

PROPOSED PROJECT-TYPE TECHNICAL COOPERATION
FOR THE
PHILIPPINE RICE RESEARCH INSTITUTE (PHILRICE)

EXECUTIVE SUMMARY

1. The Philippine Rice Research Institute (PhilRice), an agency attached to the Department of Agriculture (DA), was established on November 5, 1985 to undertake rice research and development for the Filipino farmers. In recognition of the importance of PhilRice in national development, the government of Japan through the Japan International Cooperation Agency (JICA), extended in December 1989, a grant-aid in support of the Institute's infrastructure development program.
2. To further hasten its growth and development, PhilRice requests a Project-Type Technical Cooperation in support of its research and development programs, in upgrading its manpower capability, and in the full utilization of the facilities under grant-aid assistance. It is anticipated that a strong technical collaboration between the Philippines and Japan will significantly strengthen the exchange of technical information and in fostering cultural understanding between the two countries.
3. The components of the technical cooperation are the following:
 - a) Dispatch of Japanese experts who will collaborate with their Filipino counterparts on specific fields related to the program thrusts of PhilRice;
 - b) Training of Filipino scientists and technicians in Japan on specific scientific fields as well as in the utilization and maintenance of the various research equipment to be provided by JICA; and
 - c) Provision of equipment and materials needed by the Japanese experts and their Filipino counterparts in the pursuit of their research and development activities.

PROJECT : PROJECT-TYPE TECHNICAL COOPERATION
FOR THE PHILIPPINE RICE RESEARCH
INSTITUTE (PHILRICE)

PROJECT PROPONENT/
IMPLEMENTING AGENCY : PHILIPPINE RICE RESEARCH INSTITUTE
DEPARTMENT OF AGRICULTURE

LOCATION : MALIGAYA, MUÑOZ
NUEVA ECIJA, PHILIPPINES

PROPOSED SOURCE OF
ASSISTANCE : JAPAN INTERNATIONAL COOPERATION
AGENCY (JICA), THE GOVERNMENT OF
JAPAN

RATIONALE

The Philippine Rice Research Institute (PhilRice) was established by virtue of Executive Order No. 1061 on November 5, 1985 and amended by Executive Order No. 60 on November 7, 1986. It was attached to the Department of Agriculture by virtue of Executive Order No. 116 dated January 28, 1987. It is mandated to develop and implement a national rice research and development program to attain the following objectives:

1. Sustain and expand the gains made in rice production in the country;
2. Increase the income of small farmers;
3. Expand employment opportunities and stimulate economic growth in the rural areas through rice farming; and
4. Promote the general welfare of the people through self-sufficiency in rice production.

In order to realize its objectives, PhilRice is pursuing eight major program thrusts, as follows:

1. Varietal Improvement --- improving and stabilizing yields of important agro-ecological types of rice through conventional and non-conventional breeding techniques, and facilitate production of basic seeds from released or recommended varieties.

2. Planting and Fertilizer Management --- improving and sustaining productivity of soils planted to rice with low-cost inputs and develop efficient planting methods.
3. Integrated Pest Management --- developing and adopting pest management approaches that will improve and sustain rice yields and maintain the stability of the environment.
4. Rice-based Farming Systems --- identifying yield constraints and discovering opportunities in the improvement of rice farming systems, generating technologies for profitable cropping patterns suited to specific environments, and packaging low-cost management practices for promising cropping patterns and crop-livestock/fish systems.
5. Rice Engineering and Mechanization --- promoting farm mechanization, better uses of land and water resources, and developing postharvest technologies for rice and rice by-products.
6. Rice Chemistry and Food Science --- establishing grain qualities preferred by various consumers and maximizing the use of rice and rice by-products.
7. Social Science and Policy Research --- hastening and increasing the effectiveness of technology development and adoption process, strengthening institutional support for rice production, and improve policy environment of rice farmers.
8. Technology Transfer --- adapting, verifying, and packaging location-specific rice and rice-based technologies, train the rice industry's manpower, and communicating technologies from research centers to the farms.

PhilRice has its Central Experiment Station at Maligaya, Muñoz, Nueva Ecija. It technically supervises 4 branch stations, and coordinates the rice research and development work of 7 regional research centers and 20 cooperating/testing stations.

The infrastructure project of PhilRice under the Japan International Cooperation Agency (JICA) grant-aid program consists of research laboratories and administration/support services buildings, greenhouses, machinery and equipment, and other support facilities.

In support of the mandate of PhilRice and the infrastructure project, a second JICA assistance in the form of a Project-Type Technical Cooperation is being requested. The proposed project shall have the following components, namely:

- a) Dispatch of Japanese experts who will collaborate with their Filipino counterparts on specific fields related to the program thrusts of PhilRice;
- b) Training of Filipino scientists and technicians in Japan on specific scientific fields as well as in the utilization and maintenance of the various research equipment to be provided by JICA; and
- c) Provision of equipment and materials needed by the Japanese experts and their Filipino counterparts in the pursuit of their research and development activities.

GOAL

The goal of the Project is to support the attainment of the mandate of the PhilRice through technical collaboration among Japanese and Filipino scientists.

OBJECTIVES

1. To provide viable and acceptable technology on various fields related to the rice R & D thrusts; and
2. To improve the manpower capabilities of PhilRice in rice R & D.

SCOPE

The Technical Cooperation shall cover the following areas of concern:

1. Plant Breeding
 - a) Development of high yielding rice cultivars (7 to 10 t/ha) with excellent grain quality, resistant to pests and diseases (wide resistance), and suitable maturity for specific agro-climatic conditions in the country.

- b) Development of rice cultivars suitable for cool elevated areas which are high yielding with excellent grain quality, resistant to shattering and to major pests and diseases, and responsive to low levels of fertilizer.

2. Soil Fertility

- a) Establishment of fertilizer recommendations for various agro-climatic conditions in rice growing areas.
- b) Evaluation of the transferability of fertilizer management technology in the various regions of the country.
- c) Development of models that will predict responses of rice yields in different agro-climatic conditions with different levels of fertilizer application.

3. Integrated Pest Management

- a) Identification of serious incidence of insect damages in the specific localities and examining the effective countermeasures to control them.
- b) Estimation of population dynamics with special emphasis on the densities of predators and parasites.
- c) Evaluation of the balance between chemical and biological methods of insect control.

4. Harvest and Post-harvest Mechanization

- a) Design, development and improvement of harvesting, drying and milling (farm level) machinery/implements.
- b) Determination of viable post-harvest systems to facilitate adoption of post-harvest technology.

EXPERTS

Japanese experts to be dispatched on a long term basis (5 years) shall be in the fields of:

1. Plant breeding
2. Soil fertility

3. Integrated pest management
4. Harvest and post-harvest mechanization

The field of specialization of the Japanese experts for 5-yr assignment, with their corresponding Filipino counterparts, is shown in Table 1.

The other experts will be dispatched on a short term basis for 1 year or less. The short term experts that are necessary in the attainment of the different areas of cooperation and the smooth implementation of the project are:

1. Learning Systems Design Expert
2. Tissue Culture Expert
3. Climate and Plant Type Expert
4. Crop Modelling Expert
5. Production Machinery Design Expert
6. Instrumentation Expert
7. Food Engineer
8. Food Scientist/Nutritionist
9. Rice Chemist
10. Econometrician
11. Computer System Expert

Other short-term experts will be requested when necessity arises as mutually agreed upon by the Japanese team leader and the PhilRice Executive Director.

Experts shall be well-qualified in their respective fields, with at least 10 years working experience, and an adequate command of the English language. They will do their work in close collaboration with their Filipino counterparts.

Research activities of the experts and their counterparts shall be focused on current problems in rice production consistent with the policies of the Philippine government and projects approved by the PhilRice Board of Trustees. Each expert, in collaboration with the Filipino counterpart, shall draw up a work plan that will serve as a guide in the entire duration of the project.

The experts may be assigned either at the Central Experiment Station in Muñoz, Nueva Ecija, or PhilRice Los Baños, or at the branch stations and regional research centers, based on mutual arrangement by PhilRice and JICA management.

MANPOWER DEVELOPMENT

Filipino scientists and staff serving as counterparts to the Japanese experts will be sent to Japan for non-degree training on various disciplines of rice science and technology, and to observe the operation and maintenance of various equipment and instruments provided by the JICA grant on infrastructure development. Qualified staff members will also be sent for post graduate studies in various fields as may be deemed necessary.

The requested trainees and areas of training for them is shown in Table 2.

LIST OF EQUIPMENT

1. Equipment, machinery, instruments, tools and spare parts necessary for the implementation of the 7 areas of technical cooperation.
2. Books and journals relevant to the R & D thrust of PhilRice.
3. Vehicles for experts.

Table 3 summarizes the distribution of equipment requested by PhilRice to be acquired as part of the technical assistance package.

Table 1. JICA Project-Type Technical Assistance: PhilRice Counterpart Staff

Japanese Expert/Field of Specialization	PhilRice Counterpart Staff	Position	Field of Specialization
Team Leader	Dr. Santiago R. Obien	Executive Director	Weed Science, Pest Management and Crop Protection
	Mr. Ronilo A. Beronio	Deputy Director	Agricultural Economics
	Engr. Vicente Rodriguez (a)	Department Manager	Agricultural Engineering
Plant Breeder	Mr. Hilarario de la Cruz, Jr. (a)	Supv. Science Res. Spec.	Conventional Breeding
	Mr. Raul Lara	Senior Science Res. Spec.	Hybrid Rice Production Technology
	Dr. Nenita Tepora (a)	Professor, CLSU	Plant Breeding and Genetics
Soil Fertility	Dr. Pompe Sta. Cruz	Chief Science Res. Spec.	Crop Physiology and Plant Nutrition
	Dr. Teodula Metra	Supv. Science Res. Spec.	Soil Chemistry and Soil Fertility
	Dr. Miguel Aragon	Professor, CLSU	Soil Fertility
Entomologist	Mr. Florentino Olivares Jr.	Supv. Science Res. Spec.	Plant Pathology
	Mr. Gerardo Estoy Jr. (b)	Science Res. Spec. II	Entomology and Residue Analysis
	Ms. Alejandra Burdeos (c)	Senior Science Res. Spec.	Entomology and Biological Control
Harvest and Postharvest Mechanization	Engr. Felimar Torrizo	Supv. Science Res. Spec.	Harvesting Machinery
	Engr. Federico Recta, Jr.	Senior Science Res. Spec.	Drying/Milling Machinery
	Engr. Bernard Tadeo	Science Res. Spec. II	Drying/Milling Machinery

- (a) Had some year(s) of training in Japan
 (b) Currently on training in Japan, 1990-91
 (c) Will go for a PhD Scholarship in June 1991

Table 2. JICA Project-Type Technical Assistance: Short-term Training of Staff Requested by PhilRice

Program/Name of Staff	Position	Field of Specialization	Field of Training and Justification
Rice Varietal Improvement Program			
Ma. Teresa Peralta	SRS II	Plant Breeding	Tissue Culture & Wide Hybridization
Thelma Padolina	SRS I	Plant Breeding	Varietal Improvement for Cool Elevated Areas
John de Leon	SRS I	Plant Breeding	Data Bank Management for Varietal Trials
Integrated Pest Management Program			
Ferdinand Salazar	SRS II	Entomology	Insect Pest Management
Gilely Santiago	SRS II	Entomology	Population Dynamics
Arthur Baria	SRS II	Plant Pathology	Epidemiology of virus diseases
Planting and Fertilizer Management Program			
Fernando Garcia	SRS I	Agronomy	Crop Physiology
Jovino de Dios	SRS I	Soil Science	Soil Fertility Evaluation
Constancio Asis	SRS I	Soil Science	Plant and Soil Analysis
Rice-Based Farming System Program			
Rolando Retales	Senior SRS	Crop Production/ Multiple Cropping	Crop Production & Rotation
Vilma Cristobal	SRS I	Crop Protection	Pest Management in Crop Rotation Systems

Table 2. JICA Project-Type Technical Assistance: Short-term Training of Staff Requested by PhilRice

Program/Name of Staff	Position	Field of Specialization	Field of Training and Justification
Rice Engineering and Mechanization Program			
Evangelina Sibayan	SRS II	Water Management	Underground Water Hydrology
Bernard Tadeo	SRS II	Production Equipment	Production Machinery Design (Harvesting)
Federico Recta, Jr.	Senior SRS	Postharvest Equipment	Drying and Milling
Rice Chemistry and Food Science Program			
Leslie Togado	SRS II	Chemistry	Grain Chemistry & Quality
Jumanovie Ayap	SRS I	Microbiology	Food Fermentation and Product Development
Social Science and Policy Research Program			
Carlos Carlos	Senior SRS	Sociology	Development of Computer-Generated Survey Questionnaires
Ma. Zinia Azanza	SRS I	Statistics	Statistical Designs and Analysis (Sociological Research)
Imelda Revilla	Senior SRS	Economics	Econometric Modelling
Technology Transfer Program			
Lea del Rosario	SRS II	Dev. Communication	Educational Video
Constante Briones	Senior SRS	Mass Communication	Broadcast Production
Zyla Macasieb	Senior SRS	Training & Extension	Farmers Organization & Cooperatives
Virgilio dela Trinidad	Senior SRS	Soils & Agronomy	Crop Production & Technology Packaging

Table 2. JICA Project-Type Technical Assistance: Short-term Training of Staff Requested by PhilRice

Program/Name of Staff	Position	Field of Specialization	Field of Training and Justification
Planning and Collaborative Programs Office			
Pioquinto Pangilinan	SRS I	Computer Science	Structured Systems Analysis and Design
Julius Caesar Sicat	SRS I	Project monitoring and evaluation	Project Management Information System
Teodora Briones	SRS II	Budget analysis and financial monitoring	Financial Management Information System

- SRS I - Science Research Specialist I
- Bachelor of Science graduate with less than two years' work experience
- SRS II - Science Research Specialist II
- Bachelor of Science graduate with honors or at least two years' work experience
- Sr. SRS - Senior Science Research Specialist
- Master of Science graduate or B.S. with Masteral units

Table 3. JICA PROJECT-TYPE TECHNICAL ASSISTANCE: Breakdown of equipment requested by PhilRice

Program/Office/Department	Year 1	Year 2	Year 3-5	Total
Rice Varietal Improvement	9,335	9,260		18,595
Integrated Pest Management	18,050	4,665		22,715
Planting and Fertilizer Management	52,900	44,600	77,400	174,900
Rice Engineering and Mechanization	24,046	12,898		36,944
Rice Chemistry and Food Science	42,630	43,545	200,850	287,025
Social Science and Policy Research	7,790	500		8,290
Technology Transfer	34,104	3,334		37,438
Planning and Coll. Programs Office	27,730	20,150		47,880
Research Department				
Vehicles	54,000			54,000
Books and Journals	12,000	19,000		31,000
Other equipment	10,000			10,000
Branch Stations				
Midsayap	0	41,492	36,314	77,806
CVES	0	16,657	16,396	33,053
TOTAL	292,585	216,101	330,960	839,646

Notes:

- a) The equipment requirements from Year 3 onwards are tentative, since the type and direction of future research, and therefore, equipment needs, is very much dependent on the results of current studies.
- b) The detailed equipment listing is appended to this proposal

JUSTIFICATION FOR LONG TERM EXPERTS

1. Type of Expert: Plant Breeder

Background of Project

The Philippines has made substantial progress in increasing rice production. However, at present, the yields are leveling off at about 5 t/ha. Furthermore, divergent ecosystems have also become a constraint in increasing rice yields. The tungro epidemic in different parts of the country, the outbreak of black bug in Palawan and different soil problems are also being encountered in rice varietal improvement. Thus, many lines that have performed well in some locations cannot be recommended because of poor performance in other locations.

Due to the foregoing, PhilRice is now embarking on developing varieties that are not only high yielding, with good grain quality, and resistant to pest and diseases but are also suited to specific agro-climatic conditions in the country. Although, IRRI has made tremendous advances in rice varietal improvement, the development of location-specific varieties for the Philippines is beyond its mandate. PhilRice therefore, aims to fill this gap by coming-up with regional varietal recommendations.

Under this scheme, the PhilRice central experiment station will produce different breeding materials through conventional and non-conventional breeding methods. The materials will then be sent to different PhilRice branches and cooperating stations where selection for location-specific lines/varieties will be conducted. PhilRice plant breeders will supervise regional activities.

Scope of Cooperation

- a) Development of rice cultivars that are high yielding (7 to 10 t/ha) with excellent grain quality, resistant to pests and diseases (wide resistance), and suitable maturity for specific agro-climatic conditions in the country.

- b) Development of rice cultivars suitable for elevated areas which are high yielding and cold tolerant, with excellent grain quality, resistant to shattering and to major pests and diseases, and responsive to low levels of fertilizer.

2. Type of Expert: Soil Fertility Expert

Background of Project

Rice yield responses vary with different agro-climatic conditions. As such, current national recommendations for fertilizer management have proved to be inadequate for most areas. In view of this situation, the scope of transferability of proven fertilizer management technology should be determined.

A solution to this problem is the development of models for predicting appropriate requirements for different agro-climatic conditions. To come-up with such models, it will be necessary to have detailed characterization of the environment and the responses of each rice cultivars in each agro-ecosystem.

Scope of Cooperation

- a) Establishment of fertilizer recommendations for different specific agro-climatic conditions in rice growing environments.
- b) Evaluation of the transferability of fertilizer management technology in the various regions of the country.
- c) Development of models that will predict responses of rice yields in different agro-climatic conditions with specific levels of fertilizer application.

3. Type of Expert: Entomologist

Background of the Project

The Philippines has adopted Integrated Pest Management (IPM) as the National Crop Protection Policy. Experts defines IPM as a pest management that in the context of associated environment and the population dynamics of the pest species, utilizes all suitable and compatible control strategies and methods that maintains the pest population levels below those causing economic injury.

Among the insect pests which are of major importance are the stemborers, green leafhopper and brown planthopper. Such pests may be controlled by the use of resistant varieties, however, resistance to this pests are still unknown, particularly, the resistance to the different biotypes of BPH. The use of pesticides to reduce pest population is still widely used. But the methods and timing of application with less hazards to other non target organisms are still to be explored. Besides, toxicity problems, resurgence, development of resistance among insect pests are other factors that needs more study.

Scope of Cooperation

- a) Identification of serious incidence of insect damages in the specific localities and examining the effective countermeasures to control them.
- b) Estimation of population dynamics with special emphasis on the densities of predators and parasites.
- c) Evaluation of the balance between chemical and biological methods of insect control.

4. Type of Expert: Harvest and Post-harvest Mechanization and Instrumentation Expert

Background of the Project

During the late sixties and early seventies several R & D institutions embarked on farm mechanization and post-harvest technology. As a consequence, several machines and processes were developed in laboratories. Notably IRRI, UPLB and other colleges and universities came up with their prototypes and designs.

However, even up to the present these developed technologies have not been fully adopted by end users, especially farmers, processors and entrepreneurs. Generally, farmers and processors are still using the traditional tools, equipment and techniques.

Thus, harvest and post-harvest engineering is still far from satisfactory. Labor related problems and high post-harvest losses are still occurring. Resource utilization are not optimized. The cost of production is still high and rice farmers are still suffering from low income .

Scope of Cooperation

- a) Design, development and improvement of harvesting and drying machinery/implements for small farm operations.
- b) Determination of viable post-harvest systems and schemes to promote adoption of postharvest technology and minimize post-harvest losses.

JUSTIFICATION FOR SHORT TERM EXPERTS

1. Type of Expert: Learning System Design Expert

Background of the Project

The advent of electronic communication media has revolutionized approaches in instructional technology. In the Philippines, video is increasingly becoming popular not only as an entertainment but as an educational medium as well. Moreover, other electronic media such as soundslides and audio cassettes are gaining popularity especially in teaching rice technology to farmers and extensionists. IRRI has pioneered in the development of audio tutorials on rice technology through the soundslide medium. However, it has not yet explored educational video quite extensively as a component of its instructional technology.

To standardize training content and methodology for each level of training client, PhilRice needs to develop learning systems design essentially involving the systematic organization of training content (e.g. rice technology) including the strategies of teaching these to the learner. The training and communication equipment to be provided in the technical assistance will be maximized if these will be utilized in the development of educational communication materials which will form part of the various learning system packages supporting PhilRice training programs across the national rice R & D network.

Scope of Cooperation

- a) Design and development of multi-user learning system packages in support of the national rice training program.
- b) Design and development of educational communication media as integral components of the learning system packages.

2. Type of Expert: Tissue Culture Expert

Background of the Project

The tissue culture project aims to develop and utilize non-conventional techniques to be employed together with conventional breeding as a tool for crop improvement. At present there are three main studies being undertaken: (1) Anther culture, (2) *In vitro* selection for adverse conditions (salt stress and disease) and (3) Wide hybridization.

In general these techniques are employed to overcome barriers present in conventional breeding, such as incompatibility. It allows selection for specific attributes or characters on a larger population compared to field selection. It is also a means of hastening homozygosity, thus reducing time needed for varietal improvement or development. These are only some of the advantages offered by these techniques.

Emphasis had been given to the three techniques because they are relatively easier to integrate in conventional breeding. These require less sophisticated equipment and chemicals, unlike genetic engineering and gene mapping.

However, there is a clear need to improve or refine protocols. While several procedures or protocols are available for these techniques, modifications have to be made to suit specific needs and objectives of each research.

Scope of Cooperation

- a) Refinement of anther culture techniques in order to increase the efficiency of producing doubled-haploids. This includes lowering incidence of albinism.
- b) Development of an efficient screening or selection procedure for salt stress. This includes establishment of optimum conditions (light, temperature and nutrition) for regenerable calli production. Verification of salt tolerance of resistant resistance cell lines at organizational or plant level.
- c) Development of a screening protocol for disease resistance. This includes establishment of a procedure for disease introduction *in vitro* and production of toxin (e.g., sheath blight toxin) to be utilized for screening.

- d) Refinement of embryo rescue techniques in order to increase production of wide hybrids for higher probability of gene transfer. This includes increasing seed-set and overcoming of sterility of F_1 crosses.

3. Type of Expert: Climate and Plant Type Expert

Background of Project

Climate is an important variable in crop production. Rice is grown under wider variety of climatic, soil and hydrological conditions than any other crop. Important climatic, biological and hydrological factors can limit rice productivity of an area. In order to find solutions to various agronomic problems in rice production, it is necessary to have full understanding of the rice growing environments. Climate has to be characterized.

It is observed that various plant types and varieties respond differently under given climatic condition. Pest population dynamics could also be correlated with some climatic variables.

About 50% of the lowland areas are rainfed. Predicting climatic effect on the growth of rice crop in these areas could be important in making decisions on the cultural management of the rice crop. Also, since climate is one of the parameters to be inputted in crop modelling, it is necessary to identify the minimum set of climatic variables as well as to standardize their measurement across locations.

Scope of Cooperation

- a) Development of standard methods of gathering data on climatic variables correlated with crop growth.
- b) Characterization of various plant types and varietal responses under specific climatic condition.

4. Type of Expert: Crop Modeling Expert

Background of Project

Essentially, higher crop productivity could readily be attained if the crop, its biophysical environment and related factors like technical competence, socio-political and economic support services are always compatible and predictable. In reality such a harmonious and balanced system seldom exists. However, a very promising approach has been developed in progressive countries to predict the outcome of events based on experimental data.

Models have been developed and found to be very useful in the integration of valuable information in predicting performance of crop productivity. These models are valuable in integrating research results, directing research efforts and providing basis for sound decision making for policy makers and end-users as well.

Scope of Cooperation

- a) Development of simulation models for predicting and determining the productivity and profitability of rainfed rice and other rice-based farming systems.
- b) Evaluation of various simulation models for application to specific locations.

5. Type of Expert: Production Machinery Design Expert

Background of the Project

One of the main thrusts of the Rice Engineering and Mechanization Program is the development of appropriate farm equipment for Filipino farmers. The International Rice Research Institute (IRRI) Agricultural Engineering Division has been involved in this focus but the equipment being generated require some modifications to suit specific localities and needs. In addition, other equipment unique to specific Philippine conditions still have to be generated.

The shortage and increasing cost of labor, the decreasing area available for rice production, the continuous post-harvest losses, and the unavailability of appropriate and/or affordable crop intensification equipment for small Filipino farmers justifies the continuing development of new equipment and the improvement of existing tools and machinery to further make rice production operations efficient and less drudging. Japan is highly experienced in this aspect because of the availability of varied farm equipment generated for Japanese farmers and even for neighboring countries. The expert can help guide the Filipino researchers in their present engineering projects.

Scope of Cooperation

- a) Design, development, and improvement of production machinery and equipment, particularly tillage equipment, engine-driven rice transplanter, direct rice seeder for puddled soils, upland seeders and planters (for crops following rice), fertilizer applicators, and sprayers;
- b) Provision of new concepts needed for designing a particular equipment.

6. Type of Expert: Instrumentation Expert

Background of the Project

In the design and development of equipment, with new concepts or with existing machinery that needs improvement, a necessary requirement for any engineering project is the generation of needed data. This is normally done with the help of instruments or equipment that are available in the market. However, not all equipment are available while know-how in the proper use of equipment is presently lacking with PhilRice. In addition, generation of quality data can be done with the provision of an expert who will guide the Filipino researchers on the proper use and assembly of the instruments and in data interpretation.

Scope of Cooperation

- a) Identifying the instrumentation needs for PhilRice researches;
- b) Training on the proper use, assembly and maintenance of the instruments/equipments;
- c) Design and development of suitable instrumentation equipment and training of PhilRice staff on the design aspects.

7. Type of Expert: Food Products Development Expert

Background of the Project

Food packaging is vital in lengthening the shelf life of rice food products. At present, packaging of food products, particularly rice products, is being done without considering shelf life. If packaging is developed as a component of product generation, this will have a strong economic impact particularly to small-scale rice food processors. The identification and testing of the right packaging process and packaging material is, therefore, important.

Another line of interest is the testing and improvement of the newly-developed rice flour mill. This flour mill can process rice into finer and better quality flour than the prevailing designs presently being used in the market. However, this design is still to be evaluated in the field by the processors. The expert can, thus, assist in the refinement of this design based on user's feedbacks and results of tests.

Scope of Cooperation

- a) Testing and design of packaging materials for developed products already existing in the market as well as rice products developed in the laboratory;
- b) Evaluation and improvement of the rice flour mill for Filipino rice food products.

8. Type of Expert: Food Scientist/Nutritionist

Background of the Project

High-yielding modern rice varieties of inferior grain quality characteristics are suitable for other uses such as rice food products. To keep these high-yielding varieties in the diet of Filipinos, development of processed rice products of high nutritive quality are being explored. The assistance of an expert along this line of research can facilitate the identification, development, testing, and evaluation of the product.

Scope of Cooperation

- a) Development of rice food products;
- b) Development of methodologies/approaches that would effect qualitative, quantitative, nutritional, and economic evaluation.

9. Type of Expert: Rice Chemist

Background of the Project

One of the objectives of the Rice Chemistry and Food Science Program is to support the plant breeders in the quality evaluation of their rice selections. There is already an existing methodology for grain quality analysis but it has limitations. However, some problems are encountered with other rice entries i.e. chalkiness. The expert can assist in identifying and training the PhilRice staff on new techniques or methods of grain quality analysis.

Many modern varieties developed are evaluated as more suitable for other rice food products. The identification of the rice starch properties of a particular rice selection for a specific rice food product is essential in product development. The guidance of an expert on this research is considered necessary to the achievement of the goal of the program.

Scope of Cooperation

- a) Upgrading/development of methodologies for grain quality analysis, particularly the physico-chemical aspect;
- b) Identifying chemical/starch properties of rice flours suitable for rice-based food product manufacture.

10. Type of Expert: Econometrician

Background of the Project

Rice trade studies conducted in the Philippines are numerous. However, most of them deal with the intra-regional or in country trade and marketing as their focal point. In fact, agricultural economists suggest the setting-up of a reference market (central market) as a way of minimizing price variations as changes in central market rice prices are transmitted to other local markets. Nevertheless, this has not been supported by empirical evidence.

In the inter-regional trade study, the thrust will not only be product flow but also on the institutional and infrastructural factors affecting intra- and inter-regional rice trade in the Philippines. The major outputs of this area of technical collaboration will be the development of simulation models indicating product flows, demand and supply functions, post-harvest and infrastructure facilities, reference markets, and buffer stock requirements.

Scope of Cooperation

- a) Development of models for inter-regional trade
- b) Formulation of solutions for easing regional marketing bottlenecks of rice.

11. Type of Expert: Computer Systems Expert

Background of the Project

PhilRice will link the eight programs with the Office of the Director and Administrative Department through the Planning and Collaborative Programs Office. This will entail a network of the IBM microcomputers which were given in the initial grant-in-aid to PhilRice.

In this area, there is a need for an expert to provide guidance in setting up the hardware and software requirements of the computer network. His assistance will also be needed in systems analysis and design, specifically in designing the appropriate systems programs to facilitate storage and sharing of information among the different users.

Scope of Cooperation

- a) To provide assistance in the design of the hardware requirements of the network.
- b) To provide expertise in the design of the software requirements, specifically the operating system and major information systems.
- c) Development of systems for Management Planning and Project Monitoring and Evaluation.
- d) Design of the different information systems needed in the computer network.

TENTATIVE SCHEDULE OF IMPLEMENTATION

TENTATIVE ACTIVITIES OF THE PROJECT TYPE TECHNICAL COOPERATION

Draft as of
May 24, 1991

AREA/ITEM	YEAR				
	1st	2nd	3rd	4th	5th
1. Varietal Improvement					
1) High yielding rice cultivars					
2) Rice cultivars suitable for cool elevated areas					
2. Soil Fertility					
1) Establishment of fertilizer recommendations					
2) Transferability of fertilizer management technology					
3) Crop Models with fertilizer application levels					
3. Pest Management					
1) Identification of insect damage and its counter measures					
2) Population dynamics in relation with predators and parasites					
3) Evaluation of chemical/biological methods in insect control					
4. Engineering					
1) Harvest mechanization					
2) Post harvest technology					
5. Other Research activities closely related above					

TECHNICAL COOPERATION PROGRAM (JAPANESE SIDE)

Draft as of
May 24, 1991

ITEM	YEAR				
	1st	2nd	3rd	4th	5th
I. Dispatch of Experts					
1. Long Term Assignment					
1) Team Leader					
2) Expert					
a. Plant Breeder					
b. Soil Fertility					
c. Entomologist					
d. Harvest and Postharvest Mechanization					
2. Short Term Assignment		(Figure shows the number of months)			
1) Learning System Design		6			
2) Tissue Culture		3	11		
3) Climate and Plant Type				10	
4) Crop Modelling	2		3		
5) Production Machinery Design					
6) Instrumentation	1			3	
7) Food Products Development					
8) Food Scientist/Nutritionist		6			
9) Rice Chemist	6				
10) Econometrician	2		10		
11) Computer Systems					
12) Others		(a s n e e d e d)			
II. Acceptance of Filipino Personnel in Japan		3 or 4 a year			
III. Provision of Equipment Machinery and Materials					

TECHNICAL COOPERATION PROGRAM (PHILIPPINE SIDE)

Draft as of
May 24, 1991

ITEM	YEAR				
	1st	2nd	3rd	4th	5th
I. ASSIGNMENT OF COUNTER-PARTS AND ADMINISTRATIVE PERSONNEL					
1. Head of the Project					
2. Deputy Head of the Project					
3. Counterpart personnel in the field of					
a. Plant Breeding					
b. Soil Fertility					
c. Entomology					
d. Harvest and Postharvest Mechanization					
e. Instrumentation					
f. Other fields					
4. Administrative personnel					
a. Head, Administrative Division					
b. Other Officers:					
1) Accountant					
2) Budget Officer					
3) Cashier					
4) Personnel Officer					
5) Liaison Officer					
II. PROVISION OF LAND BUILDINGS AND OTHER NECESSARY FACILITIES					
III. ALLOCATION OF RUNNING COST OF THE PROJECT					

APPENDICES

JICA PROJECT-TYPE TECHNICAL ASSISTANCE: List of Equipment for PhilRice

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Program: Rice Varietal Improvement						
1.2	Vitascope	1 unit	For rapid germinability test	850	850	1
1.3	Seed grader/thickness width grader	1 unit	Commercial type; for quick grading breeder seeds	3000	3000	1
1.4	Hand held computer/ Field Computer	2 units	For quick field data storage Portable, battery powered 16 KB RAM With printer and built-in micro- cassette drive Brand : Epson HX-20	1500	3000	1
1.5	Avn remover	1 unit	Kiya No. 183-C, Model DT 500 kg/h capacity, 750 rpm AC 220 V, 70 kg, 88x68x119 cm	650	1300	1
1.7	Platform balance	1 unit	for 50 kg at least	400	400	1
1.8	Automatic box binder	1 unit	for packaging	100	100	1
1.9	Automatic multi-seed sample divider	1 unit	5-10 openings; for ease in dividing valuable seed samples	379	379	1
1.10	Push cart (Pallet truck)	1 unit	heavy duty/big; No. 800SS Seedburo	206	206	1
1.11	Seed sampler/Grain trier	2 units	KY-101A	50	100	1
1.1	Cold water source system	1 unit	For cold tolerance screening at various water temp. gradient	5000	5000	2
1.6	Grain micrometer (Digimatic caliper)	2 units	CD series Model 500	80	160	2
1.12	Micro-Centrifuge (BHG)	1 unit	CR15T Yamato	4,000	4000	2
1.13	Haemocytometer	1 unit	Thomas 943-44; cell counting chamber	100	100	2
TOTAL					18595	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Program: Integrated Pest Management						
2.1	ELISA	1 unit	automatic plate loading; unique liquid crystal display. microplate reader Model-3550, multiple pipettor, microplates, microplate shaker, washer	10000		1
2.2	Insect collection cabinet/ Insect specimen storage cabinet	3 units	Kiya Seisakusho, SG-481 German type, hard wooden with glass lid Cork boarded 4 mm thick 113 x 47.5 x 129 cm	350		1
2.3	Insect display case	3 units	KM-210-E	50		1
2.4	Lighting moth collector	1 unit	KM-217-B	250		1
2.5	Specimen Set	3 sets	Kiya, Model L-7071	60		1
2.6	Carbon Dioxide Incubator	1 unit	Biotechnological apparatus Sibata Scientific Technology, Inc. Model EK/EC	1300		1
2.7	Glassware washer and drier	1 unit	ELE International Model EL 582-034101	390		1
2.8	MABS Monoclonal Antibody Purification System	1 unit	BIO-RAD Cat. 1986, Cat. No. 155-100	2000		1
2.9	Gradient density maker, peris- tatic pump	1 unit	Fisher Cat. No. 08666, 13-875-200	150		1
2.10	Microphotometry System	1 unit	Hikon - Microplot FX	3000		1
2.11	Fraction Collector	1 unit	Model DFC-100 (Yanato 1989-90, p. 333)	500		1
2.12	Triple beam balance	2 units	Kiya No. OH-02 Model XO-2610 2610 g capacity Sensitivity: 0.1 g Front beam: 10 g x 0.1 g Center beam: 500 g x 100 g Rear beam: 100 g x 10 g Taring beam: 0 - 200 g Dampner: Permanent Magnet	250		2
2.13	Insect rearing cage	3 units	Kiya Seisakusho, 235 B	50		2
2.14	Herbarium presser	6 units	KM 203 Model	50		2
2.15	Rice insect collecting case	1 unit	Shinkai type, KM-209-E	75		2

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
2.16	:Chromatography System (column)	:1 unit	:Biotechnological apparatus :Sibata Scientific Technology, Inc. :Model B-681		1000	2
2.17	:Fiber optic Illuminator	:1 unit	:Cole Parner Cat. No. 9741-50-9743-60, :9742-2-, 9743-20		40	2
2.18	:Multiple Dializer	:1 unit	:Fisher Cat. No. 08666, 08-670-30,08-667D		250	2
2.19	:Dessicator, screw caps	:1 unit	:Biotechnological apparatus :Sibata Model 711		150	2
2.20	:Sunshine and Radiation meter	:1 unit	:ELE International EL 505-087		400	2
2.21	:Camera lenses (accessories of :Nikon Camera)	:1 set	:AF 28 mm f2.8 :Micro - 105 mm f2.8 :Macro-zoon 35-105 mm		100 500 300	2 2 2
2.22	:Ultra-low Temperature Freezer	:1 unit	:Model CF 11/21SD (Yanato 1989-90)		1500	2
TOTAL					22715	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Program: Planting and Fertilizer Management						
3.1	Portable Seed/Grain Moisture Tester (Digital)	2 units	Kiya's Catalog No. 15, p. 19 Measuring principle: Electric resistance Measuring range: 11-30 % (paddy) 11-20 % (brown rice) Power source: 1.5 V DC (1C size) x 4 Dimension: 17 x 6 x 10 cm (Kiya Seisakusho LTD., Riceter-L)	500	1000	1
3.2	Ion chromatograph	1 lot	Shimadzu Scientific Instruments and Equipment, p. 42 For use in the fast analysis of anions like SO ₄ -2, H ₂ PO ₄ -, HPO ₄ -, NO ₃ -, Cl-, HCO ₃ -, CO ₃ -2 in soil solutions during nutrient kinetics and transformation studies to characterize nutrient releasing ability of different soils. For organic acid analysis in the study of complexation and chelation mechanisms that affects availability of micronutrients like Zn, Fe, Mn, and Cu and to correct their deficiency or toxicity in soils. Shimadzu HIC-6A is a high performance ion chromatography system that utilizes non-suppressor technology. - high sensitivity and high stability - high precision - easily upgradeable - excellent linearity of response - excellent repeatability include CDD-6A Conductivity Detector	50000	50000	1
3.3	Hollow cathode lamps		Hitachi Catalog/Brochure, p. 14			
	Mo	1 pc	HITACHI HLA-45	300	300	1
	Al	1 pc	do	320	320	1
	B	1 pc	do	320	320	1
	Ni	1 pc	do	320	320	1
	Co	1 pc	do	320	320	1
	Hg	1 pc	do	320	320	1
3.4	Washer, laboratory glasswares	1 unit	Yanato Catalog 1987-88, p. 140 Yanato Laboratory washer Model AW-82 Fully automatic washer which uses a powerful pressurized water-jet	16,000	16,000	2

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
			volume washing capacity and to minimize contaminations during analysis due to glasswares.			
3.5	Crucibles	3 units	Arthur Thomas Catalog 82/83, p. 380 Zirconia Grain Stabilized (ZGS) platinum which is stronger than platinum and has superior resistance to stress at high temperature for use in total analysis of Zn, Fe, Si, Al, etc. in characterization studies of rice soils for long-term amelioration of nutrient deficiencies and development of component technologies for integrated nutrient management for sustainable agriculture.	500	1,500	2
3.6	Pressure plate extractors	1 lot	ELE Agronomic Catalog, p. 138 The pressure plate apparatus is used to determine soil water retention and suction greater than 0.4 bar. Include 5-bar pressure plate extractor 15-bar ceramic plate extractor Pressure membrane compressor Combination manifold	10000	10000	2
3.7	Soil Exchange Capacity Determination Apparatus, Harada-Yoshida type OSK 9987	6 units	OSK Catalog Science and Education 4th ed., p. 436 Semi-micronized from base exchange capacity determination by Schollenberger method and combined with total exchangeable base determination by Barley and Willhite method. Made of hard glass and six in a set. Specifications: Washing container - 6 pcs Leaching tubes - 6 pcs Leaching bottles - 6 pcs Connection tubes - 6 pcs Wooden support - 1 set Washing capacity: 100 mL Dimension: 46x23x55 mm Dimension: 46x23x55 cm Weight: 5 kg approx.	833	5000	2

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
3.8	Soil Samplers for 100 ml cylinder	3 units	OSK Catalog Science and Education 4th ed., p. 437 Designed to sample without destroying its structure. Made of iron. Supplied with soil sampling cylinders (5 in a set) made of brass and with a hand case made of canvass Specification: sample capacity - 100 ml Accessories-brush, knife 1 each Sampling depth 25 cm	500	1500	2
3.9	Top shelves for laboratory tables	2 units	Yanato Catalog 1987-88, p. 885 ECB3-305R, Yanato	2000	4000	2
3.10	Seed cleaner	2 units	Seedburo Catalog, p. 128 Laboratory type air blast seed cleaner for rice	800	1600	2
3.11	Seed Counter	1 unit	Seedburo Catalog, p. 54 Count-A-Pak seed counters Model 701	5000	5000	2
3.12	Oven Dryer	1 unit	Yanato Catalog, 1987-88, p.9 Method : Forced convection and ventilation Safety device : Self diagnostic function Capacity : 20 cu. ft. Power supply: 220 VAC	13000	13000	3
3.13	Seed Blower	2 units	Kiya's Catalog (No. 15, p. 160) Column : 3.8, 7.6, 0.3 cm Motor : 200 W Power source: 220 VAC; 1 HP 60 Hz Dimension : 483 x 457 x 762 mm (Kiya Seisakusho LTD, Kiya No. HF-1	1000	2000	3
3.14	Glassware drier	1 unit	ELE Agronomic Catalog, p. 194 An efficient economical method of drying and storing glassware consisting of a series of stepped platform. Each has a number of varying sizes for inverting test tubes, bottles, beakers, etc. Hot air from 2x1000 W heaters is blown through these test tubes drying the	15400	15400	3

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
			glassware in 15-20 minutes. Dimension: 400 x 600 x 300 mm Weight: 10 Kg approx.			
3.15	Wagner Pots for upland rice	200units	Kiya Catalog, p. 27 :Kiya 171-B	50	10000	3
3.16	Wagner Pots for paddy rice	200units	Kiya Catalog, p. 27 :Kiya 171	50	10000	3
3.17	Cabinet for acid storage	1 unit	Yawato Catalog 1989-90, p. 1141	1500	1500	3
3.18	Photosynthesis analyzers	1 unit	OSK Catalog Agriculture and Veterinary, 3rd ed., p. 69 :OSK 10466 Consisting of CO2 analyzer : system console and sensor housing : with interchangeable leaf chambers	25000	25000	3
3.19	Digital Lux Meter	1 unit	OSK Catalog Science and Education : 4th ed., p. 502 :OSK 11380 direct reading digital lux : meter which provides 1 to 999 lux and : 10 to 9990 lux range readings.	500	500	3
TOTAL					174900	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Program: Rice Engineering and Mechanization						
INSTRUMENTATION EQUIPMENT						
5.1a	Polycorder	1 set	:Model 516C-A64K (see attached descriptio	3850	3850	1
5.1b	Polycorder Accessories	1 set	:Model 535 N, Ni-Cad battery	51	51	1
		1 pc	:Model 520 L, Field carrying case	65	65	1
		1 pc	:Model 525 C, Sensor input connector	14	14	1
		1 pc	:Model 530 A, 12 volt cigarrrete adapter	51	51	1
		1 pc	:Model 543 P, RS-232 cable with socket c	51	51	1
		1 pc	:Model 544 S RS-232 cable with socket con	51	51	1
		1 pc	:Model 5541 Audio Cassete Interface cable	152	152	1
		1 pc	:Model 570 P Down Load module programmer	330	330	1
5.1c	Torque Transducer	1 pc	:Model: 1114-100	715	715	1
		1 pc	:Model 1104 IK	770	770	1
		1 pc	:Model 1105 - 5K	935	935	1
5.1d	Pressure Tansducer	1 pc	:Model : PGW-1 KG	660	660	1
		1 pc	:Model:PG-2 KU	660	660	1
		1 pc	:Model: PG-100 KU	660	660	1
		1 pc	:Model: LU-50 KE, 50 kg capacity	660	660	1
		1 pc	:Model: LU-200KE, 200 kg capacity	660	660	1
		1 pc	:Model: LU-500KE, 500 kg capacity	660	660	1
5.1e	Slip Ring for strain gage and thermocouples	1 pc	:Model: 6118-4	495	495	1
		1 pc	:Model: 6118-12	825	825	1
		1 pc	:Model: 6105-4	550	550	1
5.1f	Strain gage input card (Interface for IBM PC-XT)	1 pc	:Model: SGO4	1100	1100	1
5.1g	Multi-function Analog and Digital I/O Card (Interface for IBM PC-XT)	1 pc	:Model: AI016	1100	1100	1
5.1h	Strain gage	2 pcs	:Model KFC-30-C1-11	44	88	1
		2 pcs	:Model KFC-20-C1-11	44	88	1
		2 pcs	:Model KFC-10-C1-11	44	88	1
		2 pcs	:Model KFC-6-C1-11	44	88	1
		2 pcs	:Model KFC-10-D16-11	50	100	1

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
		2 pcs	Model KFC-5-D16-11	50	100	1
		2 pcs	Model KFC-2-D16-11	50	100	1
		2 pcs	Model KFC-1-D16-11	50	100	1
5.1i	Gage Cement Kit	1 pc	Model BCK-77	330	330	1
5.1j	Gage Cementing Tool Kit	1 pc	Model GYK-77	330	330	1
5.2	Digital Vibration meter	1 unit	Cat. No. 8534T21, Range : 0.2-199.9 mils: (Macnaster Catalog)	1353	1353	2
	: UNDERGROUND EQUIPMENT AND TOOLS					
5.3	Groundwater potential probe	1 unit	see attached leaflet	500	500	2
5.4	Bourdon type piezometer	1 unit	see attached leaflet	1500	1500	2
5.5	Motorized soil auger set with : tripod and hand winch	1 unit	see attached leaflet	1500	1500	2
	: PRODUCTION MACHINERY AND EQPT.					
5.6a	Variable speed motor with	1 unit	One horsepower "REEVES"	1500	1500	1
5.6b	reducer	1 unit	One half horsepower "REEVES"	750	750	1
5.7	End milling machine cutting : accessories (including : shaper for cutting spur and : bevel gears)	1 lot	Face cutter, straight and tapered end : mill side cutter, plane cutter, : angle cutter, concave cutter and : convex cutter	5000	5000	1
5.8	Hand penetrometer Eykelkamp	1 unit	see attached leaflet	70	70	2
	: POSTHARVEST MACHINERY AND EQUIPMENT					
5.10	Manometer and air : velocity gauges	1 unit	Cat. No. 4019K71 : Range : 0-1 inch, 1-10 inches, 400-12500	321	321	1
5.9	Paddy grader	1 unit	Satake Testing thickness grader (leaflet)	1000	1000	2
5.11	Portable seed/grain moisture : meter (digital)	1 unit	Measuring range: 10-40% (paddy)	500	500	2
5.12	Digital hand tachometer	1 unit	ONO SOKKI/HT - 446	180	180	2

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
5.12a	(w/ spare reflection marker)	20 pcs		20	400	2
5.13	Drafting machine	1 lot				
	1 drafter	1 unit	MUTOH/RES 2-12G	680	680	2
	2 drafting table	1 unit	MUTOH/TH-20	640	640	2
	3 drafting chair	1 unit	MUTOH/CR-200	150	150	2
5.14	Digital stopwatch	2 units	SEIKO, electric, with countdown/count up timing, range 60 minutes	150	300	2
5.15	Engines	1 lot				
	Gasoline engine	2	"Robin" 2000 rpm, 3.3 PS, 8 kg weight	125	250	2
	Gasoline engine	2	"Robin" 2000 rpm, 5 hp	200	400	2
	Diesel engine	1	"Yannar", L42 model (4.2 hp), 2000 rpm, air cooled	700	700	2
	Diesel engine	1	"Yannar", L60 model (6 hp), 2000 rpm, air cooled	800	800	2
5.16	Digimatic vernier caliper with extra batteries (2 pcs)	2	CD series Model 500	500	1000	2
5.17	Paint spray gun	1	Convertible bleeder/non-bleeder type, internal and external mix includes air cups, with one quart metal canister	100	100	2
5.18	Bag truck	1	Heavy duty, tubular steel frames with solid rubber wheels	100	100	2
5.19	Electric motors (with auto-protector)	1 lot				
	1/2 hp motor	1	1750-1775 rpm, single phase, with bases open type casing	100	100	2
	3/4 hp motor	1	1750 rpm, single phase, with bases open type casing	125	125	2
	1 hp motor	1	1750 rpm, single phase, with bases open type casing	150	150	2
	2 hp motor	1	1750 rpm, single phase, with bases open type casing	200	200	2
	3 hp motor	1	1750 rpm, 3 phase, with bases open type casing	200	200	2
TOTAL				35213	36944	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Program: Rice Chemistry and Food Science						
6.1	Water Activity Test Apparatus, Conway	1	OSK 10507 Dimension : 115 x 320 x 100 mm approx.	350	350	1
6.2	Bar mill	1	600 x 800 n/a	500	500	1
6.3	Steam jacket Kettle	1	Dimension : inside = 350 x 330 mm outside = 612 x 405 x 780 mm	350	350	1
6.4	Food Mixer stainless steel	1		170	170	1
6.5	Texture meter	1	Instron	18300	18300	1
6.6	Laminar flow (inoc. hood)	1	Hitachi Model; PCV - 1303 BH	3000	3000	1
6.7	Crude fiber apparatus	1	Thomas 4430, W-25; 1988-89, p. 592	3300	3300	1
6.8a	Manifold for autoanalyzer specific for amylose	1	Technicon, Bran Lubbe	8330	8330	1
6.8b	Colorimeter for autoanalyzer	1	Technicon, Bran Lubbe	8330	8330	1
6.9	Gas chromatograph	1	Yanato 89-90, p. 498 for analysis of aroma; FID detector	33330	33330	2
6.10	Grain moisture meter	1	Satake Model SS-5	500	500	2
6.11	Top shelf for laboratory table	2	Yanato Catalog 1989-90, p. 965	670	1340	2
6.12	Table for photo enlarger	1	Yanato Catalog 1989-90, p. 106 Yanato Catalog FFS - 120 G	170	170	2
6.13	Cabinet for acid storage	1	Yanato Catalog 1989-90, p. 1141 Yanato OC-129	500	500	2
6.14	Laboratory cart	4	Yanato Catalog 1989-90, p. 1163 Yanato LCP-80	330	1320	2
6.15	Cart (for milling samples)	1	Yanato Catalog, 1989-90, p. 1164 Yanato LCH - 71	85	85	2
6.16	Shortometer	1	To measure breaking strength of baked products	3000	3000	2

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
6.17	Penetrometer (for food)	1	To measure tenderness of food products	3300	3300	2
6.18	Stone Grinder	1		500	500	3
6.19	Flavor applicator	1		1670	1670	3
6.20	Puffing gun	1	Capacity: 3 kg Operating pressure: up to 15 kg/sq. cm Temperature: up to 300 degrees C	670	670	3
6.21	Gas chromatograph	1	Yanato 89-90, p. 498 for pesticide residue; HPD detector	33330	33330	3
6.22	Rotary shaker	1	Thomas 8290-D10, 1989-90, p. 1188 Eberbach, variable speed, 622 x 356 x 254 mm accessory: flask carrier for forty 125 ml E. flask for forty 250 ml E. flask for twenty-eight 500 ml erlenmeyer flask	2670 1670	2670 1670	3 3
6.23	Rice biscuit making machine	1	Oyama Foods	6670	6670	3
6.24	Roaster	1	for roasting rice before it can be processed to rice products	1670	1670	3
6.25	Extruder with control	1	for spaghetti and bison manufacture	50000	50000	3
6.26	Boiler	1	Miura, TX 160 (brochure)	16670	16670	3
6.27	Air dryer	1	for drying of rice products	1000	1000	3
6.28	Fermentor	1	Sibata 1986-87, p. 62, Model JCS-5	50000	50000	3
6.29	Laboratory washer (for glasswares)	1	Yanato 1989-90, p. 132 Model AW-82	2330	2330	3
6.30	Infrared analyzer	1	Technicon InfrAnalyzer 250	16000	16000	3
6.31	Farinograph	1	Brabender	16000	16000	3

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
			TOTAL		287025	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Program: Social Science and Policy Research						
7.1	Magna Byte computer projector	1 unit	EGA/CGA Compatible (System) With carrying case, monitor interface cable and AC power supply	2390	2390	1
7.2	Macintosh Computer with attachments	1 unit	Macintosh plus Specifications: 68000 CPU, 8 Mhz clock speed Attachments: a. penlight b. mouse and mouse pad c. image writer LQ (132 CPI, 27 pins) d. Uninterruptible Power Supply (110/220 voltage, 12 V battery, 1-4 m/sec transfer time and 30 min back-up time)	5400	5400	1
7.3	Film Recorder Attachment for Computer	1 unit	Automatic picture-taker that can be attached to the CPU ; IBM PC/XT/AT compatible	500	500	2
TOTAL					8290	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Program: Technology Transfer						
8.1	Transparency maker machine	1 unit	with starter kit; portable screen with : carrying case; OH 16 size: 120 x 120 cm: : (3W)	500	500	2
8.2	Microphone discussion system	2 sets	1 set with 15 delegates units : 1 set with 30 delegates units : individual desktop microphone with : loop-through cabling : delegates units and chairman's unit : with built-in speakers : supply/interface unit : recording unit	2500	5000	1
8.3	Time base corrector	1 unit	compatible with Sony video system	2334	2334	1
8.4	Opaque projector	1 unit	ELMO EP-7000 : Projection of thick or solid material : 50 mm thick : Stage size: 280 x 280 mm	2834	2834	2
8.5	Broadcast console	1 unit		2500	2500	1
8.6	Cassette deck	1 unit	TEAC V-44 C/V-33	2000	2000	1
8.7	Open reel tape recorder	2 units	REVOX B77	5667	11334	1
8.8	Mobile station	1	VHF frequency: 150-180 MHz or better : Antenna frequency range: 130-180 MHz or : or better : Cutter mount: adjustable and sturdy : with 50 coax cable and PL259 plug : Slide mount rack: for easy installation : and removal of radio mounted to : mobile station : linear amplifier: 150-180 MHz : Patch cords: for interconnecting radio : to linear : Mobile handset with autopatch/torch : tone pad for mobile telephone use	2667	2667	1
8.9	Base station	1	Antenna switcher with patch cord : (RG 8/PL 259) for antenna system : Computer modern attachment, adjustable : board rate for computer/telefax : operations, inboard computer	1000	1000	1

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
			installation			
8.10A	Repeater system	1	Radio VHF: 150-170 MHz Uninterruptible power supply for the unit	1334	1334	1
8.10B			Antenna system: Two colinear vari-loop antenna (8 loops)			
			Metal cabinet with lock for radio, power supply and UPS unit			
8.11	VHF Component	1	Radio HF frequency: 2.5 to 30 MHz Antenna: three element horizontal yagi with traps Power/deck microphone for the above unit UPS: 500 watts max output/220V regulated outputs Computer modem attachment, adjustable board rate with capacity on inboard computer/telefax attachment	600	600	1
8.12	Video projection system	1 unit	Sony	500	500	1
8.13	Soundslide projector	2 units	Ektagraphic; auto-dissolve	834	1668	1
8.14	Soundslide presentation system	1 unit	Dissolve control with built-in audio system	1000	1000	1
8.15	Targa board	1 unit	compatible with Sony video editing system	2167	2167	1
Note: Video projection system, soundslide projector, targa board, time base corrector microphone discussion system have to refer manuals						
TOTAL					37438	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Planning and Collaborative Programs Office						
9.1	Interface card for file server	1	IBM PC LAN card		300	1
9.2	Network Cable	500 meters	Belden Wire and Cable RG-62A/U Type 93 Ohm Coax Table 22 AWG (.32 sq mm) solid CU covered steel .026" (.66 mm) Solid PE dielectric Bare CU Braid Shield 95% coverage .033" (.84 mm) PVC jacket surface printed	3	1500	1
9.3	File Server	1	IBM, 80486 CPU, VGA, w/ pointing device and 80 MB HD		6500	1
9.4	Network Interface Cards	12	ARCNET network interface card	200	2400	1
9.5	Uninterruptible Power Supply (UPS)	1	Powernaker Mini-UPS 5 kVA Exclusive on-line/off-line selectability; Selectable input/output voltage configurations; 220 VAC; 120 VAC		3500	1
9.6	Optical Character Reader (OCR)	1	Epson GT-6000 Resolution : 600 dpi Scaling Speed : 6.5-35 secs Document Size : 8.5 X 11 Power, Watts : 40 Scanner Type : flatbed		4000	2
9.7	XY Plotter	1	HP Plotter 7550A, 8 colors, 1 KB buffer with fiber-tip and roller-ball pens		1750	1
9.8	External Disk Drive	2	IBM PS/2, 5 1/4", 1.2 MB	300	600	1
9.9	Plain paper copier	1	Minolta EP 5400		6000	1
9.10	Computer tool kit	3	Tools for minor repair and maintenance	60	180	1
9.11	SOFTWARE PROGRAMS	1				
9.11a	Netware 386 ver 3 or higher	set	Publisher: Novell Softwares Min. Sys. Req.: 2 MB Operating system for LAN		5000	1

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
9.11b:	Statistical Package for the Social Sciences (SPSS)		:Publisher: SPSS (Chicago) :Min. Sys. Req: PC XT/AT		1000	2
9.11c:	Statistical Analysis System (SAS)		:Publisher: SAS Institute :(including Advanced Programs)		2000	2
9.11d:	Supervisions 800/3800		:Publisher: ATS Technologies Ltd. :Min. Sys. Req.: AT, 640 KB		1000	2
9.11e:	AutoCad (latest version)		:Publisher: Autodesk :Min. Sys. Req.: AT, 640 KB		2000	2
9.11f:	AutoShade v.2 with Rendernan		:Publisher: Autodesk :Min. Sys. Req.: AT, 4 MB		500	2
9.11g:	Animator		:Publisher: Autodesk :Min. Sys. Req.: AT, 640 KB :Graphic Animation and Training		500	2
9.11h:	DCA Engineering Series		:Publisher: DCA Engineering :SoftWare, Inc. :Architectural, Engineering, Construction:		900	2
9.11i:	Turbo Pascal v. 6.0		:Publisher: Borland :A high level programming language :(Structured Approach)		200	2
9.11j:	FoxBase+ 2.1		:Publisher: Fox Software :Database Management		600	2
9.11k:	dBASE 4.1		:Publisher: Ashton-Tate :Database Management		1000	2
9.11l:	Clipper v. 5.0		:Publisher: Nantucket :Database Management/Compiler		1000	2
9.11m:	MS Word ver 5.5 or higher (for Windows)		:Publisher: Microsoft :Min. Sys. Req.: PC XT/AT		300	2
9.11n:	Wordstar Prof. Rel. 6.0		:Publisher: WordStar		500	2
9.11o:	WordPerfect v. 5.1		:Publisher: WordPerfect		750	2

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
9.11p	PageMaker ver 4.0 /higher		:Publisher: Aldus Corp		1000	2
9.11q	Ventura ver 3.0		:Publisher: Ventura Softwares		1100	2
9.11r	Harvard Graphics		:Publisher: SPC		800	2
9.11s	Norton Utilities ver 5.0		:Publisher: Symantec		300	2
9.11t	Quattro ver 2.0		:Publisher: Quattro		600	2
9.11u	Windows 3		:Publisher: Microsoft		100	2
			TOTAL		47880	

ITEM CODE	ITEM	QTY	DESCRIPTION	UNIT PRICE (\$)	TOTAL (\$)	YEAR
Research Department						
10.1	Van, Mitsubishi L300	1 unit	10-12 seaters / 5 speed / 4 cyls. :with aircon/stereo cassette :with standard set of tools :with floor matting :Diesel		16000	1
10.2	Double cab, Toyota 4WD	1 unit	4x4 / 5 speed / 4 cyls :with aircon / stereo cassette :with standard set of tools :with floor matting :Diesel		18000	1
10.3	Pajero, Mitsubishi	1 unit	4 x 4 / metal top / 5 speed / 4 cyls. :with aircon / stereo cassette :with standard set of tools :with floor matting		20000	1
10.4	Materials for field activities	1 lot	rubber boots, long :walking board :rat fencing		10000	1
10.5	Books and journals	1 lot			31000	1/2
TOTAL					95000	

PHILIPPINE RICE RESEARCH INSTITUTE
 ORGANIZATIONAL BUDGET OF EXPENDITURES
 CY 1989 - 1995
 (In P'000)

Department/Division	Object of Expenditure	P R O J E C T E D						
		1989 Actual	1990 Actual	1991 Estimates	1992	1993	1994	1995
Plant Breeding	100	1,498	2,166	2,383	7,140	7,711	8,211	8,568
	200	1,688	2,400	2,860	14,482	15,639	16,652	17,375
	300	2,938	1,867	3,865				
Sub-Total		6,125	6,433	9,109	21,622	23,350	24,863	25,943
Agronomy and Soils	100	792	1,145	1,260	3,399	3,671	3,909	4,079
	200	1,520	2,161	2,575	7,213	7,789	8,294	8,654
	300	2,368	1,505	3,116				
Sub-Total		4,680	4,810	6,950	10,612	11,460	12,202	12,733
Crop Protection	100	794	1,148	1,263	3,228	3,486	3,712	3,874
	200	787	1,119	1,334	6,867	7,416	7,896	8,239
	300							
Sub-Total		1,582	2,267	2,597	10,095	10,902	11,608	12,112
Engineering and Mechanization	100	943	1,363	1,500	2,571	2,777	2,957	3,085
	200	1,195	1,698	2,024	5,422	5,855	6,234	6,505
	300	2,236	1,421	2,942				
Sub-Total		4,374	4,482	6,466	7,993	8,632	9,191	9,590

PHILIPPINE RICE RESEARCH INSTITUTE
 ORGANIZATIONAL BUDGET OF EXPENDITURES
 CY 1989 - 1995
 (In P'000)

Department/Division	Object of Expenditure	1989 Actual	1990 Actual	1991 Estimates	PROJECTED			
					1992	1993	1994	1995
Chemistry and Food Science	100	1,373	1,985	2,184	2,164	2,337	2,489	2,597
	200	760	1,080	1,287	4,595	4,962	5,283	5,513
	300	1,415	899	1,862				
Sub-Total		3,549	3,965	5,334	6,759	7,299	7,772	8,110
Social Science and Policy Res	100	744	1,075	1,183	2,508	2,709	2,884	3,010
	200	652	926	1,104	5,293	5,716	6,086	6,350
	300	251	159	330				
Sub-Total		1,646	2,160	2,617	7,801	8,425	8,970	9,360
Technology Transfer	100	1,211	1,751	1,926	5,583	6,030	6,421	6,700
	200	4,019	5,713	6,808	13,062	14,106	15,019	15,671
	300	1,213	771	1,596				
Sub-Total		6,443	8,234	10,331	18,645	20,135	21,439	22,371
Administration and Finance	100	8,915	12,886	14,180	8,392	9,062	9,650	10,069
	200	3,083	4,383	5,223	15,657	16,909	18,004	18,786
	300	4,125	2,621	5,427	2,000	5,000	2,500	
Sub-Total		16,123	19,890	24,830	26,049	30,971	30,153	28,855

PHILIPPINE RICE RESEARCH INSTITUTE
 ORGANIZATIONAL BUDGET OF EXPENDITURES
 CY 1989 - 1995
 (In P'000)

Department/Division	Actual			ESTIMATED			P R O J E C T E D		
	1989	1990	1991	Estimates	1992	1993	1994	1995	
GRAND TOTAL	44,521	52,243	68,233	109,576	121,175	126,199	129,073		

PHILIPPINE RICE RESEARCH INSTITUTE
BUDGET OF REVENUES AND EXPENDITURES
CY 1989 - 1995
(In P 000)

PARTICULARS	P R O J E C T E D						
	1989 ACTUAL	1990 ACTUAL	1991 ESTIMATED	1992	1993	1994	1995
REVENUES							
a) Nat'l. Govt. Subsidy	48,358	43,128	60,833	109,576	118,342	126,012	131,491
b) Sales Income	3,216	3,525	1,500	2,500	2,700	2,875	3,000
c) Interest Income	578	362	550	690	648	690	720
d) Trust Receipts	8,613	16,752	16,251	5,000	5,400	5,750	6,000
Total Revenues	60,749	63,759	78,334	117,676	127,090	135,327	141,211
EXPENDITURES							
I. PERSONAL SERVICES							
Salaries- Itemized Positions	4,708	8,574	11,439	18,268	19,729	21,008	21,922
Casual/Emergency Laborers	4,438	9,142	7,540	6,000	6,480	6,900	7,200
Consultants	1,176	1,176	1,665	1,822	1,968	2,095	2,186
Contractuals	789	789				0	0
Honoraria (BOT per EO 1061)	288	60	104	104	112	120	125
PERA				3339	3,596	3,830	3,996
RATA	391	185	394	590	637	679	708
Other Remunerations	4,488	3,673	4,738	4,870	5,260	5,681	5,844
Total Personal Services	16,270	23,519	25,880	34,984	37,783	40,232	41,981
II. MAINTENANCE AND OTHER OPERATING EXPENSES							
Travelling Expenses	1,312	1,857	2,480	9,621	10,391	11,064	11,545
Communication	93	133	380	5,004	5,404	5,755	6,005
Repairs- Govt. Facilities	532	267	645	6,450	6,956	7,418	7,749
Transportation Services	14	17	75	3,800	4,184	4,370	4,569
Other Services	3,845	4,959	4,880	10,003	10,803	11,503	12,004
Supplies and Materials	4,389	5,685	5,950	16,870	18,220	19,401	20,244
Rental	29	47	50	78	76	81	84
Grants, Subsidies and Cont.	1,431	3,569	3,250	4,800	5,184	5,520	5,760
Water, Illum. & Water Service	400	793	1,961	4800	5,184	5,520	5,760
Auditing Services	89	387		464	501	534	557
Maintenance- Motor Vehicles	1,449	1,800	2,449	6,350	6,858	7,303	7,620
Discretionary Expenses			45	45	45	45	45
Representation Expenses	119	56	50	4,270	4,612	4,911	5,124
Extraordinary/Emergency/ Contingency Expenses	2		50	45	45	45	45
Retirement Gratuity			950				
Total Maintenance and Other Operating Expenses	13,794	19,400	23,215	72,592	78,392	83,467	87,092

PHILIPPINE RICE RESEARCH INSTITUTE
BUDGET OF REVENUES AND EXPENDITURES
CY 1989 - 1995
(In P 000)

PARTICULARS	1989	1990	1991	P R O J E C T E D			
	ACTUAL	ACTUAL	ESTIMATED	1992	1993	1994	1995
CAPITAL OUTLAY							
Equipment Outlay	11,418	649	1,953			1,500	
Land and Land Improvements	1,861	5,186	2,560		3,500	1,000	
Buildings and Structures	1,268	3,409	14,625	2,000	1,500		
Investment Outlays							
Total Capital Outlays	14,547	9,244	19,138	2,000	5,000	2,500	
Total Expenditures	44,521	52,243	68,233	192,576	121,175	126,199	129,073
Expected Annual Savings	16,228	11,516	10,191	8,100	5,915	9,128	12,138

Note 1. Actual Figures based on Audited Financial Statements

2. Auditing Services for CY 1991 is already deducted in 1990.

3. Decrease in Wages and Contractual Services Costs due to the regularization of casual positions.

PHILIPPINE RICE RESEARCH INSTITUTE
TOTAL MANPOWER COMPLEMENT

REGULAR EMPLOYEES (Including casuals)	255
CONSULTANTS/PROGRAM & STUDY LEADERS	66
LABORERS	190

TOTAL NO.	511
	vvvvv

PHILIPPINE RICE RESEARCH INSTITUTE
SUMMARY OF PERSONNEL PROFILE
As of May 1, 1981

DEPARTMENT/DIVISION	B.S.	M.S.	Ph.D.	With M.S. Units	M.S. in Progress	Ph.D. in Progress	Others*	PhilRice Scholars
I. OFFICE OF THE DIRECTOR	5	3	1					
Planning & Collaborative Programs Office	4	1						
II. GENERAL ADMINISTRATIVE & SUPPORT SERVICES								
A. Administrative	12						5	
B. Finance	12						2	
C. Physical Plant	5						18	
III. RESEARCH DIVISION								
A. Plant Breeding & Biotechnology	19	4	1	1	3	4	1	8
B. Agronomy & Soils	8	2	3			1	3	3
C. Crop Protection	9	4	2	3	4		2	5
D. Rice Engineering & Mechanization	2	4		1	3			2
E. Rice Chemistry & Food Science	7	1			1		4	
F. Social Science & Policy Research	7	1	1		1	1		6
G. Seed Production, Processing & Health Unit	6	1			1		3	1
H. Farm Operation Unit	1				1		1	
IV. TECHNOLOGY TRANSFER PROGRAM	14	4		1	3	1	1	8
V. MIDSAYAP	25	3			1		9	1
TOTAL	136	28	9	6	18	7	51	32

TOTAL NO. OF PERSONNEL 255
(Excluding laborers) vvvvvvvv

* Vocational, Highschool graduates.

PHILIPPINE RICE RESEARCH INSTITUTE
LIST OF KEY PERSONNEL
As of May 1, 1991

NAME	HIGHEST EDUCATIONAL ATTAINMENT/SPECIALIZATION
I. ADMINISTRATIVE	
Santiago R. Obien	Ph.D. in Soil Science, Univ of Hawaii
Ronilo A. Beronio	M.S. in Agricultural Economics, Purdue Univ
Vicente C. Rodriguez	M.S. in Agricultural Engineering, UPLB
Eleanor L. Retales	B.S.C. in Management, Southern Baptist College
Nestor C. Martin	B.S. in Accounting, CPA Board Passer
Luz Belen C. Prollamante	A.B. in Economics, Univ of Santo Tomas
Carlito U. Catala	B.S.C. in Accounting, CPA Board Passer
Gloria M. Evangelista	B.S. Commerce in Management, Univ of San Carlos
Renato B. Bajit	B.S. in Architecture, Board Passer
Virginia F. Recta	M.S. in Statistics, UP Diliman, BS <u>Cum Laude</u>
Teodora L. Briones	B.S. in Statistics, UPLB
Pioquinto G. Pangilinan	B.S. in Computer Science, UPLB
Julius Caesar V. Sicat	B.S. in Agri Engineering, <u>Cum Laude</u> , CLSU, Board Passer
Besinando C. Constantino	M.S. in Agri Engineering (Ongoing), CLSU
II. RESEARCH	
A. RICE VARIETAL IMPROVEMENT	
Hilario C. dela Cruz	M.S. in Plant Breeding (Completed coursework), UPLB
Philbert S. Bonilla	Ph.D. in Plant Breeding (Ongoing) at UPLB, Thesis in Okayama Univ, PhilRice/Monbusho Scholar, BSA <u>Cum Laude</u>
Edilberto D. Redona	Ph.D. in Plant Breeding (Ongoing), UC Davies, PhilRice/Rockefeller Scholar, BSA <u>Magna Cum Laude</u>
Raul J. Lara	M.S. in Agronomy-Hybridization, UPLB
Leocadio S. Sebastian	Ph.D. in Plant Breeding-Genetics (Ongoing), Cornell Univ, PhilRice/Rockefeller Scholar
Renando O. Solis	M.S. in Plant Breeding (Ongoing), UPLB, PhilRice Scholar
Virgilio C. Andaya	B.S.A. in Agronomy, 1991 PhilRice Scholar for M.S. in Plant Breeding, UPLB
John C. de Leon	B.S.A. in Agronomy - Plant Breeding, UPLB
Thelma F. Padolina	M.S. in Crop Science (Ongoing), CLSU

NAME	HIGHEST EDUCATIONAL ATTAINMENT/SPECIALIZATION
Emily R. Corpuz	M.S. in Crop Science (Ongoing), CLSU
Artemio M. Galvez	M.S. in Agronomy, UPLB
Loida C. Malijan	M.S. in Horticulture - Genetics, UPLB
Gabriel O. Romero	Ph.D. in Plant Breeding-Biotechnology (Ongoing), UC Davies PhilRice/Rockefeller Scholar
Ma. Theresa B. Peralta	M.S. in Agronomy-Crop Physiology, UPLB
Cynthia C. Bato	B.S. in Horticulture, <u>Cum laude</u> , 1991 PhilRice for M.S. in Plant Breeding-Genetics, UPLB
Antonio A. Alfonso	B.S. in Biology, <u>Cum laude</u> , CLSU

B. PLANTING AND FERTILIZER MANAGEMENT

Pompe C. Sta. Cruz	Ph.D. in Agronomy-Crop Physiology, UPLB
Teodula M. Matra	Ph.D. in Soil Chemistry, UPLB
Rhadora R. Aldemita	Ph.D. in Plant Physiology (Ongoing), Purdue Univ, PhilRice/Rockefeller Scholar
Jocelyn B. Bajita	B.S. in Soil Science, <u>Cum laude</u> , 1991 PhilRice Scholar for M.S. in Soil Fertility, UPLB
Jovino L. De Dios	B.S. in Soil Science-Soil Fertility, CLSU
Fernando D. Garcia	B.S. in Agronomy, CLSU, 1991 PhilRice Scholar for M.S. in Crop Physiology, UPLB
Constancio A. Asis, Jr.	B.S. in Soils Science, <u>Cum laude</u> , VISCA

C. RICE-BASED FARMING SYSTEMS

Rolando O. Retales	M.S. in Crop Science, CLSU
Vilma A. Cristobal	B.S. in Crop Protection, <u>Cum laude</u> , CLSU, 1991 PhilRice Scholar for M.S. in Entomology, UPLB

D. INTEGRATED PEST MANAGEMENT

Florentino M. Olivares	M.S. in Plant Pathology/Entomology, UPLB
Alejandra Y. Burdeos	M.S. in Entomology, VISCA, 1991 PhilRice Scholar for Ph.D. in Entomology-Biological Control, UPLB
Manuel B. Rondon	M.S. in Crop Protection (21 units), G. Araneta Univ
Gilely A. De la Cruz	M.S. in Entomology (25 units), CLSU
Gerardo F. Estoy	M.S. in Entomology (12 units), VISCA
Genaro S. Rilton	M.S. in Entomology (Ongoing), UPLB, PhilRice Scholar, BSA <u>Cum laude</u>
Arthur R. Baria	M.S. in Plant Pathology (Ongoing), UPLB, PhilRice Scholar
Lina B. Flor	B.S. in Entomology-Taxonomy, <u>Cum laude</u> , Central Min- danao Univ
Hilario C. Cabanilla	B.S. in Agronomy, CLSU
Truong Hoai Xuan	Ph.D. in Plant Pathology (Virology), UPLB

NAME	HIGHEST EDUCATIONAL ATTAINMENT/SPECIALIZATION
------	---

E. RICE ENGINEERING & MECHANIZATION

Felimar M. Torrizo	M.S. in Agri Engineering-Agri Machinery & Design, UPLB, Board Passer
Eulito U. Bautista	M.S. in Agri Engineering-Agri Machinery & Design, UPLB, Board Passer, 1991 Recipient for Most Outstanding Agri Engineer in the field of Farm Power & Machinery
Federico R. Recta	M.S. in Agricultural Engineering-Post-harvest/Crop Processing, UPLB, Board Passer
Evangelina B. Sibayan	M.S. in Agri Engineering (24 units), CLSU, 1991 PhilRice Scholar (Thesis support), CLSU, Board Passer
Manuel Jose C. Regalado	M.S. in Agri Engineering-Post Harvest (Ongoing), UPLB, Board Passer
Bernardo D. Tadeo	M.S. in Agri Engineering-Agri Machinery & Design, Asian Institute of Technology, Board Passer, BSA <u>Magna cum Laude</u>

F. SOCIAL SCIENCE & POLICY RESEARCH

Danilo C. Israel	Ph.D. in Applied Economics, Clemson Univ, joining PhilRice in August 1991
Sergio R. Francisco	Ph.D. in Agricultural Economics (Ongoing), UPLB PhilRice Scholar
Jocelyn T. Quintana	M.S. in Agricultural Economics, UPLB
Imelda M. Revilla	M.S. in Agricultural Economics, UPLB
Ronaldo A. Sison	B.S. in Agri Economics, UPLB, 1991 PhilRice Scholar for M.S. in Agri Economics - Econometrics, UP Diliman
Gemma A. Gundaya	B.S. in Agricultural Economics, <u>Cum Laude</u> , VISCA
Carlos B. Carlos	PhilRice Scholar for M.S. in Rural Sociology, UPLB
Girllie Nora A. Abrigo	B.S. in Sociology, UPLB, 1991 PhilRice Scholar for M.S. in Sociology, UP Diliman
Nina K. Torreta	B.S. in Sociology, UPLB, 1991 PhilRice Scholar for M.S. in Sociology, UP Diliman
Irene R. Tanzo	B.S. in Sociology, UPLB
Ma. Isabel Zinia T. Azanza	B.S. in Statistics, UPLB, 1991 PhilRice Scholar for M.S. in Statistics, UP Diliman

G. RICE CHEMISTRY & FOOD SCIENCE

Jean B. Medina	M.S. in Soil Chemistry, UPLB
Leslie J. Togado	M.S. in Chemistry, Univ. of Santo Tomas, 1991 PhilRice

NAME	HIGHEST EDUCATIONAL ATTAINMENT/SPECIALIZATION
	Scholar for thesis support
Juma Novie B. Ayap	B.S. in Microbiology, <u>Cum Laude</u> , UPLB
H. TECHNOLOGY TRANSFER PROGRAM	
Rax L. Navarro	M.S. in Development Communication, PhilRice/IRRI Scholar for Ph.D. in Public Administration (Thesis support), UP Diliman
Virgilio Y. dela Trinidad	M.S. in Soil Fertility, UPLB
Zyla C. Macasieb	M.S. in Extension Education, UPLB
Diego G. Ramos	M.S. in Extension Education (Ongoing), UPLB, PhilRice Scholar
Wilfredo H. Libunao	M.S. Crop Science (12 units), CLSU
Constanta T. Briones	B.S. in Mass Communication, Divine Word Univ
Roger F. Barroga	M.S. in Development Communication (Ongoing), UPLB, PhilRice Scholar
Karen Eloisa R. Tanzo	M.S. in Development Communication (Ongoing), UPLB, PhilRice Scholar
Arleen Robert E. Bacilit	B.S. in Development Communication, UPLB
Lea C. Del Rosario	B.S. in Development Communication, UPLB
I. SEED PRODUCTION & HEALTH	
Rogelio P. Limuaco	B.S. in Agriculture, Araullo Univ
Frisco H. Malabanan	Ph.D. in Agronomy-Seed Technology (Ongoing), UPLB, PhilRice
Errol C. Santiago	M.S. in Crop Protection (Coursework), CLSU
III. MIDSAYAP BRANCH	
George Z. Castro	B.S. in Soil Science
Rodrigo N. Gasco	B.S. in Entomology
Evelyn B. Tabelin	M.S. in Agronomy - Hybridization, UPLB
Teresita G. Labio	M.S. in Agronomy (Ongoing), UPLB, PhilRice Scholar
Gerald B. Ravelo	B.S. in Plant Breeding, <u>Cum Laude</u> , Univ of Southern Mindanao
Remedios B. Panaguiton	B.S. in Agronomy
Rodolfo S. Escabarte	B.S. in Soil Science, <u>Cum Laude</u> , Univ of Southern Mindanao
Eliseo H. Batay-an	M.S. in Entomology, UPLB
Ma. Rufelie R. Sotes	B.S. in Plant Pathology, <u>Cum Laude</u> , Univ of Southern Mindanao
Albino B. Malitan	M.S. in Crop Production & Management, Univ of Southern Minda
Alberto J. Pajarito	B.S. in Agricultural Technology

PHILIPPINE RICE RESEARCH INSTITUTE
 LIST OF CONSULTANTS/PROGRAM & STUDY LEADERS
 As of May 01, 1991

84

NAME	AGENCY	POSITION/ASSIGNMENT
A. CONSULTANTS		
1. ESCANO, Geminiano	: Congress of the Phils.	: Special Assistant to : the Exec. Director
2. ESCURO, Pedro B.	: Private	: Consulting Sr Scientist/ : RVI-02; 03; 12A; 12B
3. ONGKINGCO, Petronio S.	: Private	: Contre Scientist; PFM-SP3
4. PABLICO, Sosimo *	: Mariano Marcos University	: Visiting Scientist
5. RIVERA, Fermina T. *	: Central Luzon State Univ	: Visiting Scientist
6. TEPORA, Justino	: Private	: Contractual Scientist
7. VEGA, Marcos	: Private	: Consulting Senior : Scientist
B. PROGRAM LEADERS		
8. CALLO, Damaso P.	: NCPC-UP at Los Banos	: OF-01; 03
9. GARCIA, Arnulfo	: UP At Los Banos	: RFS-01B
10. HERNANDEZ, Jose E.	: UP Los Banos	: RVI-04; 12C
11. MEDINA, Jose R.	: NCPC-UP at Los Banos	: IPM-13
12. ROLA, Agnes C.	: UP at Los Banos	: IPM-096; SSPR-01; 03
13. SAMONTE, Virginia P.	: CPDS-UP at Los Banos	: SSPR-02; 03
C. PROJECT LEADERS		
14. ADALLA, Candida B.	: UP at Los Banos	: RVI-09; RVI-12A3
15. ARAGON, Miguel B.	: Central Luzon State Univ	: PFM-03
16. BORROMEO, Teresita	: UP at Los Banos	: RVI-01; RVI-04; RVI-08
17. CARPENA, Azucena L.	: UP at Los Banos	: RVI-16
18. CARPIO, Ernesto V.	: UP at Los Banos	: RCFS-03; 07
19. DEL MUNDO, Angelita M.	: UP at Los Banos	: RVI-11; RCFS-01; 04; 05
20. DEL ROSARIO, Ricardo R.	: UP at Los Banos	: RFCS-02; 06
21. ENGLE, Liwayway M.	: Inst. of Plant Breeding	: RVI-01
22. GAPUD, Victor	: UP at Los Banos	: IPM-12
23. HUELGAS, Romeo	: UP at Los Banos	: RFS-SP1
24. JAVIER, Edwin L.	: UP at Los Banos	: RVI-05; 081; 082; 083; 12D
25. LABIOS, Romeo V.	: UP at Los Banos	: RFS-01A; RFS-02 (LB)
26. LALICAN, Danilo	: UP at Los Banos	: RVI-04; RVI-05; RVI-13
27. LAPIS, Delfin B.	: UP at Los Banos	: RVI-10; IPM-14; IPM-11
28. PADUA, Leodegario	: BIOTECH, UPLB	: IPM-05 (LB)
29. PALLER, Enrique C.	: UP at Los Banos	: IPM-11; IPM-03
30. PANCHO, Juan V.	: UP at Los Banos	: IPM-10; COMM-011
31. REJESUS, Belen M.	: UP at Los Banos	: IPM-15 (LB)
32. SEVILLA, Cesar C.	: UP at Los Banos	: RFS-03
33. TEPORA, Nenita M.	: Central Luzon State Univ.	: RVI-051; RVI-14
34. VILLEGAS, Violeta N.	: UP at Los Banos	: RVI-08

NAME	AGENCY	POSITION/ASSIGNMENT
D. STUDY LEADERS		
35. ALZONA, Fe D.	: UP at Los Banos	: RVI-16
36. ATIENZA, Ester	: UP at Los Banos	: Study Leader
37. BALA, Juan	: RCPC-Region III	: IPM-09
38. CALILUNG, Isagani	: UPLB	: PhilRice Mushroom Proj.
39. CAYABAN, Ernesto	: UP at Los Banos	: RVI-16
40. COLIGADO, Elpidio L.	: UP at Los Banos	: RFS-032
41. ESCAMOS, Senen H.	: UP at Los Banos	: RVI-16
42. JUSTO, Valeriana P.	: UP at Los Banos	: IPM-041
43. LIMOSINERO, Rene L.	: FSSRI, UPLB	: RFS-01A; 02
44. LOPENA, Vitaliano	: UP at Los Banos	: RVI-16
45. MATEO, Lun G.	: Central Luzon State Univ.	: RVI-14 (Maligaya)
46. MONTESUR, Jaime G.	: UPLB	: RFS-01A
47. PANGAN, Norma	: RCPC-Region III	: IPM-09
48. SANTIAGO, Dante R.	: NCPC-UPLB	: IPM-13
49. SINOHIN, Alfredo M.	: UP at Los Banos	: RVI-16
E. OTHERS		
50. AQUINO, Minda Flor M.	: BPI-Region II	: Proj Staff-IPM 11
51. BAYUCAN, Corazon M.	: BPI-Region II	: Proj Staff-IPM 11
52. CAGUICLA, Amor	: BPI-Region IV	: Proj Staff-IPM 11
53. CRISOLOGO, Vic	: UPLB/PhilRice MushRm Proj	: Technician
54. FAMARIN, Teresita R.	: BPI-Region IV	: Proj Staff-IPM 11
55. HOQUE, Melanda M.	: UP at Los Banos	: Mngt Staff-IPM 097
56. LIZARONDO, Rosario	: RCPC Los Banos	: Proj. Staff-IPM-11
57. LORENZANA, Orlando	: BPI-Region II	: Proj Coordintr-IPM 11
58. MAGSINO, Gil L.	: Nat'l Crop Protection Cen	: Mngt Staff-IPM 11
59. MANZANILLA, Cecille M. C.	: RCPC-Los Banos	: Proj Staff-IPM 11
60. PERDIDO, Ma. Visitacion	: BPI-Region II	: Proj Staff-IPM 11
61. SAAVEDRA, Napoleon T.	: Nat'l Crop Protection Cen	: Mngt Staff-IPM 11
62. SAN GABRIEL, Rolando C.	: RCPC-Region III	: Proj Staff-IPM-11
64. TENORIO, Agustin M.	: RCPC-Region III	: Proj Coordintr-IPM 091-095
65. VIGILIA, Reynaldo	: RCPC-Region III	: Proj Staff-IPM-11
66. VILLEGAS, Elpidio L.	: BPI-Region IV	: Proj Coordintr-IPM 11

Department of Agriculture
 PHILIPPINE RICE RESEARCH INSTITUTE
 Maligaya, Muñoz, 3113 Nueva Ecija

LIST OF SCHOLARS
 AS OF MAY 1, 1951

NAME	AGENCY	POSITION	MS (PHD)	SPECIALIZATION	PERIOD OF SCHOLARSHIP	SCHOOL	SPONSORING AGENCY
I. ON-GOING SCHOLARS							
1. Aldenita, Rhodora R.	Phil. Rice Research Institute	Sr. Sci Res Spec	x	Plant Physiology	September 1950 to August 1953	Purdue University (Indiana)	Rockefeller Foundation
2. Bariz, Arthur R.	Phil. Rice Research Institute	Sci Res Spec II	x	Plant Pathology	November 1950 to October 1952	Univ of the Philippines at Los Baños (UPLB)	Phil Rice Research Inst
3. Barroga, Roger F.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Development Communication	June 1950 to May 1951	Univ of the Philippines at Los Baños (UPLB)	Phil Rice Research Inst
4. Bonilla, Philbert S.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Plant Breeding	November 1950 to October 1952	Univ of the Philippines at Los Baños (UPLB)	Phil Rice Research Inst
5. Carlos, Carlos B.	Phil. Rice Research Institute	Sci Res Spec II	x	Rural Sociology (Thesis Support)	June 1950 to June 1951	Univ of the Philippines at Los Baños (UPLB)	Phil Rice Research Inst
6. Francisco, Sergio R.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Statistics	November 1950 to October 1952	Univ of the Philippines at Los Baños (UPLB)	Phil Rice Research Inst
7. Labio, Teresita G.	Philippine - Widsayap	Sci Res Spec I	x	Agronomy	June 1950 to May 1952	Univ of the Philippines at Los Baños (UPLB)	Phil Rice Research Inst
8. Leano, Rufino M.	Nueva Vizcaya State Institute of Technology (NVSIT)	Instructor	x	Plant Pathology	June 1950 to May 1951	Univ of the Philippines at Los Baños (UPLB)	Phil Rice Research Inst

NAME	AGENCY	POSITION	MS (PhD)	SPECIALIZATION	PERIOD OF SCHOLARSHIP	SCHOOL	SPONSORING AGENCY
3. Malabanan, Frisco M.	Phil. Rice Research Institute	Sr. Sci Res Spec	x	Seed Technology	Nov 1950 to Nov 1953	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
10. Navarre, Rex L.	Univ of the Phils at Los Banos (UPLB) / Phil Rice Research Institute	Manager II	x	Ph D Public Admin. (thesis support)	November 1950 to October 1951	Univ of the Philippines (Dillman)	Inter'l Rice Res Inst
11. Nicor, Nersie C.	Univ of Southern Mindanao		x	Plant Physiology	June 1953 to June 1952	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
12. Ramos, Diego G.	Phil. Rice Research Institute	Sci Res Spec II	x	Extension Education	June 1953 to May 1951	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
13. Redona, Ediberto D.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Plant Breeding/Genetics	September 1950 to August 1953	UC-Davis (USA)	Rockefeller Foundation
14. Regalado, Manuel Jose C.	Phil. Rice Research Institute	Sci Res Spec II	x	Ag'l Engineering	June 1955 to May 1951	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
15. Rillon, Genaro S.	Phil. Rice Research Institute	Sci Res Spec I	x	Entomology	June 1955 to May 1951	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
16. Romero, Gabriel O.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Plant Breeding	October 1955 to August 1952	Univ of California at Davis (UC Davies)	Rockefeller Foundation
17. Sebastian, Leocadio S.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Plant Breeding/Genetics	September 1950 to August 1953	Cornell University, Ithaca New York	Rockefeller Foundation
18. Solis, Renando O.	Phil. Rice Research Institute	Sci Res Spec II	x	Plant Breeding	June 1950 to May 1952	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
19. Tanco, Karen Elidisa R.	Phil. Rice Research Institute	Sci Res Spec II	x	Development Communication	June 1953 to May 1951	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst

NAME	AGENCY	POSITION	MS/PhD	SPECIALIZATION	PERIOD OF SCHOLARSHIP	SCHOOL	SPONSORING AGENCY
II. INCOMING SCHOLARS (1991)							
1. Abrigo, Gerlie Nora A.	Phil. Rice Research Institute	Sci Res Spec II	x	Sociology	June 1991 to May 1993	Univ of the Philippines at Diliman	Phil Rice Research Inst
2. Andaya, Virgilio C.	Phil. Rice Research Institute	Sci Res Spec II	x	Plant Breeding	June 1991 to May 1993	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
3. Azanza, Ma. Zinia Isabel T.	Phil. Rice Research Institute	Sci Res Spec I	x	Statistics	June 1991 to May 1993	Univ of the Philippines at Diliman	Phil Rice Research Inst
4. Bajita, Jocelyn S.	Phil. Rice Research Institute	Sci Res Spec II	x	Soil Science	June 1991 to May 1993	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
5. Sato, Cynthia C.	Phil. Rice Research Institute	Sci Res Spec II	x	Plant Breeding	June 1991 to May 1993	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
6. Surdeos, Alejandro I.	Phil. Rice Research Institute	Senior Sci Res Spec	x	Entomology	June 1991 to May 1994	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
7. Cristobal, Vilma A.	Phil. Rice Research Institute	Sci Res Spec II	x	Entomology	November 1991 to October 1993	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
8. Garcia, Fernando	Phil. Rice Research Institute	Sci Res Spec II	x	Soil Science	June 1991 to May 1993	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
9. Mascorines, Arnulfo M.	Dept. of Agri. - Region 5	Agri Prod Technicia	x	Community Development	June 1991 to May 1994	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
10. Sales, Hector M.	Bicol Experiment Station	Agriculturist II	x	Agricultural Economics	June 1991 to May 1994	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
11. Sibayan, Evangelina B.	Phil. Rice Research Institute	Senior Sci Res Spec	x	Agricultural Engineering	June 1991 to May 1991	Central Luzon State University	Phil Rice Research Inst

NAME	AGENCY	POSITION	MS (PhD)	SPECIALIZATION	PERIOD OF SCHOLARSHIP	SCHOOL	SPONSORING AGENCY
12. Sison, Romaldo A.	Phil. Rice Research Institute	Sci Res Spec I	x	Agricultural Economics	April 1991 to March 1992	Univ of the Philippines at Diliman	Phil Rice Research Inst
13. Torreta, Nino K.	Phil. Rice Research Institute	Sci Res Spec II	x	Sociology	June 1991 to May 1993	Univ of the Philippines at Diliman	Phil Rice Research Inst
III. FORMER SCHOLARS							
1. Garcia, Blanquita M.					School Year 1986-1991	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
2. Ilagan, Evangelina D.	Phil. Rice Research Institute	Sci Res Analyst	x	Family Resource Mngt	June 1989 to May 1990	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
3. Neira, Teodora M.	Phil. Rice Research Institute	Supvy Sci Res Spec	x	Soil Science	Jan 1990 to June 1990	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
4. Malitan, Albino	Philrice - Nidsayap	Sci Res Analyst	x	Crop Production and Management	June 1988 May 1990	Univ of Southern Mindanao (USM)	Phil Rice Research Inst
5. Quintana, Jocelyn T.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Agricultural Economics	June 1989 to May 1990	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
6. Revilla, Inaida M.	Phil. Rice Research Institute	Sr Sci Res Spec	x	Agricultural Economics	June 1989 to May 1990	Univ of the Philippines at Los Banos (UPLB)	Phil Rice Research Inst
7. Tadeo, Bernardo D.	Phil. Rice Research Institute	Sci Res Spec II	x	Agr'l Engineering	January 1989 January 1991	Asian Institute of Technology (Thailand)	Asian Institute of Technology (AIT)

JICA