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AGENCY FOR
AGRICULTURAL RESEARCH AND DEVELOPMENT

FOURTH QUARTERLY NARRATIVE REPORT
ON THE
APPLIED AGRICULTURAL RESEARCH PROJECT

FOR THE MONTHS
OF
JANUARY, FEBRUARY, MARCH 1983

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NARRATIVE REPORT ON THE APPLIED AGRICULTURAL RESEARCH PROJECT
FOR

January, February, March 1983

I. INTRODUCTION.

During this fourth quarter which completes one year of the AARP/RMI activities, the major event was the arrival of five more long term specialist. These specialists allow us to actively assist the research and training programs at the Maros Research Institute for Food Crops and the Banjarmasin Research Institute for Food Crops. The project made it possible for Dr. Hank Beachell, world famous rice breeder, to assist BORIF on research and monitoring during a short term consulting assignment.

In this three month period a major effort of the AARP has been to accelerate the construction schedule and the procurement program. The Manpower Training Study for AARD was initiated and the revision of the Detailed Implementation Plan begun.

II. PERSONNEL.

As of December 31, 1982 only five long term full-time expatriate AARP/RMI specialists were on the job. Five additional specialists arrived during the quarter, raising the complement to ten. The new arrivals were:

1. Dr. Anwar Rizvi, Plant Pathologist at Maros Research Institute for Food Crops (MORIF) who arrived January 4 for a two-year assignment.
2. Dr. Fritz von Fleckenstein, Agricultural Economist at MORIF, who arrived January 27 for a 33 month assignment.
3. Dr. Kevitt Brown, Deep Water Rice Breeder, the first AARP/RMI specialist at the Banjarmasin Research Institute for Food Crops (BARIF), who arrived January 31 for a two year assignment. with his wife who is also a plant breeder and is volunteering her services to BARIF.
4. Ms.. Greta Watson, Social Scientists/Agricultural Economist at BARIF, who arrived February 28 for a two year assignment with her husband who has volunteered to help the entomology department at BARIF since he is trained in ecology.
5. Dr. John Bolton, Soil Scientist at BARIF, who arrived March 11 for a two year assignment. Unfortunately, at the end of the quarter it appeared that Dr. Bolton would not be able to remain with the project.

Orientation of most new specialists included visits with the AARD Director General Mr. Sadikin Sumintawikarta, the AARP Project Leader Mr. A. Abdullah and our AARP/RMI Chief-of-Party and Administrative Specialist, as well as officers of RMI.

A short term consultant, Dr. H.M. Beachell of IRRI, spent the month of February assisting the Bogor Research Institute for Food Crops (BORIF) in evaluation, monitoring and a long term rice research program.

RMI has signed long term contracts with two additional specialists whose present status is as follows:

- Dr. Chhorn Lim, Milkfish Nutritionist, who will be assigned to the Bogor Research Institute for one year and possibly transferring to the new facilities currently under construction at Gondol Bali. Dr. Lim was expected to arrive in March. However, procedural difficulties have been encountered in obtaining a long term visa because of Dr. Lim's citizenship status. A refugee from Cambodia, he currently has resident status in the U.S. but does not have a passport. We believe these difficulties will be solved, and we look forward to his arrival during May.
- Ms. Diane Barrett, Tuber Crops Post Harvest Processing specialist, who expects to arrive in early April for a two year assignment at BORIF.

GOI and USAID clearances are nearly complete, we believe, for two year assignments of Dr. Bernardo Gabriel as Entomologist at BARIF in June or July 1983 and of Dr. William Vanstone as Milkfish Breeder at the new Gondol Inland Fisheries Research Station in September or October, 1983.

III. STAFF ACTIVITIES.

1. William L. Collier, Chief-of-Party, participated in AARD's January Bali workshop on research management and presented a paper on managing a foreign assistance project which is appended to the AARP/RMI report for January. He attended the January AARD-Ford Foundation sponsored workshop on "Intensive Agriculture and Sustainability" in preparation for a program on this topic in Indonesia.

In March he attended the AARD-IRRI Collaboration meeting in Ujung Pandang on rice research. He helped prepare a proposal on establishing a center of excellence for marine fisheries which was submitted to the AARD Director General.

Several times during this three month period he traveled to MORIF and BARIF to introduce new AARP/RMI staff and help get them started.

Dr. Collier worked with the Center for Agricultural Research Programming (CARP) in developing a program on intensive agriculture and sustainability, preparing for an international workshop on tropical fruits research to be held in June and in preparing a proposal for an AARD manpower training study. He initiated assistance to AARP in revising the Detailed Implementation Plan for the project in cooperation with AARP officers.

2. Carl R. Fritz, Administrative Specialist, continued to work on budgeting, financial, and administrative matters. He reviewed, edited and submitted RMI claims for reimbursement from USAID grant and loan funds, supervised and coordinated the preparation of monthly reports on local expenditures, and prepared the quarterly report on local currency disbursements for the previous quarter and the request for local currency to support the AARP/RMI contract during the current quarter.

As of March 31, 1983, RMI expenditures under the AARP contract totalled \$578,616 of grant funds, \$285,710 of loan funds and Rp 146,729,000 of local counterpart funds. In the latter category, receipt of Rp 101 million in early April permitted repayment of 55 million temporarily borrowed from RMI.

Mr. Fritz accompanied the Rizvi family to Ujung Pandang during January and introduced Dr. Rizvi to MORIF staff. He also participated in the orientation of arriving long term specialists.

Specialists arriving during this quarter have encountered considerable delays in clearances of household effects. Where bills of lading mentioned radios, we had to find out the brand names, and the documents had to

clear the Department of Trade as well as the National Secretariate. Where books were mentioned, we had to secure the titles and prices. We had not encountered these obstacles previously, and we must assure that future arriving specialists are aware of these requirements in advance. These and other "settling in" problems of new arrivals have absorbed considerable attention of the Administrative Specialist during this quarter.

Mr. Fritz also participated in the periodic review meetings, worked on the AARD Manpower Training Study, and worked with CARP and USAID officers in the preparation of documents and communications regarding training, procurement and other project matters.

3. James C. Myers, Jakarta based part time Training Coordinator, continues to assist departing training participants with travel and other arrangements. He is now assisted by a travel agency representative with working space in the RMI office at no additional cost to the project. Walter Flinn, Washington, D.C. Training Administrator, continues to communicate with U.S. training institutions regarding project requirements and arranges for participant enrollments, reception, orientation and timely payments of maintenance allowances. He has also been assisting new AARP/RMI specialists in preparation and arrangements for departure for Indonesia.

4. Roland E. Harwood, Research Station Development Specialist, continues to work with AARP and USAID officers and the three architectural firms contracted by AARP for the design of major buildings for Bogor, Maros and Banjarbaru. A key AARP officer for these matters, Mr. Sirdan, has been on extended sick leave all of this quarter.

Plans for Bogor construction in 1982-83 were delivered to USAID in February for study and approval. Plans for the Maros laboratory and greenhouse were also submitted except for the water treatment plant. A close check of the building site at Banjarbaru revealed a need to revise building locations proposed by the architects.

Mr. Harwood has been much concerned with construction problems which became evident in Bogor during this quarter. At the end of March, work on the auditorium was still in abeyance pending agreement on a method for strengthening sub-standard foundations. Work on the other buildings and greenhouse is progressing, but both contracts are behind schedule. The greenhouse contractor has accepted an improved method for attaching glass.

Mr. Harwood's trips to Samarinda and Balikpapan are reported in Appendix I.

5. Jerry L. McIntosh, Farming Systems Specialist assigned under the RMI/IRRI consultancy agreement to the Bogor Research Institute for Food Crops. Participated in the January Workshop on Intensive Agriculture and Sustainability and the March AARP/IRRI Collaboration Meeting at Maros. Plans were made for research on upland rice, brown plant-hopper, Tungro Virus, Hybrid rice, and water management. He was able to update his "Indonesian Farming Systems Research and Development" manuscript which will be published by AARD and possibly abroad. He prepared, edited and revised a number of project proposals and reports. Dr. McIntosh joined inspection tours of on-site research and problem areas, as well as participated in preparations for INSFEER monitoring tour and in an assessment of upper river watershed research and development projects in Java. Dr. McIntosh described his March visits to South Sumatra fertilizer efficiency experiments and cropping system research in his monthly report found in Appendix II.
6. Fritz von Fleckenstein, the AARP Agricultural Economist at MORIF was approximately two months at this post during this period. He was able to participate in the AARD-IRRI Collaborative meeting at MORIF which was a good introduction to AARD. He has been active in discussions on the type of computer to acquire for MORIF and will assist MORIF staff

in data analysis computers when this equipment arrives. He took a field trip to Jenepono and Bulukumba Kabupatens (see Appendix III) to visit farmers who grow corn and to test questionnaires for a study on secondary crops. Since he already knew some Indonesian before arrival, he was able to make major progress in improving his fluency in this quarter. Ms. Ruth Fleckenstein was active at MORIF in their English language teaching program. For more information please refer to Appendix IV.

7. Anwar Rizvi, plant pathologist at MORIF arrived in early January and quickly ^{became} ~~because~~ involved in projects at the Institute. He made a number of trips to the Lanrang sub station to assist their experiments on tungro virus. For more details on his activities in assisting research at MORIF refer to Appendix V and the January and February monthly reports. He visited Bogor to participate in a workshop on rice pests and disease organized by the Central Research Institute for Food Crops.
8. Igmidio T. Corpuz, soil scientist at MORIF since July 1982 continued to work with MORIF research officers in designing, establishing, and conducting experiments on fertilizer efficiency, soil fertility and organic materials and also conducted fertilizer application demonstrations.

He worked closely with the committee which prepared for the MORIF site visit for the International Network on Soil Fertility and Fertilizer Evaluation for Rice (INSFFER) conducted February 21, and prepared six papers in conjunction with his Indonesian colleagues. Besides this, Dr. Corpuz prepared materials for lectures to be delivered at MORIF for training proposes. Dr. Corpuz's March activity report is in Appendix VI.

9. Kevitt Brown, rice breeder at the Banjarmasin Research Institute for Food Crops (BARIF) arrived in late January and spent most of February visiting the different rice growing areas in both direct and indirect tidal swamps in South and Central Kalimantan. In March he worked with Ir. Suhaemi on screening nurseries for submergence tolerance in Handil Manarap and soil problem tolerance in Belandean. They are also beginning to work on improving the screening of upland rice nurseries for rice blast. He joined the Director in a trip to visit two upland transmigration sites. Sebamban at the request of the Governor. For more information on his March activities, please refer to Appendix VII. His wife, Sara Brown, has volunteered her assistance to the secondary crops breeding program since she is also a trained plant breeder.

10. Greta Watson, Social Scientist/Agricultural Economist at BARIF arrived in late February and was able to quickly become acquainted since she lived in a Banjarese village in Central Kalimantan for two years where she carried out her Ph.D. dissertation research. In March she initiated her work by having discussions with the agricultural economists and sociologists at BARIF on their research programs. She assisted them by reviewing and editing project proposals for 1983/84 and suggested changes. She will help the Institute establish a training program in research methodology and will assist their Monday Seminar series. For more details, please see Appendix VII.

11. John Bolton, Soil Scientist, assigned to BARIF for a two year period arrived in Bogor on March 10 and reached Banjarmasin on March 18. He reviewed a proposal on a land resource data base requested by the Director General of AARD. He began work on the procurement list for laboratory equipment to be installed at the new Banjarbaru site for BARIF. He visited station sites with a team of AARP staff who were reviewing these sites for final decisions on their acceptability (see Appendix VIII for more details)

IV. TRAINING.

Mrs. Ati Sri Duriat, Plant Virologist at the Lembang Research Institute for Horticulture (LERIH), departed during February on a three month training program in the Elisa Technique for potato virus detection at the American Type Culture Collection, Rockville, Maryland. Of three Forest Products Research Institute researchers who originally planned to study various aspects of coconut wood research in the Philippines for one month during March, two were unable to go, and only Mr. Kosasi Kadir went. Mrs. Novenny Wahyudi of the Research Institute for Inland Fisheries departed during March for the Aquaculture Training Program at Auburn University, Alabama.

Only seven AARP participants were in training during the quarter. These included four LERIH scientists training as an interdisciplinary vegetable breeding team at the Asian Vegetable Research and Development Center, Taiwan.

As of 31 March, 44 AARP participants had departed for overseas training, 37 of them under RMI auspices. Details are found in Appendix IX.

USAID conducted an ALIGU test during February for 29 BARIF employees. Only two passed. USAID will conduct another test at MORIF in April. Mrs. von Fleckenstein is now collaborating with a British volunteer in conducting English language training at MORIF. Another British

volunteer has just arrived at BARIF, and plans to begin English classes in April. AARP/RMI experts will augment such language training by conducting lectures and workshops in the English language.

Participant training decelerated during this quarter pending results on the AARD Manpower Training Study which aims at setting forth a five year plan for all types of training. This study was officially initiated during February.

During March, the AARD Director General asked Dr. Collier, Mr. Fritz and the IADS Training Advisor for the National Agricultural Research Project, Dr. Ralph Retzlaff, to prepare a one year 1983/84 training program based on 26 areas of priority. At the end of March, we were awaiting responses to questionnaires relative to both the five year plan study and the one year program.

V. PROCUREMENT OF EQUIPMENT.

At a meeting held in Bogor March 10-11, AARP decision-makers decided to procure most loan equipment through a procurement services agent based in the US who is experienced in USAID procurement practices. Such an agent will assist in developing specifications and tender documents, evaluate tenders and recommend supplies, combine various orders into economic shipments for delivery in Indonesia and arrange for transshipments within Indonesia as well as assure availability of after-sales services and spare parts.

An advertisement has been placed in the Commerce Business Daily, and USAID officers anticipate receipt of 50 or more bids which are due to be received by the middle of May 1983, AARP has already selected committees for evaluating the bids and negotiating with the winning bidder.

TRIP REPORT
Official trip to Lanrang
March 16 and 17, 1983

Trip was made for two reasons : (1) to participate in the harvesting and gathering of experimental data on the Timing of Nitrogen Application, and (2) to evaluate the soil problem where soybean plants produced empty pods.

Originally the plan was to go with Ir. Christine J.S. Momuat, Head, Soil and Soil Fertility Department, but because of the Intensive English Course which was conducted from March 14 to 25, 1983 she was not able to go. In her place she sent Mr. Hatibu, field technician to go with me.

Apparently there was some miscommunication because at the time we arrived the experiment was already harvested. The plot harvests for yield data were processed in Lanrang. Sixteen hill samples for yield components determination were brought to Maros.

Together with the substation director, the area which was planted to soybean with the problem of empty pods was visited. Earlier it was visited by Dr. Talekar an Entomologist from AVRDC, Taiwan. His evaluation was "a soil problem possibly molybdenum".

Soil samples were collected for chemical analyses (at the time this report was written results are not yet available).

An arrangement was made that a field fertilizer trial will be conducted in the area in June, 1983. The proposed design is presented as appendix A.

TRIP REPORT
Official Trip to Lanrang Substation
March 20 - 22, 1983

The purpose of the trip was to participate in harvesting and gathering data on two experiments namely Nitrogen Fertilizer Efficiency on Irrigated Wetland Rice and Long Term Soil Fertility Experiment.

Ir. Agustina Buntan was encouraged to join despite the Intensive English Course because there is an important observation to be made. Mr. Hatibu, field technician also came with us.

In the Nitrogen Fertilizer Efficiency Trial some of the treatments lodged. There was variation on the degree of lodging. I had to impress Ir. Agustina Buntan to take note of the treatments which lodged. Similar situation was observed in the Long Term Soil Fertility Experiment. Lodging was observed in some treatments. Fortunately there was no rat and bird damage. However because of lodging the yield will be affected. The yield decrease attributed to lodging vary depending on the degree of lodging and the stage when lodging occurred. The yield is not affected when lodging occurred at a time when the grains are fully matured as long as there are no rats and there is no standing water in the paddy. With standing water the panicles loaded with grains will get soak and some grains may germinate. When this happen there is definitely reduction in yield.

The treatments in the Nitrogen Fertilizer Efficiency Trial were designed for a dry season crop. The situation in Lanrang Substation is very unusual. The cropping season is supposed to be a dry season. Actually it was a wet season. It is now referred to as wet-dry season.

Either the climate classification is wrong or the climate had completely changed.

There was lodging in the experiments and in the production areas because the rate of nitrogen applied was for a dry season crop which is usually much higher than a wet season crop.

Appendix II

COOPERATIVE CRIFC - IRRI PROGRAM
THE INTERNATIONAL RICE RESEARCH INSTITUTE

CABLE ADDRESS :
IRRI/IAID BOGOR

April 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 - March 1983

I. Principle Activities and Accomplishments

A. AARD/IRRI Collaborative Meeting, Maros, South Sulawesi.
March 2-5, 1983. Plans were made for collaborative
research on:

1. Upland rice
2. Brown planthopper
3. Tungro virus
4. Hybrid rice
5. Water management

B. Visits to Nakau and Way Abung, Lampung and Batumarta, South
Sumatra to inspect fertilizer efficiency experiments and
cropping systems research. March 15-18, 1983.

1. Upland rice looks especially good this year. Blast has
not been a serious problem. However, outbreaks of brown
planthoppers in Way Abung and Batumarta on upland rice
are very severe.
2. Upland rice interplanted in young coconut appears to be
a promising practice. The farmers are enthusiastic.
A special TV crew visited the area and interviewed farmers
and researchers.
3. The fertilizer efficiency studies in Nakau look good.
The trials in Batumarta are affected by soil disturbance,
late planting and brown planthoppers.

- C. Attended special Rice Research Meetings at Cibogo.
March 22-24, 1983.

These meetings were designed by the Central Research Institute for Food Crops to bring together the latest information in Indonesia on 10 subjects related to rice breeding, pests and diseases, soil problems, post harvest technology, research impact, growth hormones, grain quality and water management.

- D. Participate in a month long Assessment of Upper River Watershed Research and Development projects in Java. This will include the Citanduy, Yogya, Solo and Brantas watershed and river projects.

- E. Prepare and edit reports.

1. Indonesian report at SEARCA Meeting on Agricultural production in relation to climate.
2. Upland rice project proposal.
3. AARD/IRRI collaborative papers and reports.
4. Papers for IRRC.

II. Miscellaneous

A. Consultations

Mr. Harder, MCC
Mr. Enrique Barrau, USAID
CIBA representative - Rice blast
CARGIL - Hybrid corn
Mr. Peter Dart, ICRISAT

B. Meeting and Seminars

Ken Rachie - Seminar
John Nickel - Seminar
Cropping Systems Meeting

III. Problems and Constraints

Same

IV. Plans

- A. Participate in Watershed Assessment
- B. Participate in IRRC.

Appendix III

TRIP REPORT 29 - 31 March 1983

Orientation trip to Jeneponto and Bulukumba
Fritz von Fleckenstein

People involved : Ir.IGP Sarasutha, acting head, Agroecomics MORIF
Baharuddin, Enumerator, Agroecomics
Fritz von Fleckenstein, Agr. economist

Purpose of visit

The purpose of this visit was to acquaint me with of the work being done by the department in the field, preparatory to making recommendations for future research. The basic procedure I suggested was that Pak Sarasutha should conduct the sessions with farmers as if I were not present, although this was not wholly possible, since my visit was a special event, and the Kepala Desa insisted on gracing the event with his presence. Also, as it turned out, I could not keep myself from asking questions of the farmers!

Organization of the research work

In the ordinary course of events, this trip was one of three or four which Sarasutha, as supervisor of the research, made to the area to interview farmers as a check on the information provided by the questionnaires. Baharuddin, who speaks the local languages in the area, was the regular interviewer, who would visit the farmers at crucial periods in the work cycle of the crop, and remain for periods of approximately one week.

In his inspection trips, Sarasutha, who was born in Java and who does not speak Bugis or any other local language, prefers to have the regular interviewer with him, in case interpretation was needed. As it turned out, all the farmers visited on this trip spoke very good Bahasa Indonesia.

In both Jeneponto and Bulukumba kabupatens, the farmers we visited were part of a study of the effect of the factors of production on the production and income produced by Corn (Maize). The Dinas Pertanian had been asked to indicate the areas in which the production of Corn was the greatest; within these areas, 2 Desas were chosen in kabupaten Bulukumba, and 1 Desa in kabupaten Jeneponto. 31 farmers were interviewed in Bulukumba, and 13 in Jeneponto. No other department (Kelompok penelitian or Kelti) was involved in this research, which was designed primarily to describe farmers' current practices.

Logistics

Two village sites were visited. Since both of them are some distance from the kabupaten centres, it is useful to record information about access to these villages. This information was not immediately available during the trip, and, indeed, there was some confusion about the travel time and distance between various points, until we began to make our own measurements.

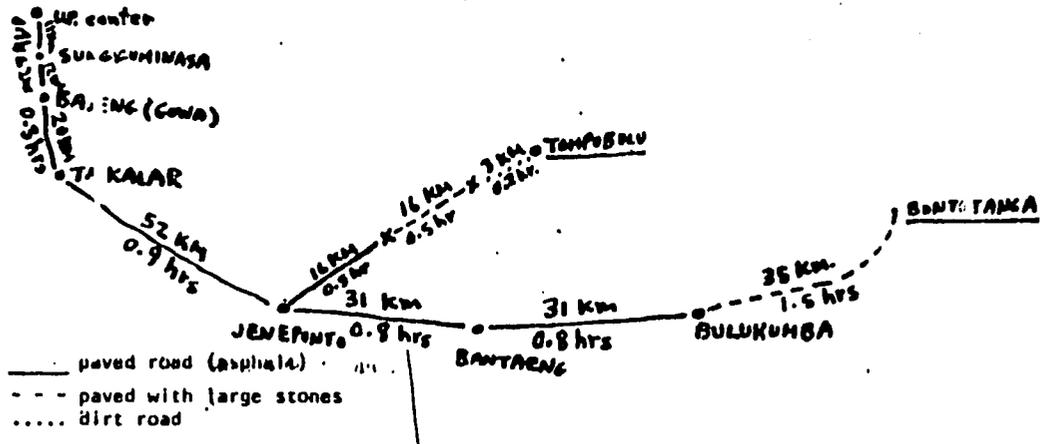
The two village sites visited were :

DESA	KECAPATAN	KABUPATEN
Bontotanga	Bontotiro	Bulukumba
Tompobulu	Kelara	Jeneponto

The schematic map in figure 1. shows the positions of these villages.

FIGURE 1

Distances and times to places visited on orientation trip



All distances and times were measured, except for the distance and time from Bulukumba to Bontotanga. It can be seen that safe travelling through Ujung Ponda traffic moves at about 28 kph, rising to approximately 60 kph on the road from Sugguminasa to Jenepono, but dropping to about 40 kph from Jenepono to Bulukumba. Moving out from the kabupaten centers, however, the rate necessarily drops to about 25 to 30 kph. The amount of time necessary to reach the villages, of course, depends on the time of the year and the type of road. The road to Tompobulu, for example, is paved in asphalt for part of the way, paved in rocks for another stretch, and, finally, unpaved. In the dry season, the speed on the paved or rock-paved portions was the same, but the speed on the dirt road, even in dry weather, was reduced to 15 kph. It should be noted that both of the villages were at higher altitudes than the kabupaten towns. This was particularly true in the case of Tompobulu, which I would estimate to be at least 500 m ASL.

Agroecological Zones

Both of the study villages are in the same agroclimatic zone, according to the Agro-Climatic Map of Sulawesi prepared by Oldeman and Darmiyati (CRIA, 1977). This zone is D₃, with 3 to 4 wet months (more than 200 mm rain) and 3 to 5 dry months (less than 100 mm rain). In both cases, too, they are sufficiently far enough east so that the West Season (Nov-Mar) is a dry season and the East Season (April-October) is a wet season. However, the West Season was unusual this year. In the Ujung Pandang area, which is usually quite wet, it has been abnormally dry. In the study villages, on the other hand, it has been unusually wet, which has caused, the farmers say, an usually low Corn yield.

Along the roadside

Irrigation schemes

Travelling through Kabupaten GOWA, I noticed that the primary irrigation canal in an irrigation project had been built so that it was lower than the secondary canals in a large part of the scheme. This necessitated using pumps to supply water to the secondaries, which is an extremely expensive solution to a problem that appears to have been caused by initial bad design of the project. In other parts of the project, the primary canal is indeed higher than the secondaries, and it may be that the primary canal was designed with too steep a slope for the terrain. Later, in kabupaten Jenepono, however, we saw a very well-designed irrigation project which appeared to be working quite smoothly.

Fishponds

In Bulukumba, we were invited to dinner at the Empang (brackish water fish pond) of Ir. Subaada, one of the members of the agro-economics department, and enjoyed the fish and crabs very much. It occurred to me that Subaada might well want to think of a case study of her Empang, even though it is not strictly speaking a food crop. I mentioned this is passing to Sarasutha.

K a p o k

On the way to Bontotanga, we saw many KAPOK trees, and I asked Sarasutha if they were ever exploited. He seemed to think not. We noticed that they were of the traditional variety, with small pods and fairly tall trees, and some of them were even of the old variety with thorns. In Thailand, we had seen the improved varieties, shorter, with smooth trunks and large pods. Later, on our way to Tompobulu in Jeneponto, we saw a woman drying kapok fibre on a mat, and we intended to talk to her on our way home, but by that time it had started raining, and she had gone inside, so we never did find her again. At any rate, it is evident that people do exploit these trees, and that they do form a source of income which would be worth knowing about.

Grinding corn

On the way to Bontotanga, we were walking to get the kinks out of our legs and backs, and we came upon a woman grinding corn under a house, using a simple hand machine with a hopper on top for the corn grains, and a grinder turned by a hand wheel. We went in to talk to her.

By putting the grain through the machine twice she could produce what is called beras jagung and is cooked and eaten just like rice. Sarasutha remembers when he was a young boy, in 1960, during the food crisis, people mixed beras jagung with rice and cooked it.

The lady told us that it took slightly more than 10 ears of corn to give one liter of beras jagung, which could be sold for 60 Rupiah.

Sarasutha and Baharuddin began questioning her about the yields of her corn. They asked her how much land she had in corn, and she said that she had 3 hectares. Then they asked her how many ears she got from one hectare. She said that she didn't know, which didn't surprise me very much. She said that the price used to be 100 rupiah per liter (of ears of corn!), but now it was only 30 rupiah.

Baharuddin then tried another tack. How do you transport the corn, he asked. By horse. How many ears can a horse carry? She didn't know, but it depended on the type of corn. If it was white corn, the horse could carry 75 liters. If it was yellow corn, the horse could carry 100 liters.

Now, he asked, how many horse-loads can you get per hectare? 20 to 50 horse loads, she said. I told him that I was doubtful that people would actually make a calculation per hectare, and asked him to ask for the whole farm. She answered that she got 70 - 80 horseloads for the whole farm, which I believe to be the more accurate figure. In this case of course, we were just chatting in general terms with a lady by the wayside, and not carrying out rigorous research. Nevertheless, Baharuddin showed considerable imagination in applying some of the traditional techniques of farm-management investigations, and was quite sensitive to the possibility that the lady might have no idea of her yield as expressed in standard measures. The problem with such techniques, however, is that they still require the farmer to do an inordinate amount of calculation in his head, even if he has done the necessary measurements (and remembers them). To express anything as a ratio (yield per hectare, for example) requires calculations. To use local measures (such as horse loads) is a good thing, but to determine the equivalences of those local measures to standard measures simply by asking the farmer is to beg the question.

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The farmers use local measures precisely because they do not use standard measure and they have reason to calibrate these local measures. The researcher, however, can and should. We will see more examples later.

Desa Bontotunga, KM Bontotiro, KB Bulukumba

In some villages, the village secretary (Tata Usaha Desa) acts as a resident interviewer, administering questionnaires sometimes by himself, and sometimes by helping Baharuddin. When Baharuddin comes, he checks the work was done while he was away, and interviews some farmers, using the village secretary as his interpreter. I did not observe any of this particular trip, as we all went about together, and Sarasutha did most of the interviewing, without the help of a checklist or interview form.

1. Pak Soe

He is a kepala kelompok tani, head of one 16 farmers groups in the desa.

Sarasutha began the interview by explaining that he wanted to ask only about the corn crop.

Pak Soe said that this seasons production was less than last season.

How much do you have planted in corn?
MORE THAN ONE HECTARE, SAY 1.5 HECTARE.

How do you know this area?
FROM LAND REFORM PROGRAMME, AND LAND TAX

What was your production this year of corn?
16 HORSE-LOADS, AFTER PAYING THE WORKERS

What was your gross product (produksi kotor)?
22 HORSE LOADS (HEEAN)

How do you plough your land?
I USE SAPI (cattle) BECAUSE MY LAND IS FLAT (Rata)

Labour use

For each category of labour, Sarasutha would ask the same questions :

How many people?

How many yoke of oxen? (pasang)

How many days?

How many hours in a day : specifically, from what time to what time.
(if a farmer claimed to work from early morning to late in the afternoon, he would be asked if he didn't stop for lunch. He always admitted that he did, and would then give morning and afternoon hours,

Sometimes he would also ask :

What tool did you use ?

How many days after planting did you do this?

(English D.A.P = Indonesian K.S.T Hari Selesai Tanam)

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		Hours	
Answers :	Land Preparation	7 days, 2 yoke, 2 people 6.30 to 11.00, 1.30 to 4.30	Man 52.5 Animal 105
	Planting (Menanam)	3 days, 2 people, 2 yoke same hours as above	45 90
	Weeding (Menyiang)		
	I. 15 DAP (HST)	7 days, 1 man (farmer)	72.5 60
	USE	2 days, 2 ploughmen, 2 yoke	
	PLOUGH	2 days, 2 women to follow the plough and set up the corn stalks again. (everyone same hours as above)	
	II. -----	5 days, 2 people	75
	USE	(cut only where needed,	
	Parang	not the whole area)	
	(machete)	(hours as above)	

Fertilizing (Memupuk) DID NOT DO.

Insecticide : DID NOT USE

No problems with diseases or insects?

"I didn't see any problems. If there are problems, there will be damage."

How is the product, the corn?

"Some few of the ears have no grains. I think it may be because there was too much rain. We had more than one month of heavy rain."

(Later, we returned to this problem, and asked him if he could estimate, out of 100 ears, how many were empty. He said, "15" and that he was not worried, because the majority of the crop was all right. As we continued to talk to him, it became clear that he meant that 15 out of 100 PLANTS had some empty ears. So the actual percentage was likely to have been less than 15 percent. Of course, if we had present at harvest time, we could have sampled the ears. We took some back to Maros to get the Maros to get the opinion of our physical agriculture colleagues.)

Harvest (Panen) 4 days, 3 people
6.30 - 11.30, 1.00 - 4.30 102

Amount : 22 horse - loads total production
pay : 1½ horse-loads per woman
= 1.5 x 3 = 4.5
3 horse-loads per man
= 3.0 x 2 = 6.0
TOTAL PAY IS 10.5 horse-loads
thus 22 - 10.5 = 11.5 horseloads for farmer.

Pak Soe (continued)

After this discussion, Sarasutha asked the farmer about his land. Pak Soe said that he has 1 hectare of his own land and share-cropped 0.5 hectare. (What about last year?). Last year, he grew only his own 1 ha and did not sharecrop.

Sarasutha picked up on the reference to share-cropping, and asked the farmer how much he paid as a share-crop, and whether it was part of the 22 horse-loads that he had noted was his gross product. After a bit of muddling about, the farmer finally decided that the 22 horse-loads were what he had left AFTER he had paid 4 horse loads as a share crop :

26 horse loads	TOTAL PRODUCTION
- 4	SHARE CROP
-10.5	LABOUR
<u>11.5</u>	For Farmer

He said that he used all of this corn for eating, that there was no surplus. I pointed out to Sarasutha that he actually had no way of knowing what he was going to do with the harvest, in fact, that all we could say is that he had stored it and that he did not plan to sell any at this time. He was worried that he would not have enough food to eat if he sold any.

He said that the corn could be stored up to 1 year by storing it on the stalk. He piles it on the floor of his attic.

(How many crops do you grow in one year, and when do you grow them?)

Two crops :

- I. Plant in Nov/Dec, crop lasts 3 months CORN
- II. Plant in April/May, crop last months CORN

(What variety do you use?)

White corn of local variety.

Some of the local variety names are HANSE (white), PULUT (grey)

Sarasutha asked the farmer which varieties he preferred, and Pak Soe replied that both yellow and white are good :

If we grow yellow, we get a larger yield.

If we grow white, we get a smaller yield, but we can store the crop longer.

In the coming season, which will be II, he plans to grow beans intercropped with corn on his own land, and rice on the share-cropped land :

	Seasons	
	I	II
Land		
Own 1 ha	Corn	Corn intercropped with Kedele SOYBEAN Kapas COTTON Kacang Ijo MUNGBEAN
Sharecropped .5 ha	Corn	Rice

2. Pak Alimuddin

In this season 1 (the Western Season), he had 3 hectares of land :

0.5 hectare he worked himself, planting Corn and Peanuts

2.5 hectare he rented out from CORN sharecrop. Usually he gets about 12 horse-loads share-crop, because the land lacks water. This year he has not yet gotten his share, so he doesn't know how much it is. (At the end of the interview, he said he had gotten 20 horse-loads last year, but expected to get only 12 this year, because of too much rain.)

(Can you estimate how much area was planted to each crop?)

No, but I know that I used 3 liters of seed for the peanuts.

(How many liters of seed do you need for 1 hectare of peanuts?)

100 liters.

(THUS, Baharuddin calculated that the area in peanuts was 0.3 ha)

.03 ha Peanuts

.47 ha Corn

LABOUR QUESTIONS

Pak Alimuddin also used cattle to plough his land. His answers to the labour questions were for both crops in most cases, since he could not separate them :

		<u>Man-hours</u>	<u>Animal hours</u>
LAND PREPARATION (both crops)	1 yoke, 1 man, 2 days 7-11 am ; 2-5 pm	14	28
PLANTING (Menanam)	1 yoke, 1 man, .5 day 2 women, .5 day 7-11 am	6	8
WEEDING (Menyiang)			
A. CORN (plough)	1. 15 DAP (HST) 1 yoke, 1 man, .5 day 2 women, .5 day 7-11 am	6	8
B. PEANUTS (use Sangko) :	1 man, 2.5 days	11	
hand implement	day 1 : 8-10, 3-5 day 2 : 8-10, 3-5 day 3 : 2-5		
NO FERTILIZER			
NO INSECTICIDE			
HARVEST (PANEN) (CORN)	2 women, 2 days 7-11, 2-5	28	
HARVEST AMOUNT : 10 horse loads (of 4 baskets each) (CORN)	6 horse loads white corn		

The woman were paid 1 basket each for all of their work.
The man was Pak Alimuddin.

Thus 10 horse loads gross product
-0.5 horse loads paid to women
9.5 horse loads for farmer

Pak Alimuddin (continued)

Pak Alimuddin also keeps his corn in the attic, but he strips the ears off of the stalks and stores them in baskets.

(What will you do with your corn? Sell it?)

If I have enough

(How long can you keep it?)

Up to one year.

(What kind of corn gives a higher yield?)

Yellow corn, but you can't keep it as long

(How much seed did you use?)

3 liters of yellow corn
10 liters of white corn
3 liters of peanut seed

Marketing of Corn

(If you sell, in what form do you sell your corn : as ears, or as grain, by the liter)

As grain, by the liter.

(What is the price now at the local market?)

White is 40 Rp/liter
Yellow is 60 Rp/liter

HARVEST OF PEANUTS

Man-hours

1 man, 1 day (9-12, 12.45-6)

8.25

(How much did you harvest?)

I don't know yet, because they are still drying, but I think about 200 liters.

(If they were dry, how many liters they be?)

150 liters

(If they were also shelled, how many liters would they be?)

50 liters

(What is the price of dry, shelled peanuts now?)

400 Rp/liter

Other seasons

(Next season, if, what will you plant)

.5 hectare of paddy

(Fritz : How much corn did you get from your .5 ha last year?)

Last year I got 15 horse-loads, but this year I only get 10, because there was too much rain this year. Not every village got too much rain. In fact, only two villages in this area had that problem : Batang, and this village (Bontotanga).

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After the interview, we went out to look at his peanuts, which were spread out to dry on mats. Both Baharuddin and I felt that there were nowhere near 200 liters, while the farmer actually thought that there might be more. I pointed out to Sarasutha that if one were to take along simple measuring instruments (calibrated plastic buckets, for example) on one's field trips, one could often make direct measurements. We could have measured his whole peanut crop in ten minutes if we had had the equipment.

Sarasutha told me that the questionnaires for the study had already been collected by Baharuddin several weeks before, probably because the corn had been harvested, although it had not been prepared for market or marketed. The ancillary crops, such as the peanuts, were still being harvested.

Desa Tombobulu, Kecamatan Kelara, Kabupaten JENEPONTO

The second village visited was in Jeneponto kabupaten, which we visited on the following day. The village is in the hills. We visited one farmer.

3. Pak Jumanai

Pak Jumanai told us that this kecamatan is better for growing corn and vegetables than the kecamatan lower down near Jeneponto. He had been living in this place for more than 10 years.

He said that he owned 1 hectare of land, and cultivated only that. He grew corn on it, but he also grew other vegetables on this one hectare. He estimated that he grew corn on .75 hectare, and cabbage on .25 ha.

His answers to the labour questions were as follows :

		<u>Man-hours</u>
Land preparation : he used a hoe	5 days, 1 man 8-12,2-5	35
Planting (used Sangko)	: 2 days, 2 women (note : there were a number of people in the room, and there was a certain amount of kibbitzing : one man said, "It usually takes 2 days" Then the farmer said, "It took 2 days") 8-11,2-5	. 24
Weeding I	with a Sangko 10 days, 2 men 8-12,2-5	140
Weeding II	7 days, 2 men 8-12,2-5	98
Fertilization	UREA 2 Zak = 100 kg TSP 10 kg	
Fertilization I	15 days TSP 1 day, 2 men 8-12,2-5	14
Fertilization II	45 days TSP (same as above)	14

NO INSECTICIDE ON CORN (but does in cabbage)

Any problems with insects or disease? NO

What type of corn : YELLOW What variety? (didn't hear answer)

Pak Jumanai has improved a rock fence to protect against cattle and horses. I asked him how much time he had spent, improving that fence.

Pak Jumanai (continued)

INSECTICIDE APPLICATION

Applies 5 times, uses one Ketjap bottle "Station 740" full, for all five times. This bottle contains .67 liter. Thus, in one application, he uses .67 : 5 or .13 liters

One application takes him 3 hours, thus 15

RENTS SPRAYER Cost is 5% of total product of cabbages, regardless of how many times sprayer is used.

After this, Sarasutha returned to the price of corn. This time, Pak Jumanai said that the price of corn was 75 Rp/liter in the Desa market, but 70 Rp/liter at the farm gate.

I asked whether the price was for ears of corn, or for individual grains. Pak Jumanai said it was for individual grains.

I noted that the labour for husking and shelling would also have to be included if one was to get a correct costing for the production of corn, not to mention that we had as yet no way of knowing how many liters of grains were produced by a kamboti of ears.

After the interview, at my suggestions, we took a walk to see the farmer's field, which was 300 meters from his house. An interesting sight greeted us. We could see immediately that some of the field had been planted to corn, some had not been planted to anything, in fact, some of it was very stony, and there were two distinct crops of cabbages. One was looking very good. This the farmer said had been planted 45 days before. The other was looking terrible: it was completely riddled with holes from insects. It had been planted 30 days previously, and the farmer had finally given up on it, and had planted kacang merah (yard-long bean: *vigna sinensis*) 7 days previously.

The size of the cabbage plantings looked quite small to me, and I tried pacing them off, very roughly, without using a diagonal. I thus had to assume that they were right-angled, which is unlikely. The results of my pacing were:

45-day old crop (good cabbage) : 18 x 35 paces
9 x 17.5 meters
(assuming my pace to be .5m)
= 157.5 m² = .016 ha

30 day old crop (infested cabbage) : 17 x 21 paces
8.5 x 10.5 meters
= 89.25 m² = .009 ha

I have measured my pace previously, but it could be slightly more or less than .5 meter. Also, since the plots were not rectangular, they could have been bigger, but the chances are they would be smaller. In any case, the actual area planted to cabbages was more like .025 ha rather than .25 ha.

Findings and Recommendations

If we consider the first eleven pages of this report as the raw data for a case study in data collection, we can make a number of observations and recommendations. These recommendations fall into two groups:

- I. Recommendations applicable to all research currently being done by the Agro-economics department.
- II. Recommendations concerning the type of research which should be carried out.

I. RECOMMENDATIONS APPLICABLE TO ALL RESEARCH BEING BY AGROECONOMICS

1. Categorization of data needs improvement

1.1 This is particularly noticeable in labour data: the questions always concerned the cut-and-dried categories of land preparation, planting, fertilizer application, insecticide application, weeding, and harvesting. While the farmers were always quite glib in answering these questions, and while they occasionally volunteered more specific information, it was not always clear which operations were subsumed under these general categories. For example, in one case I asked whether tying the unhusked corn cobs together was part of the harvest labour or not. The farmer then told us that it was.

The solution to this problem is to have a careful talk with some representative farmers before the questionnaire is drafted, to make sure that all of the specific operations are included in the check list, rather than simply the general categories, which may be viewed differently by the farmer and the researcher.

For example, instead of LAND PREPARATION, in rice cultivation, we should ask questions about:

- Slashing (cutting weeds with parang before ploughing)
- First ploughing
- Second ploughing
- Harrowing
- Levelling

In any particular area, there may be other operations involved in land preparation for rice, and these should also be included in the questionnaire.

2. Specification of units and conversion rates needs improvement.

Farmers often use local units which are not clearly related to any standard measure. In addition, the conversion rates from farmer measures of one form of a crop to standard measures of another form of that crop are also not known.

For example, in the course of our visits to 4 farmers (1 informal and three formal), we found several different units used to describe the amount of corn:

- Horse-load (beban) = 75 liters of ears (white) or 100 liters of ears (yellow)
- Basket = $\frac{1}{4}$ beban (that is, 4 baskets to 1 beban)
- Kamboti = 25 liters (used for many things, not just corn)
- Liter of shelled grain (used for quoting price of corn)

Assuming for the moment that these equivalences are correct, we still do not know how much the corn produced is worth, because we do not know how many liters of grain are produced from one liter of ears. (We also don't know the costs of changing the form of the product, which would be essential in giving a value to the product. See point 3.2 below for a simple solution to this problem.)

3. Measurement techniques need to be improved.

At present, the sole measurement that is used of any amount, whether it be land area owned or planted, hours worked, amounts of inputs used, amounts of production, and prices received, is an interview with the farmer, in which he is expected to produce from the top of his head data which he may not be able to remember, and which in fact, he may never have measured at all.

3.1 Land area

In my experience, farmers do not have a good idea of the amount of land they own, and they have, of course, an even vaguer idea of the area of the crop planted. Clever questioning will never allow one to discover something that the farmer does not know. One should also beware of the "folklore" about seeding rates, typical rates of work, and so forth. These are interesting to give us an idea of the PERCEPTION of farmers, but they are not a good guide to what is actually happening.

The dramatic example in our short trip, of course, is Pak Jumanai, the only farmer whose field we visited. Although he said that he had a hectare planted to corn and cabbage, we found his plot had definite unplanted areas. A rough measurement showed his area of cabbage to be one-tenth the size he had reported (after much clever questioning). No matter how rough the measurement was (and it was quite rough, consisting only of pacing the perimeter of the plots). I do not believe that it was so rough as to account for an error of 1000%. If measurement error was 100%, which I doubt, then the discrepancy is still 500%.

The solution to this problem is quite simple: measure the land area, both the land owned, and the land planted to a crop or mixture of crops. Detailed descriptions of the procedure for doing this already exist in other works I have written, and forms can be drafted for ensuring that these procedures are followed.

All that is needed for this exercise is a tape-measure of sufficient length to measure the diagonals of the largest fields. 600 meters would be nice.

3.2 Amounts of grain, fertilizer, insecticide, etc

3.2.1 Production and Yield

Once the area planted is known precisely, the yield can be determined if the production is also precisely measured. One can also measure the yield directly, by taking a crop-cutting of a small carefully chosen sample area of known size, and then multiplying by

$$\frac{\text{area of land planted to crop}}{\text{area of land in sample}}$$

If the plot is not carefully chosen (it is sometimes better to choose several samples), the yield will not be representative of the whole crop, and the total production will be incorrect.

Ways of direct measurement of the whole product and of crop-cutting are described in other writings of mine. The important thing to note is that the crop should be measured in all of its forms.

For example, for corn:

- on stalk
- off the stalk
- husked
- shelled

A small sample, at any rate, should be measured in all the forms, so that the conversion rates between them can be determined.

The most startling example in our trip was the case of the peanuts of Pak Alimuddin. In the interview he estimated them as 200 liters before drying, and 150 liters after drying. Actually, peanuts in the shell will have a lower weight after drying, but they will have the same volume. Then, he estimated a volumetric conversion ratio of unshelled to shelled peanuts of 3:1, which could be true. Finally, his estimate of the number of liters he has now seems to be too high.

In this particular case, it would have been easy to measure the peanuts by using :

1) a calibrated plastic bucket to measure the volume.

2) A scale to measure the weight

The bucket, when full, could have been placed on a simple table scale, such as are used in shops. Then, the empty bucket could be weighed, and the net weight per bucket volume determined.

In some cases, when measuring much heavier amounts, another type of scale is also useful :

3) A spring scale

NOTE : the bucket can be calibrated by using a standard liter measure, and pouring water from it into the bucket. Mark the bucket off in convenient intervals. Bring the liter measure for small parts of the volume.

3.2.2 Fertilizer

In whole standard sacks of fertilizer are used, there is probably no need to measure. However, sometimes parts of bags are used, and if you can discover the measure used by the farmer, or the bucket he used, one can measure the volume of this bucket, or, better yet, the weight of the fertilizer that fits in it. Sometimes, small bags of fertilizer are sold, and one of these can be weighed to see how much it contains.

3.2.3 Insecticide

Baharuddin's method of asking about the type of bottle used for buying insecticide is a good one : he knew that it contained .67 liters, and was able to calculate on that basis. Another way is to ask the farmer to save the packets or bottles of insecticide which he buys -- this also helps to identify the type of insecticide used.

3.2.4 Other inputs (such as manure) : calibrating local measures

If, as Pak Jumanai did, the farmer specified so many kamboti (or other local measure) of manure or whatever, it is best to look at the measure he used, and to calibrate it. That is, measure the volume of the measure by pouring water into it from the calibrated bucket.

For example, suppose the farmer shows you his Kamboti. You pour water into the calibrated bucket until it reaches 10 liters. You pour that into the Kamboti, and refill your bucket to 10 liters. You pour that in and see that there is still a little left. You fill your bucket again until it is 10 liters. Then you pour carefully into the Kamboti until it is full. You see that your bucket still has 6 liters in it.

This means that the Kamboti is $10 + 10 + (10-6) = 24$ liters. If this is so, it may be true only for this farmer, but you can calculate how many liters of manure he used, if he measured it in Kamboti.

3.3 Labour and animal power used

This is the most important input used by a farmer, and it is the most difficult to measure. Aside from some problems with categorization, Sarasutha was following the standard practice for a one-visit survey, and doing it very well. However, the standard practice is totally useless in providing information about labour because

The farmer CANNOT REMEMBER the times of his actions (let alone those of his family or workers) for more than a few days.

In our interviews, Pak Soe said that all of his workers and his animals worked from 6.30 to 11.00 in the morning, and 1.30 to 4.30 in the afternoon, for all operations except harvesting, when they worked a half-hour later in the morning, and started a half-hour earlier in the afternoon.

Pak Alimuddin, however, worked from 7-11 am and 2-5 pm. If he worked a half-day, it was from 7-11 in the morning. Only for peanut weeding did he come up with an account that sounds normal to me: two days of 8 to 10 in the morning and 3 to 5 in the afternoon, and a third day from 2 to 5 in the afternoon to finish the job.

In Jeneponto, Pak Junanal usually worked from 8-12 in the morning, and 2 to 5 in the afternoon, except when he was building his wall, when he worked from 9-12 in the morning, and 3 to 5 in the afternoon.

Anyone who has actually followed farmers at their daily work, either by observation or through daily interviews or record-keeping, knows that they do not actually work to a schedule like government civil servants or office workers. In fact, no one day is very much like another, except during harvest time, when extremely long hours may be worked.

The solution to the problem of getting good labour data is :

1. Choose a subsample of your main sample for investigating labour, so that you can measure carefully.
2. Use one or a combination of the following methods :
 - a. Time-and-motion study (observation)
Equipment needed : 1) stop - watch
2) measures (tape-measure scales) to measure the amount of work done.
 - b. Daily interviews or daily farmer record-keeping
 - c. Weekly interviews (this is more a compromise than an ideal method)

One has to face the fact that getting accurate labour data requires time, and that there is no easy way estimating labour. If one works quickly, one simply gets data which one cannot explain, and which one suspects is not accurate.

4. Data collection in farmers' fields should never stop at harvesting, but should carry on until marketing is completed.

Because of the current division of research at Maros into two semesters, the economists' studies of farmers in the field seem to have terminated immediately after the harvest of the particular crop being studied, as happened in Jeneponto and Bulukumba.

As we have seen above, this leads to serious problems in calculating the economic impact of a crop or cropping system, because the form of the crop as harvested is often not the form in which it is marketed. The costs of transforming the crop (in labour and materials), the changes in weight or volume of the crop, all need to be known in order to calculate the true economic impact of the crop.

In addition, such a practice would enable us to learn more about marketing problems than we are at present.

NOTE : there is no reason to separate this aspect of a study of, say, factors of production, into a separate marketing study. The period of the study should simply be increased.

II. RECOMMENDATIONS CONCERNING THE TYPE OF RESEARCH TO BE CARRIED OUT.

1. Data collection should include the whole farm, not just selected crops or cropping systems.

At the moment, Agro-economic research at Maros, partially because of budget categories designed to accommodate physical agricultural research, concentrates on individual crops or cropping systems.

For example, in the 1982/83 research year, the department budget of 38 units (1 unit = 400,000-450,000 Rupiah) was allocated as follows :

<u>CROP</u>	<u>UNITS</u>
Rice	13
Corn	3
Soybean	2
Peanut	1
Potato	2
Cabbage	1
Citrus	2
Passion fruit	2
Cropping systems	6

Most of the studies were production economics, more specifically studies of factors of production, but some were joint research with other departments investigating the comparative economic impact of improved and farmers' practices, and a few concerned marketing, the supply of credit and inputs and land tenure and farm labour :

Factors of production	
Actual studies	15 units
Preliminary surveys	6 units
Joint research comparing improved and traditional practices	9 units
Other studies, all for rice only	8 units

The Jeneponto and Bulukumba studies were factors of production studies.

In all cases, even the joint research, farmers' actual practices are studies, so that the only thing which distinguishes the joint research from the factors of production studies is the concurrent experimental plots managed by the cooperating department, usually the agronomy department.

Thus, the information gathered in 30 units of studies in 1982/83 could have been gotten as part of a whole farm study.

We have seen above some of the disadvantages of studying a single crop in the farmer's fields : we simply cannot get enough information about corn only by studying corn. Of course, the researchers tried to account for other income, but they were able to do so in only a very cursory fashion. The information about peanuts, for example, was very misleading.

The farmer runs his whole farm as one unit, and he thinks about it in that way. His corn, his rice, his legumes, his animals, his fishing, his handicraft even his off-farm labour, to say nothing of his domestic activities, are all related. The buffalo or cattle provide power and manure for the rice crop and other crops, and they receive food from the rice crop.

The family labour is used for all of the activities, and the farmer must decide how to allocate that labour to his different possible activities or enterprises. We will never understand his problems and be able to make recommendations for him if we only look at a part of what he is doing.

A whole-farm study can provide the same information as single-crop studies, but it can also provide information about labour constraints (which no single crop study can do), about farmer income and employment, about the most profitable farming system a farmer can use (considering all of his alternatives, not just a single or two or three cropping systems or food crops), about cash flows and credit needs, about marketing problems, and about many other things.

A whole-farm study can also provide the framework in which meaningful integrated research can take place between different departments. The soils, water resources, insect pests and diseases, agronomic practices, varieties, and tools and implements used can all be clearly described and measured along with the labour inputs, yields, prices, marketing variables and social and psychological variables in such a way as to present a total picture of the farm environment, and to provide a basis for meaningful correlation of the many diverse factors affecting farm income and farmer well-being.

The gathering of this information for the same farmers is what makes this method so powerful.

2. Whole-farm studies require smaller samples, or more enumerators.
 - 2.1 Careful data collection requires more time than casual data collection.
 - 2.2 Coverage of all activities on a farm also requires more time than concentration on one crop or cropping system.
3. Careful whole-farm studies require computers to analyze
 - 3.1 Careful whole-farm studies generate more data. A daily record-keeping study of a whole farm can produce 2000 to 8000 records in one year.
 - 3.2 Careful whole-farm studies require careful checking of data to get the best results from time-consuming data collection. Computers, particularly if using the FARMAP programme, can provide the means of checking the data.
4. Computer analysis requires the same amount of time as hand tabulation.
 - 4.1 Careful studies produce more data, and this data must be entered (punched, written onto disks).
 - 4.2 Computer analysis permits checking that is never done by hand. This checking takes time, but it results in better data.
 - 4.3 Once checking is done, which may take as much time as hand tabulation, many analyses can be run quickly.

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Appendix IV

Three-monthly report

January - March 1983

Fritz von Fleckenstein

1. I actually arrived in Indonesia on 27 January 1983, and after orientation in Jakarta, which included consultation with some computer users with a view to advising MORIF about appropriate microcomputers to purchase, I went to Ujung Pandang, where I arrived 2 February 1983.
2. I spent some time settling in, which included getting to know the staff members of the economics department and some in other departments, as well as finding a house to live in and arranging for its proper furnishing.
3. I began a study of manpower requirements at Maros, on the suggestion of Dr. Bill Collier, and involved my IRII colleagues in gathering information from their departments. This work, as all work, moved slowly because of repeated illnesses, and I finally discovered that Pak Sarasutha, head of the ~~agroeconomics~~ agro-economics department, had actually gathered all of the information needed. I turned my files over to him as reference materials.

One problem I found was that most of the staff members do not have the vaguest idea of what they ~~xxx~~ want to do in the future, but the leaders of the sections and the administrators of the station have very clear ideas of what they want those people to do. As a result, the future careers of the Agro-economic staff, for example, are very clearly specified. Pak Sarasutha has written all of this material up, and has sent it to AARD, to Pak Ibrahim Manwan. (Note: some of this is from early April.)

4. I spent a frustrating amount of time sick in bed, suffering from severe colds and influenza-like symptoms with dizziness and stomach problems. At one point, I had a number of laboratory tests done by order of a doctor who suspected that I might have mononucleosis, but the results were negative. Periods of illness alternated with periods in which I was able to work if I took it easy:

Ill: 15-25 February
14-24 March
2-9 April

After the first bout of illness, I participated in the three-day sessions of the annual IRII-MORIF collaborative research meeting, which were extremely gruelling, and which ~~xxxxxx~~ for which I was not in good shape. After the second bout of illness, I attended part of a long meeting, and a few days later went on my first field trip, which proved very interesting but also very exhausting. I have now (April 19) been well for 10 days, and am pacing myself. I have been able to start jogging again, and the only problem I have is with my stomach, which now insists on being fed exactly on time.

5. After a meeting with Bart Duff of the IRII Agricultural Engineering Department, and his colleague B.V.R. Reddy of IRII-DITPROD in Pasar Minggu, in which Dr. Duff mentioned the use which IRII was making of the TRS-80 Model 12, I decided to recommend the use of a microcomputer which could use the diskettes from IRII and could send diskettes to them. Unfortunately, I was actually sick at the time of this meeting, and could not have the strength to follow this matter up with Dr. Duff. Several weeks later, when I came to myself, I drafted this document, which I have already sent to IRII Bogor. Almost immediately after I wrote the memorandum, however, I received an answer to my letter to Dr. Geoff Swenson of Pusat Agro Ekonomi with the details of the PATANAS programme, which specified that PATANAS would supply 4 microcomputers and numerous peripherals to MORIF. It is clear that no decisions can be made on the MORIF microcomputers or peripherals to be bought under AANP until the discussions which with Dr. Swenson (who is due to arrive tomorrow, 20 April.)

6. I took a field trip, my first orientation trip with the agricultural economists, postponed because of a crash English course and my illness.

This was from 29-31 March.

This trip was to Jenoponto and Dalulumba Kabupaten, to visit farmers growing corn, ~~the~~ and provided me much food for thought. Pak Sarasutha, who let me watch his methods, kept pressing me to tell him what was being done incorrectly. I could not avoid answering, but I said that I wanted to reflect and put my thoughts into my trip report for IRII. As a result, I returned to Ujung Pandang, looking forward to clarifying my ideas. Unfortunately, I fell sick ~~the~~ the next day, and was only able to finish the report today (April 19). It has, I fear, become more than a trip report; and I intend to distribute it to Sarasutha and other economists as well as sending it to Jakarta.

~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~

~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~

7. One good side effect of my time in bed has been the increase in my knowledge of Indonesian, and of South Sulawesi. I had managed to get hold of the final report of the Sulawesi Regional Development Study done by the University of British Columbia, which Dr. Corpuz inherited from the IRII team, and which is a truly impressive compendium of only slightly old information about Sulawesi. I also diligently studied the Cornell language book. As a result, when I went on the field trip, I was able to understand about 3/4 of the interviews which Sarasutha hold with the farmers, and quickly was able to pick up the items I didn't know. This helped me to understand what was going on.

8. Recently, probably in the month of April, I have been consulted with greater frequency by the agricultural economists, who are preparing their papers for the seminar reporting their work for the first semester of 1982/83. This is giving me a good idea of their needs for ~~my~~ knowledge. It is obvious that a basic practical course in statistics (including such humble tools as tables construction) is needed. I would like to wait until I have my materials, however, as I produced a lot of good material at UPNG, and would hate to have to reconstruct it with the lack of materials here. Another area of attack is the matter of data collection, but ~~XXXXXXXXXXXX~~ PATANJAS and the Maron Pilot Village (which is at the moment merely a gleam in the eye of, ~~xxx~~ shall we say, Ir. Hadijah) are going to have a lot to say about that, and that is properly the subject of our report for April.

~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~

9. Properly Ruth's activity, there was a frantic flurry of English teaching in the latter part of ~~XXXX~~ March (14-25 March, to be exact). Every day except Sunday, Ruth taught two classes of one hour each, using tapes of conversations for which question sheets were provided. Ruth and I made the tapes in the evenings. Later, the ALIGU materials were received, and Ruth gave two special classes in the first week of April to drill people on the sort of test used for LIIGU listening comprehension. Peter Ricketts, the VSO teacher, had taught grammar in the 14-25 March period.

Unfortunately, no one from MORIP passed the ALIGU test on 9 April, though one person from Fisheries did. Sarasutha of economics and Christine Monuat of soils came close to passing listening comprehension. Grammar was the biggest problem faced by the students.

Heretical as it seems, short-term training perhaps should be done in Indonesian or Malay-speaking countries. Agroecologists have ~~spiced~~ chosen this option, at the suggestion of Mrs. Wuryani of AARD.

10. My work is somewhat hampered by the unavailability of books in the Bangkok shipment and the air shipment, both of which I expected to be able to use within weeks. I understand that the airshipment may not yet have left the United States, but the Bangkok shipment must be being read very carefully by someone.

Appendix V

Monthly Report - March 1983
Syed Anwar Rizvi - MORIF

I. Activities

1. Presented to Dr. Farid Bahar, Director of MORIF, a seminar on rice tungro virus (RTV) nursery experiment as it has been conducted at the Institute's sub-station in Lanrang this year. Discussed in detail my plans for improving the experiment's efficiency and development of necessary facilities at Maros as well as at Lanrang in future. Major limiting factor it seems will be the non-availability of 3 Ir. level staff (even untrained) needed for carrying on various operations to conduct the experiment efficiently and effectively. I explained the responsibilities of each prospective staff and their possible training areas. I have made contacts with BORIF/IRRI for suitable training in future as staff will become available. Dr. Farid Bahar showed great interest in the new plan and indicated his full support for its implementation.
2. Preliminary investigations were started to develop a simple technique to inoculate rice seedlings in trays with blast inoculum using a spray bottle. Results of the first test were very encouraging as infection was developed uniformly in 2-3 days after inoculation compared with standard method used at MORIF which takes 6-7 days for the development of infection. More tests will be conducted to confirm the preliminary observations before using this technique routinely at MORIF.
3. An experiment was designed to test IR56 resistance to blast in field as well as in greenhouse. Seed of IRRI source of IR56 was obtained from Dr. Siwi, BORIF Director, Bogor. This seed will be tested along with IR56 line available at Maros to compare reaction of each IR56 source line to blast infection.
4. Assisted Ir. Syaharuddin of Pathology Department/MORIF to organize his experiments on Sheath blight, blast and bacterial leaf blight of rice to screen resistant lines to these diseases. Certain modifications of screening methods were suggested to improve the reliability of each test results.
5. Attended AARD/IRRI annual cooperative meetings in Ujung Pandang and went to Lanrang with the participants of this meeting. While in Lanrang, I explained salient features of RTV nursery experiment to the meeting participants and exchange ideas on different methods to improve this test at Lanrang. Later, farmers' fields in Pinrang were also visited where neck blast infection was very severe on IR50. Dr. Khush of IRRI suggested that farmers should not plant IR50 in areas where disease is severe.
6. Discussed with Dr. Hibino, Virologist from IRRI, possible areas of collaboration for the development of RTV screening activities at MORIF. Dr. Tantera of BORIF was also involved in these discussions to see how BORIF can help at some stages of RTV nursery testing.
7. Visited University Hasanuddin (UNHAS), Ujung Pandang to make plans for collaborative research activities. It was a follow up visit to continue our discussions of February 1983 meetings. Possibility of UNHAS students participation in MORIF research experiments in Plant Pathology was discussed.

(Cont page 2)

8. Attended a seminar given by Dr. N.S.Talekar, Entomologist, Asian Vegetable Research and Development Center (AVRDC), Taiwan who visited MORIF during March 1983. Seminar title was "Insect pests of Mungbean and Soybean".
9. On their trip to Lanrang, I was asked by MORIF Director's office to accompany Dr. Mew, Head Pathology Department, IRRRI, Philippines and two Japanese scientist in his party, working on bacterial diseases of rice particularly bacterial leaf blight (BLB) of rice. Ir. Shagir Sama, Head, Entomology, MORIF and Ir. Syahajuddin of Pathology Department also accompanied us. A general survey on reaction of various varieties to BLB was conducted by the visiting party. I showed them RTV nursery experiment and discussed our future plan to conduct RTV experiment at Lanrang and asked their comments and opinion to improve it further.
10. Discussed with Dr. Mew about the blast inoculation technique (spray method) which I am experimenting to screen rice nurseries for blast at MORIF. An easy to perform, less time consuming and efficient screening method is of utmost importance to identify sources of resistance to blast with greater reliability. Dr. Mew suggested a simple method to produce large quantities of inoculum needed for blast test in screenhouse. We are looking into the possibility of using this method at MORIF.
11. Went to Bogor to attend a workshop on rice pests and diseases organized by Central Research Institute for Food Crops (CRIF), Bogor. While in Bogor, I discussed with Mr. Harwood of RMI about the upcoming construction of the new greenhouses, their designs and other related would-be-available facilities for pathological research work at MORIF. I will continue my discussions when Mr. Harwood, in near future, will visit Ujung Pandang. I am very much interested to know this information in detail so that we in Plant Pathology Department at MORIF could prepare our future research plans, accordingly.
12. Meetings were held with Dr. Tantera, Head Pathology Department at BORIF as a follow up of our meetings in Ujung Pandang to organize work on RTV purification and preparation of RTV antiserum at BORIF. I have discussions with other staff of Pathology working on virus disease to identify areas of mutual interests for possible future collaboration between MORIF and BORIF. I also visited their laboratory, greenhouse etc to see the facilities and ongoing research work. In another separate meeting, I explained to Dr. Tantera procedures involved in the LATEX serological method to detect various viruses in plants. This method can be adapted easily and successfully both at BORIF and MORIF to facilitate virus research and increase the efficiency of results obtained.
13. During the meetings in Bogor, I also attended a seminar given by Dr. John Nichol, Director General of International Center for Tropical Agriculture (CIAT) on CIAT's research activities and accomplishments made at the headquarters in Columbia and in its out-reach programs around the world. I feel that MORIF can do some collaborative work with CIAT to improve its research on Cassava by introducing new germplasm and technologies from CIAT for selecting new lines with higher yields and resistance to diseases and pests of cassava. This effort of MORIF could eventually help to improve the economic returns and living conditions of cassava growing farmers in Sulawesi.

(Cont..... page 3)

14. Met with Dr. Alan R. Hurdus of USAID at RMI office in Bogor and reviewed with him, Dr. William Collier and Mr. Carl Fritz different research activities which I have been involved since my arrival at MORIF. Dr. Hurdus informed me that AARD Project Leader, Pak Ahmad Abdullah has authorized the availability of \$200 for each RMI staff to purchase few reference books, small equipment etc necessary to use immediately by each individual staff in his/her area of speciality. However, all purchases must be channelled through Mr. Carl Fritz or Dr. William Collier. I appreciate this facility very much and will use it to facilitate my contributions in research and training activities at MORIF.
15. I prepared a list of selected IIRI publications and training modules related to plant protection activities in rice and gave it to Dr. Collier, Chief-of-Party, RMI to arrange their purchase through IIRI liaison office in Bogor/Jakarta. These materials will be necessary for the development of training programs in Plant Pathology at MORIF. I also visited IIRI office in Bogor and obtained an updated list of IIRI publications 1983 edition for its possible use in future.

II. Travels Made :

1. Joined with AARD/IIRI cooperative meetings' participants on their trip to Lanrang and Pinrang (Activity # 5).
2. Accompanied Dr. Mew, Head, Plant Pathology Department/IIRI, Philippines and his party, and MORIF staff on their field trip to Lanrang. (Activity # 9 and 10).
3. Went to Bogor to attend a Workshop on Rice pests and diseases and to visit research facilities at MORIF's Plant Pathology Department. (Activity # 11 to 15).

Plans for April :

1. Continue assisting MORIF staff in Plant Pathology and Entomology Departments in organizing their research projects, data collection and preparation of result reports.
2. Encourage and assist Institute's staff in preparing research papers for publications in Agriculture Journals both in Indonesia and abroad. Assist staff in writing of research manuscripts in English.
3. Assist staff to prepare and present seminars on their ongoing research at MORIF and make open discussion to improve their research.
4. Test and develop more reliable screening methods for diseases of rice. Evaluation of each test will be conducted to judge its degree of reliability. Greenhouse testing is being emphasized.
5. Make arrangements to obtain necessary training materials and equipments to organize and conduct in future certain training courses in Plant Protection at MORIF.
6. Look into the possibilities of sending available staff in Plant Pathology for further training in their areas of research activities. Develop contact with other institutes in Indonesia and abroad to accomplish this objective.

Appendix VI

Report of Activities for the month of March, 1983

Ignacio T. Corpuz

I. Activities and accomplishments

- A. Designed a field fertilizer experiment to determine the soil fertility problem responsible in producing soybean plants with empty pods. (Project outline, Appendix A).
- B. Discussed with Ir. Agustina Buntan the harvesting procedures to be followed in harvesting the INSFFER Trials. The procedure is the result of a discussion with the INSFFER Coordinator during the INSFFER Site Visit Tour in Maros last February 21, 1983. (Ir. Buntan, had an orientation training in preparation for her permanent appointment in Gowa from Jan 30 to Feb 28, 1983. She was not around during the INSFFER Site Visit Tour) (Appendix B).
- C. Participated in harvesting and gathering experimental data conducted at Lanrang Substation:
 1. Timing of Nitrogen Application
 2. Nitrogen Fertilizer Efficiency on Irrigated Wetland Rice
 3. Long Term Soil Fertility Experiment.
- D. Started developing the topics to be discussed in a series of lectures to be given (Appendix C).

II. Travels made

- A. March 16 and 17 - To Lanrang Substation (Trip report Appendix I).
- B. March 20 - 22 - To Lanrang Substation (Trip report Appendix II).

III. Other activities

- A. Participated in the AARD - IRRI Collaborative Meeting held in Ujung Pandang and Maros on March 3 to 5, 1983.
- B. Discussed with Dr. Joel Levine, RMI Livestock expert in Southeast Sulawesi about the soil problems in his area.
- C. Attended the seminar delivered by Dr. Talekar, an Entomologist, AVRDC Taiwan.
- D. Discussed with Mr. Wayne Rude about the soil problems in Luwu specifically Bonepute.

(Cont page 2)

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IV. Plans for April

- A. Continue participating in completing on going experiments.
- B. Prepare a detailed outline and finally write the materials of each of the topics to be given in the series of lectures.

Soil Fertility Evaluation of Lanrang
Soil for Soybean

The soybean crop at Lanrang which was planted in February, 1983 produced empty pods. This is true for all the varieties tested.

The area was newly converted into an upland. It was in a number of years continuously planted to lowland rice. Because there was the difficulty of irrigating the area it was deemed proper to convert the area into an upland for palawija crops like mungbean and soybean, the first crops planted after several years of continuous lowland rice.

There are several causes of the problem. One of course is the soil. The soil profile chemical characteristics of the area are presented below. These data are adapted from the Interim report on the Detailed Soil Survey of Lanrang Substation conducted by the Soil Research Institute at Maros.

Soil depth (cm)	pH (H ₂ O)	Olsen P (ppm)	% N	Exchangeable		Cations (m.e/100 gr)	
				Ca	Mg	K	Na
0 - 25	6.0	1	0.11	11.2	5.7	0.1	0.2
25 - 47	5.9	trace	0.05	12.4	7.3	0.3	0.3
47 - 75	5.5	trace	0.05	13.4	8.8	0.3	0.3
75 - 146	5.7	2	0.06	15.0	9.5	0.3	0.3

Strikingly the level of phosphorus is extremely low.

Objective

The basic objective of the experiment is to determine the possible soil problem responsible for the empty pods of the different soybean varieties earlier tested. Specifically the experiment was designed to determine the influence of increasing the rates of phosphorus and potassium.

(Cont page 2)

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Methods and Procedure

A modified plus one nutrient technique will be employed under actual field condition-varying the rates of phosphorus and potassium.

The treatments in four replications arranged in a randomized complete block design are as follows :

- | | |
|----------------------|-----------------------------------------|
| 1. Control | 6. N2 P2 K ₁ |
| 2. N2 P ₀ | 7. N2 P2 K ₂ |
| 3. N2 P ₁ | 8. N2 P2 K ₃ |
| 4. N2 P ₂ | 9. N2 P2 K ₂ L ₀ |
| 5. N2 P ₃ | 10. N2 P2 K ₂ L ₁ |

Rates (Kg/ha)

- | | |
|---------------------|-----------------------|
| N ₂ - 40 | K ₁ - 30 |
| P ₁ - 30 | K ₂ - 60 |
| P ₂ - 60 | K ₃ - 90 |
| P ₃ - 90 | L ₁ - 1000 |

Sources

- N - Urea
- P - TSP
- K - K Cl
- L - ground limestone

Lime will be applied one week before planting. Nitrogen, phosphorus and potassium will be applied at planting time.

The recommended soybean variety will be used. It will be planted at a spacing of 25 cm between rows, 10cm between hills, 2 seeds to a hill to be thinned to 1 plant per hill one week after germination.

A 4-row plot, 5 meters long will be used.

The necessary pest control measures will be employed.

Data to be gathered.

Since the problem is empty pod, the data to be gathered will only be seed yield.

MAXIMIZING EFFICIENCY OF NITROGEN APPLICATION

Instruction For Harvesting
and Processing Yield

1. Collect 25 panicle samples, one from each of the 25-hill samples per plot. Place the panicle samples in plastic bags and bring to the laboratory for further processing.
2. Cut the 25-hill samples for each plot close to the ground level. Bind the 25 plants together and place the panicles and in a plastic bag to prevent looses. Bring the samples to the laboratory for further processing also.
3. Harvest the remaining plants within the harvestable area (3.2 x 3.2 m or 16 x 16 hills). Cut the whole plant close to the ground. Thresh the grains out and weigh the straw. Bring the threshed grains to the laboratory for further processing. Dry the unclean grains either in the dryer or under the sunshine. When dried, clean the grains using the electrically run blower. It is advisable to use the blower so that the cleaning will be uniform. This will minimize variability. After cleaning, weigh the clean dry grains.
4. From the 25-hill samples, count the total number of tillers, the productive tillers (or the number of panicles) and then thresh the grains out. Care should be observed when threshing not to lose any single grain. Dry the grains either in the oven at 60°C or under the sun. When dry, weigh the unclean grains, then clean it through the electrically run blower. After cleaning weigh the clean grains.

After threshing the grains, weigh the fresh straw and then oven dry at 60°C. When dry, weigh the straw.

In summary, the following data should be collected from the 25-hill sample.

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- a. Number of tillers.
 - b. Number of productive tillers (or number of panicles).
 - c. Weight of unclean dry grains.
 - d. Weight of clean (or filled) dry grains.
 - e. Weight of fresh straw.
 - f. Weight of dried straw.
5. Dry the 25-panicle sample collected earlier in the oven at 60°C then measure the length of each panicle. Measure starting from the node where the first primary branch emerged. Thresh out the grains and separate the empty from the filled grains. Count the total number of grains as well as the number of filled grains per panicle. In summary the following data should be collected from the 25-panicle sample:
- a. Length of each panicle.
 - b. Total number of grains (filled and unfilled) per panicle.
 - c. Number of filled grain per panicle.
 - d. Weight of filled grains per panicle.

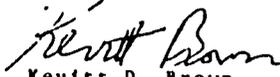
Soil Problems : Their Management and Improvement

- I. Soil Fertility Problems
 - A. Nitrogen Deficiency Problem
 - B. Phosphorus Deficiency Problem
 - C. Potassium Deficiency Problem
 - D. Sulfur Deficiency Problem
 - E. Micronutrients Deficiency or toxicity problems
 1. Zinc Deficiency Problem
 2. Boron Toxicity Problem
 3. Iron Toxicity Problem
 4. Copper Deficiency Problem
 5. Molybdenum Deficiency Problem
 - F. Soil acidity Problem
 - G. Soil Salinity and Alkalinity Problem
- II. Peat Soils
- III. Acid Sulfate Soils.
- IV. Soil Erosion Problems.

Appendix VII

AARP - RMI --- USAID - BARIF

Monthly Report : March 1983


Kevitt D. Brown

Progress in the breeding programs I am involved with have been somewhat slow this month but a lot of administrative details have been handled which should improve the situation for future months.

Greta Watson and her husband Tom were welcomed early this month and later John Bolton who will also serve as consultants at BARIF. We will hire an administrative assistant beginning in April. Meantime I have continued

to serve as project bookkeeper to ensure some continuity. Past difficulties with the monthly financial report have been or will be resolved when Mr. Fritz arrives April 4. We have not yet chosen a project secretary but are continuing the search process. A manual and an electric typewriter have arrived from Jakarta, which should help greatly.

My wife, Sara, has agreed to volunteer part of her time to help with the breeding program at BARIF without pay. Also, the British VSO volunteer who will help to instruct BARIF personnel to learn English, arrived March 31 and will begin classes in April.

Dr. Anwarhan has been very informative to explain policies and procedures to the consultants over matters that relate to BARIF. We will maintain close informal communication with him to solve mutual problems that may arise in the future. We discussed the foreign training of Ir. Suhaimi and Ir. Hadiatmi. The latter asked to withdraw her request to go to CIMMYT but Suhaimi is still interested to go to the U.S.A. in June for "Management of government organizations" training. During his two month absence I will assume his breeding responsibilities.

My discussions continued this month with Suhaimi to improve the BARIF rice breeding program. We focused most on screening nurseries for submergence tolerance in Handil Manarap and soil problem tolerance in Belandean. Detailed experimental plans were discussed and will be implemented over the next year. Also, we are beginning to work on improving the screening of upland rice nurseries for rice blast.

Suhaimi and I visited Pleihari, an upland rice testing site and took data on the nurseries there but very few promising materials were identified as offering very much hope for immediate use. We also visited Handil Manarap twice this month. The farmers' planting of IR 50 for the first crop was quite successful this year. Station trials were planted too late and look poorer. Not much of the tidal swamp material presently tested is promising but we are increasing seed of the best material and some will be tested again in Belandean this season, if the germination is still good. We've planted a hybridization block in Banjarmasin but many parents were not available so we've scaled it down considerably. We may request Bogor or IRRI to make crosses to complete our program.

I also took a trip with Dr. Anwarhan and Suhaimi to visit two of the upland transmigration sites in Sebampan at the request of the Governor. They had a serious problem with rice blast and blamed it on the varieties. Our recommendation included that only locally adapted and blast tolerant lines be used in future upland projects since there are not yet any recommended upland varieties for Kalimantan Selatan and that the people can intercrop with cassava. If possible the trans migrant people were asked to consult with BARIF prior to making recommendations in the future. The trip stressed to me the further importance of the upland nurseries to our overall breeding program.

Appendix VIII

To: Dr. William L. Collier
RMI/AARP Projects Specialist

FROM: Greta A. Watson
RMI/AARP Consultant in Agroecconomics/Social Science

SUBJECT: Monthly Report - March 1983

I. Orientation - RMI/AARP Project, Jakarta and Banjarmasin, BALITTAN, Banjarmasin

I arrived 1 March 1983 in Jakarta and was received by Dr. William Collier, who acquainted me with AARP/RMI Project goals. During the next few days I consulted with:

1. Mr. Sudikin - Director General of Research AARD.
Mr. Sudikin stressed GOI's goal of increasing the income of the small farmer. I outlined some agroeconomic and social science research necessary to these interests. He expressed hope that the BALITTAN-AARP/RMI project would benefit farmer income and Indonesian food crop production.
2. Mr. Achmad Abdullah - AARP/RMI Director
Mr. Abdullah outlined the organization of the GOI-AARP/RMI project throughout Indonesia. He emphasized the necessity of directed research and publication of results.
3. Dr. J.L. McIntosh - CRIFC-IRRI Farming Liason Scientist.
This informal discussion covered a wide range of cropping problems of vegetable and grain crops.
4. Dr. J. Ritchie Cowan - CRIFC-IRRI Liason Scientist
5. Mr. Carl R. Fritz - AARP/RMI Administrative Specialist
Mr. Fritz discussed administrative procedures to be carried out by AARP/RMI staff in Banjarmasin, and procedures for acquiring research materials and baggage.

March 8, 1983 I arrived in Banjarmasin. In the following days, Dr. Hans Anwarhan, Head of the BALITTAN Food Research Institute, outlined the

research goals and aims of the Institute. He delineated various subsections of the BALITTAN and their respective heads. Dr. Anwarhan offered all assistance necessary in implementing AARP/RMI - BALITTAN programs.

I. Principal Activities

A. Initiated Consultancy with Agro-economic staff at BALITTAN, Banjarmasin

1. Discussed role of agro-economists in the BALITTAN Food Crops Program. The 1983 research funding proposal stresses plant breeding: 40 units of research from the sum total of 81 units. Agro-economic research has been allocated 4 units. Most agro-economists are involved in plant breeding and/or agronomic research, and funding within their own field is limited. We expect that this situation is temporary, and that results of research carried out in the 1983/84 year will prompt increased funding in agro-economy.

Mr. Rumansyah, my counterpart in the BALITTAN staff outlined agro-economic staff research.

2. Reviewed and edited project proposals for 1983/1984 and suggested changes in research methodologies.

Projects include:

- a. Marketing Systems and Prospects for Increased Production of Cassava in Tidal Swamp and Dryland Areas of South Kalimantan. Research will focus on Gross and Net costs of production, profit margins and marketing networks in these two areas. Research will be carried out at village, county, subprovince and provincial levels.
- b. Supply and Demand Research on Selected Vegetable Crops in South Kalimantan. This research includes examination of low, middle and high income households in major cities regarding their monthly consumption of selected vegetable crops and in-depth interviews with large-scale vegetable dealers. Broader village and county-level research could better evaluate potential for increased production of crops, but funds are limiting.

c. Tidal Swamp Agriculture: Potentials for Double Cropping of Rice and Increasing Non-Rice Crops, South Kalimantan. Proposed research includes evaluation of social, economic and environmental restrictions to double cropping and potential for increasing or initiating non-rice crop production.

3. Discussed organization of training program in research methodology with agro-economy staff. The proposed workshop would include training in organization of research proposal writing, field methodology , analysis of data, and interpretation of data for future projects or research. First priority is given to direct and indirectly influenced tidal swamp areas and inland or monotonous swamps.

4. Discussed organization of Monday Seminar Series. This series would include lectures by RMI/AARP consultants in Banjarmasin, BALITTAN staff , and the possibility of outside participants.

B. Developed initial list of equipment for agro-economic research to be obtained through AARP procurement funds.

III. Miscellaneous Activities

A. Routine AARP administrative business and organization of office.

B. Interviews of prospective secretaries and administrative assistants for COL-RMI/AARP project.

C. Familiarization with and replacement of parts for the Texas Instrument 59 calculator. This calculator will be used to analyse results from various farming surveys. This consultant will instruct BALITTAN's statistician on its use when the calculator is in working order.

D. Research Planning Discussion/Visitors to BALITTAN Banjarmasin GOI RMI-AARP project.

1. Dr. William Collier - AARP/RMI Projects Specialist.

Dr. Collier and I discussed the Organization of a Tidal Swamp Workshop to be possibly carried out in July of 1983, and my role as an agro-economist/social scientist in farming systems research. Dr. Collier may be able to obtain funding for additional agro-economic research.

2. Dr. Ronald Harwood, AARP/RMI Research Station Development Specialist

Dr. Harwood outlined procurement procedures for equipment under AARP funding. We discussed problems in construction and maintenance of buildings and equipment in the new Banjarbaru station. Field trial experiments may be difficult to carry out in this swampy area unless the land can be adequately drained. Topographical problems also occur at the Lempake site in East Kalimantan.

E. Located and rented house in Banjarmasin.

IV. Plans for April

A. April 19-21 : Visit Resarch sites of BALITTAN Banjarmasin in South and Central Kalimantan.

B. Organize BALITTAN staff-run seminars on work-related topics: tidal swamp and monotonous swamp environments, crop characteristics, pests and diseases.

C. Start training program for Agricultural Economics Staff at BALITTAN.

D. Investigate Potential Sites/ Villages for Agro-economic research.

Greta A. Watson

Greta A. Watson

Agroeconomist/Social Scientist, RMI

1 April 1983

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Appendix IX

Report for March 1983

John Bolton, Soil Scientist BARIF

I. ACTIVITIES

1. Arrived in Jakarta/Bogor from London on March 10.
2. Attended meeting in Bogor on procurement procedures under Chairman Dr. Muljadi and explained methods used by USAID Research Project in Bangladesh. The major decision was to use a U.S. Agent and selection was put in hand by USAID.
3. Reviewed Project proposal for compilation of a land resource data base for Indonesia from Centre for Soil Research for Ir. Sadikin, Director General AARD. Attended Symposium on computer modelling of land potentials at Soil Research Institute on 17 March.
4. Arrived in Banjarmasin with Dr. Collier on 18 March. Interviews of candidates for RMI Admin. Officer. Mr. Siddik selected to start April 1. A secretary was selected but has not yet agreed terms. Further interviews and tests may be necessary.
5. Attended meetings with Dr. Hans Anwarhan and his staff at BARIF to discuss future programs and training and the responsibilities of expatriate staff.
6. Started review of procurement list for laboratory equipment for Banjarbaru and other substations and checked equipment already in the laboratories.
7. For reports on visits to Samarinda, E. Kalimantan and to new research station site at Banjarbaru ~~see Appendices I and II.~~
8. Now that three RMI staff members are working in Banjarmasin a well-organized office is essential. Hopefully much progress will be made in April with office organisation, accounting and typing facilities. Two RMI staff (Brown and Watson) have now moved into houses. Dr. Brown was also hospitalised for 4 nights and recuperated at home for a few days. The diagnosis was severe influenza.

John Bolton, 2 April 1983

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Report on visit to Samarindar --- John Bolton, Soil Scientist
(BARIF)

The purpose of this visit was to inspect proposed sites for a new Forestry Research Institute laboratory and offices in Samarindar and a new Research Station for the Food Crops Research Institute at Lempake about 15 km north of Samarindar. "

1. Forestry Research Institute site.

This site only about 3 km from Samarindar on a good paved road was allocated by the Municipality beside other agricultural offices (?). The plans showed a small piece of unallocated land (with a deep ravine) between the proposed site and the adjoining offices under construction. The 3 ha site was situated on a steep ridge of land rising at least 30 m from the road. The top of the ridge was only about 3 m wide. The soil was a yellow brown latosol derived from sedimentary friable sandstone with much folding, and cuttings showed rapid erosion. Much site preparation will be necessary before building, and it was agreed that a detailed topographic survey would be made to calculate cut and fill quantities and costs. In my view this is a most unsuitable site for an office/housing complex.

2. Lempake.

This site was at the end of about 5 km of very rough unpaved road leading from the main road through a transmigration site. Buildings were being constructed for Dinas Pertanian (a seed farm) adjoining the proposed experimental station. On the higher ground, two wooden buildings were being constructed - a library and ? as part of the new complex. Land for experiments was under belukar and will need extensive clearing, road and drainage construction. The topography was part flat and part hilly. The soil on the flat land is a very heavy clay with mottling to the surface showing strongly impeded drainage during part of the year (now the land is free of surface water).

This land may be very difficult to cultivate mechanically or otherwise and certainly, a comprehensive drainage system will be required. Water availability within the profile will be small. We did not investigate the natural drainage pattern -- it could be through the Dinas Pertanian land in which case cooperation in a drainage scheme would be essential. As for the Forestry site, a detailed topographic survey is required as soon as possible.

A major problem after development will be the access to the station and unless the road is paved it is unlikely that staff will be content or that many farmer groups visits will be possible.

Itinerary : 21/3 Mon. 8:00-16:00 Banjarmasin to Samarindar
via Balikpapan (air).
22/3 Tues. 9:00 Meeting with Assist. Governor E.Kalimantan
10:30 " " Mayor of Samarindar.
12:00 Visit to Forestry Rs.Inst. proposed site(3 ha)
14:30 " " Lempake Ag. Rs.Station, " " (20 ha)
18:00 Travel by bus Samarindar to Balikpapan
23/3 Wed. 12:00 Balikpapan to Banjarmasin arr. 14:30 (air)

JK

REPORT ON VISIT TO BANJARBARU/ 24 March 1983.

J/ Bolton Soil Scientist BARIF

Accompanied by Dr Hans Anwarhan and Mr R/ Harwood, I visited the site of the new experimental station to look over the land and surrounds. Entry is via about 1.5 km of laterite road from the main Banjarmasin- Banjarbaru highway. The only problem with this road is an unsafe wooden bridge just before the site. This will need immediate repair before building starts. There is an alternative route of about 3 km via a housing estate on the edge of Banjarmasin town.

The site area had been marked with concrete posts at the corners, at least on the north and east sides. Most of the experimental land at the western end was under water and local farmers were growing padi. Possibly they had banded the water in from drainage into the rivers on the south and west boundaries. This needs to be checked. Peat soils were found at this end but depths could not be measured.

At the eastern end, we walked over part of the proposed building site covered with belukar and alang-alang and came upon a small depression with standing water about 80 m from the west road - very close to one wing of the main laboratory building site. More detailed measurements should be compared with the final site plans to see whether the buildings should be moved nearer the road. I shall try to do this as soon as possible.

It seems certain that construction of access roads to the experimental fields and a drainage system will be both difficult and expensive due to a lack of fill material. A detailed topographic and soil survey is necessary and should be organised as soon as access is possible during the dry season.

LIST OF AARP/RMI PARTICIPANTS AS OF MARCH 31, 1983

No.	NAME	EMPLOYING OFFICE	COURSE/OBJECTIVES	INSTITUTIONS/COUNTRY	DURATION
<u>DEPARTURE:</u>					
1.	Kosasi Kadir	FPRI/Bogor	Woodworking & drying & research proj. plan- ning & evaluation	Forest Products R&D Insti. Los Banos, Philippines	Mar.7-April 7,1983
2.	Noverny A.Wahyudi	RIIF/Bogor	Aquaculture Trg.Prog.	Auburn University Alabama, USA	Mar.18-Jul.15,1983
<u>CONTINUING IN TRAINING:</u>					
3.	Ati Sri Duriat	LERIH/Lembang	Elisa Technique	America Type Culture Center in Rockville Maryland, USA	Feb.20-May 28,1983
4.	Nani Sumarni	LERIH/Lembang	Interdisciplinary re- search in Plant Breed- ing	Asian Vegetable Res.& Dev. Center, Taiwan	Nov.07-May.07,1983
5.	Erti Purwati	-do-	-do-	-do-	-do-
6.	Yoyo Sulyo	-do-	-do-	-do-	-do-
7.	R.E.Suriaatmadja	-do-	-do-	-do-	-do-
<u>RETURNEES:</u>					
8.	Mas Ismunadji	BORIF/Bogor	Spec.Trng.in upland crops physiology	-do-	Nov.11-Dec.01,1982
9.	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
10.	Syafril Lansayun	CARP/Jakarta	Procurement Training	TransCentury Corp.USA	Oct.15-Nov.14,1982
11.	A.M. Laponangi	MORIF/Maros	-do-	-do-	-do-
12.	Abdussamad Syahrani	BARIF/Banjarmasin	-do-	-do-	-do-
13.	Warsito Hutomo	G 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
14.	Mohamad Mansur	CRIIC/Bogor	Agric.Proj.Planning & Analysis Section II	USDA,Washington,DC	Sep.7-Nov.11,1982
15.	Hafni Zahara Syukri	CARP/Jakarta	-do-	-do-	-do-
16.	Wahyadi Sosrowardoyo	CRIFI/Jakarta	Applic.and Diffusion of Agric.Research Results to the Community Level	Iowa State Univ.USA	Aug.25-Oct.1,1982
17.	Sofyan Ilyas	RIFT/ Jakarta	Determination & Prevention of Postharvest Food Losses	Cornell Univ. USA	Sept.6-Oct.13,1982
18.	Achmad Hidayat	C A Q/Jakarta	Plant Quarantine	USDA,Washington,DC.	July 19-Sep.17,1982
19.	Dewa M. Tantera	BORIF/Bogor	Integrated Pest.Mgmt.	Purdue Univ. USA	June 9-Jul.23,1982
20.	Sudiarto	CRIIC/Bogor	Agric.Research Method	Kansas State Univ.USA	May 31-Jul.23,1982
21.	Lalu Sukarno	BORIF/Bogor	-do-	-do-	-do-
22.	Siti Sufiani	MORIF/Maros	-do-	-do-	-do-
23.	M. Saleh Pandang	MORIF/Maros	-do-	-do-	-do-
24.	Wafiah Akib	MORIF/Maros	-do-	-do-	-do-
25.	Tambak Manurung	CIRIAS/Bogor	-do-	-do-	-do-
26.	Didi Suardi	CRIFC/Bogor	-do-	-do-	-do-
27.	Yono C. Rahardjo	CRIAS/Bogor	-do-	-do-	-do-
28.	Budhoyo Sukotjo	Prog.and Proj.Form. Unit.Jakarta	Agric. Research Management	Washington,DC and Hawaii, USA	June 6-12, 1982 June 18-21,1982
29.	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
30.	Rachmat Kartapradja	LERIF/Lembang	Veg.Crop.Prod. & Markt.	Rutgers Univ.USA	July 12-Aug.20,1982
31.	Artaty Wijono	CRIFI/Jakarta	Ag.Comm.&Med'.Strategy	Iowa State Univ.USA	July 12-Aug.20,1982
32.	Abisano	TARII/Tg.Karang	-do-	-do-	-do-
33.	Adi Widjono	CRIFC/Bogor	-do-	-do-	-do-
34.	T.H.Mangunsong	Reg.Ag.Quarant/Jkt	-do-	-do-	-do-

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