least four different warehouses and they are not controlled by the farm manager. The record keeping could be improved greatly. Management is much more efficient when there is only one warehouse office.

III. Screenhouses. These structures are not insect proof as there are large openings under each glass on the roof because on the type of construction used. In some cases the doors were left open in the screen houses. (Since the greenhouses cannot be used, some of the screenhouses may be functioning as greenhouses).

IV. Greenhouses. These cannot be used as they have no ventilation and are too hot. The roofs have the same problem of spaces between the panes of glass. (If a controlled environment is essential, growth chambers must be used). What work is planned for the greenhouses that could not be done in a screenhouse?

V. Headhouses. What should be a headhouse is in reality a corridor between the screen houses. A headhouse needs at least five meters of width to accomodate soil bins, potting tables, sinks, storage etc., and to have an ample work area. Pots, flats, soil, and refuse are now piled around the screenhouses for lack of an adequate headhouse. Good management could improve the situation a little.

VI. Housing for professionals. The houses are very good but one would wonder when so many will be needed. Many thousands of cubic meters of soil are needed to grade around many of the houses to prevent drainage and flood problems. The station manager is doing an excellent job of grading around some of the houses with the station's bulldozer.

VII. Messhalls and guest houses. The guest house we stayed in was excellent and the food and attention were good. We were told that there are twelve mess halls, but could not find out the reason for having so many.

VIII. Utilities. The water appears to be of excellent quality and comes directly from a drilled well without treatment. The station has an excellent electric generating station. There is a large electrical sub-station being built now by the government very close to the experiment station so municipal electric power may be available soon.

IX. There is a need for several kilometers of all weather roads on the station and the farm manager has requested machinery for the construction and maintenance of these roads. Some of this equipment could help in the grading work required in the housing area.

X. The farm manager has no responsibility for the greenhouses. I would suggest a change in this situation. The farm manager is the logical person to manage both the warehouses and the greenhouses as he should be acquainted with most, if not all, of the activities carried out in these buildings.

We visited the seed producing organization in front of the experiment station. The seed processing plant is functioning well using seed from private farmers as well as from the government farm.

The condition of the field machinery, farm shop, and general building maintenance could be improved.

We were well received at both stations and everyone was most helpful.

I plan to cooperate with Terry in developing a plan for improved management for agricultural experiment stations.

Woody

Roland E. Harwood

November 1, 1982

1st November, 1971

Appendix III B

EXPERIMENT STATION OPERATIONS

R.E. Harwood

While social structures, traditions, etc. encountered in different countries sometimes require a different approach to farm management, the basic objectives remain the same. The principle purpose of experiment station development and operations is to create the physical facilities needed at agricultural experiment stations and to manage them in such a manner as to give maximum service to the research effort. Along with this service to research, a good farm manager may modify machinery to better fit local conditions, he may discover better cultural practices, etc. but his principle reason for existence remains that of supporting the research effort.

The myriad problems encountered daily by a farm manager in a developing country demand a type of person and a training vastly different from what is required of a scientist. We must bear in mind that nearly all University level agricultural students in developing countries are from the larger cities. Most have had no farm experience and many have little desire to get any. Their objective, all too often, is a government position. While salaries are usually low, these positions offer security and some prestige. Sometimes the government work may consist of teaching and research, but full time teaching usually results and little or no field research is accomplished. To a man with this background, a specialized training to the Ph.D. Level in the USA may qualify him for research, but certainly not to be a farm director. In a situation where an advanced degree is an essential requirement for a farm director, he must be trained in farm management before getting his degree since the social system in most countries would not permit him to receive the necessary training afterwards. Usually these scientists are dismal failures as experiment station directors.

Their much needed skills are lost to research also, compounding the loss to their country.

I believe it is of vital importance to have a national director of research. This man should direct and coordinate the research programs, allocate budgets, and constantly review all research projects. This is a full time job and considering that many of the scientists have had little or no experience managing budgets or programs they need constant help and supervision. Frequently a newly returned Ph.D. in a developing country will be named as head of a national program with a budget hundreds of times larger than any he's ever seen before. More over he may be placed in a program far removed from what he was trained for. In a more developed country one would work several years as a subordinate before being named to a top position.

I want to emphasize that the position of research director requires a different training and usually a different type of person from that of farm manager. Both are full time positions in any case and, in an operation of any size, could not be performed by one man.

The research people and the farm manager must work in close cooperation and understanding. This is the only way that farm management can keep abreast of the needs of research and researchers can learn what farm management is and how it may help their programs. Usually the need for a good farm operations program is not realized by those who most need it. They have no concept of what is wrong or why when their experiment stations do not function properly.

I believe the international centers could give valuable training to selected candidates for farm management positions. I first want to mention some of the differences in the operations of an international center as compared to managing a research farm in a lesser developed country.

The international center has an ample and reasonably flexible budget, highly trained personel recruited internationally, adequate facilities of all kinds, and is free of most problems arising from local politics. These centers are not restricted to government wage scales, but can compete with industry for the best service personel. The government sponsored research station usually has a meager budget, is burdened with a high percentage of security seeking, low output personel who cannot be fired, probably has the lowest wage scales in the area, seldom promotes anyone on the basis of merit, and has a dearth of trained personel.

While many needed farm management skills are common to both above mentioned experiment stations, others are completely different. Most important, the international center will have several engineers and adequate service personel to cope with all problems of daily operations. In many experiment stations in the lesser developed countries, a farm director needs a general knowledge of as many skills as possible because, more often than not, he will find himself alone. A typical day on an experiment station many present problems dealing with personel, electrical installations, machinery breakdown, surveying, training of machinery operators, drainage and irrigation, road building and maintenance, building maintenance, etc. and many more. An international center will have people trained specifically in all these fields, or the center may call local contractors to do the work. The government sponsored experiment station must depend on the farm manager to do most of this work. Even when work is contracted with private companies, unless the farm manager can closely supervise what is done, it may well be unsatisfactory. A farm manager at an international center well receive much help from the internationally recruited scientific personel. These people usually have had considerable

field experience and know what they need. The scientists in the lesser developed countries many times have had little or no field experience so can be of little help to a farm manager.

Some of the training for Farm Directors that might be accomplished at International Centers could include short courses in:

1. Personel Management
2. Use of Machinery
3. Machinery Maintenance
4. Land Forming
5. Irrigation and Drainage
6. Budget Operation and Book-keeping
7. Use of Electrical Power
8. Records and Record Keeping
9. Farm Structures
10. Warehousing and Inventories
11. Experiment Station Operations
12. Research Orientation
13. Experiment Station Operations
14. Land Preparation

These training courses must be kept simple and practical. Their purpose is not to train mechanics, electricians, book-keepers, etc., but to give a farm operations man enough training to recognize the problems that arise, fix some of them, and to know when and where to go to obtain help for anything beyond his competence. These training classes should be limited to twelve students at a time. The all important training in leadership and decision making, must take place in the student's home country. However the training given at the international center should give a man added confidence with which to tackle the problems at home.

Anyone heading up such a training program should visit prospective trainees and become acquainted with their specific problems. After training, it would be profitable to follow up on these people and may be work a week or two with each one at his respective research station. Frequently local conditions will not allow an efficient farm administration. Some time spent in trying to convince local officials to allow a farm manager to function might prove profitable.

Some of the qualities desirable in a farm director are that he be:

1. A leader. While this quality can be developed, the basic ability comes from the cradle. This is probably the basic quality in shortest supply worldwide.
2. Honest.
3. Willing to work longer hours than most personel on the station.
4. Able to understand and enjoy all kinds of people.
5. Able to hire and fire people.
6. Able to make decisions quickly based on fact and not emotion.
7. Able to delegate authority and willing to look for the best people available as subordinates.
8. Dedicated to making his station the best research station on the world.

While I believe the above traits are desirable, some societies would not allow a man possessing them to work at all. We should know each man in his native environment, learn how he functions and why, then may be we can help to train him in a way that will allow him to be more efficient within the environment in which he must function.

One successful organization for farm management that I have known in a developing country included an Office of Farm Development and Farm Management with the following personel at the National level:

Director
Sub-Director
Electrical Engineer
Civil Engineer (2) (Working as Agricultural Engineers)
Electricians
Refrigeration specialist
Communications specialist
Secretary
Auditors
Mechanic

These people are available to help as needed or to train new personel at the twelve experiment stations within the organization.

This office also had a fleet of heavy ccnstruction equipment and operators with the necessary budget to move from one to another of the twelve experiment stations as needed. The director of this office reported to the general of the national research organization and he was also a member of the technical committee of this research organization, where policy and operative decisions were made, composed of the director general, the national director of research, the national director of extension, and the national director of planning. Each research station had a director who reported to this national office. Young man were chosen and trained as experiment station directors; personel from the national office continued to help these station directors and all were made to feel part of a team. Bi-Annual meetings were called and problems and suggestions discussed. It was possible to establish a level of pride and accomplishment in farm development and management well over and above anything previously attained. The co-ordination and cooperation among the twelve stations were improved tremendously.

During nearly twenty years spent in teaching people to build and manage agricultural stations, I have become completely convinced that every country has people capable of doing this work. Still, in many of the lesser developed countries of the world, the poorest managed agricultural land is usually the government supported research station. In few countries have infrastructures been built up which recognize the need for farm management or supply the necessary incentives to help create and maintain it.

The fact that farm management is taken for granted in the U.S.A. by many people must explain why so many U.S.A. financed research projects in lesser developed countries are well supplied with equipment, structures, etc., and a group of highly trained scientists who either cannot work efficiently because of lack of farm development and management or who spend too much of their own time in management problems to the detriment of their research effort.

Roland E. Harwood

Bill:

I wrote this in 1971 after twenty years of experience in Latin America. With an additional twelve years of experience, including several years in Asia, I have not had reason to change my ideas on station management.

Woody Harwood

Roland E. Harwood
October 30, 1982

REH:ib

To : Dr. J. Pitchie Cowan
IRRI Liaison Scientist

From : J.L. McIntosh
Farming Systems Liaison Scientist

Subject : Monthly Report - October 1982

I. Principal Activities and Accomplishments

A. During the Indonesian Cropping Systems Working Group Meeting held at Cibogo, September 30 - October 2, 1982, Mr. Inu Gandana Ismail was appointed by the Director of CRIFC as Technical Coordinator for Cropping Systems Research. This is a very useful action and will facilitate the implementation of collaborative research among research centers and institutes in country and internationally.

The discussions at the meeting emphasized the necessity for cropping systems research to focus on problems that have been identified from our previous research.

1. Stability and sustainability of introduced cropping patterns must be certain. Research is needed for:

   a. Long term evaluation of introduced and traditional cropping patterns.

2. Soil and water conservation. Research is needed for:

   a. Terracing for different soil and climatic conditions.

   b. Evaluation of different cover crops for multi purposes.

   c. Water storage and farm ponds.

   d. Crop residue management.

3. Costs of production. Research is needed for:

   a. Development of strategies to minimize cash input requirements.

b. Development of techniques to improve fertilizer efficiency.

c. Reduction in need for hired labor.

4. Minimize labor requirements. Research is needed for:

a. More efficient means and methods of land preparation and seeding, fertilizing and harvesting crops.

B. Preparation for and participation in the Asian Cropping Systems Working Group Meeting, Bangkok and Chiang Mai, Thailand, October 10-16, 1982. This was an excellent meeting — more specific collaborative projects were discussed and planned. Dr. B.H. Siwi acted as the Indonesian Representative and very effectively presented the Indonesian Report (Appendix I).

C. Preparation for and participation in the AARD/IRRI Collaborative Meetings, October 23-25, 1982 at the Sahid Jaya Hotel, Jakarta. The meetings were concluded by the signing of a Memorandum of Understanding by the respective Directors General of AARD and IRRI. Collaborative research programs were developed for:

1. Upland rice breeding
2. Hybrid rice
3. Irrigation water management
4. Farming systems
5. Research management

II. Miscellaneous Activities

A. Punch planters received from IRRI Los Banos (8) have been distributed. The evaluations of these planters will be coordinated by Mr. Inu and Ir. Trip Alihamsyah.

B. Lamtoro seed (30 kg) has been received from Messrs. Prussner and Barrau, USAID and sent to Maros for use in the research – extension trials described in last months report.

C. Impact studies of cropping systems research and implementation are proceeding. It is hoped that the Indonesian report can be completed in time to be included in the International Rice Research Conference (IRRC) in April, 1983.

D. Continued work on Rainfed Farming Systems project proposal.

E. Consultation and meetings

1. IFDC/AARD staff - Joint Fertilizer Efficiency and Cropping Systems Working Group Studies.
2. Dr. Silver - USAID, Washington, Social Sciences in Agriculture.
3. Dr. Antony Perez - ADB, Cropping Systems in Irrigated areas.
4. Dr. Aroon - IADS, SAR Project
5. Drs. Sheldon and L.B. Williams - IFDC/Kujang Consultation
6. Mr. Jun Hubungan - RMI Consultant, Kendari, S.E. Sulawesi

III. Constraints

A. Time and funds to visit on site research.

IV. Plans

A. Help implement studies outlined in Appendix I.

B. Visit Cropping Systems Research sites in Sumatra.

C. Help finalize research proposal for rainfed farming systems and Trans III.

JLM:fh

Appendix V

REPORT FOR OCTOBER 1982

Igmidio T. Corpuz

I. Activities and Accomplishments.

1. Assisted in harvesting, gathering and processing yield components and yield data on the experiment "Liming, NPK and Inoculation Study on Soybean". The study was conducted to answer a basic question raised as to whether the recommendation of 2 tons of lime per hectare for soybean in South Sulawesi is appropriate.

2. Assisting Mrs. Suarni and Mr. Amir Kamaruddin, Soil Analysts in improving the set up of the Soil Analytical Laboratory in the Soil and Soil Fertility Department, Maros Research Institute for Food Crops.

3. Assisting Mr. Saleh Pandang, Head, Agronomy Department and Ir. H. Syarifuddin of Agricultural Extension Service in the Lamtorczation Project in South Sulawesi

II. Travels made.

1. October 1 to 3 to Bone-Bone, Kabupaten Luwu (Report of Trip - Appendix A).

2. October 10 to Malino, Kabupaten Gowa (Report of Trip - Appendix B).

3. October 11 to Desa Baging, Kabupaten Takalar (Report of Trip - Appendix C).

III. Seminar participated in:

1. Weekly seminar at The Maros Research Institute:

a. October 4, 1982. Department of Soil and Soil Fertility presented results of experiments conducted during the 1st semester.

b. October 9, 1982 - Department of Agronomy/Physiology presented results of experiments conducted during the 1st semester.

.....2/

c. October 20 to 22, 1982. The different sub-stations Heads at Makariri, Maluku Province, Mariri, Lanrang, Jeneponto, South Sulawesi, Wawotobi, South East Sulawesi and Kalasey, North Sulawesi presented their program of activities which include research projects and substation developments, their problems and how they expect to solve them.

d. October 23, 1982 - Department of Plant Pathology presented results of experiments conducted during the first semester.

IV. Activities for November 1982.

1. Continue assisting Mrs. Suarni and Mr. Amir Kamaruddin in improving the set up of the Soil Analytical Laboratory.

2. Assist in setting up experiments at Maros Experimental Farm, Lanrang Substation, Mariri Substation and Bontobili Substation.

3. Assist in setting up trial on ipil-ipil at Bone and Jeneponto.

4. Assist in preparing reports on the results of experiments.

Appendix A

TRIP REPORT
OFFICIAL TRIP TO BONE-BONE KABUPATEN LUWU
from October 1 to 3, 1982

The trip was made together with Dr. Farid Bahar, Director of Maros Research Institute for Food Crops and all the Department Heads except the Head of the Soil and Soil Fertility Department who was represented by Ir. Lukman Gunarto, M.Sc. The purpose of the trip was to serve as resource person in the Field Day sponsored by the Institute and Project Luwu.

The field day was held on October 2, 1982. Eighty five local people attended the field day. Extension workers were there. Some local farmers were also there. The first three hours (0700 - 1000 hrs) were devoted to questions-answers session. There was a lengthy discussion on the liming requirement of soybean. This issue was raised because of the program to plant 15,000 hectares to soybean in South Sulawesi to be supervised by the Extension workers. A recommendation was given (by whom I am not sure) to apply two tons of lime per hectare. We pointed out that a general recommendation of two tons is more harmful than beneficial to farmers recognizing the wide variability of soils. We informed them that the Department of Soil and Soil Fertility at the Institute was directed to assist the Agricultural Extension Service in determining the lime requirement of the soil in the areas targeted for soybean production.

The field visitation was first held at Pepuro Barat I. In this site a very clear problem was visible. Many small circular areas about ½ to 1 meter in diameter were empty. Plants did not grow. Where there were plants the growth were stunted. Outside these small circular areas the growth of corn, soybean, mungbean and cowpea were good and normal. Several of the participants, agronomists, entomologists, pathologists and plant breeders pointed out that the problem is in the soil. Our immediate concern then was to identify the specific soil problems. Adjacent to the experimental site is an area not disturbed, showing the presence of small hills scattered all over the area. We pointed this out to the participants. In the experimental site the small hills were scraped to level the area. This mechanical alteration of the site resulted to the removal of the topsoil exposing the subsoil. It is in these areas where the subsoil are exposed where no plant grew.

.....2/

A critical soil factor which brought about the problem is the lack or absence of organic matter in the exposed subsoil. The only solution to the problem is the direct application or addition of organic materials like animal manures, compost or green manures. There is no other way.

The area should have been avoided as a site for experiments especially fertilizer and liming experiments. It is not possible to isolate the effect of the treatments being tested by the effect of soil variability.

The sub-station manager agreed to set up an experiment using a special field layout to test the effectiveness of different organic materials commonly available in the area.

TRIP REPORT
OFFICIAL TRIP TO MALINO, KABUPATEN GOWA
IN OCTOBER 10, 1982

The trip was made with Ir. Christine Momuat, Head, Soil and Soil Fertility Department and Ir. Reginald de Cerff, Soil Cropping System Researcher of the same department. The purpose of the trip was to gather experimental data from the markissa fertilizer experiment.

A question was raised as to what are the more important agronomic parameters to be gathered other than the number of fruits harvested. Should the length of the vines be measured? Should the number of branches be counted? There was the intention to gather these parameters. It was hypothesized that the longer the vines and the more branches the more fruits could be harvested. Knowing the length of the vines and the number of branches it may be possible to predict the yield potential of the plant. There are no reports available to support the hypothesis. It is worth trying to establish the relationship between yield (number of fruits) with length of vines and number of branches. It was finally discovered that there are some technical difficulties in measuring the length of the vines and in counting the number of branches.

The kind of data that was finally gathered was the number of fully developed fruits from each of the experimental plants (9 of them) excluding the border plants (16 of them). Each treatment consists of 25 plants.

Weight of fruits is not normally taken because markissa fruits are sold by the number. Since there are no data available to show the extent of nutrient removal of markissa, it was decided to weigh the harvested fruits and samples be taken for NPKCa Mg S determinations.

Inspite of the dry condition in the area the markissa plants show no sign of moisture stress. Apparently markissa plants are tolerant to drought.

TRIP REPORT
OFFICIAL TRIP TO DESA BAGING, KABUPATEN TAKALAR
ON OCTOBER 11, 1982

With the trip were Ir. Agustina Pasolang, in charge of INSFFER Trials (International Network on Soil Fertility and Fertilizer Evaluation for Rice), Dr. Ashraf Ali, FAO Soil Classification Expert and Dr. Sawiyo, Dr. Ali's assistant. The purpose of the trip was to make a systematic and more or less complete characterization of the area where the trial on the Nitrogen Fertilizer Efficiency on Rice under Rainfed Wetland was conducted.

Site characterization is now one of the requirements in the INSFFER Program coordinated by IRRI. Results of similar trial on Nitrogen Fertilizer Efficiency on Rice under Irrigated Wetland conducted in 17 countries vary very widely. It is believed that the wide variability in the response of rice to treatments obtained in the different cooperating countried could be explained knowing the soil and environmental characteristics.

In this trip Ir. Pasolang learned a very important lesson aside from making a systematic site characterization. It took us about the same length of time locating the site as the time spent in traveling from Ujung Pandang do Baging, Kabupaten Takalar with a distance of about 45 kilometers. She worked with the farmer cooperator not knowing what his name is. We had to stop several times and asked several people whether they know the farmer and whereabout his house. The best that she can do is to describe the farmer and his house. Fortunately Mrs. Pasolang can speak the local dialect called Makassar. It turned out that the farmer cooperator is one of the Desa leaders. If she only knew the name there was no problem locating him. The lowly farmer is most of the time taken for granted. He is not given the importance he rightfully deserves.

Appendix VI

BRIEF DESCRIPTION OF RESEARCH ACTIVITIES IN NUTRITION AND FEED DEVELOPMENT

by

Chhorn Lim

I. INTRODUCTION

Aquaculture or fish farming either in fresh, brackish or marine waters, has become one of the major thrusts in producing animal protein needed for human consumption. Fish farming has its origin in Southeast Asia and dates back to ancient times. Compared to agriculture, it is an art rather than a science. The methods used in fish production are mostly based on the traditional (extensive) methods whereby the animals depend totally on the natural food produced in the culture environments. Through the application of the modern scientific inputs such as nutrition, feed and feeding, genetics and breeding, water management, fertilization, pest, predation, and parasite and disease control, etc...., significantly higher yields have been achieved.

In recent years, due to the shortage of world food supplies, the competition for land and its high cost, the method of culture has changed its trend from extensive to intensive where large biomass per unit area can be

produced. The success of this type of farming depends on a variety of indispensible factors. However, if cannot be overemphasized that one of the most important of these factors is supplement feeding with artificial diets formulated in accordance with the nutritional requirements of the species concerned.

II. STATUS AND PROBLEMS IN AQUACULTURE NUTRITION

Nutrition studie aquatic species is relative young compared to that of the terrestrial animals. However, in the past decade considerable progress has been made toward the understanding of the nutritional requirements of a few important fish species such as trout, salmon, channel catfish, common carp and eel.

Nutritional studies for crustacea are scanty and very recent as compared to those of some finfish species. However, considerable effortshave been made toward the development of feed formula suitable for intensive culture. Furthermore, unlike research in fish nutrition which involved mostly on the nutritient requirements and feed formulation, significant amountsof work in crustacean nutrition have been done concerning the physical characteristics of feed such as the water stability and the feed processing techniques.

There are limited numbers of research institutions which are actively engaged in research on aquatic nutrition. Studies on this subject have been carried out mainly in USA, Japan and UK. Much work in this field has also been done by the private feed manufacturing companies but the results are proprietary and often are kept confidential.

Recently, several institutions are developing facilities for such work but the research activities are still minimal due to the lack of qualified technical manpower and/or funding support.

In Indonesia, research in fish nutrition has been initiated about 4 to 5 years ago. The activities are concentrated mainly on feed formulation, feed evaluation and the physical characteristics of the feeds, especially the water stability. Studies on the nutritional requirements have not yet been started. However, at present the Research Institute for Inland Fisheries is in the process of constructing the facilities and acquiring various equipment necessary for the conduct of experiments on nutrition and feed development .

III. OBJECTIVES

The objectives of the nutrition and feed development studies are to:

1. Determine qualitive and quantitative nutrient requirements of some commercially important aquatic species at various stages of their life cycle.

2. Determine the nutritive values (chemical and biological) of various locally available feed stuffs.

3. Develop economical and nutritionally balanced diets suitable for different life stages of some aquatic species raised in various culture systems.

4. Develop suitable tecnniques for feed processing, and feeding practices.

IV. RESEARCH METHODOLOGY AND ACTIVITIES.

Although significant information is available in the field of aquaculture nutrition there is still much more to be learned. This information is very valuable not only for immediate application for a certain species but also serves as a guide for further nutritional requirement studies of other species. Oftentimes, information obtained from one species cannot be directly applied to other

species because the biological requirements of different species are apt to be different. Even within the same species nutrient requirements could be different due to variation in size or age, environmental conditions, composition of the experimental diet, water management, etc. This implies that each aquatic species should be individually investigated for their nutritional needs under various climatic and environmental conditions at various life stages.

Feed formulation is not simply a matter of combining various feed stuffs together like food recipes. It is rather the translation of knowledge about the nutrients and feedstuffs. Furthermore, quality feeds cannot be obtained without good processing techniques and proper handling and storage. On the other hand, feeding practices (amount, frequency, time and method of feeding) are as important as diet formulation, processing and storage. Excess or non-consumed feed can not be recovered and may contaminate the environment. Feed development and nutritional studies will be conducted for various stages of the life cycle for aquatic species which command good market values. For those of low market value, studies will be concentrated toward the development of suitable

feeds for broodstock and fry to fingerling.

Research studies in nutrition are classified into two broad categories, basic research and applied research. These two broad-based activities will be conducted simultaneously. However, priority will be given to applied research for the species in which nutritional information is available such as common carp. This includes chemical and biological evaluation of various locally available feed materials, feed formulation and evaluation, feed processing and storage, and the development of standard feeding practices. This type of experiment will be conducted mainly in the field under actual pond condition. The basic research concerns primarily studies on the nutritient requirements, nutritient interrelationships, digestive processes, physiology and metabolism, and feed additives. Studies of this nature will be carried out in the laboratory where the experimental animals are confinced in a controlled environment utilizing purified or semi-purified diets.

The research activities described here are basic. A thorough study and understanding of the status and the problem of nutrition and feed development of the particular species concerned should first be done before

the specific studies could be proposed. On-going research activities in various stations need also to be identified to avoid overlapping. Furthermore, since a great part of this proposal will be conducted in collaboration with the research staff of various stations, a much closer examination of the existing resources (equipment, facilities, staff, etc) at various station should also be made.

V. REQUIREMENTS

The long term needs for the facilities and equipment necessary to carry out studies in Nutrition and Feed Development have been discussed with Mr. Adi Hanadi who is responsible for preparation of the list. Some suggestions have been made to reclassify the list of equipment based on specific laboratories. Additional equipment requirements for the feed laboratory have also been recommended. However, detail specification of various equipment could not be given due to the lack of some information such as the total daily feed requirements and unavailability of the catalogues.

The existing equipment at the Research Institute for Inland Fisheries in Bogor and the Depok station is sufficient for small scale feeding experiment needs. However, a bigger capacity Hobar Mixer (5 Kg), is needed. The facilities needed for the conduct of the feeding experiments are:

- 36 units of fiberglass or glass aquaria with 40 or 60 l capacity
- 24 units of 500-m^2 ponds
- 12 units of 1000 to 250 m^2 ponds.

Feed ingredients and chemicale will also be needed but the quality and quatity can only be determined when specific proposals have been made.

ib
10/29/82

APPENDIX VII

LIST OF AARP/RMI PARTICIPANTS AS OF OCTOBER 31, 1982

No.	N A M E	EMPLOYING OFFICE	COURSE/OBJECTIVES	INSTITUTIONS/COUNTRY	DURATION
	DEPARTURES:				
1.	Mohamad Sirdan	CARP / Jakarta	Project Preparation & Evaluation in Ag. and rural Development	Statistical,Economic & Social Research & Trg. Center for Islamic Countries,Turkey.	Oct.18-Nov.12,82
2.	Sjafril Lamsayun	CARP / Jakarta	Procurement Training	TransCentury Corp.USA	Oct.15-Nov.14,82
3.	A.M. Laponangi	MORIF/ Maros	- do -	- do -	- do -
4.	Abdussamad Syahrani	BARIF/ Banjarmasin	- dO -	- do -	- do -
	CONTINUING IN TRAINING:				
5.	Warsito Hutomo	CAQ / Jakarta	Agric.Proj.Planning & Analysis Section II	USDA,Wash. D.C.	Sept.7-Nov.11,82
6.	Mohamad Mansyur	CRIIC/ Bogor	- do -	- do -	- do -
7.	Hafni Zahari Syukri,Ms.	CARP / Jakarta	- do -	- do -	- do -
	RETURNEES:				
8.	Wahyadi Sosrowardoyo	CRIFI/ Jakarta	Applic.and Diffusion of Agric.Res.Results to the Community level	Iowa State Univ.USA	Aug.25-Oct.1,82
9.	Sofyan Ilyas	RIFT / Jakarta	Determination & Prevention of Postharvest Food Losses	Cornell Univ. USA	Sept.6-Oct.13,82
10.	Achmad Hidayat	CAQ / Jakarta	Plant Quarantine	USDA, Wash. D.C.	Jul.19-Sept.17,82
11.	Dewa M. Tantera	BORIF/ Bogor	Integrated Pest.Mgmt.	Purdue Unvi. USA	June 9-Jul.23,82
12.	Sudiarto	CRIIC/ Bogor	Agric.Res.Method	Kansas State Univ.USA	May 31-Jul.23,82

No.	N A M E	EMPLOYING OFFICE	COURSE/OBJECTIVES	INSTITUTIONS/COUNTRY	DURATION
13.	Lalu Sukarno	BORIF / Bogor	Agric. Res.Method.	Kansas State Univ.USA	May 31-Jul.23,82
14.	Siti Sufiani,Mrs.	CRIIC / Bogor	- do -	- do -	- do -
15.	M. Saleh Pandang	MORIF / Maros	- do -	- do -	- do -
16.	Wafiah Akib, Mrs.	MORIF / Maros	- do -	- do -	- do -
17.	Tambak Manurung	CIRIAS/ Bogor	- do -	- do -	- do -
18.	Didi Suardi	CRIFC / Bogor	- do -	- do -	- do -
19.	Yono C. Rahardjo	CRIAS / Bogor	- do -	- do -	- do -
20.	Budhoyo Sukotjo	Program and Project Formulation Unit/ Jakarta	Agric. Research Management	Washington D.C, and Hawaii, USA	June 6-12, 1982 June 18-21,1982
21.	Tambunan S.M. Manungkol	BORIF / Bogor	Estab.Data Bases & Analyt.Syst. for Econ.Decision making in Agriculture	University of New Mexico, USA	June 6-Aug.13,82
22.	Rachmat Kartapradja	LERIF / Lembang	Veg.Crop. Prod. and Marketing	Rutgers Unvi. USA	July 12-Aug.20,82
23.	Artaty Wijono	CRIFI / Jakarta	Ag. Comm. and Media Strategy	Iowa State Univ.USA	July 12-Aug.20,82
24.	Abisono	TARII / Tg.Karang	- do -	- do -	- do -
25.	Adi Widjono	CRIFC / Bogor	- do -	- do -	- do -
26.	T.H. Mangunsong	Reg.Ag.Quarant/Jkt.	- do -	- do -	- do -
27.	Fathan Muhadjir	BIRIFC/ Bogor	Wheat & Maize Phys.	CIMMYT,Mexico City	July 20-Aug.25,82
28.	Nurlaila Hasbullah	BARIF/ Banjarmasin	Rice Production	IRRI, Philippines	July 1-Aug.27,82
29.	Nurul Aida	BARIF/ Banjarmasin	- do -	- do -	- do -
30.	Achmad Dimyati	BORIF/ Bogor	Tech. & Econ.aspects of Soybean Production	Univ. Illinois, USA	May 10-Aug. 1982