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AGENCY FOR
AGRICULTURAL RESEARCH AND DEVELOPMENT

NARRATIVE REPORT
ON THE
APPLIED AGRICULTURAL RESEARCH PROJECT

FOR THE
MONTH OF MAY 1983

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NARRATIVE REPORT
ON THE
APPLIED AGRICULTURAL RESEARCH PROJECT
FOR
MAY 1983

I. INTRODUCTION

One of the highlights of the AARP/RMI staff in May was the initiation of village surveys which are being conducted in the tidal swamps by the Banjarmasin Research Institute of Food Crops and the AARP staff who are assisting this effort. Another highlight was the preparation of Questionnaires for a pilot methodological study on intensive and frequent interviewing of farmers and analyzing the data using the FARMAP computer program at the Maros Research Institute for Food Crops. One of the AARP staff accompanied a scientist from the Bogor Research Institute for Food Crops on a visit to cassava production and processing operations in Lampung. Finally, the opening of the International Workshop on Promoting Research on Tropical Fruit Crops was the culmination of efforts by the Chief-of-Party and Anila Kusumanegara to assist the Center for Research Programing to carryout this activity.

II. PERSONNEL

In the last week of May, Dr. Chhorn Lim arrived to take the AARP position of Fish Nutritionist at the Research Institute for Inland Fisheries. Dr. Lim's last assignment was the head of the Research Division, Aquaculture Department, South East Asian Fisheries Development Center in Iloilo, Philippines. He was at this Center for five years where he achieved substantial distinction as one of the leading researchers on milkfish. His Ph.D. and M.Sc are from Auburn University in the U.S.A..

Also in May the project lost Dr. John Bolton, our Soil Scientist at the Banjarmasin Research Institute for Food Crops. He resigned this position because he could not adjust to the shortage of water and electricity in Banjarmasin. He will be missed since he had much experience in research, station development, and procurement. The Project is now looking for a replacement.

A second staff member resigned in May also. She was Ms. Anila Kusumanegara who was secretary at our AARP/RMI Bogor office. She has taken a job as the personal secretary to the Indonesian Ambassador to Argentina.

Scheduled arrivals are Dr. Bernardo Gabriel who will arrive on July 1 and take the position of entomologist at the Banjarmasin Research Institute for Food Crops and Dr. William Vanstone who will be the milkfish breeder for the Research Institute for Inland Fisheries stationed at Gondol, Bali. He will arrive on September 1 and will live in Singaradja, Bali.

As of May 31 the project has used 79 person months of long term technical assistance to assist AARD out of the total of 630 person months in the project. For more information please see Appendix I.

III. STAFF ACTIVITIES

1. William L. Collier, Chief-of-Party, during the month of May, besides being involved in managing the project, assisted Dr. Ibrahim Manwan with arrangements for the International Workshop on Promoting Research on Tropical Fruit Crops. This workshop was opened by the Junior Minister for Food Crops on May 29, 1983.

He is helping with the manpower training study which is at the stage of transferring the basic data to computer tapes. Analysis should begin in late June. He is also working on the revised Detailed Implementation Plan for AARP.

He joined Dr. Ibrahim Manwan in a visit to the Banjarmasin Research Institute for Food Crops. The purposes of this trip were to discuss the World Bank's Swamps II project and the forthcoming Workshop on Tidal Swamp Land Development which will be sponsored by AARD. A brief visit was made to several projects in the coastal swamp areas.

2. Carl R. Fritz, Administrative Specialist, continued working on financial and administrative matters, attended meetings connected with the AARD manpower training study, consulted with the Taiwan Chamber of Commerce regarding arrangements for sending six participants to Taiwan for training in brackish water aquaculture in late June, and arranged to have the Workshop Superintendent of the Research Institute for Fish Technology join USAID consultants in installation of a refrigerator plant in a fishing village in Lampung province. This latter activity was designed in part to permit the consultants to assess refrigeration capability at the Institute so they could organize a training program for this purpose. Mr. Fritz also assisted project officers in preparation of documentation and communications required to obtain USAID concurrence on specific training programs and other matters.

3. James Myers, part time Training Coordinator based in Jakarta, assisted Mr. Fritz in making arrangements for training and departure of participants. Mr. Walter Flinn who is AARP/RMI's part-time Training Coordinator based in Washington D.C., contacted various institution, to support participants who are already in programs and to make arrangements for those who are scheduled to arrive.

4. Roland E. Harwood, Research Station Development Specialist, was very active assisting AARP's construction program.

Construction was finally resumed on the auditorium at Cimanggu though some problems still delay this work. Hammer tests were made at twenty-one more points in the foundation and reinforcement will be designed for the areas that do not meet minimum specifications.

Work continued all month on the building plans for Banjarbaru, Bogor and Maros. Cutbacks in total building area were necessary due to the devaluation of the rupiah and some building plans and cost estimates had to be changed.

Some progress was made in preparing the list of equipment to be ordered through the 497-0302 Project

He expressed his views on station management in a brief note entitled "Experiment Station Operations Management" which is in Appendix II. He would like comments on this note.

5. Diane M. Barrett, Post Harvest Processing Specialist assigned to the Bogor Research Institute for Food Crops and it's sub station in Karawang, gave her first lecture on research methodology to the staff at this sub station. She was involved in an assessment of the past research concerning post harvest processing of cassava at this sub station. She worked with staff of this station in Karawang and Dr. B.H. Siwi in preparing seven terms of reference for ACIAR-AARD collaborative research projects. She made a trip to Lampung with Dr. Roberto Soenarjo to examine cassava processing in Lampung (see Appendix III). Her monthly report is in Appendix IV.

6. Jerry McIntosh, Farming Systems Specialist at the Bogor Research Institute for Food Crops., finished the Upper River Watershed Assessment and participated in discussions of their report. He assisted staff of AARD in preparing a project proposal on Crop/Livestock Systems Research. He made trips to BARIF.

in South Kalimantan to evaluate candidates for IRRI training courses and to Sembawa and Batumarta in South Sumatra to participate in planning activities for Farming Systems Research and Development. For more details, please see Appendix V.

7. Chhorn Lim, fish nutritionist assigned to the Research Institute for Inland Fisheries in Bogor and Gondol, Bali arrived on May 22, 1983. His first activity was to familiarize himself with AARD. He is already well-acquainted with the staff of the Research Institute since he has worked with them in the past.

8. Igmidio T. Corpuz, Soil Scientist at the Maros Research Institute for Food Crops (MORIF), was very active traveling in Sulawesi and attending the symposium on "Sulfur in Southeast and South Pacific Agriculture" held at Ciawi, Bogor. Several of his major accomplishments during the month were assisting the establishment of an experiment on lime and phosphorus rates for cropping systems, assisting in selecting and characterizing sites for nitrogen and phosphorus trials, and assisted in establishing a simple Rice Variety and Sulfur Trials at MORIF. For further information on Dr. Corpuz's activities in May, please see Appendix VI.

9. S. Anwar Rizvi, plant pathologist at the Maros Research Institute for Food Crops, continued to assist the Pathologist/Entomology staff in organizing their research programs and seminars. He worked with one of the Pathology Department staff in the preparation of improved experimental designs regarding research on peanut mottle virus (PMV) both for the greenhouse and field tests. Further tests were conducted to evaluate the efficiency of rice blast spray-bottle-inoculation technique. For more information on his activities, please see Appendix XIV.

10. Fritz von Fleckenstein, Agricultural Economist at MORIF was primarily involved in the PATANAS project during May. His time was spent on drafting a precoded questionnaire. Besides this he is working with the staff on intensive interviewing for the pilot methodological study concentrating on six farmers in Bajau Bodoa village which is near MORIF (see Appendix VII for his monthly report and Appendix VIII for a description of the pilot study).

11. Kevitt Brown, Rice Breeder at the Banjarmasin Research Institute for Food Crops (BARIF) visited the Bogor and Sukamandi Research Institute with his counterpart to discuss areas of cooperation and to gather ideas for their breeding program (see Appendix V). He attended a seminar on deepwater rice conducted by BARIF and the BAPPEDA. He is helping to establish a seed storage system and a seed record keeping system (see Appendix X).

12. Greta A. Watson, Social Scientist/Agricultural Economist at BARIF gave three seminars on agroecosystem theory and methods, research methodology for the tidal swamp survey, and construction of graphs and maps. The staff of BARIF including Ms. Watson have begun work on the survey for the tidal swamp workshop which included compilation of historical and present-day social and environmental data on each village, using group farmer and individual interviews. (see Appendix XI).

IV. TRAINING

Dr. Purwito Martosubroto, Director of the Research Institute for Marine Fisheries, joined a group of participants from the Indonesian Institute of Science (LIPI), the National Institute for Administration (LAN) and the Universities of

North Sumatra and Pattimura in a training program in R&D Management Consultancy Services at the Denver Research Institute May 22-July 1, 1983. Another USAID project paid the cost of the training program, and AARP is paying the maintenance allowances, air travel and insurance for Dr. Purwito.

The interdisciplinary vegetable breeding team of four scientists returned during the month from training at the Asian Vegetable Research and Vegetable Center, Taiwan, to rejoin the staff at the Lembang Research Institute for Horticulture (LERIH). One member of the group, Mr. Yoyo Sulyo, Virologist, was granted a two week extension at AVRDC, then later attended the Singapore Workshop on Plant Viruses and Mycoplasmas May 24-27, 1983. His attendance at the Workshop was paid from AVRDC funds. •

Mrs. Ati Sri Duriat of LERIH completed her three month training program at the American Type Culture Collection on May 28, but was granted an extension of two weeks for some work at USDA facilities in Beltsville, Md.

During June we expect to send two officers from the National Library for Agricultural Sciences, one officer from the Marine Fisheries Research Institute and one officer from the Central Research Institute for Fisheries to the International Center for Living Aquatic Resources Management

in Manila for four weeks of library training. We also expect to send six officers from various inland fisheries stations to Taiwan for two months training in brackish water aquaculture.

As of the end of May 1983, AARP participants had completed 95.9 person months of training abroad, 89.7 of them under the RMI contract. Full details are provided in Appendix XII.

V. MONTHLY REPORTING

In order to simplify our monthly and quarterly reporting, we have decided to produce only brief monthly reports and to have very complete quarterly reports. The guidelines for this reporting are in Appendix XIII.



Appendix I

Status of AARP Technical Assistance

I. End of Project September 1985

Total person years	52.5
person months	630
Total Grant	\$6,468,000

II. Completed as of April 30, 1983

Person months	71
Grant	\$ 670,866

III. Balance to be completed

Person months	559
Grant	\$5,797,134

IV. Analysis

At the end of May 31, 1983 the technical assistance was the following:

Long Term Experts	Length of Contract (months)	Date begun	Months worked	Remaining person months
1. William L. Collier	42	3/28/82	14	28
2. Carl R. Fritz	24	4/ 1/82	14	10
3. Jerry McIntosh	24	7/ 1/82	11	13
4. Roland E. Harwood	24	8/28/82	9	15
5. Diane M. Barrett	24	4/ 7/83	2	23
6. Igmidio T. Corpuz	36	7/ 1/82	11	25
7. Anwar Rizvi	24	1/ 1/83	5	19
8. Fritz von Fleckenstein	32	1/24/83	4	28
9. Kevitt D. Brown	24	1/23/83	4	20
10. John Bolton (resigned)	24	3/ 9/83	2	22
11. Greta A. Watson	24	3/ 1/83	3	21
Total	302		79	223

<u>Short Term Experts</u>	<u>Date Begun</u>	<u>Days Worked</u>
1. Roger Pullin	5/10/82	19
2. Ching Ming Kuo	5/10/82	9
3. F. Purnel	7/11/82	25
4. Roger V. Cuyno	12/3/82	<u>8</u>
		61

The positions that have not yet been filled but were scheduled before April 30, 1983 are:

<u>Position</u>	<u>Date Planned</u>	<u>Person who has been hired</u>	<u>Date will begin</u>	<u>Number of months Delayed</u>
1. Entomologist BARIF	Sept. 1982	Benardo Gabriel	July 1983	11
2. Fish Nutritionist RIIF	Sept. 1982	Chhorn Lim	May 1983	9
3. Fish Breeder RIIF	Sept. 1982	William Vanstone	Sept 1983	12

The reason for the delay in the fisheries positions was that the station in Gondol was not yet finished and we were asked to delay their arrival.

The positions that are planned to begin are:

<u>Position</u>	<u>Length of time (months)</u>	<u>Planned Date to begin</u>	<u>Estimated Date can actually begin</u>
1. Tropical Forest Silviculturist (FORI)	24	Sept. 1983	May 1984
2. Tropical Forest Soil Scientist (FORI)	24	Sept. 1983	May 1984
3. Forest Engineer (FPRI)	24	Sept. 1983	May 1984
4. Forest Economist (FPRI)	24	Sept. 1983	May 1984
5. Tropical Forest Silviculturist (FORI)	24	Sept. 1983	May 1985
6. Animal Pathologist (RIAD)	24	Sept. 1983	May 1985
7. Parasitologist (RIAD)	24	Sept. 1983	May 1985
8. Pasture Agronomist (NTT)	24	Sept. 1983	May 1985
9. Silviculturist (NTT)	24	Sept. 1983	May 1985

These positions are delayed because the institutes in Samarinda (FORI and FPRI), Banjarbaru (RIAD), Maros (FORI), and in NTT will not be finished on time and this causes the delay in arrival.

If this project is completed in Sept. 1985, then none of these positions can be filled for the entire period planned. The project will not use from 54 to 216 person months depending on the arrival date of the experts.

WLC:h

Appendix II

EXPERIMENT STATION OPERATIONS MANAGEMENT

While much agricultural research should be done in farmers' fields, a national agricultural research program requires agricultural experiment stations with multiple facilities. Depending on a scientist's specialty, he or she may need field plots with controlled water, greenhouses, dryers, laboratory equipment, storage facilities, etc. All scientists regardless of specialty will need among other things, transport, laborers, office space, secretarial help, maybe housing, and an organization within which to work. In a large station such as the AARP Institutes a director, and maybe a sub-director, are needed. These positions require scientists trained to the Ph.D. level and with many years of experience. The director is the maximum authority on the station and maybe the director of research as well. Usually a committee of scientists will assist a director in this work.

A director will also be involved in public relations and general policy and budget decisions. Some directors have their own research programs, but many do not have the time needed to do research.

All other scientists at an institute should be able to dedicate full time to research and teaching. Who then will train people to use machinery and maintain it, who is in charge of the farm shop, the warehouse, and the field laborers? Who will train them in the many different kinds of work they must perform? Who will obtain and maintain in good condition the equipment and tools needed by the institute? Who will teach the workers how to use the new grain cleaner or dryer soon to arrive? Who understands the potable water system at the institute and its maintenance? What happens when an electrical circuit blows out?

On many of our new stations no field work has been started yet. Who will lay out the fields, drains, irrigation systems, roads, etc, and who will level the fields? This kind of work should be done by someone who understands agricultural research.

All of these tasks, which back up the research effort, can be done by a good station operations manager. This is a full time position, one might say full time and a half since there seldom is time to finish all that needs to be

done. A good station manager can organize station operations and train the people needed to give maximum support to the research effort.

While no one can do everything, a good station manager will be able to do many things and to recognize problems that are beyond his competence and know when outside assistance is required.

Most of the training for farm operations managers can best be done in Indonesia at the Institutes. Most of this training is of the "hands on type" and candidates for this training must be carefully chosen. People usually like this kind of work very much or they refuse to do it at all. The work should be clearly explained to prospective trainees so that only those interested in this profession will apply for training.

Farm operations management, what it is and what it can do, are many times not understood by scientists working in areas where little has been done in this profession. Scientists and station managers must work closely together so that managers can understand the needs of the scientists and scientists can learn how a good manager can most help them. There will be more demand for station operations managers in Indonesia when their work becomes better known.

REH:ib

R. Harwood
May 1983

Appendix III

TRIP REPORT

CASSAVA PROCESSING IN LAMPUNG

MAY 23-27, 1983

by

Diane M. Barrett

Dr. Roberto Soenarjo

From May 23-27, 1983, Dr. Roberto Soenarjo, Root Crop Breeder, BPTP-Bogor, and Diane M. Barrett, Food Scientist, BPTP-Karawang, visited farm and industrial level cassava processing sites in Lampung, Southern Sumatra. Four locations were visited and observations are summarized below:

(1) Farm Level Cassava Processing

Homes in the village of Tamanbogo, near the Sub Balai Penelitian Tanaman Pangan (30 Km from Metro) were visited to observe farm-level processing of cassava.

a) Observations.

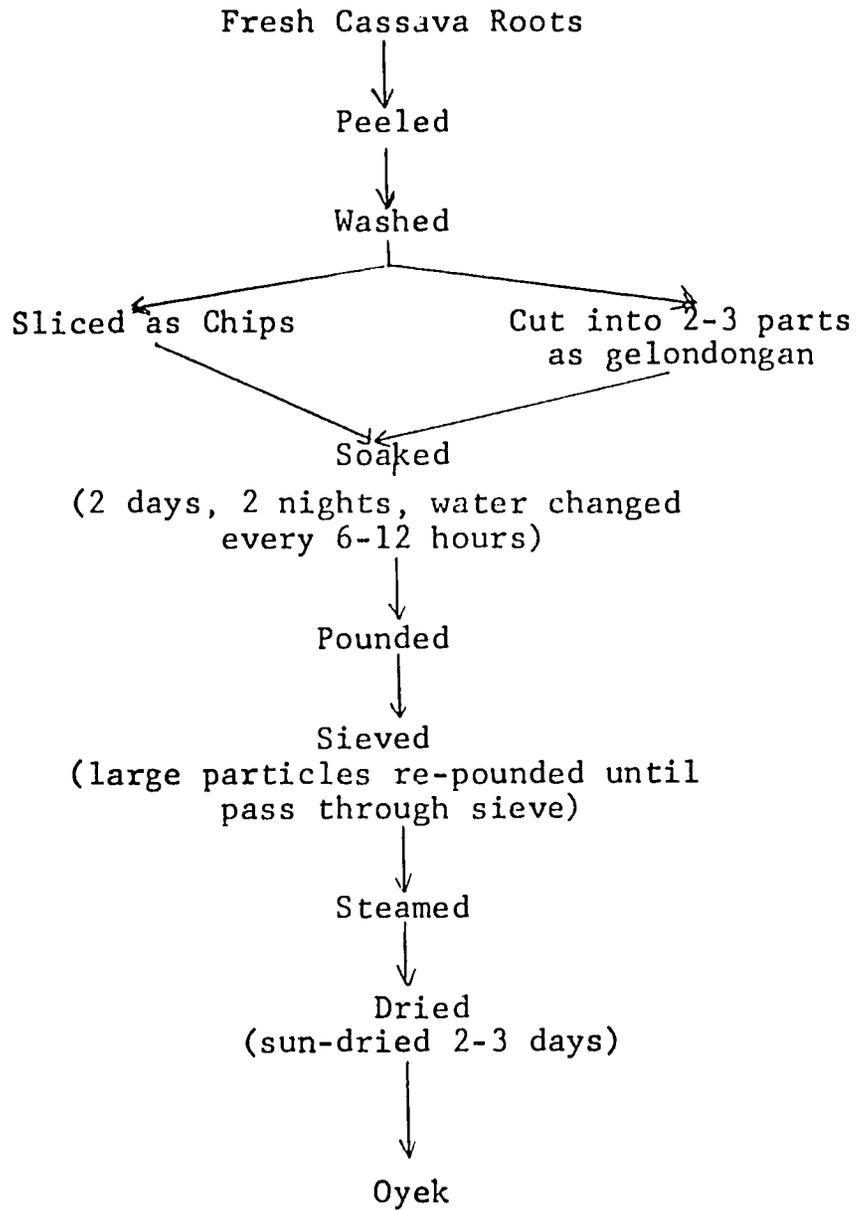
1. Sweet cassava is produced primarily for industrial purposes, in which case the fresh roots are sold to middle men or directly to the factory. Cassava is also consumed by farm families during "economizing times" in order to conserve rice, which sells for a higher price.
2. Cassava is harvested if the farmer needs money or if the market price is high. The time of harvest does not always coincide with the optimal maturity and/or yield.
3. If there is an overabundance of cassava, it is usually processed into one or two Javanese products, cassava roots should be processed with 1-3 days in order to decrease moisture content and produce a more compact, easily manageable form.

4. Tiwul and oyek production are outlined in Figures 1 and 2.
5. Cassava chips are more quickly sun-dried, resulting in a lighter-colored better quality product, and are more easily packed than gelondongan. However, production of chips involves greater labor costs and chips are more difficult to process further due to their thin, brittle nature.
6. Gelondongan production requires less labor and results in a larger, more manageable form for further processing. However, sun-drying requires a longer time period and the larger shape is more difficult to pack.
7. Oyek produced from tiwul is better-tasting than oyek itself, due to the shorter soaking time (fermentation), and lighter color (shorter drying time).
8. The best oyek is granular and similar to rice in texture.
9. Oyek or tiwul are mixed with rice in a 2:1 cassava: rice ratio in order to extend the rice supply. If more rice is available, the ratio may be 1:1
10. Rice is half - cooked (karu), then placed in a cone-shaped bamboo container. The oyek or tiwul is placed on top, and the whole product is steamed until done. Then the cassava - rice combination is mixed well, and served with grated coconut, fish or vegetables.

b) Problems.

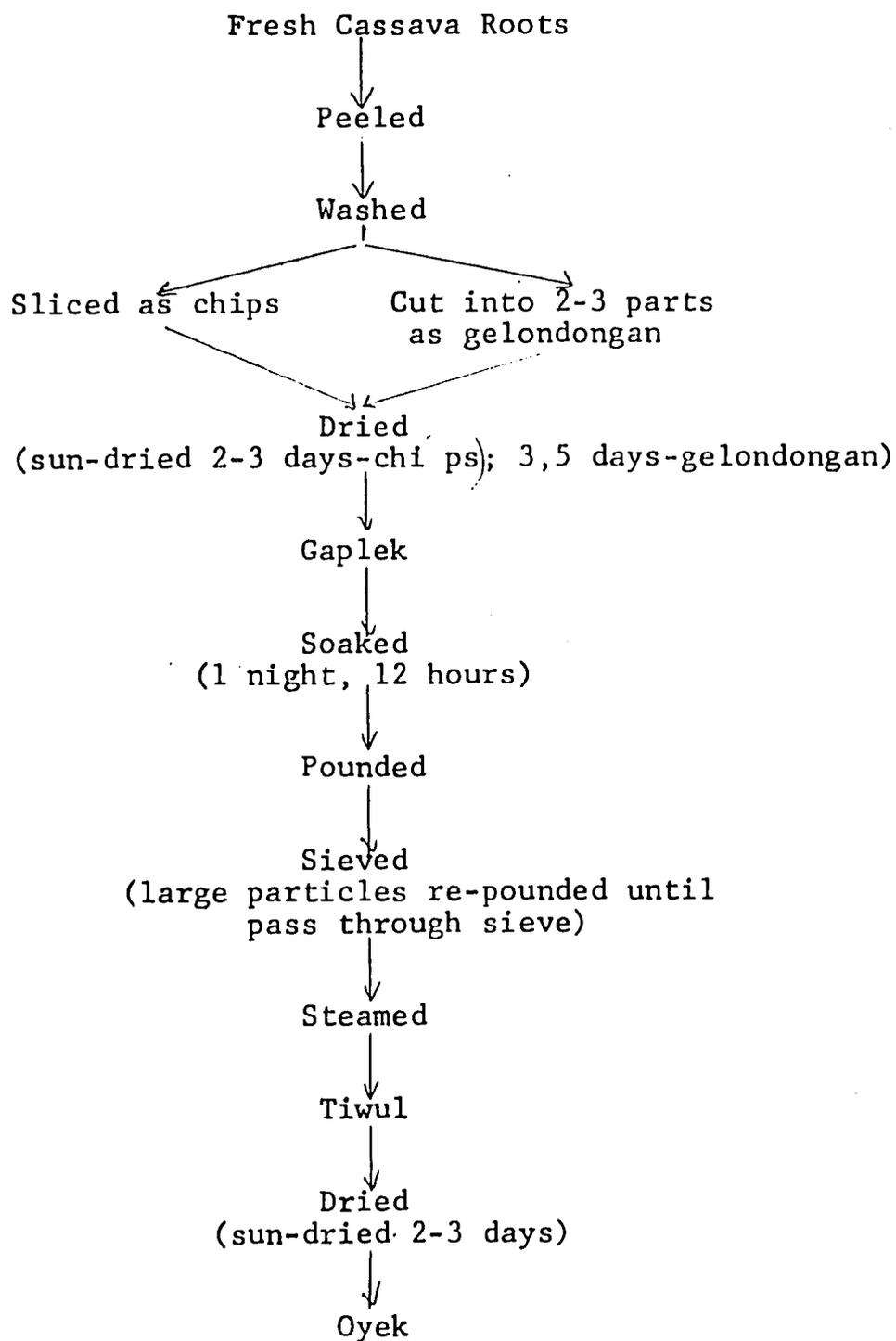
1. Cassava is rarely harvested at its optimal maturity, hence farmers do not receive as much monetary reward for their crop, nor do they receive the most nutritious product possible.
2. Storage of cassava on the farm is difficult due to its rapid deterioration. Fresh roots usually must be processed, sold or consumed directly.

Figure 1. Oyek Production



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Figure 2. Tiwul Production



3. Dried cassava chips and gelondongan exhibit extensive deterioration due to mold. Before use, the dried products are usually re-wet and the mold is scraped off, resulting in large product losses.
4. Drying cassava is difficult during the rainy season or times of decreased sunshine. Excessive deterioration due to browning and mold attack is common.

(2) Semi-Automatic Starch Processing Plant

Our second visit was to the Pabrik Sagu Bangun, Kampung Buyut Hilir, Gunung Sirih. Mr. Syarifudin Husein, the factory manager, showed us the facilities.

a) Observations.

1. The factory uses both sweet and bitter cassava and produces 70 tons of starch/day maximum.
2. A flow chart of the processing appears in Figure 3.
3. The washing, peeling, grinding and sieving operations are executed with locally-made machines, whereas drying is done with a large-scale drier from Taiwan.
4. Six hundred kilograms of cassava are required to produce 100 kilograms of starch.
5. The buying price for cassava roots is currently 35 Rp/Kg.
6. The selling price for starch ranges from 180-260 Rp/Kg.
7. Starch production does not appear very lucrative. Raw material costs alone for every kg starch are:
$$\frac{6 \text{ Kg cassava}}{1 \text{ Kg starch}} \left(\frac{35 \text{ Rp}}{1 \text{ Kg cassava}} \right) = 210 \text{ Rp/Kg starch}$$
8. The settling floors are glassed over tiles to prohibit acid deterioration of the tiles.

26

b) Problems.

1. Fresh cassava roots are not graded upon entering the factory, but instead sweet, bitter, spoiled and unspoiled roots are all mixed together. In addition, farmers do not always remove all of the fibrous cassava neck before selling their roots, and these fibrous materials are incorporated into the starch.
2. After the ground cassava roots are sprayed with water, the fibrous residue is thrown away. This residue still contains quite a bit of starch, which could be further extracted, or else the residue could be used for animal feed.
3. The acidic, cyanogenic waste water from the starch/water solution is not treated, but is dumped directly into a nearby stream.

3. Cassava Production Area

P.T. Padangratu Agricultural Corporation (Pago) was our next stop. This company is involved in cassava production for industrial purposes. At one time they produced cassava cubes, by this process was not economical, so now fresh roots are sold to factories. We spoke with Mr. Zeno Otono, Director, Ir. Suistijono Sulaiman, Manager, and M. Soedigbyo Widhoyopoetro, Asst. Manager. They gave us some background on their current activities, and reasons why they discontinued cube production.

a) Observations.

1. Pago has approximately 11,000 Ha of land, only 6-7,000 Ha of which are planted at one time. All of the land is planted with cassava.
2. Cube production involved the process outlined in Figure 4.
3. Yields of cubes were the following:

sweet cassava 2.5 - 2.8 Kg cassava → 1 Kg cubes - 35-40%net
bitter cassava 3.3-3.9 Kg cassava → 1 Kg cubes - 26-30% net

4. An analysis of the cost of cube production appears in Table 1. It appears that unless fresh cassava is selling for 9.52 Rp/Kg or less, it is not economic to produce chips or cubes.

b) Problems.

1. Because of the high cost of production and the cost of the processed cube or chips, cassava processing is not feasible for pogo.
2. Cube production is too labor intensive.

4. Cassava Pelletizing.

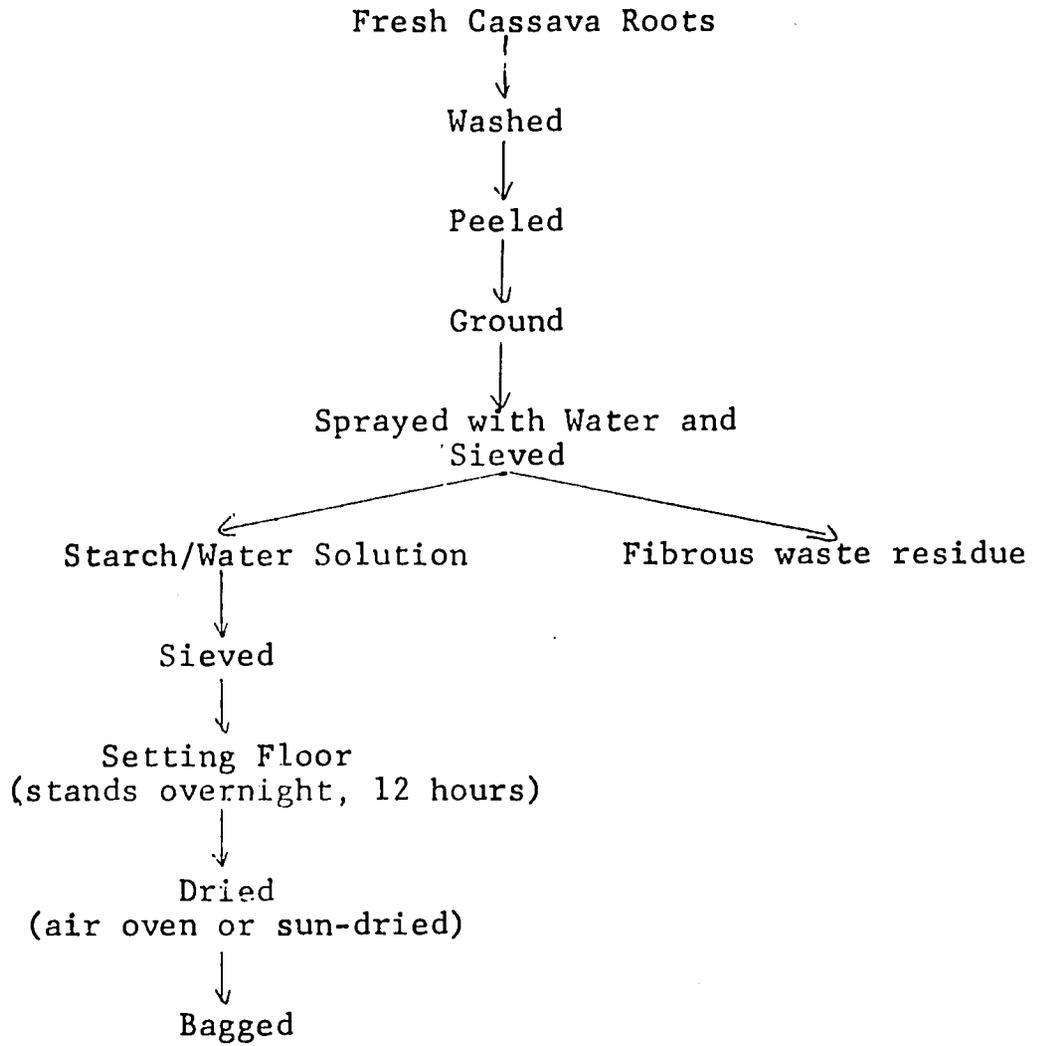
Our last visit was to the Lampung Pelletizing Factory, Teluk Betung.

LPC was not pelletizing cassava at the time that we visited, but the manager was very helpful in discussing the operation and problems involved.

a) Observations.

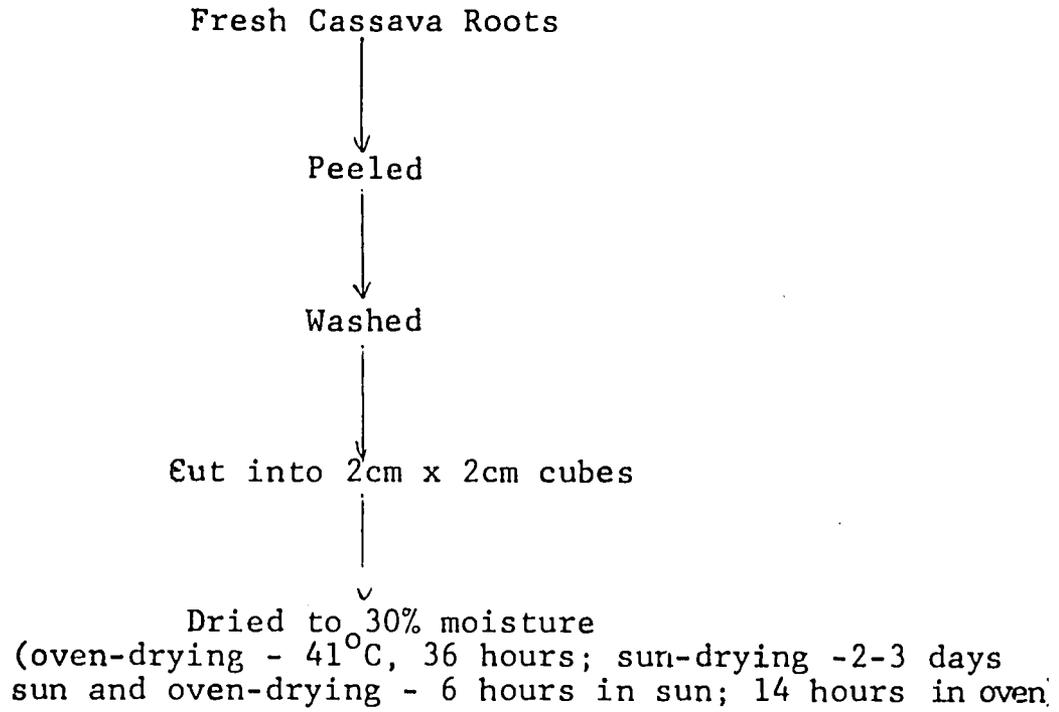
1. The Lampung Pelletizing Company is the oldest in Indonesia. It was built in 1971.
2. LPC manufactures various products, including: cassava pellets, rice bran pellets, kopra (coconut pulp) pellets and cassava flour.
3. Dried cassava chips are bought from agents, rather than directly from the farmer, and are processed into pellets using an automated pellet mill, according to the outline in Figure 4.
4. Some figures concerning production, costs of finished products, etc. appear in Table 2. If these figures are correct, it would appear that cassava pellet production is not economical.

Figure 3. Starch Production



25

Figure 4. Cassava Cube Production



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Table 1. Cassava Cube Production Cost Analysis

Raw Material	2,806,728 Kg
Rotten, waste from harvest <u>+10%</u>	<u>280,673 Kg</u>
	2,526,053 Kg
Cube/chip production	793,500 Kg net
Net yield	3,5 Kg fresh cassava/1 Kg chips
	41,56 Kg cubes/gunny sack
	19,091Kg gunny sacks

Labor costs

Males	2,563
Females	8,468
# Days worked	329
Avg.# persons/day	8 males, 26 females

Cost production

Labor	Rp 3,009,522.50
Overtime	347,815
Supervisor	164,850
Plastic rope	81,600
Machinery*	<u>368,068.60</u>
	Rp 3,971,836.10
Cost per Kg chip	Rp 5.0/Kg chip
(Rp <u>3,971,836.10</u>)	
793,500 Kg Chips	

Table 1 (cont.)

Cost Analysis

Selling price-chips	<u>Rp 44/Kg</u>
Production cost	Rp 5/Kg
Transportation cists	Rp 5.5/Kg
Loading costs	<u>Rp 0.18/Kg</u>
TOTAL	Rp10.68/Kg

Selling price chips - Production, Transportation = Net Profit 1 Kg chips
and Loading costs

$$\text{Rp } 44/\text{Kg} - \text{Rp } 10.68/\text{Kg} = \text{Rp } 33.3/\text{Kg chips}$$

Net Profit \div Net yield = Net Profit 1 Kg cassava
1 Kg chips Chips from cassava

$$\text{Rp } 33.3/\text{Kg chips} \div 3.5 \text{ Chips/Kg cassava} = 9.52 \text{ Rp/Kg cassava}$$

Therefore, the profit for 1 Kg cassava made into chips is 9.52 Rp/Kg.
If the selling price for fresh cassava is more than this, it is not
economic to produce chips or cubes.

* Washers, chippers, etc.

Figure 4. Pellet Production

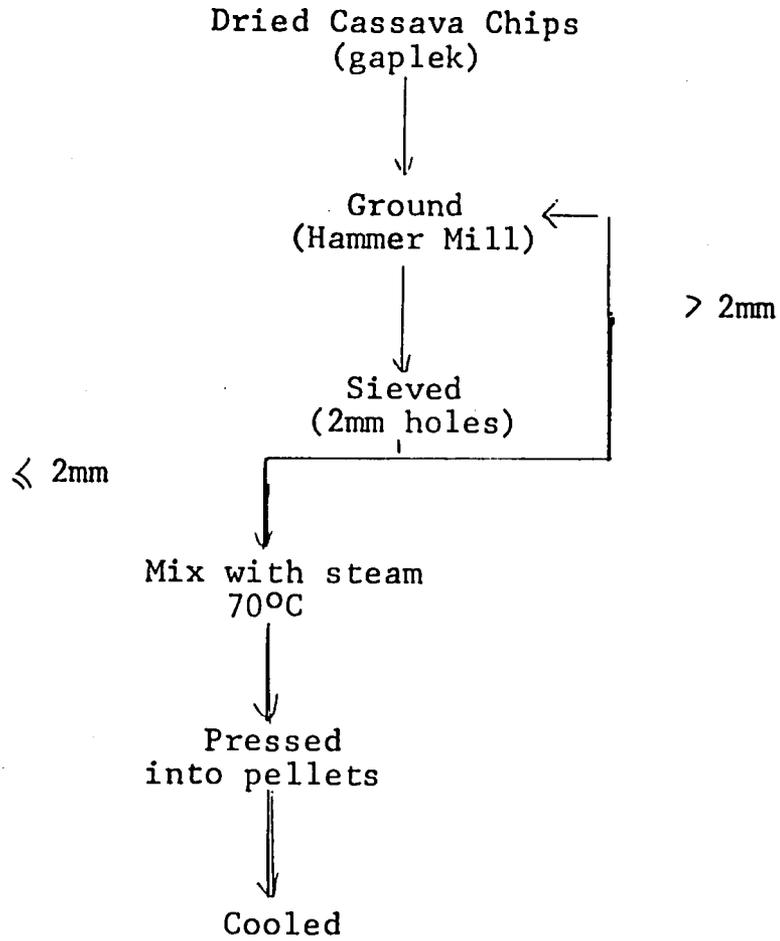


Table 2. Pellet Production Figures

LPC	Pellet production	300 - 400 tons/day 50,000-60,000 tons/year
Exportation	1981 - 50,000 tons pellets * 1982 - 13,000 tons pellets	
Net yields	1 Kg gaplek/3Kg cassava 1 Kg pellets/10Kg cassava	
Market prices	Rp 35/Kg cassava Rp 80/Kg gaplek **Rp 114/Kg cassava pellet (US\$120,00/ton) Rp 66.5/Kg rice bran pellet (US\$70,00/ton) Rp 142.5/Kg kopra pellet (US\$150/ton)	

Production cost Rp 25/Kg pellets (from chips)

Cost Analysis

raw materials + production cost = Rp 375/Kg pellets
(Rp 35/Kg x 10) + (Rp 25/Kg)
selling price = Rp 114/Kg pellets
- Rp 261/Kg pellets

* 1982 was a dry year, and not much cassava was produced. The figure above represents cassava pellets left over from 1981.

** At US\$ 1.00 = 950Rp.

5. Most of the pelletizing factories in Lampung were shut down, due to lack of raw material. There are both cassava flour and cassava pellet factories in Lampung, and the two compete for the available cassava. The last time LPC produced cassava pellets was February of 1982.
6. LPC's storage capacity is only 20,000-25,000 tons. During the harvesting season, this is not adequate to store all the gaplek purchased (50,000-60,000 tons of pellets/year require 150-180,000 tons of gaplek), Therefore some gaplek is left outside under plastic covers.

b) Problems.

1. Raw material (cassava) is lacking, due to competition with starch, flour, and other pelletizing companies. It is easier for farmers to sell cassava roots fresh than it is to process them into gaplek for subsequent pellet production.
2. During harvesting periods excess gaplek is stored for up to 3-6 months at 20% moisture. It is common for piles of gaplek chips 5-6 meters high to have $\frac{1}{2}$ meter of deterioration on the top and sides of the piles.
3. Storage facilities are insufficient. Adequate facilities which allow ventilation and a warm environment are essential.
4. The final pellets are dark brown in color. This is due to browning during pellet production. When pellets are pressed, friction against the pellets farms walls causes an increase in temperature and induces browning.

5. Government regulations concerning cassava processing are confusion. Starch production falls under the jurisdiction of the Department of Agriculture, because raw tubers are the starting materials, while pellet production (from dried gapek) falls under the Department of Industry and Trade.

5. Recommendations

a. Traditional Cassava Processing

1. Research efforts should concentrate on:
 - a) On-farm storage of fresh roots for 1-2 weeks
 - b) Improving methods of sun-drying cassava slices and gelondongan.
 - c) Chemical preservation of slices and gelondongan.
 - d) Storage of dried chips or gelondongan.
2. Farmers should be encouraged to wait until cassava is mature to harvest it. Premature harvesting is common due to higher off-season market prices and/or the farmer's lack of money.

b. Semi-Automatic Processing Plant

1. Cassava should be checked prior to manufacture to insure against spoilage and subsequent production of low quality starch.
2. The fibrous residue left after starch extraction should be dried and sold as animal feed.
3. Waste water should be treated to lower the acidity and eliminate cyanides.

c. Cassava Pelletizing

a. Research efforts:

1. Improving methods of gapek storage.
2. Improving pelletizing process to decrease browning.

b. Storage facilities should be enlarged.

Appendix IV

MONTHLY REPORT
MAY, 1983

Diane M. Barrett

I. PRINCIPAL ACTIVITIES

- A. Assessment of past research concerning cassava postharvest technology at BPTP-Karawang.
- B. Preparation of first research methodology lecture on "Quantitative vs. Qualitative Analysis".
- C. Improvement of Postharvest Evaluation Study Terms of Reference to include all research stations within AARD, not only food crops.
- D. Assistance (with Dr. Siwi, Pak Soemardi and Ibu Rumiati) in preparation of 7 TORs for ACIAR-AARD Collaborative Projects in:
 1. Short-term Storage of High Moisture Grains.
 2. Long-Term Storage of Grain Under Plastic Covers
 3. Drying in Bulk Storage of High Moisture Grains in Tropical Climates.
 4. Integrated Use of Pesticides in Grain Storage in Humid Tropics.
 5. Moisture Movement in Grain.
 6. Aspects of Pesticide Relationships in Integrated Control Programs.
 7. ACIAR Grain Storage Information Network.
- E. Participation in computerized AARD Manpower Training Study.
- F. Inspection of cassava production and processing operations in Lampung with Dr. Roberto Soenarjo, BPTP-Bogor, from May 24-27.

II. CONSULTATION AND MEETINGS

- | | | |
|----------------------|-------------------|-------------------------------|
| A. Pak Siwi | BPTP-Bogor | ACIAR Proposals |
| B. Pak Sadikin | Litbang | ACIAR, Postharvest Evaluation |
| C. Pak Dudung | BIMAS | BIMAS Activities |
| D. Pak Soemardi | | |
| Ibu Rumiati | BPTP-Karawang | My activities, ACIAR |
| E. Dr. Manwan et.al. | Pusgram | Manpower Training |
| F. Ernesto Lucas, | USAID | |
| Dr. Julian | PIP | Root crop training course |
| G. Dr. Ron Edwards | NSW University | ACIAR proposal |
| Dr. Sofjan Ilyas | Litbang-Fisheries | |

III. FUTURE PLANS

- A. Initiate postharvest evaluation study.
- B. Initiate research on storage of fresh cassava tubers.
- C. Repair spectrophotometer at BPTP-Karawang
- D. Inspect cassava processing near Karawang
- E. Visit the BULOG Food Technology Center in Tambun.

DMB:ib

Appendix V

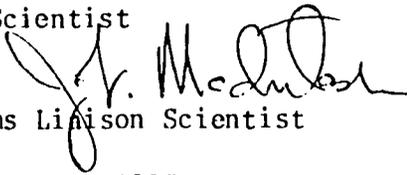
COOPERATIVE CRIFC - IRRI PROGRAM
THE INTERNATIONAL RICE RESEARCH INSTITUTE

CABLE ADDRESS :
IRRI/IAID BOGOR

June 6, 1983

MAIL ADDRESS
COOPERATIVE CRIFC - IRRI PROGRAM
IRRI - P.O. BOX NO. 107
BOGOR, INDONESIA

To : Dr. J. Ritchie Cowan
IRRI Liaison Scientist

From : J.L. McIntosh 
Farming Systems Liaison Scientist

Subject : Monthly Report - May 1983

I. Principle Activities and Accomplishments

- A. Finished Upper River Watershed Assessment and participated in discussions of report.
- B. Assist in preparation of a Crop/Livestock Systems Research project proposal.

As a follow-up of the Workshop held at IRRI Los Banos in April, the Indonesian Farming Systems Research and Development program has almost completed a project proposal for research in Batumarta, South Sumatra and Crop/Livestock Systems research. A Working Group of AARD scientists, including the following has carried out this task.

Dr. B.H. Siwi - Administrative Coordinator
Dr. Suryatna Effendi - Batumarta Farming Systems Research Project Leader
Dr. A.P. Siregar - Animal Scientist
Dr. Sultoni Arifin - Agro-economics
Dr. Soewardjo - Soil Conservation
Ir. Soetjipto Ph. - Agronomy
Mr. Inu G. Ismail - Cropping Systems
Dr. V.R. Carangal - Asian Farming Systems Working Group

It is expected that this project will be a follow-up of the IRRI meeting and complementary to the Farming Systems Research to be carried out in Batumarta with Trans III funding. The Trans III research will be mostly directed toward new land opening and development while the crop/livestock research will be in the older settlements of Trans I where farming systems have been developed -- including animal production.

C. Edit scientific papers for:

1. Soybean Breeding
2. Azolla

D. Travel

1. BARIF, South Kalimantan to evaluate candidates for IRRI Training Courses and to discuss Cropping Systems Research.
2. Sembawa and Batumarta, South Sumatra to participate in planning activities for Farming Systems Research and Development.

II. Miscellaneous Activities

1. Seminars attended

- a. Lamtoro Research in NTT - PDP Project
- b. Home Gardens Research - AVRDC/UNICEF
- c. Imperata Management - Mike Dove, RF

2. Consultations

- a. Dr. V.R. Carangal, IRRI
- b. Dr. C.P. Mamaril, IRRI
- c. Dr. Albert Hagan, USAID Consultant on Home Gardens evaluation
- d. Dr. Peter Carriage, CSIRO Consultant on Animal Production
- e. Dr. Doug Perry, IADS, Padang

III. Constraints to Work — The development of a Working Group of scientists from different disciplines who wish to work together is developing well.

IV. Plans

1. Continue work on project development for crop/livestock.
2. Prepare paper on soybeans in Tropical and Sub-tropical Agriculture.
3. Help review last season research and develop plans for new crop season.

Appendix VI

Report of Activities for the month of May, 1983.

I. Activities and accomplishments :

- A. Assisted Ir. Reginald le Cerff, Incharge of Fertilizer in cropping Project establishing the experiment on lime and phosphorus rates for Cropping Systems at Puriala experimental farm. Because the experiment is a 5-year project there was the need to make small canals between plots to prevent surface runoff from moving from plot to plot thus affecting the treatment.
- B. Assisted Ir. Agustina Buntan in selecting and characterizing the sites for Nitrogen and Phosphorus trial at Kabupaten Wajo.
- C. Assisted Ir. Agustina Buntan in the collection of soil samples in the Nitrogen Fertilizer Efficiency on Rainfed Wetland Rice at Tambua, Maros.
- D. Established a simple Rice variety and Sulfur Trial at Maros in connection with the Sulfur symposium.
- E. Assisted Ir. Agustina Buntan in establishing Nitrogen Fertilizer Efficiency on Irrigated Wetland Rice - A Residual Effect Study.
- F. Participated in the symposium on Sulfur in Southeast and South Pacific Agriculture at Ciawi, Bogor. Discussed with the post symposium tour the experiment at Tambua, Maros on the effectiveness of Two Sulfur Sources (Elemental S and Ammonium sulfate).

II. Travel made :

- A. May 4 to 8 - To Southeast Sulawesi (Trip Report Appendix I)
- B. May 17 - To Wajo (Trip Report Appendix II).
- C. May 22 - 28 - To Ciawi, Bogor (Trip Report - Appendix III)

III. Other Activities :

- A. Participated in the weekly Saturday seminar at Maros Resaerch Institute for Food Crops :
 - May 7 - Plant Breeding Department
 - May 14 - Agronomy/Plant Physiology Department
 - May 21 - Plant Pathology Department

IV. Plans for June :

- A. Continue assisting preparing reports of completed research project.
- B. Assist in establishing experiment for the dry season.
- C. Continue preparing materials to be given in the series of lectures to be given very soon.

Dr. Ignidio T. Corpuz
Soil Scientist/Agronomist - MORIF

Trip Report
Official Trip to Southeast Sulawesi
May 4 - 8, 1983

The trip was made with Ir. Reginald le Cerff, Incharge of the Fertilizer-Cropping Systems Project, a cooperative project of AARD and IFDC to evaluate the site selected for one of the experiments in the project.

Ir. le Cerff earlier went to Southeast Sulawesi alone to select a site for the experiment. Because it is a 5-year project he wanted to make sure that he made a sound judgement in the selection of the site. He is apparently guided by advice of Dr. Farid Bahar, Director of Maros Research Institute for Food Crops. Dr. Bahar encouraged the researchers to implement research projects as much as possible on their own initiative and judgement. However, if they have some doubts they should not hesitate to consult with us while we are around because finally they will be left alone.

The site Ir. le Cerff selected is located in the farm of a transmigrant from Sinjai whom he knows personally. It is 60 Kilometers from Kolaka proper and 35 Kilometers to the Puriala Experimental farm, Wawotobi Substation.

The experiment calls for an Upland soil which is acidic and phosphorus deficient. Unfortunately at the time the site was earlier identified no soil sample was collected for pH and phosphorus determinations. The soil in the area is an alfisol which is not generally acidic and phosphorus deficient. Ir. le Cerff had already initially made some negotiations. The proposed site is already cleared. As a matter of fact it was already tilled once. Specifically it is at the middle of an area with shrubs like vegetation. I gathered from the farmer-cooperator to be that wild pigs and rats are serious problems in the area. Earlier, the corn that he planted was completely damaged by wild pigs. Since then he did not plant corn anymore. The test crops in the experiment are corn and rice. The farmer planted instead cacao, coconut, bananas, guavas, clove, citrus and jack-fruit. The farmer expressed his willingness to construct fence around the experiment as long as he is provided with the necessary fund. Based on the total area needed and the layout of the experiment the total length of the fence to be constructed around the experimental area is about 250

meters. Looking around the area there are no possible sources of fencing materials. We were told there are plenty of bamboos in a nearby village.

There are two basic factors that were pointed out to Ir. le Cerff in arriving at the final decision of whether to use the area or not for the experiment. These are (1) the soil requirement of the experiment and (2) the risk of getting no results from the experiment because of the problem of wild pigs and rats. The question on the soil requirement is really not critical. The second factor is a more serious problem.

Ir. le Cerff arrived at the final decision to abandon the site he earlier selected and agreed on the suggestion to establish the experiment at the Puriala Experimental Farm, Wawotobi Substation. The soils at Puriala Experimental Farm consist of two soil orders namely oxisol and ultisol. These soils are definitely acidic and phosphorus deficient which meet the soil requirement of the experiment. Canal one meter wide and one meter deep is being dig around the experimental farm to hopefully prevent wild pigs and rats from destroying the crops grown in the experimental farm.

The experiment was finally established because an area sufficient to accomodate the experiment was available at the time. Since the experiment will be carried out for 5 years it was emphasized that it is essential to establish permanent markers in order to be able to re-establish the plots every cropping. Likewise there is the need to prevent soil movement from plot to plot. To attain this, there is the need to construct small canals around the different plots.

Dr. Ignidio T. Corpuz
Soil Scientist/Agronomist - MORIF

Trip Report
Official Trip to Kabupaten Wajo
May 17, 1983

Trip was made with Ir. Agustina Buntan, Incharge of INSFFER Trials, a cooperative project between AARD and IRRI to locate sites for the experiments on Nitrogen Fertilizer Efficiency on Rainfed Wetland Rice and Phosphorus Sources for Wetland Rice.

It is recognized that it is important of involve the local extension workers in the selection of farmer cooperators and in selecting the site for the experiment especially if the experiments are to be established in farmers' field. The local extension workers are more familiar with the locations of the soil problem areas. The experiments that are to be conducted in the area calls for soils that are nitrogen deficient and/or phosphorus deficient.

The sites were finally selected after contacting two farmers. The factors considered in the final selection were (1) the representativeness of the area in terms of rainfed wetland rice condition ; (2) our impression on the farmers during the first meeting in terms of his willingness to cooperate and (3) accessibility of the area.

The sites for both experiments are at Kilometer post 212 or about 180 Kilometers from Maros Station along the main road. The soil is a grumusol and the area is typically rainfed. The rainy season started last April and will end in October.

Soil samples at the plow depth layer were collected for the determination of some soil chemical and physical properties. More detailed site characterization will be made at a later date. There is the problem of exposing the soil profile when the soil is wet.

Dr. Ignidio T. Corpuz
Soil Scientist/Agronomist - MORIF

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Trip Report
Official Trip to Ciawi - Bogor
May 22 to 28, 1983

With the approval of Dr. William Collier, Chief-of-Party, AARP and Dr. Farid Bahar, Director Maros Research Institute for Food Crops, I had the opportunity to participate in the symposium " Sulfur in Southeast and South Pacific Agriculture " held at Ciawi, Bogor from May 23 to 27, 1983.

Background papers on the sulfur status of the soil in the different countries in Southeast and South Pacific regions were presented on May 23, 24 and 26, 1983. A field trip to Sukamandi Research Station and P.T. Pupuk Kujang was held on May 25. May 27 was devoted for discussion on the research gaps on sulfur, the research areas that should be given priority. The research areas identified were :

1. Sulfur in Soils
2. Sulfur in Plants
3. Sulfur in Animals
4. Sulfur Fertilizer and Technology
5. Diagnostic Technique for Sulfur Status Evaluation

The countries where sulfur were definitely identified to be deficient in the soil are Indonesia, Thailand, China and Papua New Guinea. In the Philippines pot trials show sulfur response. However, it was pointed out that under field condition there was no response. In Malaysia, Taiwan, North Australia , Laos, Vietnam and Cambodia no response to sulfur were observed. It was predicted however that sulfur maybe a problem in the near future if present trend of practices will continue.

Some practices commonly mentioned as responsible for the sulfur deficiency problem at present and in the future are :

1. Use of high analysis fertilizers
 - a. Use of urea in place of ammonium sulfate as source of N
 - b. Use of treble superphosphate in place of single superphosphate as source of P.
2. Intensive cropping - two to three crops/ha/yr instead of just one.
3. Burning crop residues.
4. Use of high yielding varieties (rice, corn, etc.)
5. High total rainfall causing excessive leaching and soil erosion.

The sulfur balance had been tilting towards the depletion side with little addition coming in.

A question which triggered the reaction of several participants is the issue of not only solving the sulfur deficiency problem but also on the issue of preventing its reoccurrence.

It is in this issue where I actively participated in the formal and informal discussions.

I am confident that the sulfur problem could now be solved and it should not be a problem in the future. This is highly possible because the most effective and most efficient source of sulfur is now commercially produced and made widely available throughout the world. The solution to the sulfur problem and the prevention of the occurrence of sulfur problem all over the Southeast and South Pacific regions as a matter of fact the world over is the use of AMMONIUM SULFATE (20 % N 24 % S). The use of AMMONIUM SULFATE not as a source of Sulfur per se but as a source of nitrogen. Nitrogen is a universal problem. Use ammonium sulfate to solve nitrogen problem. Incidentally the sulfur problem is also being solved.

To illustrate :

For example nitrogen recommendation calls for the application of 100 kg N/ha. Usually the required amount is met by using only urea. As a strategy in solving the sulfur problem and preventing the sulfur problem to occur supply the nitrogen required in the forms of urea and ammonium sulfate. There is no definite proportion to follow but as a rule of thumb apply 100 kg of ammonium sulfate. The rest of the nitrogen to be supplied in the form of urea. The amount of 100 kg of ammonium sulfate will supply 24 kg S ($100 \times .24$) or 12 ppm S which is more than the critical level in soil of 9 ppm S.

The co-chairman of the symposium expressed some risk in the recommendation. His orientation is that if ammonium sulfate is applied as basal and incorporated in the mud the SO_4 will be reduced to H_2S causing toxicity to plant roots. He failed to recognize that ammonium sulfate could be applied as top dressing when the plants are already activity growing. The nitrogen source to be applied as basal and incorporated must be urea and not ammonium sulfate.

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By including AMMONIUM SULFATE as a source of nitrogen together with urea, sulfur problem is automatically solved and is prevented from becoming a problem again.

Dr. Ignidio T. Corpuz
Soil Scientist/Agronomist - MORIF

Appendix VII

Monthly Report

MAY 1983

Fritz von Fleckenstein

1. 1-5 May was spent on activities related to PATANAS in Bogor, which were described in my report of the trip submitted with last month's report.
2. Upon my return to Ujung Pandang, I compared notes with Ir. Sarasutha, who had attended the training of interviewers in Malang. We agreed that a number of activities could be started immediately in South Sulawesi, to avoid some of the problems encountered by PATANAS in East Java.
Our first concern was to outline a sampling scheme for South Sulawesi which could be carried out in the province, under the direction of MORIF staff. We drafted this outline, which we sent to CAER (PAE) in Bogor. A copy is attached to this report.
3. From 6 - 11 May, Alfred Diebold, the Regional FARMAP trainer of PAO, who is stationed at AIT in Bangkok, was in Ujung Pandang. While he was here, he talked with Ir. Sarasutha and Dr. Parid Bahar, and we laid the groundwork for the attendance of MORIF officers at the next regular FARMAP course in August 1983.
I also advised Mr. Diebold to visit MORIF and PAE in order to explain his training programme. The result is that MORIF will send two trainees, MORIF intends to send two, and I believe that several will also go from PAE, all to the August session. This training will provide a group of people in the PATANAS programme who have a basic understanding of the FARMAP package. Such an understanding by economists is absolutely essential to the successful use of this package, which gives the economist great flexibility in tabulating and extracting data, provided he is willing to use the computer himself.
4. The greatest part of my time in May, however, has been taken up in helping to draft the FARMAP-coded questionnaires which we will use in our pilot methodological study in Bajau Bodoa. These questionnaires, which will become the prototypes for the PATANAS questionnaires in South Sulawesi, are giving rise to a number of documents as they are developed.
The first need to be realized was for accurate bilingual lists of plants, plant operations, inputs and outputs. I was able to get hold of a bilingual agricultural glossary prepared by USAID/Jakarta, and while this is an interesting document, it is far from complete, and it has a number of inaccuracies.
As a result, we have been drafting our own lists, which also include the FARMAP codes, and we will be sharing them with colleagues at MORIF and at other stations, with the caveat that they are first approximations. In this way, we hope to get suggestions for improvements which will make the lists more complete. In time, they can come to serve as the basic code lists for FARMAP applications in Indonesia. I am not attaching any of these lists at this time, because of their tentative nature.
5. The Bajau Bodoa study itself is beginning with land measurement rather than input monitoring, because the preparation of the questionnaires is taking longer than anticipated. The sample of 6 farmers has been chosen, and measurement of all parcels and plots (FARMAP terminology) has begun. On the first day, I went out with Ir. Hudi Jah and one enumerator, but on subsequent days, the team has been managing quite well on its own.
6. Although no formal lectures have been given, the work on Bajau Bodoa and the casual conversations which I am now able to carry on since my Indonesian has improved have led to a number of impromptu lectures and handouts. To wit:
 - a. Footnotes in draft papers led to photocopy of milling rates in Southeast Asian countries and brief discussions.
 - b. A search for a table of random numbers led to understanding that many economists had been drawing systematic samples

when they intended to be drawing random samples, and indeed stated that they had.

As a result, I immediately gave a half-hour demonstration of the drawing of a random sample (having finally found a table in the Plant Breeding department). This was followed immediately by the drawing of the Bajú Bodoa sample, which we decided in the end to draw randomly. Ir. Hadijah drew the sample.

- c. The measurement of parcels and plots was preceded by a half-hour session in which the method of using triangles was explained, and the simple check for gross inaccuracies was shown.

I anticipate that the continuation of the research in Bajú Bodoa will give many opportunities for short teaching sessions such as the above. These fit much better into the schedule and work of MORIF than do a formal lecture series.

Plans for June

1. A week of leave in the beginning of the month, to permit me to travel with my daughter, who is only able to be here a short while.
2. Finish resource utilization forms for Bajú Bodoa study, and to begin monitoring of inputs and outputs.
3. Finish resource description forms for Bajú Bodoa and begin entering data already collected.
4. Continue work on choosing South Sulawesi PATANAS sample.
5. Begin writing programmes necessary to translate Bajú Bodoa forms into standard FARMAP records. We have taken some liberties with the standard format in order to make the forms easier to use.
6. Prepare materials to orient potential FARMAP trainees and others to the computer.
7. Begin regular tutorials on the computer. This may not start immediately, since the computer will probably arrive in the first week of June, and will need to be set up and procedures established for using it in a rational manner. Also, I will need a bit of time to get used to its peculiarities.

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Appendix VIII

Proposal

Title : Pilot study of Whole Farm Approach (Kabupaten Maros)

Background

1. In the past the Agro Economics department of MORIF has made many studies of farmers. Most of these studies focussed on single crops or cropping systems. The only exceptions were the so-called baseline surveys, which were actually preliminary surveys in which cursory information was collected about an area and its farmers.

Such single-crop studies tend to produce distorted results because farmers always grow as part of a cropping system, and, indeed, as a part of a FARMING SYSTEM. Thus, when one studies one part of this farming system, only a part of the picture is available for analysis.

2. In the past, the Agro Economist department has used methods of measurement which were EXTENSIVE rather than INTENSIVE. For example, farmer recall is used for getting most information, including yields, amounts of inputs and labour requirements and use.

Extensive methods often produce misleading results, particularly in the case of labour use, which is difficult to remember for long periods.

3. The PATANAS (Panel Tani Nasional) programme, which is a national sample of farmers which will be monitored continuously, is presently operating in East Java, and will expand to include South Sulawesi during this year. This programme is still in its experimental stage, and is badly in need of an efficient data collection methodology. For example, it is intended to process the data using the FARMAP package of programmes, but as yet the forms being used are not suitable for easy tabulation by FARMAP.

Also, the specification of the environment of the farmers and his problems needs more work.

Research Problems

There is a need for a small study to investigate the following methodological problems :

1. How can a whole farm investigation be carried out ?

Many whole-farm investigations have been carried out in many parts of the world in the past. The problem here is merely to demonstrate how such a study is carried out.

Proposal

Page 2.-

2. How intensive should the methods of investigation be ?

Everyone will agree that the more intensive an investigation is, the more accurate are the data which are gotten, for the particular cases studied. In general, however, the more intensive the investigation, the longer the amount of time and effort which must be spent on studying one case. If we are to develop some methodology for the larger PATANAS investigation, we must know the relative accuracy of different methods of investigation and the amount of time and effort they require :

a. What is the comparative accuracy of more and less intensive methods ?

b. What is the comparative amount of time required ?

3. What forms would be most appropriate for less intensive and more intensive whole farm investigations ?

FAIMAP pre-coded forms will be devised for the various situations.

4. How can various types of analyses be made from whole farm data ?

This again is a matter of demonstration. In the past, the economics department has been fond of comparing revenues and costs for individual activities, and incremental revenues and costs of improved practices compared to farmers' practices (which they called B/C ratio), as well as regression analyses to determine the influence of various factors of production. All these, of course, can be done with data from a whole farm study. This will be demonstrated.

In addition, the value of budgets containing amounts and a detailed look at inputs and outputs can be shown. Sensitivity analysis will be demonstrated.

Analyses possible only with whole-farm data will also be done : relative merits of different farming systems can be compared. Sensitivity analysis using likely yields and prices can be made. Of great importance is the use of shadow prices reflecting the true value of inputs and outputs, given the large amount of subsidization.

Area of Study

In order to design a study which can answer the above research questions, it is best to choose an area near Maros, where intensive data collection can be carried out without extensive travelling being required. In the PATANAS programme, resident interviewers (enumerators) will be used, but in this study, the principal investigators will do much of the data collection themselves.

Area of Study (continued)

The sample Desa, chosen because it is near Maros, and because it also has a large variety of activities, is

Desa Baju Bodoa
Kecamatan Maros Baru
Kabupaten Maros

Method of sampling

A very small sample of 6 farmers will be chosen, in order to permit the use of intensive techniques of observation.

Since the purpose of the study is to develop methods for use in whole-farm studies the sample will be drawn purposively to include farmers with a large variety of activities. Other than this, we intend to include farmers managing large areas of land, farmers managing small areas of land, pure owner-operators, pure tenants and mixed owner-operator/tenants. People who own land, but merely live from the rents, will not be included.

What we will end up with, then, is a series of case-studies of farmers. While this will not be able to tell us anything about farmers in general, it will enable us to explore the ways in which information from whole-farm studies can be gotten and can be analysed.

Information to be gathered

The object of the study is not to produce information to test a particular hypothesis about the farmer's economic situation or to study one particular part of his farm. Instead, the object is to study all of his activities and to show how they relate to each other. For this reason, a wide range of information is needed :

1. Resource Base
 - a) Household
 - b) Land
 - c) Crops
 - d) Animals
 - e) Assets
 - f) Stocks of crops and inputs
 - g) Credit
2. Special Environmental Situation
 - a) Rainfall
 - b) Diseases
 - c) Marketing and prices
 - d) Other institutions
3. Resource utilization
 - a) inputs
 - b) outputs
 - c) Prices (of actual transactions)

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Methods of Gathering Information

A number of methods will be used gathering information, some of them extensive and some of them intensive. For every type of information, extensive and intensive methods will be used. These are shown schematically in the following table :

TYPE OF INFORMATION	METHOD OF GATHERING INFORMATION						Observation Direct Measurement
	Interview		Seasonal Visit	Monthly Visit	Weekly Visit	Daily Visit	
	1 st Visit Year	2 nd Visit Year					
<u>Resource Base</u>							
Household	x	x		x			
Land and Soils	x	x					x
Crops	x	x		x			x
Animals :							
Large (Kerbau, Sapi, Domba)	x	x		x			
Small (Ayam, Itik)	x	x		x		x	
Assets	x	x					
Stocks	x	x					x
Credit	x	x		x			
<u>Resource Utilization</u>							
Material inputs		x	x	x	x	x	x
Labour		x	x	x	x	x	x
Outputs		x	x	x	x	x	x
Prices		x	x	x	x	x	x
<u>Environment</u>							
Rainfall (secondary)							
Diseases		x	x	x			x
Marketing		x	x	x			x
Other institutions		x					

1. Resource base measurements

It is customary to make resource base measurements by making an initial visit and questioning the farmer at the beginning of the year. Other investigators prefer to question the farmer gradually, noting the changes that take place during the year, and making a thorough inventory at the end of the year. This is the method favoured by the designers of FARMAP.

It is also possible to introduce direct measurement into this second scheme. The area of land owned and rented, the area of crops planted, and the amount of stocks held are particularly important to measure. It sometimes is useful to count chickens and other small animals.

Resource base measurements (continued)

In the case of small animals, it is often necessary to ask about them weekly, as changes are not easily noticed after a few weeks.

In this study, we will ask at both frequent and infrequent intervals, to see what the comparison in accuracy is. We shall both measure and ask for farmer estimates.

2. Resource utilization measurements

These are also usually gathered by using questionnaires. There is much controversy about labour measurement in particular. Generally, it is agreed that more frequent interviews provide more accurate information, but at the cost of greater time spent.

In this study, five frequencies of questioning will be used :

- 1) At the end of the year (to simulate a single-visit survey)
- 2) At the end of each season.
- 3) At the end of each month (to simulate the twice-in-a-season strategy)
- 4) At the end of each week (the practical intensive survey). The farmers will be asked to keep informal records of their work.
- 5) Daily for a random selection of weeks and farmers. (to allow a comparison of the weekly records for the given weeks and the daily records for those weeks)

In addition, one type of observation will be used

- 6) Time-and-motion studies of important operations, showing both time spent and amount of work accomplished (on a per area or per animal basis if possible)

3. Environment

Questions about the environment are more difficult to handle. Often, they are appropriately asked for the whole locality rather than farm by farm. Rainfall must be measured over a long period to be useful, so it is usually gotten from secondary data, if available. Diseases, however, may strike some farmers' fields, but not others. Farmers may or may not be aware of the diseases in their fields.

3. Environment (continued)

Thus, they will be asked at the end of the year, at the end of the season, and at the end of each month. Their fields will also be visited for observation by pathologists, if possible. Marketing will be discussed with the farmers, including the general level of prices, and this will be compared with the prices observed in the market. Monthly information would be useful for this exercise. The observations in the market can be compared to farmers' perceptions and to prices actually received by farmers as reported in their resource utilization records.

4. Measurement of research time

For all these measurements, it is important that we also measure the time taken to get the measurements. Thus, all of the workers in the field, including supervisors, should make a careful record of the time they spend in the field, and the different activities they are doing. Forms should be made for such records.

Analysis of data

There are two basic answers which we wish to get analysis of this data :

1. What is the accuracy of each method of investigation, and what is its cost in terms of time?

For the purpose, simple t-tests could be used to compare mean values of various disaggregated and aggregated data to determine if a significance difference existed. Assuming the most intensive method to provide the most accurate data, the deviation from that accurate data can be compared to the time cost of various methods.

2. What kinds of analysis can be made from whole farm data?

In this case, we shall demonstrate as many types of useful techniques as we can, drawing on the data from the study.

Forms to be used

All forms will be designed to be tabulated by the FARMAP package of programmes to permit swifter analysis than is possible by hand tabulation. Since the same data will be gotten several times by different methods of measurements, these different measurements will be distinguished, probably by using different farm numbers. This, too, will allow more swift comparison of the different methods of measurement.

Appendix IX

To : AARP - GOI Project
From : Kevitt D. Brown
Subject : Trip to Bogor & Sukamandi
Date : May 2 - 7, 1983

Party : Suhaimi Sulaiman, Sara and Kevitt Brown

Itinerary :

<u>Date</u>	<u>Location</u>	<u>Purpose</u>
2/5	Travel Muara Station, Bogor	- Discuss Bogor rice breeding program
3/5	LP ₃ , Bogor Muara Station	Set up itinerary Station visit and discuss breeding
4/5	LP ₃ Travel to Sukamandi Station	Talk to Dr. Siwi and Cowan -
5/5	Sukamandi Travel to Bogor	Station visit and discuss breeding -
6/5	RMI office, Bogor	Discuss bookkeeping and acquisition plant breeding supplies for Banjar- baru with Dr. Bolton.
7/5	Travel	

Purpose :

This trip should help to improve communication and germplasm exchange between BALITTAN Banjarmasin and the Muara and Sukamandi stations and should improve the acquisition of materials for the new Banjarbaru station.

Muara Station, Bogor

Corn program : The corn breeding program uses all methods of breeding but relies upon selections made from 5 populations or pools :

white corn 80 - 100 days, yellow corn less than 80 days,

yellow corn 80 - 90 days, yellow corn 90 - 100 days,

and yellow corn more than 100 days.

We may request the pools of interest to KalSel or make selections within the lines now selected by Muara. They expressed interest in our proposal to send Hadiatmi for short training in corn breeding. They suggested four weeks beginning in August or later. We must send a formal letter later.

Seed storage : The electricity was off and one of two airconditioners were gone for repairs when we visited the cold storage room in Muara. When the system is working the temperature should be 16-18°C and the humidity 50%. Under these conditions using blue silica gel inside of glass jars, seeds can be maintained 3 to 4 years with good viability. They buy silica gel for 7000 rupiah/kg in Bogor. They never store seeds in tin cans and seldom in plastic jars and they seal the lids of glass jars with tape. Except for cam-por with the legume seeds no insecticide are used in seed storage to avoid killing the seeds. They would use fumigation except for the cost. Small seed quantities are kept under air conditioning alone. There are basically two seed storage record books. The Receiving book gives a number to new accessions, % germination, type and class of the entry and other information. The Accession book gives a new number to each line and records pertinent plant characteristics. Every 2 years all entries are rejuvenated in the field. Jars holding the entries are numbered and the accession book also has this number. 50-60 grams of each line are kept in storage. We asked Mr. Sutjipto who is in charge of seed storage to send us a list of all Kalimantan rice accessions and their characteristics but we will need to follow up with a formal letter.

Grain quality laboratory : This is a fairly well equipped lab but understaffed. We can send our samples for analysis there but the data will be slow in returning. The cooking quality test is quite simple and requires on ordinary stove and pot with divisions for each sample. They conduct amylose content tests, alkali tests, and gel consistency tests also. Some instruments are duplicated because they are essential and there are frequent breakdowns.

Submergence tolerance tests : Muara station routinely tests for submergence tolerance in tank and in the field. The tank is a concrete box measuring 2 x 3 meters and 2 meters depth and is covered by black plastic with six, 40 watt light bulbs suspended inside. Entries are direct seeded in flat wooden boxes filled with unfertilized lowland soils. Each box contains 7 lines for testing and FR13A as resistant check commonly receives a score of

(1-2) and Dangku a local variety from South Sumatra is the susceptible check and receives scores of (7-9). Water temperatures are not standardized but average 27°C. The water depth of testing is 50 cm. Ten days after seeding plants are placed in the filled water tank. Nine days later trays are removed to dry. After seven days plants are scored from 1 to 9. Each entry is replicated 2 or 3 times and a new batch can be run every month.

The field test takes 2 months to run one batch and is replicated twice. There is only one set of checks in each rep and the susceptible check is somewhat weak so may not be adequate for our purposes. Fertilizers are not added to this experiment which is conducted in a 25 x 25 meter area. Plots are 2 meter paired rows. Thirty day old seedlings are transplanted and water is added to a depth of 50 cm nine days after transplanting. The water is maintained for 9 more days then drained. Seven days later lines are scored in the field for % survival and vigor. The correlation between the field and tank is good we were told. We should send our set of native germplasm to be tested for submergence tolerance by both methods and any future breeding lines from crosses arising from our program. Possible cooperative experiments between Banjarmasin and Muara may include correlating standard tests in Muara with field screening in Handil Manarap and Banjarmasin.

Rice blast screening : Muara station uses the IRRI method of screening for seedling blast with Sigadis as the susceptible check sown along the borders of seedling rows and Asahan and Tetep are resistant checks every ten rows. The borders are sown 2 weeks before and inoculated with spore suspensions. Plots are fertilized with 40 tons manure/ha and 180 kg N/ha. The test field is sprayed twice with water to enhance distribution of blast spores. Muara also tests for the 8 major blast races in Indonesia in small (1 x 2 meter) cages covered with plastic sheet. We should contact Dr. Machmud to inquire about cooperative research to use testers to identify the KalSel blast races.

Breeder's seed field : Muara purifies its seed by harvesting individual hills and planting the progeny in a single row. Spacing in the field is 40 x 50 cm. Further purification can be made between and within rows.

Muara rice breeding program : There are 1 PhD, 2 MSc, and 5 Ir degree holders in the Muara rice breeding program under Dr. Z. Harahap. Mr. Suhito talked to us together with Ms. Tintin who is in charge of tidal swamp and deepwater breeding. They breed for deepwater up to 1 meter. Their materials

are tested in Banjarmasin and S. Sumatra because there are no suitable areas near Muara. The breeding program of Muara produces 13 - 25 crosses / year for tidal and deepwater rice. They use the modified bulk method (since 1976) with bulks in the F₂ - F₆, head rows in the F₇, one meter paired rows in the F₈, 1 x 5 meter OYT in the F₉, preliminary yield trial in the F₁₀, and a replicated yield trial in later generations.

The criteria for selection of tidal swamp materials in Muara are height - moderate (Pelita type) in the F₂ - F₇; maturity - 110 to 130 days; submergence tolerance - good in tank tests after F₆; routine tests include BLB, BPH, and blast resistance, and amylose tests. We asked for a list of all previous Bogor crosses but will need to follow this up with a formal letter.

Cooperation between Banjarmasin and Muara breeding programs :

- 1) In the future all breeding materials for November planting in Banjarmasin will be sent by Muara in August.
- 2) They will send us 139 promising swamp rices in August. Seven of these are advanced and the rest are newly tested.
- 3) In the future they want us to send up to 20 kg of seed of promising breeding lines which we may be considering for varietal release so they may increase the seed in anticipation of multilocation testing. We promised seed of the best B2791 line after one year more testing.
- 4) Materials with good submergence tolerance in Muara will be sent to KalSel and part for seed increase incase test fail here.
- 5) We requested one or more sites in S. Sumatra for testing our advanced yield trials including Mandil Manarap, Belandean and Banjarmasin.
- 6) Muara prefers not to make selections for photoperiod sensitive lines so these selections in all generations will be made here.
- 7) We agreed to exchange full information and data on each line we receive from each other in the future .
- 8) We can request crosses to be made for us in Muara.
- 9) If we want to have to Muara breeder(s) come to visit our joint materials the budget will have to be provided by Banjarmasin
- 10) In the future Muara will send a list of crosses for tidal swamp, deepwater, and upland rice they have made and we can request seed of the F₂ of those we choose to grow and make selections in the field here.
- 11) If we have lines of special interest to us we must send 100-200 gms for testing for routine disease and insect screening. One kg of seed is needed if the complete test including eating quality is desired. The tests which Muara can run routinely include for advanced lines : BPH, GLH, Blast, Gall midge, amylose content, eating quality, bacterial leaf streak, submergence tolerance, gel consistancy; and for all stages : BLB.

Varietal consideration of B1050-Mr-18-2 : The last day of our visit to Bogor the variety committee including Dr. Harahap and Siwi met in Parankuda

to discuss nominations to the seed board for all crops. A copy of the report about Bl050 was given to the necessary persons. We did not see Dr. Harahap but wrote a letter asking him to represent our interests and spoke with Dr. Siwi. We emphasized the need for a short season tidal swamp released variety and mentioned our support of this particular line. We do not yet know the outcome of the May 7 meeting.

Sukamandi Station

Facilities : The head of Sukamandi station is Dr. Hairuddin but he and several staff members were out of town. Dr. Bambang was our chief contact. The drive to Sukamandi required four hours. The station itself is quite large (450 ha) and modern. Construction began in 1972 and a few simple experiments and the facility was inaugurated in 1982. The money for construction was in part provided by the World Bank and experts from IRRI were used there for the first four years. The station has 7 PhD (3 in plant breeding) and two more are expected soon. Presently the station is understaffed and probably not operating at full efficiency. Sukamandi has the national mandate for crop research for fully irrigated areas plus a geographical mandate for Central Java which includes some rainfed, cold tolerance, upland, medium deep, and hybrid rice research as well as hybrid corn, and secondary upland crop research. There are 200 permanent workers, 90 monthly paid workers, and 500 laborers employed at the station. Laborers are paid 1000 rupiah per day. Sukamandi station also includes 4 research substations in Central Java.

The station has 11 guest houses, but these are used for housing trainees from Bogor occasionally. There are also numerous houses built in a western style with western furnishings. Many if not most are vacant. The station is not located near a town or market so many residents complain of the inconvenience. Few residents have cars but they are becoming available to the senior staff. The energy for the station is supplied by five 400 hp diesel generators which are run consecutively. The total output is 350,000 volts and they consume 60-70 liters of fuel per hour for a cost of 200 million rupiah per year. Presently the staff are being asked to conserve on energy consumption. The generator building is about 100 meters from an office building. The noise level in the Banjarbaru station could be reduced if the generators could be moved further away.

Laboratories : The chemistry laboratory was very well set up and seems to be operating efficiently. 50 samples / day can be run for amylose content, gel consistency, water uptake ratio, stickness, and eating quality. We asked

the lab to send us a complete list of their equipment. We will follow this up with a formal letter. The laboratory also is in charge of the plant breeding seed lab which is in another part of the building and has a large 0°C walk-in cold storage unit for reagents and bulk seed storage. There are 3 MSc, 1 BS, 1 Ir, and 4 high school graduates working in the chemistry lab.

The agronomy lab is not yet well organized and is poorly staffed. All analyses are currently run in Bogor. Although much of the necessary equipment is on hand to do soil and plant analyses none are being conducted except what can easily be taught to laborers. They explained that there was no agronomy expert to help set up this lab and the Indonesian agronomists on the staff now are more field oriented and do not have time to supervise in the lab. Banjarbaru could have similar problems if trained staff and technicians are not available to use the sophisticated laboratory equipment. The staff in agronomy in Sukamandi include 20 technicians and 15 high school graduates.

Seed storage : Sukamandi has a very good seed storage facility but even now may be too small. We must ensure that the storage areas are more than adequate for all future needs. The long term storage room is -10°C and 30 to 40% humidity. Silica gel is used in glass jars in this room. The floor space is about 20 square meters. The normal storage room is 5 x 7 meters. Temperatures are kept at 23°C and 60% relative humidity and silica gel is not used in this room. There are two air conditioners but I suspect 3 or more would be preferable considering breakdowns. Insecticides are not added to the seed but Sevin is added by hand sprayers occasionally. Mrs Tuti is in charge of seed storage and there are 6 permanent laborers.

When a new accession is received in Sukamandi, it is grown out in the field and data are taken on its characters. The seed increase fields are close to the storage facility. Then the entries are given numbers and stored. 200 gms of peanut, 100 gms of mungbean, and 100-150 gms of rice are stored for each accession. A sample of this seed is tested for germination each year and multiplied if it falls below a certain level. There are several seed storage record books. Data in these books include : Sukamandi storage number, Muara storage number, pedigree, source, time received, amount of seed still available, etc. We asked if we could store our native germplasm in Sukamandi but they preferred we use Muara facilities because of the more direct linkage between our station and Muara.

Facilities : There are numerous greenhouses in Sukamandi but only the pest and disease facility was operational. The other greenhouses were poorly constructed without ventilation so that temperatures during the day rise to 40°C.

Local design for the facilities at Banjarbaru are essential since Western designs are usually for temperate climates. Besides the laboratory size drying ovens at Sukamandi there were a few large forced air driers run by electricity but heated by kerosine. These were acquired from Kaunlaran Industries in Calamba, Philippines might be constructed locally. The ingoing heat is 40°C and can be thermostatically controlled and moisture readings can be taken regularly.

Cooperation between Banjarmasin and Sukamandi :

- 1) It is best to send seed first to Bogor rather than make direct connections because of poor parcel service
- 2) Sukamandi crop schedule is sowing in November and in May
- 3) They promised to send seed of a new upland variety they released which has resistance to the 8 major blast races in Indonesia. We need to follow up with a letter.
- 4) We can obtain Sukamandi advanced lines for upland rice, soybean, peanut and mungbean.

Appendix X

To : Dr. William L. Collier
RMI / AARP Project Director

From : Kevitt Brown
Rice Breeder, Banjarmasin

Subject : Monthly Report for May 1983

Date : 31 May 1983

As a result of the drought in Kalimantan in February through April, many of the dry season plant breeding field trials have been postponed. This has provided more time than usual in the project to plan for improvements in the program ahead.

The first week of May my counterpart and I travelled to Bogor and Sukamandi to visit the research stations there to discuss areas of cooperation and to gather ideas for the breeding program in the next year when BARIF moves to Banjarbaru. (See trip report). The following week I had a vacation including two days vacation leave.

Part of this month has also been spent in establishing in-house policies concerning employees and vehicles. The absence of a head of party and the time spent without clearly stating policies has caused some minor confusion which we hope is now clarified. Most of my duties as bookkeeper were turned over to our administrative assistant this month with satisfactory results.

Research proposals for the World Bank Swamps II program were discussed and written. Also I attended a deepwater rice seminar conducted between BARIF and BAPPEDA. Dr. Anwarhan proposed that a 1000 ha area near Sungai Buluh be used for extension of the most promising deepwater lines, beginning within the next two years. While our confidence in these lines is still low, from the perspective of the plant breeder, I agree with this proposal because of a need to move ahead in the deepwater program. We will continue to expand testing of deepwater materials and increase seed of the best lines to meet the objective.

We soon expect to receive silica gel for maintaining the germination of seeds in storage. The whole system of seed storage and handling will be reviewed next month to develop an efficient system. Other aspects of the breeding program continue to be discussed and planned. A particular

concern is the centralization of plant breeding research responsibility to the department head. There are few plant breeders at BARIF and many plant breeding experiments so that in the past technicians from other disciplines have taken responsibility. This dry season will be the first time that technicians will be overseen by a plant breeder and central records will be kept for all plant breeding experiments. This should improve research by improving the training and communication within BARIF and raise the confidence in our experimental results.

Appendix XI

To : Dr. William L. Collier
RMI / AARP Project Director

From : Greta A. Watson
RMI / AARP Consultant in Agroecconomics / Social Science,
Banjarmasin

Subject : Monthly Report for May 1983

Date : 31 May 1983

I. Synopsis : The major activity this month focussed on pre-tidal swamp workshop surveys carried out by the BALITTAN team and myself. I gave a total of three seminars on 1) agroecosystem theory and methods, 2) research methodology for the tidal swamp survey, and 3) construction of graphs and maps.

The first part of the survey has been completed. This included the compilation of historical and present-day social and environmental data on each village, using group farmer and individual interviews. Both male and female farmers were questioned. Team members have begun to recognize the value of an multi/interdisciplinary approach to farming systems research.

Members of the AARP RI-USAID Central Committee visited from Jakarta to discuss the upcoming tidal swamp agriculture workshop and possible funding for the World Bank sponsored SWAMPS II proposal.

II. Activities

A. Consultations with Visitors.

* Jakarta-based AARP RI-USAID team :

Dr. Ibrahim Manwan, Dr. William Collier,
Dr. Soewardjo,

9 May 1983

B. Field Trips

- * 1. Survey Ia in Purwosari I, Purwosari Baru, Tamban Raya, South Kalimantan, 14-16 May 1983
- * 2. Survey Ib in Tamban Lupak and Lupak Dalam, Central Kalimantan, 21-23 May 1983
- 3. Survey IIa in Purwosari I, Purwosari Baru, and Tamban Raya, South Kalimantan, 28-31 May 1983

C. AARP - BALITTAN Activities

- * 1. Gave seminar to the Tidal Swamp Survey team, 3 May 1983
in the Indonesian language on Analysis of Farming Systems in Tidal Areas : An Agroecosystem Model ("Analisa Pertanian di Daerah Pasang Surut : Model 'Agroecosystem'"),
- * 2. Gave seminar to the Tidal Swamp Survey Team, in Indonesian, on Research and Methodology for Workshop Presurvey on Tidal Areas ("Penelitian dan Metode-Methode Yang Akan Dipakai Dalam Praesurvei Daerah Pasang Surut")
3. Organized Tidal Swamp Research Team : coordinated activities, reviewed and modified survey I questionnaires, implemented introductions and contacts between farmers and team members interviewed village heads, provided some field equipment.
4. Helped modify and reorganize survey budget.
5. Consulted with BALITTAN staff and outlined basics of social and economic studies for SWAMPS II research project.
6. Drew up scale maps of Purwosari I, Purwosari Baru, and Tamban Raya villages, South Kalimantan for use in part II of the Tidal Swamp Survey.

D. Miscellaneous Activities

1. Office supplies : RMI acquired a bookcase cum storage cabinet, and type writer table.
2. Wrote in-house personnel policy sheet with Kevitt Brown
3. Inquired at and assessed the Hotel Fabiola in Banjarmasin. Facilities and amenities at the hotel may make it a desirable location for the Tidal Swamp Workshop.

E. Constraints

1. The pre-workshop survey was designed, organized, and implemented

* See report as seminar paper included with monthly report.

in less than a month. Although the time allotted allowed for adequate training of team member and construction of survey questionnaires, such time limits were not optimum. Flaws in survey research methods have been minor, but do occur.

2. Some of the village which have been surveyed do not maintain comprehensive records. Except in one instance there were no 'to scale' maps in villages. Both of these constraints have necessitated drawn out interviewing to obtain the data.
3. There have been minor problems obtaining funding for the survey. RMI, Jakarta and GOI institutions have graciously provided short term loans to alleviate this.

F. Comments

1. Ir. H. Rumansyah, my agro-economist counterpart at the BALITTAN, has been an invaluable source of information and aid in tidal swamp survey coordination. His wide-ranging field and institutional experience, enthusiasm and ability to inspire younger team members, and ease in communicating with farmers is gratifying to observe. Within the next few months Mr. Rumansyah will become head of the East Kalimantan Farm Research Unit of the BALITTAN. It is hoped that he will be able to continue to participate as a part-time consultant for continuing coastal swamp research projects.
2. The SWAMPS II research proposal is broad-ranging. Although not specifically stated in the proposal, women farmers constitute a large proportion of village populations. They actively contribute to rice, vegetable and tree cropping, often in a greater capacity than men. Their knowledge and practice of farming and marketing crops should be actively pursued. Finalized survey organization most specifically include the role of women in agriculture and its potential for technological improvement.
3. Mr. Siddik has taken charge of accounting and supplies and our office organization has improved considerably.

F. Plans for June 1983

1. Finish in-field survey work.
2. Organize survey field reports from various disciplines.
Write general introduction to these reports and submit them, in Indonesian to the AARP RI-GOI project heads.
3. Initiate the collection of bibliographic sources concerning all aspects of tidal swamp environment and potential for development. References would primarily be in English and Indonesian.
4. Visit Jakarta-Bogor for coordination and planning of the Tidal Swamp workshop, 16 - 23 July 1983.
5. Presentation of seminar on soil problems in coastal swamp areas. This seminar paper will be the nucleus for a paper on the self same topic at the workshop.

Appendix XII

LIST OF AALP/RUE PARTICIPANTS AS OF MAY 31, 1983

NO.	NAME	EMPLOYING OFFICE	COURSE/OBJECTIVES	INSTITUTIONS/COUNTRY	DURATION
<u>DEPARTURE:</u>					
1.	Purwito Martesubroto	RIMF/Jakarta	R&D Management Consultancy Workshop	Denver Res.Inst. Denver, Colorado, USA	May 23-July 01, 1983
<u>CONTINUING IN TRAINING:</u>					
2.	Ati Sri Driat	LERIH/Lembang	Elisa Technique	American Type Culture Center in Rockville Maryland, USA	Feb.20-June 9, 1983
3.	Novenny A.Wahyudi	RIIF/Bogor	Aquaculture Trg.Prog.	Auburn University Alabama, USA	Mar.18-July 15, 1983
<u>RETURNEES:</u>					
4.	Nani Sumarni	LERIH/Lembang	Interdisciplinary re- search in Plant Breed- ing	Asian Vegetable Res.& Dev. Center, Taiwan	Nov.07-May.07, 1983
5.	Etti Purwati	-do-	-do-	-do-	-do-
6.	Yoyo Sulyo	-do-	-do-	-do-	Nov.07-May 21, 1983
7.	R.E.Suniatmadja	-do-	-do-	-do-	Nov.07-May.07, 1983
8.	Kosasi Kadir	FPRI/Bogor	Woodworking & drying & research proj.plan- ning & evaluation	Forest Products R&D Inst. Los Banos, Philippines	Mar.7-April 7, 1983
9.	Mas Ismunadji	BORIF/Bogor	Spec.Trng.in upland crops physiology	Asian Vegetable Res.& Dev. Center, Taiwan	Nov.11-Dec.01, 1983
10.	Mochamad 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, 1982
11.	Syafril Lansayun	CARP/Jakarta	Procurement Training	TransCentury Corp.USA	Oct.15-Nov.14, 1982
12.	A.M. Laponangi	MORIF/Maros	-do-	-do-	-do-
13.	Abdussamad Syahrani	BAPIF/Banjarmasin	-do-	-do-	-do-
14.	Warsito Hutomo	C A Q/Jakarta	Agric.Proj.Planning & Analysis, Section II	USDA, Washington, DC	Sept.7-Nov.11, 1982

No.	NAME	EMPLOYING OFFICE	COURSE/OBJECTIVES	INSTITUTIONS/COUNTRY	DURATION
15.	Mohamad Mansur	CRIIC/Bogor	Agric.Proj.Planning & Analysis Section II	USDA,Washington,DC	Sep.7-Nov.11,1982
16.	Hafni Zahara Syukri	CARP/Jakarta	-do-	-do-	-do-
17.	Wahyadi Sosrowardoyo	CRIFI/Jakarta	Applic.and Diffusion of Agric.Research Results to the Community Level	Iowa State Univ.USA	Aug.25-Oct.1,1982
18.	Sofyan Ilyas	RIFT/ Jakarta	Determination & Prevention of Postharvest Food Losses	Cornell Univ. USA	Sept.6-Oct.13,1982
19.	Achmad Hidayat	C A Q/Jakarta	Plant Quarantine	USDA,Washington,DC.	July 19-Sep.17,1982
20.	Dewa M. Tantera	BORIF/Bogor	Integrated Pest.Mgmt.	Purdue Univ. USA	June 9-Jul.23,1982
21.	Sudiarto	CRIIC/Bogor	Agric.Research Method	Kansas State Univ.USA	May 31-Jul.23,1982
22.	Lalu Suharno	BORIF/Bogor	-do-	-do-	-do-
23.	Siti Sufiani	MORIF/Maros	-do-	-do-	-do-
24.	M. Saleh Pandang	MORIF/Maros	-do-	-do-	-do-
25.	Wafiah Akib	MORIF/Maros	-do-	-do-	-do-
26.	Tambak Manurung	CIRIAS/Bogor	-do-	-do-	-do-
27.	Didi Suardi	CRIFC/Bogor	-do-	-do-	-do-
28.	Yono C. Rahardjo	CRIAS/Bogor	-do-	-do-	-do-
29.	Buhoyo Sukotjo	Prog.and Proj.Form. Unit.Jakarta	Agric. Research Management	Washington,DC and Hawaii, USA	June 6-12, 1982 June 18-21,1982
30.	Tambunan SM Manungkol	BORIF/Bogor	Estab.Data Bases&Analit.Syst.for Econ.Decision making in Agric.	University of New Mexico	June 6-Aug.13,1982
31.	Rachmat Kartapradja	LERIF/Lembang	Veg.Crop.Prod. & Markt.	Rutgers Univ.USA	July 12-Aug.20,1982
32.	Artaty Wijono	CRIFI/Jakarta	Ag.Comm.&Med.Strategy	Iowa State Univ.USA	July 12-Aug.20,1982
33.	Abisono	TARII/Tg.Karang	-do-	-do-	-do-
34.	Adi Widjono	CRIFC/Bogor	-do-	-do-	-do-
35.	T.H.Mangunsong	Reg.Ag.Quarant/Jkt	-do-	-do-	-do-

No.	NAME	EMPLOYING OFFICE	COURSE/OBJECTIVES	INSTITUTIONS/COUNTRY	DURATION
36.	Fathan Muhadjir	BORIFC/Bogor	Wheat & Maize Phys.	CIMMYT, Mexico City	July 20-Aug.25, 1982
37.	Nurlaila Hasbullah	BARIF/Banjarmasin	Rice Production	IRRI, Philippines	July 1-Aug.27, 1982
38.	Nurul Aida	BARIF/Banjarmasin	-do-	-do-	-do-
39.	Achmad Dimiyati	BORIF/Bogor	Tech. & Econ. aspects of Soybean Production	Univ. Illinois, USA	May 10-Aug.6, 1982
<u>TRAINING OUTSIDE RMI CONTRACT:</u>					
40.	Achmad Sarnita	RIIF/Bogor	Study Milkfish Cultiv. Methods	SEAFDEC/Philippines Institute of Marine Biology and Gulf Coastal Fisheries Center/USA	5 July-Aug.15, 1981
41.	H a n i a h	-do-	-do-	-do-	-do-
42.	Suningrat	NLAS/Bogor	Regional Micrographic T. Course	SEARCA/Philippines	Jan.10-23, 1982
43.	Sumardi Dahlan	-do-	-do-	-do-	-do-
44.	Azis Arifin	LERIF/Lembang	The Decinal Long of Cip. Peru Comperative Study for Tuber Crops Research Comparative for wheat Research	CIAT/Columbia CIMMYT/Mexico	Feb.22-26, 1982 Feb.29-March 1, 1982 March 3-4, 1982
45.	Surhahmat Kusumo	CRIFC/ Bogor	-do-	-do-	-do-
46.	Sundaru	BORIF/ Bogor	Management Agric. Organ	USDA/ USA	May 17-Jul.9, 1982

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Appendix XIII

INTER-OFFICE CORRESPONDENCE

TO : AARP/RMI Experts
FROM : William L. Collier *Bill*
SUBJECT : Monthly and Quarterly Reports

DATE : June 7, '83

REF. :

As you are aware, our reporting each month on our activities is becoming a major task. Since we are actually doing more than is required for the monthly report, Carl Fritz has developed guidelines that should make it easier to report each month. Please read the instructions carefully and send in the necessary reports on time.

AARP/RMI PROCEDURES GUIDANCE NO.6

MONTHLY, QUARTERLY AND NARRATIVE REPORTS

June 6, 1983

1. INTRODUCTION

1.1 The purpose of this instruction is to simplify the management of AARP/RMI reporting and to enable us to fulfill contractual obligations with quality reports issued in a timely manner.

1.2 The AARP/RMI contract carries the following reporting provisions:

A. Monthly Narrative Reports

The Consultant shall submit brief monthly narrative reports, with exhibits as appropriate, which shall include (but need not be limited to) the following, to the extent that such items are applicable to each reporting period.

1. Personnel arrivals, departures, and end of month strength.
2. Major conferences, submissions, approvals, decisions and events.
3. Major problem areas, current or foreseen, together with recommendation for their solution, and monthly reports will be due as of the 10th working day of each calendar month following the calendar month reported.

B. The Consultant shall prepare brief quarterly reports. Each third monthly report will be combined into a quarterly Report.

1.3 The contract also provides for annual and other reports.

1.4 It is obvious that reporting has gotten beyond our ability to manage properly because we have tried to do more than was required. As seen from the above excerpt of the AARP/RMI contract, there is no reason to describe the activities of each team member each month as we have been doing. This guidance is intended to simplify the reporting task for all of us and to give us some additional time to carry out our work.

2. MONTHLY REPORTING

2.1 Individual team members need not prepare a monthly report, only quarterly reports as discussed in 3. below

2.2 The format of the monthly report will cover an Introduction, Personnel, Training, Construction, Equipment and Other Significant Items.

AARP/RMI PROCEDURES GUIDANCE NO.6

MONTHLY, QUARTERLY AND NARRATIVE REPORTS

June 6, 1983

1. INTRODUCTION

1.1 The purpose of this instruction is to simplify the management of AARP/RMI reporting and to enable us to fulfill contractual obligations with quality reports issued in a timely manner.

1.2 The AARP/RMI contract carries the following reporting provisions:

A. Monthly Narrative Reports

The Consultant shall submit brief monthly narrative reports, with exhibits as appropriate, which shall include (but need not be limited to) the following, to the extent that such items are applicable to each reporting period.

1. Personnel arrivals, departures, and end of month strength.
2. Major conferences, submissions, approvals, decisions and events.
3. Major problem areas, current or foreseen, together with recommendation for their solution, and monthly reports will be due as of the 10th working day of each calendar month following the calendar month reported.

B. The Consultant shall prepare brief quarterly reports. Each third monthly report will be combined into a quarterly Report.

1.3 The contract also provides for annual and other reports.

1.4 It is obvious that reporting has gotten beyond our ability to manage properly because we have tried to do more than was required. As seen from the above excerpt of the AARP/RMI contract, there is no reason to describe the activities of each team member each month as we have been doing. This guidance is intended to simplify the reporting task for all of us and to give us some additional time to carry out our work.

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2.2 The format of the monthly report will cover an Introduction, Personnel, Training, Construction, Equipment and Other Significant Items.

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- 2.3 One person at each AARP/RMI location will be responsible for preparing a summary report covering the above items as they effect the role of team members at that location. The following persons will have that responsibility:

Jakarta/Bogor

Carl Fritz, Reporting Officer, with William Collier as alternate. These persons will also be responsible for amalgamating all location reports into a single cohesive report. Mr. Harwood will be responsible for inputs regarding events in his area of responsibility.

Maros

Frits von Fleckenstein, Reporting Officer, with Anwar Rizvi as alternate.

Banjarmasin

Kevitt Brown, Reporting Officer, with Greta Watson as alternate.

- 2.4 Reporting Officer will prepare a monthly report covering their geographic area and send it kilat khusus to Mr. Fritz in Jakarta by the second working day following the reporting period. For most such reports there will be no need to exceed one page in length.

3. Quarterly Reporting

- 3.1 Quarterly reports will be issued every third month, i.e., to cover the quarters ending in April, June, September and December. Each quarterly report will incorporate a summarization of material produced in the previous two monthly reports. William Collier will be responsible for preparing this quarterly report.
- 3.2 By the last day of the quarter, all personnel should submit a Quarterly Activity Report generally not exceeding two pages in length which covers past activities of significance, accomplishments, problems and proposed solutions, and plans for the following quarter. The specialist may append important papers and reports produced during the reporting period. Such reports should be submitted to the Reporting Officer named in 2.3 above as responsible for the relevant geographic area. A trip report should be prepared for each trip made by the specialist.
- 3.3 Each Reporting Officer will prepare a two page "Quarterly Activity Report for the AARP/RMI Specialist Team Located at _____". This report will include a section on matters covering the project or team as whole and a one paragraph summary of each individual activity report submitted.
- 3.4 Quarterly reporting documents will be clearly marked in the top center of the first page as follows:

- Appendix I - Quarterly Activity Report for the AARP/RMI Specialist Team Located at Jakarta/Bogor.
- Appendix I.A - Quarterly Activity Report by William L. Collier, Chief of Party (attached papers and reports should be marked Appendix I.A.1., I.A.2., I.A.3. etc.)
- Appendix I.B - Quarterly Activity Report by Carl R. Fritz, Administrative Specialist. (I.B.1. etc.)
- Appendix I.C - Quarterly Activity Report (QAR) by Roland E. Harwood, Research Station Development Specialist. (I.C.1. etc.)
- Appendix I.D - QAR by Diane Barrett
- Appendix I.E - QAR by Jerry L. McIntosh, IRRI Farming Systems Specialist.
- Appendix I.F - QAR by Chhorn Liem, Fish Nutritionist.

- Appendix II - Quarterly Activity Report for the AARP/RMI Specialist Team Located at Maros.
- Appendix II.A - QAR by Fritz von Fleckenstein, Agricultural Economist.
- Appendix II.B - QAR by Igmidio T. Corpuz, Soil Scientist.
- Appendix II.C - QAR by Anwar Rizvi, Plant Protection Specialist.

- Appendix III - Quarterly Activity Report for the AARP/RMI Specialist Team Located at Banjarmasin.
- Appendix III.A - QAR by Kevitt Brown, Deep Water Rice Breeder
- Appendix III.B - QAR by Greta Watson, Social Scientist/Agricultural Economist.
- Appendix III.C - QAR by Bernardo Gabriel.
- Appendix III.D - QAR by Sara Brown (optional).

3.5 Reporting Officers should send these reports kilat khusus to Carl R. Fritz no later than the fourth working day following the reporting period. He will draft a report covering general project matters, and references to the attached appendices, and submit the package to Dr. Collier for final editing.

4. Other Reports

- 4.1 This instruction covers regular periodical reports to the Government of Indonesia and is not intended to prevent any specialist from reporting directly to the Chief of Party on matter he considered deserving of such reports.

Issued by William L. Collier
Chief of Party

Copies : All AARP/RMI Long Term Specialists
All AARP/RMI Locations
Roy Saunders

Appendix XIV

Monthly Report - May 1983

Anwar H. Rizvi - MORIF

I. Activities :

1. Continued efforts to acquire a collection of various kinds of training materials at MORIF. Work was initiated to type reference cards on individual research papers, thesis etc. being published/reported by IRRI on rice tungro virus (RTV) and its vector green leafhopper (GLH). Also, selected training modules and publications on rice pests and diseases ordered from IRRI were received for use in future training activities and seminars at MORIF.
2. In response to my request, I received photocopies of Description of important rice viruses (7) and peanut viruses (3) from Dr. Luis Salazar, Virologist of the International Potato Center (CIP). I made more copies of these virus descriptions and provided one set to Ir. Hasanuddin, Head of Plant Pathologist Department at MORIF. Another set was donated to MORIF library for use as general reference by the other interested MORIF staff and students in their research programs.
3. Discussions were held with Ir. Hasanuddin regarding :
 - a) sending of Mr. Samuel Pakan, a new staff of Pathology Department, for training at BORIF to learn how to purify RTV and peanut mottle virus (PMV) and prepare their antisera,
 - b) plans/methodology for the next RTV nursery experiment during the first semester of 1983-84 research programs at MORIF,
 - c) training of laboratory assistant, Miss Zubeda to catalogue properly the chemicals and equipments presently available in Pathology Department and
 - d) continued assistance to Pathology staff in the preparation of individual seminars on their respective research.

Later, I also discussed with Dr. Farid Bahar, Director of MORIF, regarding the virology training of Mr. Samuel at BORIF. Ir. Hasanuddin during his next trip to Bogor for English language training will discuss suitable time and duration for the above-mentioned training with the Director and Head of Plant Pathology Department of BORIF.

4. Attended four seminars given in a series at Maros on every Saturday starting May 07, 1983. During these seminars various departments at Maros were asked to present the results of their research activities being completed during the second semester of 1982-83. I assisted the Head and staff of Plant Pathology Department in organizing their seminars particularly about the research conducted on RTV at Lanrang sub-station of MORIF. Also attended a special one day seminar on Luwu Project held at Maros.

(Cont.....p.2)

5. Assisted Ir. Yulianto of Pathology Department in the preparation of improved experimental designs regarding his research work on peanut mottle virus (PMV) both for the greenhouse and field tests. As the first step in peanut virus research at MORIF, a greenhouse mass screening method was suggested using spraygun inoculation (PMV) method at 30 pound per square inch pressure on 7-10 days old seedlings of peanut to select peanut breeding lines with resistance to PMV.
6. In a cooperative effort with Ir. Syaharuddin of Pathology Department further tests were conducted to evaluate the efficiency of rice blast spray-bottle-inoculation technique (Rizvi's March'83 report). Satisfactory results were continuously obtained in greenhouse tests, however, certain modifications need to be made in the inoculum preparation procedures before the technique could effectively be used under field situation.
7. Assisted Ir. Syaharuddin to test the performance of sorghum as medium for culturing the rice blast inoculum in large quantities to use in our blast screening program. Germination of sorghum seed made it difficult to culture blast. We need more information on this method from IRRI before we can use it at MORIF.
8. Accompanied Ir. Shagir Sama, Head of Entomology Department at MORIF, to discuss Entomology experiments in the greenhouse and field at Maros regarding varietal reaction against brown planthopper (BPH) and effect of planting dates on the incidence of RTV among various breeding lines/varieties. We will cooperate with each other at various stages of these experiments and I will assist him in writing results reports in English.
9. Assisted Ir. Yulianto to know about citrus diseases and gave him necessary reading material on the topic. He needed this information to prepare a seminar regarding his research on citrus diseases in South Sulawesi.
10. A training session was held with Mr. Samuel on the following topics :
 - a) Form and Structure of plant viruses.
 - b) Review of literature on the efforts of chemical control of plant viruses.After the session, I gave him some reading materials on the above topics to continue our discussions further.
11. On the request of Dr. Farid Bahar, I gave a seminar concerning the procedures being followed to run the motor pool at the International Potato Center (CIP), Lima-Peru. The seminar was attended by Dr. Farid Bahar, Ir. Shagir Sama and Mr. A.M. Laponangi, secretary of MORIF. The purpose of this seminar was to see if MORIF can use some of these

procedures to improve the efficiency of its motor pool. Designs of different forms required for various operations/activities necessary to run a motor pool effectively were also discussed. In conclusion, adaptation of certain procedures with some modifications can result in the improvement of motor pool system at MORIF.

Plans for June :

1. Continue assisting Pathology/Entomology staff in organizing their research programs and seminars.
2. Prepare and conduct my own once a month, if possible, seminar series on special topics in plant pathology.
3. Organise training activities for Pathology staff on topics of mutual interest.
4. Urge and help Pathology staff to write up their research findings in a form suitable to publish in scientific journals of Bahasa Indonesia and English.
5. Finalize plans for the next Lanrang RTV nursery experiment regarding planting dates, materials needed etc. using a field screening design proposed by me and approved by the Head of Pathology Department. Necessary arrangements will be made to make sure that all needed materials should be available in the required quantities and at the right time.
6. Provide necessary aid to the laboratory assistant in the preparation of inventory index cards for chemicals and equipments present in the Pathology Department.

Dr. Anwar H. Rizvi
Plant Pathologist/MORIF.