PN-AA7-805

HIGHLIGHTS OF IRRI'S INVOLVEMENT WITH SEVERAL NATIONAL PROGRAMS (PAST AND FUTURE POTENTIAL) SUPPORTED WHOLLY OR PARTIALLY BY USAID

OCTOBER 1984

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Executive Summary

1. Resume of the IRRI's past involvement with national programs in Indonesia, Sri Lanka, Bangladesh, India, Pakistan, Philippines, Egypt, and Madagascar with donor support or partially by USAID (page 1-6).

2. Projection of future potential assistance in national programs of Burma, Philippines, Bangladesh, Thailand, Sri Lanka, Egypt, and Madagascar (page 7-16).

3. Resume of the IRRI's Agriculture Industrial Liaison with national programs and the significant role of its Agricultural Engineering Program as a technology and back up resource (page 17-19).

4. A separate document has been prepared jointly by AARD and IRRI as a proposal for funding on "Upland Rice and its Intergration into Upland Rainfed Farming Systems" for Indonesia

INFORMATIONAL

The IRRI has received substantial assistance in its research and training programs by generous support from USAID which has materially helped it in its work with national programs. Many of these involvements were instituted shortly after IRRI was organized. There have been major efforts in Indonesia, Sri Lanka, Bangladesh, India, Pakistan, Philippines, Egypt, and Madagascar, in which IRRI has worked together with national research systems in rice research and humanpower development or in rice-based farming systems. A brief account of these collaborative efforts undertaken with generous support from USAID is given below.

Indonesia

IRRI scientists have been located in Indonesia since 1972. Indonesia's rice production has increased dramatically during the interim from some 13 million metric tons of milled rice in 1972 to over 25 million metric tons of milled rice in 1984 on approximately the same hectarage. The USAID support was approximately 3M dollars over one decade (1972-1982). Assistance was provided in the areas of Plant Breeding, Cropping/farming Systems, Soil Fertility, Plant Pathology, Agricultural Economics, and research management. During the period of 1982-85, one consultant was retained in the Farming Systems area. His support came from USAID bilateral funding on a host country contract basis.

Many scientists received both short-term training and post graduate training. Most of the current key leaders in the Research and Development Agency for Agriculture were selected from this group.

Sri Lanka

Under a USAID loan which provided 3.8 million US Dollars, the rice production, rice-based cropping systems, and appropriate training was substantially assisted during the period of May, 1977 - June 30, 1982. A two-year extension, through June 30 allowed the completion of the training component. The technological base for rice research capability was significantly increased. It is felt that technical assistance and professional improvement provided by the project will have a continuing beneficial impact for many years to come. The rice farmers of Sri Lanka benefited greatly; there has been a steady increase in yields per acre of rice and greater diversity of cropping patterns during the life of the project. Hence, the new environment created has stimulated more food per acre per year. At the termination of the project, it was felt that the major contribution of this research and training could not be properly assessed for at least some five years (1987).

India

The Government of India established the All-India Coordinated Rice Improvement Project (AICRIP) in 1965 to bring inter-disciplinary and inter-institutional coordination into the rice research efforts of various state and central government agencies. Through AICRIP, new findings in one part of India may be rapidly evaluated and adopted in all parts of the country. Likewise, new materials from abroad may rapidly find their way in practice in India if testing found them to be useful.

IRRI actively participated in the activities of AICRIP in 1967 through a contract between IRRI, USAID and the Government of India.

Through the USAID support, four IRRI scientists were associated with AICRIP in conducting research and in extending development of their areas of specialization under the AICRIP program. The IRRI scientists were associated with AICRIP for four years.

Pakistan

USAID provided a substantial loan for the improvement of research on cereal crops to Pakistan. The Pakistan Agricultural Research Council (PARC) was given responsibility for strengthening the coordination of the rice program at the national level. IRRI was associated with PARC in strengthening coordination of rice research specifically through the implementation of a pilot applied research and production project. IRRI stationed two rice production specialists in Pakistan for this purpose. The total expenditure for the project from June 1977 to September 30, 1984 was US$866,876.41.

Among the lessons learned from the collaborative effort was the identification of new production technology that increased rice yields. Among these new technology were: new varieties; increase in the recovery of applied nitrogen through incorporation in dry soil; incorporation of granular insecticide; and increase of plant population from about 50,000 to 100,000 plants per acre.

The collaborative project also demonstrated that new technology can be tested to ascertain its effectiveness in pilot extension programs. Pilot extension programs could then be enlarged so that technology could be further tested and an extension methodology of the technology developed. For instance, the effort led to the 44-88 Rice Maximization Program organized for the Gujranwala District in the Punjab Province covering an area of 625,000 acres.

Beginning in 1976 in addition USAID supported an industrial extension program with a resident agricultural engineer in Pakistan. Starting with an Engineering Cell established in the PARC to work in collaboration with the IRRI project, in 1979, the PARC Engineering Cell was upgraded to a full division of the PARC called the Agricultural Machinery Division.

Among the machines introduced and popularized by the project were four multicrop threshers: the Mini thresher; the Standard PTH7 thresher; the Unishaft thresher Model IRRI-PARC 20, and the PTO thresher Model IRRI-PARC 30. These threshers can thresh not only wheat and paddy but also sunflower, safflower, sorghum, millet and soybeans. More than anything else, the collaborative effort has enabled local scientists to evaluate and improve under local conditions machines introduced from other programs.

The training of technical personnel was an integral part of the IRRI-PARC machinery program. The Agricultural Machinery Division has continued to introduce, evaluate and test machinery even after the IRRI engineer left Pakistan in 1982.

Egypt

The rice research and training project is a five-year international effort launched in 1980 with outside financing from the USAID. The research and training programs are carried out by a multinational team of scientists from the Egyptian Ministry of Agriculture, the University of California, Davis, California, USA as prime contractor, and IRRI and the University of Arkansas, USA as subcontractors.

Under the subcontract, IRRI has three resident scientists: a plant breeder, a rice production specialist and an agricultural engineer. The project started in July 1980 and will be completed in March, 1985.

IRRI's subcontract involves US$1,793,014.

Philippines

From June 1975 to July 1983, approximately US$421,778.20 dollars have been spent by USAID to assist in developing technology transfer methodologies for disseminating information on rice production and rice-based cropping systems. These funds have been made available to the Ministry of Agriculture. IRRI has identified a scientist who has served as a liaison between the IRRI and the Ministry. This person has provided counsel and assistance in the development and the packaging of rice production technology for the Masagana 99 Program. A great deal of effort has been expended in the area of soil fertility information and technology transfer. From 1982, special Technology Transfer workshops are being held twice a year as a means of disseminating a broad spectrum of knowledge accumulated by the IRRI relative to rice production and cropping systems It has been most useful to the Philippine national program and much has been learned re methodologies and techniques which can be used in principle in IRRI's collaboration with other national programs.

Bangladesh

IRRI has been involved collaboratively with the development of BRRI (Bangladesh Rice Research Institute) since its inception. USAID has contributed in many ways. During the current phase of the

collaborative project which is being supported by a consortium of donors (USAID, Government of Australia, Canadian Government and Ford Foundation), substantial progress has been made in establishing the Bangladesh Rice Research Institute. Many scientists have been trained both in the area of post-graduate training as well as short-term training. The Institute now has a staff of well qualified persons for the most part. Bangladesh has substantially increased its capability to produce rice its most important staple food.

FUTURE PROJECTIONS

Burma

Self-sufficiency in food, both at the national and local level, an adequate supply of good quality raw material for expanding agro-industries, export promotion, and import substitution, are the four major pillars of the Burma agricultural strategy. The land and water use policies in all 314 townships of Burma will need to be oriented towards achieving its goals. Both research and development are functions of the AC (Agriculture Corporation). With the guidance of AC, scientific land and water use patterns can be introduced under the auspicies of its Township Council based on ecology, economics and employment.

There is a lack of well-trained scientists, hence, more emphasis must be given to the M.S. and Ph.D. levels of staff training for the AC who are posted at ARI (Agriculture Research Institute), Yezin. Since Burma wishes to retrieve its former world position as an exporter of quality rice, emphasis is placed on the development and marketing of high quality rice. Therefore, Agricultural Chemistry and Botany (re tissue culture) are very important disciplines in which scientists should be trained to meet their anticipated needs. More emphasis must be placed on disease control, thus, training in Plant Pathology is essential.

Phase III for their Research Development Program for rice will begin in January of 1986. The following areas will receive prime attention;

- Breeding rice for specific farming systems
- Low input technology

- Bio-technology
- Animal-drawn implements
- Training
- Constraints and impact analysis
- Quality analysis and improvement

CIDA has been the prime donor for Phase I and II. It would be hoped that they would be able to continue to provide some support in Phase III. However, it would be realistic to entertain a consortium approach similar to the one being used in Bangladesh where USAID would provide assistance as well.

Philippines

The Technology Transfer Program which has become a liaison effort between the Ministry of Agriculture and the IRRI has made a substantial contribution. The major scope of the activities carried on through this liaison effort has developed significantly in its usefulness in recent years. The initial effort was primarily in rendering technical assistance to the Masagana 99 Program which was very valuable. Now it has evolved into a broad spectrum of effort in technology transfer where regular workshops are organized to share "points of view" between IRRI scientists and those charged with implementing the "results of research" to the benefit of the Filipino rice farmers. This program must be continued in order to expedite the sharing of new knowledge from the IRRI research program in the most efficient manner to the Filipino rice producer. A good rapport and credibility has been established. It is now on the threshold of a major "pay off" which is urgently needed within the context of the

serious overall economic situation with which the Philippines is currently faced.

Bangladesh

The Bangladesh Government in 1973 established the BRRI (Bangladesh Rice Research Institute). Since its inception, IRRI has worked very closely with BRRI, having gone through Phase I and Phase II which will be completed on or about December 31, 1986. It is the desire of the Bangladesh Government that this working relationship be extended at least through the current decade (1987-1990).

The breeding of deep water rice has many challenges. Real progress has been made in techniques, methodologies and the identification of some useful "gene pools". This program needs to be continued and the momentum accelerated. In Phase I and Phase II, the IRRI project scientist has provided the prime leadership in this research effort. As BRRI scientists return from training abroad and assume leadership in the implementation of the breeding program, the IRRI scientist will assume a new role. The IRRI scientist will serve more as a consultant.

The training of extension and research assistants in the area of technology transfer has been well stablished. The adaptive research is well underway particularly as it would relate to evaluation of advanced germplasm lines. This needs to be intensified and made more comprehensive. Likewise, in the future, the project scientist would play more of a consulting role rather than the prime leader and/or innovator of the program.

The rice-based cropping systems program is beginnning to get established with new leadership provided by the IRRI scientist retained towards the end of Phase II. This farming systems dimension is extremely important and must become the object of greater focus and attention as we move into the latter part of the decade of the 80's and into the decade of the 90's.

Training has been a primary objective. Many scientists have been trained either on a short-term basis or as post graduates. When BRRI was organized, it was composed of many scientists who were mid career. As a result very shortly, a new generation of leadership will be needed, since many of the "charter staff" will have reached retirement age. Bangladesh is now on the threshold of being able to do more short-term and graduate training in country. AUB (Agriculture University of Bangladesh) in Mymensigh is a good candidate.

For a variety of reasons, AUB has not been very effective during the past few years. Recently, they have been administratively placed under the Ministry of Agriculture. The University has been given the authority to conduct research which they were not able to do officially previously. Even though they have this authority, they are short on funds primarily for assistants and in some cases, for materials and/or equipment. It would seem advisable to provide some assistance at least on a "pilot project" basis initially. IRRI has recently signed an overall Memorandum of Understanding with AUB to provide assistance where possible. A dialogue between IRRI and the AUB has indicated that the most urgent need and perhaps the one which would pay greatest dividends would be to provide some support to the Rice-based Farming Systems Program.

This University is organized and has an interest in short-term training as well as post graduate training. It is somewhat unusual for a University to be interested in short-term training. Hence, it should be encouraged. This could be accomplished by giving support to the farming systems research and training program. This could result in a closer working relationship between BRRI and AUB; it might be necessary for it to be informal in nature but such could definitely be mutually beneficial and of great benefit to Bangladesh agriculture in general.

Thailand

IRRI has had a long and productive working relationship with the Rice Department of Thailand. One of the major challenges at the present time is providing better rice production practices for Northeast Thailand. Over the last few years, there has been a tendency for this region to become a mono-cropping culture of the cassava production. This has been encouraged and stimulated by the export demand for cassava flour to Western Europe in the 1970's. This market is now declining. For purposes of good agriculture management practices, there is a need to have greater diversification of production in this region.

There needs to be developed research programs;

- alternate crops to reduce adverse soil effects
- reduce risk
- provide food crops
- give the farmers an opportunity to diversify income

Among the crops to be considered, upland rice will play a significant role.

- Rice varietal improvement would be made up of the need to develop varieties resistant to drought, diseases, insects and adverse soil.
- Fertilizer efficiency research on upland rice is a critical area of investigation.
- Weed control of upland rice
- Cropping/farming systems adapted to a extremely variable environment.

IRRI in cooperation with the Rice Research Department have developed an excellent deep water rice research facility in Huntra. This "field laboratory" has proven to be not only valuable for the overall rice research program in Thailand but has become the focus for regional research activities for those neighboring countries who have an interest in deep water rice production. One of the phases of this research effort which has developed during the last few years has been the Integrated Pest Management peculiar of deep water rice production.

One of the more serious pests is the yellow stemborer. A facility has been developed for screening of advanced breeding lines for deep water rice breeding research in Thailand, IRRI, India, Bangladesh and Burma at the Huntra Research Center.

- There is a need to study population fluctuation and ecological environments relative to the yellow stemborer.
- A survey should be made of major pests of deep water rice.
- The feasibility and practibility of chemical control of the yellow stemborer needs study.

- The control of viruses and brown planthopper in the preflooding period.
- In all situations, a better understanding of rodent damage and control.

The first training course on field methods of research in deep water rice pest management was conducted October 8-19, 1984. A new screen house was built at Bangkhen. More facilities for rearing insects and exposing seedlings are needed.

This program as presently funded will terminate as of March 31, 1985. It not only has made a very important contribution to rice production in Thailand but as well in Bangladesh, India, Viet Nam, Laos, Indonesia, Malaysia and other regions and/or countries where deep water rice is an important economic facet of the total rice production of the country. Hence, continuing funding is most urgent.

Sri Lanka

Sri Lanka's largest agriculture crop is rice. When the IRRI-Sri Lanka Rice Research Project supported by USAID began in 1977, the nation was importing about 30% of the total rice required for its annual consumption. This project continued formally through June 30, 1982 with the modification that there would be a 2-year extension (June 30, 1984) for the training component. Significant progress was made in finding solutions to some of the challenges relative to rice production and rice-based cropping systems during the life of the project.

At the time that this project was initiated, the agriculture research agency was initiating a decentralized organizational pattern.

This was based on the fact that there were a wide range of ecological environments and it was not possible to conduct research on a centralized basis that would answer the many challenges coming from different environments. During the life of the project, this decentralization of the research program moved in a positive and constructive fashion. It is essential to continue this effort.

- Rice researchers in their breeding programs must recognize the importance of tailoring varieties and management practices to fit specific environments.
- A surveillance of potential disease and pest hazards relative to rice production must be continued.

Progress have been made in cropping/farming systems and Sri Lanka has become an example of the benefits to be derived therefrom. This program needs to be expanded with additional sites. But the activities should be coordinated with those of World Bank extension and their adaptive research programs. The IDRC has a similar project and it is important to avoid any duplication to make certain that the efforts of all complement and supplement one another so that the Sri Lankan farmer will be able to benefit by the useful findings of all groups having a common interest in this area of investigation.

There is an interest on the part of the Government of Sri Lanka and the USAID mission in Colombo to have a continuing involvement of IRRI. This would probably be best accomplished through a liaison scientist and short to medium term consultants. The training of rice scientists should continue to be an integral part of the collaborative effort.

Egypt

An initial discussion with the Deputy Director of the Rice Research and Training Project of the Ministry of Agriculture indicated that Egypt would like to continue its collaborative work with IRRI at the National Rice Institute at Sakha through a direct agreement with IRRI and with USAID financial support. Present thinking is for the IRRI rice production specialist and agricultural engineer to continue to be in residence in Egypt. In addition to undertaking collaborative research, IRRI's assistance is being sought for the establishment of laboratory/facilities for rice breeding, agricultural mechanization and extension.

The next phase will also involve training of Egyptian rice scientists both in special short courses and at the post doctoral level.

Short-term consultants from IRRI will likewise visit Egypt at appropriate times.

Further discussions between Egyptian officials and IRRI will be held after they have discussed the matter with USAID.

Madagascar

A contract between IRRI and USAID was signed in February 1984, under which IRRI was provided support to assist the Government of the Democratic Republic of Malagasy (GDRM) to upgrade its rice research capability. The contract is for 30 months, terminating in August 1986. Under the contract IRRI has stationed an agronomist and a plant breeder with FOFIFA (the National Center for Applied Research on Rural Development). They are evaluating existing Malagasy rice varieties at

four locations, and assessing yield potential under various management techniques. Selected varieties have been introduced to Madagascar to widen the basis of the breeding program, and arrangements have been made for Madagascar to participate more regularly in the International Rice Testing Program. In addition to rice germplasm, small IRRI designed machines and many publications on rice have been introduced to Madagascar. Plans for the training of Madagascan scientists at IRRI, and through in-country training programs are being developed. Several Madagascan scientists have already visited IRRI, to discuss the organization of the national rice research program, effective quarantine arrangements for the introduction of new germplasm into Madagascar, and the improvement of facilities for rice research.

The grant provides funds so that a series of consultancies can be arranged to plan for further strengthening of the national rice research program. Towards the end of 1985, progress in the development of the Malagasy rice research program will be reviewed, and recommendations developed regarding the further extension of the project.

AGRICULTURAL ENGINEERING DEPARTMENT
RESEARCH AND INDUSTRIAL LIAISON

The USAID has been the prime motivating and expediting funding source for this effort of IRRI. It encouraged and supported a comprehensive Agricultural Mechanizaton Research Project at IRRI in its early stages of development. Subsequently, it observed that the end-user "the farmer" was not receiving the benefit of the ideas evolving through the Agricultural Engineering Research Program at IRRI as promptly as he should. Hence, from these discussions evolved the concept of an Agricultural Industrial Extension Program. There were three national programs;

- Philippines
- Thailand
- Indonesia

which took a keen interest in the potential of such an effort in the early stages. Subsequently (only recently), India has joined this consortium.

There are many ingredients necessary to make an industrial liaison program effective above and beyond the actual availability and demonstrated usefulness of the equipment which has resulted from the engineering research. It is necessary to have credit both for the manufacturer and for the farmer to purchase such equipment. This means that banks must understand agriculture and the value of loaning funds to encourage and facilitate not only local industry but the farmers to make such purchases. It is important that there be an appropriate and effective educational program. This means training of liaison personnel from time to time to update them on the technology

as well as appropriate demonstration. Sets of equipment need to be made available to Experiment Stations and Universities so that researchers and students may become familiar with benefits to be derived from the use of such. It is important that local "blacksmiths" or "machine shops" know how to manufacture such simple equipment as well as renovate and repair them. Thus, the industrial liaison program has many different components all very essential if it is to deliver information relative to the usefulness of such appropriate technology. Too frequently, agricultural mechanization is associated with some type of combustion engine power source. This is important but in many instances such as Burma and parts of India, it is equally important to have improved hand tools and/or animal drawn equipment.

The program in the Philippines has probably advanced the most dramatically because of the two-pronged approached which has evolved. There is an industrial liaison specialist working with the Philippine Government relative to education, manufacturing, maintenance and utilization. However, many will come directly to the research department of IRRI to get their information. Thailand has excelled in the production of small threshers. Indonesia has been successful in introducing such appropriate technology to many of the outer islands where there is labor shortages at critical times in the production cycle. It takes time to establish rapport and credibility in this type of activity. The past six years has been most productive, constructive, even though at times, it may have advanced rather slowly. The program is on the verge of a major pay off. It would be most unfortunate if it were discontinued at this point in time.

As the agricultural engineering project of IRRI matured and gained in reputation and prestige, many inquiries have come from areas substantially removed from Asia in the rice growing world, seeking assistance. There have been requests from the Solomon Islands, Fiji, Papua New Guinea, etc. but the largest number have come from Africa. Examples of the type of requests received from Africa is reflected in Appendix I.

When some of these requests were made from Africa for equipment, it was proposed that blue prints be sent instead of the equipment. However, those requesting the equipment (FAO, VITA, etc.) had such a great degree of urgency that they felt they could not afford to take the time to try to find local manufacturers ("blacksmith shops") or "machine shops" and that they wished the equipment to be manufactured and sent to them directly. With the tremendous need for increased food production in African rice growing nations, it would seem that there would be merit in having at least one location or more centrally established where a liaison industrial engineer could be available and a shop for the manufacturing of prototypes which IRRI had developed and/or modify them to meet local needs for distribution to interested African nations.

This, in itself, points up the importance of having a strong and productive agricultural engineering program within the framework of IRRI. If this program is reduced, it means that the source of new ideas and prototypes will be very soon exhausted and such needs will go unheeded.

110 A UNIVERSITY HALL,
UNIVERSITY OF SCIENCE
AND TECHNOLOGY,
KUMASI - GHANA
W/ AFRICA.

Dear Sir / madam,

I am a final year student in the above named institute in the department of Agric Engineering. I have very great interest in the design and development of agric equipment and agric processing units, so I was very happy when I got your address and also learnt that you develop and design agric equipments, because I think you can help me a lot in this line.

I would be very grateful if you can help me with the fundamentals of the design of simple equipments and processing units. I would be very happy if you can send me some magazines, pamphlets and drawings on such units which you design and develop.

I would very much appreciate it if you can hint me about the possibility of securing job or furthering my education in your institute after my first degree course.

I am with the great hope that you can help me.

Thank you.

Yours faithfully,

KWAME OSEI POKU

THE DIRECTOR
THE INTERNAL RICE RESEARCH INSTITUTE
P O BOX 933
MANILA PHILIPPINES.

August 6, 1984

Mr. Kwame Osei Poku
10A University Hall
University of Science
& Technology
Kumasi, Ghana

Dear Mr. Poku:

Thank you for your letter requesting information about machines developed by IRRI. I am enclosing a set of brochures which will indicate the type of work we do.

I was a Visiting Professor at the University of Ghana in 1970 and had opportunity to visit your beautiful campus several times.

We presently have no open positions available at IRRI.

Yours very truly,

C. W. Bockhop
Head
Agricultural Engineering Dept.

CWB/ecs

Enc: a/s

BANKERS S. S. Bank Ltd., Accra
G. C. Bank, Tsito/Ho

Telephone 22464
Cable & Grams: Gloriosa

Kwame Nkrumah Circle,
P.O. Box M-167,
Accra

15th December 19 83.

Dear Sirs,

Thank you for sending us full drawings for the possible local manufacture of the IRRI Batch Dryer.

The catalogue which accompanied the drawings has given us new ideas. Our idea is if possible to adopt one of your power tillers with steering facilities for use in ploughing, harrowing, furrowing, seeding, cultivating, as well as fertilizer applications in the growing of maize, Cowpeas, groundnuts and sugarcane.

We should therefore be very much obliged if you could choose for us one of your power tillers which can best suit our purpose, and also send us all drawings and information which can help us manufacture it locally for use of farmers.

We shall be further grateful if you would send us similar information on the local manufacture of the implements which can do the jobs we have in mind. We shall tackle the growing of rice after we have got the production of our stable crops on the way.

We look forward to an early and favourable reply from you.

Yours faithfully,
Gloriosa Services (Ghana) Ltd.

A.K. Asem
Managing Director

Director,
The International
Rice Research Institute,
P. O. Box 933,
Manila
Philippines

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December 13, 1983

Mr. A. K. Asem
Managing Director
Gloriosa Services
(Ghana) Ltd.
Kwame Nkrumah Circle
P. O. Box M-167
Accra, GHANA

Dear Mr. Asem:

As requested in your letter of 15 November, I am enclosing one set of drawings for the PT-3 Power Tiller with steering clutches.

I suggest you contact the Agricultural Engineering Department at the University of Science and Technology, Kumasi for assistance. They have fabricated an IRRI designed thresher.

Very truly yours,

Original signed

C. W. BOCKHOP
Head
Agric. Engineering Dept.

CWB/ect

Enclosed: a/s Sent under separate cover

GLORIOSA SERVICES (GHANA) LTD.

BANKERS S. S. Bank Ltd., Accra
G. C. Bank, Tsito/Ho

Telephone 22464
Cable & Grams: Gloriosa

Kwame Nkrumah Circle,
P.O. Box M-167,
Accra

25th January, 1984

Mr. C. W. Hockhop,
Head, Agric. Engineering Dept.,
The I. R. Research Institute,
P. O. Box 933,
Manila, Philippines.

Dear Sir,

Thank you for your letter dated 13th December 1983 forwarding the design and technical drawings of the IRRI PT3 and informing us that our KNUST, Kumasi, has manufactured one of your threshers locally.

We shall be grateful for further help from you. You mentined that many parts of your equipment are standard. We would like you to give more particulars of the standard type of the engine you employ in the manufacture of the IRRI power tiller or let us know the makers of these parts.

Secondly, we would like to import two of the PT3 with their full set of impliments which can be hitched to them. So kindly let us have a proforma invoice covering them. These should include plows, harrows, cultivators, rotavators (if it is one of the implements of the PT3), IRRI plow pole fertilizer applicator, and the IRRI multicrop upland seeders. The proforma should include one CAAMS-IRRI 1.0M Reaper and one engine used in the IRRI batch dryer, two blower burners used in the batch dryer. And wherever a choice exists we prefer the diesel engines. Of the burners, add a third which uses rice husk.

We shall be grateful for your early reply. Thank you.

Yours faithfully,
Gloriosa Services (Gh) Ltd

A.K. Asem
Managing Director
(A.K. Asem)

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February 14, 1984

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	FILE

Mr. A. K. Asem
Managing Director
Gloriosa Services
(Ghana) Ltd.
Kwame Nkrumah Circle
P. O. Box M-167
Accra, Ghana

Dear Mr. Asem:

This is in reply to your letter of 25th January requesting further information about our equipment.

We design the power tillers to use standard parts as much as possible. For example we use standard sprockets, roller chains, and V-belts which are generally available in each country. Our power tillers are all belt driven so any locally available engine can be used.

If you wish to import some equipment from the Philippines, I suggest you write to Mr. C. Follosco, President, Alpha Machinery and Engineering Corporation, P. O. Box 579 MCC, Makati, Metro Manila, Philippines. His company does export equipment. IRRI does not manufacture equipment.

I suggest that you work with the Agricultural Engineering Department at Kumasi to fabricate and test your first power tiller. The power tiller we have developed has not been tested for upland conditions, which you describe and in which you plan to use it. I am sure that considerable testing and modification is needed for the use in upland crops.

Yours very truly,

C. W. Bockhop
Head
Agricultural Engineering Dept.

CWB/ecs

Kumasi.
Ghana.
20-10-83

Dear Sir,

I am very happy to write to you a detailed information concerning your products which appeared in the DTT series No 7 of the UNIDO publication.

I am very interested in the business of manufacturing agricultural machines such as those you have developed.

In the near future I hope to manufacture some tools, equipment and machinery to help the development of agriculture in my country.

I shall be pleased to have detailed engineering drawings and other technical information that will enable me manufacture the products.

Those items mentioned in the publication are.

IRRI MULTI-HOPPER SEEDER

IRRI ROW SEEDER

IRRI POWER TILLER

IRRI BELLOWS PUMP

IRRI TABLE THRESHER

IRRI BATCH DRIER

IRRI POWER GRAIN CLEANER

JET FLOW PUMP

MULTICROP AXIAL FLOW THRESHER

In the University of Science and Technology of Ghana, there are Engineers and Technicians which will be prepared to construct and build specimens of the products and also aid me to manufacture them. I hope you will write back in good with all the necessary information.

I count on your cooperation.

Thank you in anticipation. Greetings, and I remain,

Yours sincerely,
T. A. Anden.

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February 17, 1984

CWB
AUK
BD
MA
RES
FILE

Mr. Thomas A. Andoh
P. O. Box 636
Kumasi, Ghana

Dear Mr. Andoh:

This is a reply to your letter requesting blueprints for various IRRI designed equipment.

I am sending under separate air mail cover the blueprints for the IRRI portable thresher (TH6) and the IRRI batch dryer (BD-1). It is our experience that a shop needs to develop and sell one type of machine successfully before venturing into the production of another machine. The University of Kumasi has fabricated the thresher.

I am enclosing forms which I request that you complete and submit to us. This Memorandum of Agreement will formalize our relationship.

I look forward to hearing from you.

Yours very truly,

C. W. Bockhop
Head
Agricultural Engineering Dept.

CWB/ecs
Enc: a/s

27

INDUSTRIAL RESEARCH INSTITUTE
(C.S.I.R.)
P. O. BOX 1439
ACCRA
GHANA
17/7/1987

Dear Sir,

Detail Plan for the construction of Irrigation Pumps

The Engineering Division of the Industrial Research Institute will be pleased if you can supply us with the detail plan for the construction of portable, manually operated low lift irrigation pumps for rice farmers.

This request is in the anticipation of our present research on various types of pumps to be developed by the Institute.

Yours faithfully
FRED DJOKOTO
(RESEARCH OFFICER)

AGRICULTURAL ENGINEERING DEPARTMENT
THE INTERNATIONAL RICE RESEARCH INSTITUTE
P. O. BOX 933
MANILA. PHILIPINES.

28

May 7, 1984

Mr. Fred Djokoto
Research Officer
Industrial Research Institute
P. O. Box M32
Accra, Ghana

Dear Mr. Djokoto:

This is a reply to your letter of 17 April requesting plans for our manually operated pump.

I am enclosing blueprints for the manually operated diaphragm pump and for the 6 in. axial flow pump which may also interest you.

I am also enclosing a set of brochures which will indicate the type of equipment we have developed.

Thank you for your interest in IRRI.

Yours very truly,

C. W. Bockhop
Head
Agricultural Engineering Dept.

CWB/ecs
Enc: sent under separate air mail cover

29

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

IMPORTANT
All correspondence and document relating to this order must show this No. FPO / 28/82 / MAG 81/001 / 27187

FIELD PURCHASE ORDER

TO
AGRICULTURAL ENGINEERING DEPARTEMENT
I. R. R. I.
PO BOX 933
MANILA - PHILIPPINES

FROM
J. CASTIAUX CTP MAG 81/001
c/o PNUD
B. P. 1348
ANTANANARIVE-MADAGASCAR

SHIP BY
☐ Air Freight ☒ Sea Freight ☐ Overland Freight ☐ Air Parcel Post (Regd.) ☐ Surface Parcel Post

TERMS OF PAYMENT (i.e. as specified in the original of this form). Payment will be made in the currency of the country in which the supplier is established.

ALL-RISK INSURANCE WAREHOUSE TO WAREHOUSE INCLUDING WAR, STRIKES, ETC. TO BE ARRANGED AND PAID BY SUPPLIER.

FREIGHT must be provided only to the port of entry and pre-paid by supplier.

TERMS OF DELIVERY Ex. Sh. Ex. Dr.

SHIPMENT TO BE MADE TO
REPRESENTANT RESIDENT DU PNUD
B. P. 1348
ANTANANARIVO MADAGASCAR 101

Attn CTP MAG 81/001

FPO / 27/82 / MAG 81/001 / 27187

(Each case, crate, parcel, etc., MUST SHOW THIS MARK)

COST, INCLUDING FREIGHT AND INSURANCE, NOT TO EXCEED $10 000 OR EQUIVALENT

Item No.	Description	Unit	Quantity	Unit Price	Amount
1	Axial flow tresher		2		5.000

CONDITIONS: this order is subject to the General Conditions listed overleaf (original).

THIS ORDER LAPSES WHEN SUPPLIED IN PART OR IN FULL. ONLY ONE DELIVERY TO BE MADE, IE; NO BACK ORDERING.
FAO AS AN INTERNATIONAL ORGANIZATION IS GENERALLY EXEMPT FROM ALL IMPORT-EXPORT RESTRICTIONS, PAYMENT OF TAXES, CONSULAR FEES, CURRENCY REGULATIONS ETC.

INSURANCE	
FREIGHT	
ESTIMATED TOTAL Not to exceed $10000 or equivalent	5.000

Accounting Code 3.9100.1719/41

Authorizing Officer
Date: 18/8/82 Signature:

3D

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

FIELD PURCHASE ORDER

IMPORTANT: All correspondence and documents relating to this order must show this No. FPO / 27/82 / MAG 81/001 / 79-27186

TO
AGRICULTURAL ENGINEERING DEPARTEMENT
I. R. R. I.
PO BOX 933
MANILA - PHILIPPINES

FROM J. CASTIAUX CTP MAG 81/001
c/o PNUD
B. P. 1348
ANTANANARIVE-MADAGASCAR

SHIP BY: ☐ Air Freight ☒ Sea Freight ☐ Overland Freight ☐ Air Parcel Post ☐ Regd. Parcel Post

TERMS OF PAYMENT (see sheet appended to the original of this form) Payment will be made in the currency of the country in which the supplier is established.

ALL-RISK INSURANCE WAREHOUSE TO WAREHOUSE INCLUDING WAR, STRIKES, ETC. TO BE ARRANGED AND PAID BY SUPPLIER.

FREIGHT must be provided only to the port of entry and pre-paid by supplier.

TERMS OF DELIVERY a. s. a. p.

SHIPMENT TO BE MADE TO
REPRESENTANT RESIDENT DU PNUD
B. P. 1348
ANTANANARIVO MADAGASCAR 101
Attn CTP MAG 81/001

FPO / 27/82 / MAG 81/001 / 79-27186 (Each case, crate, parcel etc., MUST SHOW THIS MARK)

COST, INCLUDING FREIGHT AND INSURANCE, NOT TO EXCEED $10 000 OR EQUIVALENT

Item No.	Description	Unit	Quantity	Unit Price	estimated
1	IRRI Vertical binbotch dryer with engines		2		2,500
2	IRRI rice transplanter		1		250
3	IRRI grain cleaner		2		1,000
4	IRRI 6 - in. dia. propeller pump with 5hp gasoline engine		1		600

CONDITIONS: this order is subject to the General Conditions listed overleaf (original).

THIS ORDER LAPSES WHEN SUPPLIED IN PART OR IN FULL. ONLY ONE DELIVERY TO BE MADE, IE; NO BACK ORDERING.
FAO AS AN INTERNATIONAL ORGANIZATION IS GENERALLY EXEMPT FROM ALL IMPORT-EXPORT RESTRICTIONS, PAYMENT OF TAXES, CONSULAR FEES, CURRENCY REGULATIONS, ETC.

INSURANCE
FREIGHT
ESTIMATED TOTAL Not to exceed $10 000 or equivalent 5,500

Accounting Code 3.9100.1719/41

Authorizing Officer Date 18/X/82 Signature:

THE INTERNATIONAL RICE RESEARCH INSTITUTE

P.O. Box 933
Manila, Philippines
Telephone: 88-48-69
88-45-14

Cable: Ricefound, Manila
Telex: (ITT) 45365 RICE INST PM
(RCA) 22456 IRI PH
(EASTERN) 63786 RICE PN

13 January 1984

Attn: The Director

Gentlemen:

This refers to our recent shipment to you of one container containing six crates agricultural machines from Dr. Bockhop of our Agricultural Engineering Department. The shipment was loaded on board "MAERSK TEMPO V-8351" which left Manila for Douala on or about 20 December 1983 under Bill of Lading Number MNLY-G2320.

Please find enclosed herewith the following documents covering the abovementioned shipment for reference:

1. Original and Duplicate Bill of Lading Number MNLY-G2320
2. Copy of shipment's covering Invoice/Packing List

We hope you receive the shipment in good order.

Please acknowledge receipt.

Sincerely,

Pedro G. Banzon
Manager
Purchasing/Shipping & Security

Cameroon National Root Crops
Improvement Program (CNRCIP)
Nkolbission, BP 2067
Yaounde, United Republic of Cameroon

Encl.: a/s

cc.: CWB

PGB:mte

32

August 9, 1983

Mr. Frank C. Gerard
Cameroun National Root Crops
Improvement Program
Nkolbisson
B.P. 2067, Yaounde
United Republic of Cameroun

Dear Mr. Gerard:

Your order for IRRI designed equipment has been given to me. Although the Agricultural Engineering Departmental shop is used only for experimental purposes and we do not fabricate for resale, I will assist you in obtaining your equipment since you are being supported in a program by IITA. We will arrange for fabrication of the equipment by a local manufacturer, we will test the units to assure that they meet IRRI standards, and we will crate the equipment and arrange for shipment by sea freight.

I have requested quotations for the equipment in your order. All prices are less than the amount of your estimate (due, in part, to the increase in the value of the US dollar) except for the trailer and the multi-crop upland seeder. The manufacturer quotation for the trailer is US$[illegible] and your estimate is $370. The quotation for the multi-crop upland seeder is $[illegible] and your estimate is $200. I am enclosing an information brochure for the upland seeder. We do not have a manually operated seeder. Before issuing instructions for fabrication for these two units, I will await your approval. Meanwhile, I have instructed the manufacturer to commence fabrication on all other units.

We are not asking for quotations for the spare parts for the engines and power tiller since these items will be purchased from dealers stock at retail and we will charge actual costs. We will arrange for crating and shipment and will charge actual costs of labor, materials, trucking to port and freight charges.

Please let us know (via cable, if possible) your decision on the trailer and upland seeder.

Yours very truly,

C. W. Bockhop
Head
Agricultural Engineering Dept.

CWB/ecs

The International Rice Research Institute

Memorandum

To: CWB

Date: 2 Aug '83

From: PGB

Subject:

Attached is Purchase Order and covering speedletter from IIE for a number of IRRI designed agricultural machineries to be chipped to United Republic of the Cameroon.

Please advise if you can supply. We can bill IIE later.

Thanks.

cc: MRV

Routing Slip

TO: MR

FROM: CWB

DATE:

— FOR YOUR INFORMATION
— FOR YOUR COMMENTS
— PLEASE ANSWER DIRECTLY
— FOR YOUR FILES
— FOR YOUR APPROVAL
— FOR YOUR SIGNATURE

RETURN TO:

REMARKS: Please advise the institute for the equipment IRRI designed with the cooperation

THE INTERNATIONAL RICE RESEARCH INSTITUTE

Speed Letter 44-902 Graphic

Speed Letter

PEDRO G.BANZON — From — FRANK C. GRAHAM

IRRI - PHILIPPINES — IITA - NEW YORK

RECEIVED 01 Aug 83

Subject: Attached P.O. No. CM 43037

Date: Aug

Attached is our purchase order for equipment and spares to be supplied by IRRI for IITA's project in Cameroon.

Please pass it on to proper party at IRRI for completion.

Thank you for your kind services.

Date July 22, 1983 Signed Frank Graham

By

Date Signed

Boise Cascade Company

RECIPIENT—RETAIN WHITE COPY, RETURN PINK COPY

INSTITUTE OF INTERNATIONAL EDUCATION
809 UNITED NATIONS PLAZA, NEW YORK, N.Y. 10017
(212) 883-8229

PURCHASE ORDER

	NUMBER
7-21-83	CM 43037

VENDOR:
INTN'L RICE RESEARCH INSTITUTE
P.O. BOX 933
MANILA, PHILIPPINES

CONSIGN TO following via Prepaid Oceanfreight
CAMEROON NATIONAL ROOT CROPS
IMPROVEMENT PROGRAM
(CNRCIP) Nkolbisson,
BP 2067
YAOUNDE, UNITED REPUBLIC OF CAMEROON

ULTIMATE DESTINATION	LITA - CAMEROON			DELIVERY DATE
OUR QUOTATION NO	TERMS NET 30 DAYS	F.O.B Manila, Philippines	SHIP VIA BEST WAY	AS SOON AS POSSIBLE

ITEM NO	QUANTITY	MODEL NO	DESCRIPTION	UNIT PRICE	TOTAL PRICE
			ITEMS 1. thru 60, AS ATTACHED THREE PAGES:	PRICES TO BE ADVISED	
			NOTE: Documents for clearing ocean shipment should be sent in advance Attn: J.M. NGEVE.		

PLEASE NOTE

1. PROMPTLY ACKNOWLEDGE ACCEPTANCE OF THIS ORDER BY SIGNING AND RETURNING THE ATTACHED EXTRA COPY OF THIS ORDER
2. "PLEASE INDICATE SCHEDULE "B" COMMODITY NUMBER ON PACKING LIST, SINCE THIS MATERIAL IS BEING PURCHASED FOR EXPORT"
3. DOMESTIC PACK AND PREPAY FREIGHT CHARGE.
4. SEE ATTACHED SHIPPING INSTRUCTIONS FOR MARKS, ETC.
5. THIS ORDER IS BEING PLACED BY THE INSTITUTE OF INTERNATIONAL EDUCATION FOR THE ACCOUNT OF THE AGRICULTURAL INSTITUTE SHOWN IN THE "ULTIMATE DESTINATION" SPACE AT THE TOP OF THIS FORM. THE AGRICULTURAL INSTITUTE IS RESPONSIBLE FOR THE PAYMENT OF THIS INVOICE. SAID PAYMENT WILL BE MADE IN U.S. DOLLARS DRAWN FROM THE ACCOUNT OF A U.S. BANK.
6. "WITHOUT LIMITATION, THE SELLER AGREES TO BE BOUND BY THE PROVISIONS OF SECTION 202 OF EXECUTIVE ORDER 11246 OF SEPTEMBER 24, 1965 RELATING TO EQUAL EMPLOYMENT OPPORTUNITY UNLESS EXEMPTED THEREFROM BY RULES, REGULATIONS OR ORDERS OF, OR RULINGS OR ISSUED PURSUANT TO SUCH EXECUTIVE ORDER."

Frank C. Gerard

Frank C. Gerard

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N	QUANTITY	REF. NO.	DESCRIPTION	ESTIMATED UNIT COST	EXTENSION
	1		IRRI designed PT-3 Power Tiller with steering clutch system, with rotovator system mounted with B S S 10 HP gas engine model 243431 and with 2 pneumatic tires with rim and hub.		$2,000.00
	1		IRRI designed TR-1 Manual Rice Transplanter (Paying Model)		$ 225.00
	1		Trailer (with 2 tires) for PT-3 Power Tiller		370.00
	1		Combharrow for PT-3 Power Tiller		60.00
	2 Pieces		Lowland cagewheel for PT-3 Power Tiller		120.00
	1 Set		Counterweight with bracket for PT-3 P. Tiller		70.00
	1		IRRI designed TH-6 Portable Thresher (Paying model) mounted with B S S5HP gas engine model 131431.		675.00
	1		IRRI designed portable grain cleaner (Paying model) mounted with B S S 3HP gas engine model 83331		450.00
	1		IRRI designed PU 4-6 inch Axial Flow Pump (JCEE model) mounted with B S S 5 HP gas engine model 131431.		525.00
	1		IRRI designed Multihopper seeder for placement of pregerminated seeds.		200.00
	1		IRRI designed multicrop upland seeder for operation in small experimental plots. (preferably for manual operation)		200.00
	1		CAMS-IRRI designed 1.0m Paddy reaper mounted with 3 HP gas engine		1,300.00

M	QUANTITY	REF. NO.	DESCRIPTION	ESTIMATED UNIT COST	EXTENDED SIGN
	12		IRRI designed Push-type band sealer		
			Spare Parts for Briggs & Stratton 3 HP engine (Each):		
	12		Spark Plugs CJ - 8		
	2		Valve exhaust 34 - 296676		
	2		Ignition Kit 375 - 294628		
	2		Pipe fuel flex - 391409		
	2		Fuel tank cap 181 - 69221		
	2		Carburetor Assy. 90 - 295607		
	2		Ring set std. 26 - 294232		
	2		Piston Assy. 25 - 295507		
	2		Carburetor Kit 121 - 291691		
	2		Muffler exhaust 732 - 30966		
	2		Gasket set 358 - 297275		
	4		Element air filter 27707 (4)		
			Spare Parts for Briggs & Stratton 5 HP engine (2 Each)		
	12		Spark plugs CJ - 8		
	2		Piston assy. std. 25 -29804		
	2		Valve intake 34 - 261044		
	4		Fuel tank cap 181 - 393156		
	6		Element air filter 270979		
	2		Gasket set 336 - 297615		
	2		Exhaust muffler		
	2		Piston ring 26 - 293982		
	2		Valve exhaust 33 - 211119		
	2		Breaker assy. 375 - 294628		
	2		Fuel Line Flex 137 - 391409		
	2		Carburetor assy 90 - 393753		
	2		Carburetor repair kit 121 - 394010		
	2		Element cartridge 392308		

M	QUANTITY	REF. NO.	DESCRIPTION	ESTIMATED UNIT COST	EXTENSION
			Spare Parts for Briggs & Stratton 10 HP gas engine (1 No.)		
	6		Spark plugs J - 8		
	1		Valve intake 33 - 261207		
	1		Gasket set 300 - 299193		
	2		Element air filter 535 - 270732		
	1		Breaker assy. 330 - 299105		
	1		Valve exhaust 34 - 229253		
	1		Ring std. 25 - 2990003		
	1		Carburator kit 121 - 391071		
	1		Governor 219 - 291192		
	1		Fuel filter assy		
			Spare Parts for ZT - 3 Power Tiller (1 No.)		
	6		B - 73 V - Belt		
	8		Oil seal 45[illegible]		
	4		6204 - DD ball bearing		
	4		6203 - DD ball bearing		
	5		RC - 50 offset link		
	2		RC - 50 x 10 ft. roller chain		
	6		Oil seal 29423		
	4		6205 - DD ball bearing		
	2		6305 - DD ball bearing		
	6		RC - 50 conn. link		
	12		Rotavator blade (- left + 6 - right)		

22456 IRI PH
PHILCOM SEP 16 0638

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22456 IRI PH
ZCZC 0026
MAC: 15-00313.1
TLX 3 72222456:76444
BT
WASHINGTON DC 15 SEP 82
PAGE 1
TO:
IRRI

MANILA, PHILIPPINES
FOR BOCKHOP, HEAD AGRICULTURAL ENGINEERING DEPARTMENT.
AAA REYRLTR SEPTEMBER 2, 1982 ON EQUIPMENT FOR SIERRA LEONE EASTERN AREA PROJECT. FINANCING HAS BEEN APPROVED BY THE WORLD BANK IN TELEX TO DR. WILL ON JULY 15, 1982. THE ORDER HAS TO BE PLACED BY THE PROJECT AND UPON RECEIVING THEIR DISBURSEMENT APPLICATIONS, WE WILL PAY YOU DIRECTLY. 20 PERCENT UPON RECEIPT OF PROFORMA INVOICE AND 80 PERCENT UPON RECEIPT OF SHIPPING DOCUMENTS. BBB WE ARE LOOKING FOR A CONSULTANT TO EXAMINE THE FEASIBILITY OF INTRODUCING THE USE OF LIGHT MECHANICAL EQUIPMENT IN SIERRA LEONE FOR SWAMP AND UPLAND RICE CULTIVATION. TERMS OF REFERENCE INCLUDES EXAMINATION OF (1) ENGINEERING ASPECTS - SUITABILITY OF EQUIPMENT, OPERATIONS AND MAINTENANCE ETC. AT FARM LEVEL (2) AGRICULTURAL ASPECTS - IMPACT ON FARMING ACTIVITIES, CROPPING CALENDARS, LABOUR SAVINGS, ETC. (3) FINANCIAL ASPECTS - COSTS OF INVESTMENTS AND OPERATIONS, FINANCIAL FEASIBILITY AT FARM LEVEL AND (4) LOCAL DISTRIBUTIONAL ARRANGEMENTS - IMPORTATION, DISTRIBUTION AND SERVICING. TIMING WOULD BE 3 WEEKS IN SIERRA LEONE STARTING OCTOBER 24 FOLLOWED BY

PAGE 2 OF 2
2 WEEKS OF REPORT WRITING IN WASHINGTON. CCC DR. WILL HAD RECOMMENDED REDDY YOUR MECHANICAL CONSULTANT IN JAKARTA OR AMIR KHAN THE FORMER HEAD OF YOUR DEPARTMENT. COULD YOU PROVIDE CONTACT ADDRESSES FOR THESE PERSONS OR ANYONE ELSE YOU MAY CONSIDER SUITABLE AND THAT WOULD BE AVAILABLE.
DDD WOULD GREATLY APPRECIATE REPLY BY TELEX TO MACKRANDILAL, INTBAFRAD. REGARDS MACKRANDILAL, WORLD BANK.
NNNN 0
22456 IRI PHMMMMM

Lily 9/16 0740
RECEIVED SEP 16 1982

ed with RCA Global Communications, Inc. Philippine Global Communications, Inc. Philippine Global Com

September 1982

Mr. Harry Will
Project Manager
Eastern Area Project
P. O. Box 52
Moyamba, Sierra Leone

Dear Mr. Will:

As you requested we have the quote on the equipment you listed in your telex. A copy of the quote from Poying is enclosed. The total comes to $7,281 plus freight of about $4,300. I suggest you add $900 for spare parts. Thus the total will be $12,481.

As soon as a firm order is received from the World Bank we will process the order and request fabrication to begin.

Although we do not manufacture for resale, we will test the machines before shipping and arrange shipping.

Please provide shipping instructions when the order is placed.

Yours very truly,

C. W. Bockhop
Head
Agricultural Engineering Dept.

CWB/ccs
Enc: a/s

cc: Vijaya Halrandilal (Ms.)
The World Bank
1818 H Street, N.W.
Washington, D.C. 20433
U. S. A.

RECEIVED
12 AUG 1982

PT/CONF/04/13

21st July, 1982

Vijaya Makrandilal (Ms.)
The World Bank
1818 H Street, N.W.
Washington D.C. 20433
U. S. A.

Dear Vijaya,

I wish to refer to the subject of the procurement of International Rice Research Institute rice production machinery for testing and demonstration that I discussed with you and you gave your approval during your last supervision mission here. By copy of this letter, I am fowarding the list of equipment agreed upon to International Rice Research Institute and should be grateful if you would please contact IRRI for firm order and payment.

As I indicated, although the equipment were originaly designed and pilots types produced by IRRI engineers, the actual commercial production is undertaken by companies that are recognised and sponsored by IRRI.

Yours sincerely,

Harry Wiel
Project Manager

cc: C.W. Bockhop
International Rice Research Institute
P.O. Box 933
Manila
Philippines

HW/JES

24 February 1982

Dear Dr. Willis:

This is a response to your cable requesting quotations for the IRRI machines which you saw during the Quinquennial Review. Since we do not manufacture but can only give you quotations from outside fabrication, the prices may change from that I can give you.

I have attached a sheet showing the latest quotations. I suggest you give us a firm list of machines you wish to test and we can then get a firm contracted cost.

I hope you have an engineer or experienced machinist who can work with these machines. It will take someone who can work with them and train operators. We are conducting a school on all IRRI machines from June 7 to 18. If you have funds to send someone, we can arrange to hold a place for him. Please let me know immediately if you wish to do this. In this way, he could be trained on all IRRI machines.

I look forward to hearing from you.

Yours very truly,

C. W. BOCKHOP
Head
Ag. Engineering Dept.

Dr. Harry Wills
P. O. Box 52
Moyamba, SIERRA LEONE

CWB/hhr

/Encl.: a/s

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Prices of IRRI designed machines in U.S. dollars (prices are quoted by manufacturers. IRRI can only arrange for fabrication and cannot guarantee prices).

Power tiller (PT-3) without steering clutches ---------- $ 1200

includes: (a) 10 HP Briggs & Stratton Engine
(b) Molboard Plow
(c) Comb Harrow
(d) Puddling Wheels

2. Power tiller (PT-3) with steering clutches (accessories same as above) ------- $ 1430

3. Axial flow thresher (TH-8) with 16 HP engine ---------- $ 2351

4. Portable thresher (TH-7) with 8 HP engine ---------- $ 1224

5. Portable thresher (TH-6) with 5 HP engine ------- $ 716

6. Grain cleaner with 3 HP engine ---------- $ 470

7. Wooden vertical bin dryer - 2 ton capacity with blower assembly, kerosen burner and 5 HP engine ---------- $ 980

8. IRRI manual transplanter ---------- $ 210

9. IRRI upland seeder ---------- $ 520

10. Plow sole fertilizer applicator ---------- $ 99

11. 6 in. diameter axial flow pump with 5 HP engine ---------- $ 480

12. 10 in. propeller pump with 8 HP engine --------- $ 660

13. Manual diaphram pump ---------- $ 110

14. 3 HP power tiller with 3 HP engine ---------- $ 750

15. 1 meter wide reaper ---------- $ 610

16. 1.6 meter wide reaper (not available from manufacturer but IRRI can fabricate one) -- $ 800

PROJECT PROPOSAL

Research on Upland Rice and its Integration into Upland Rainfed Farming Systems

A Proposal for funding of a collaborative research project between AARD and IRRI

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Summary

The proposal was prepared by a joint AARD-IRRI team.

The national average yield of upland rice in Indonesia has remained 1 ton per hectare and the yield shows great variability from year to year. The proposal identifies the problems associated with the low yields of upland rice.

The blast disease is considered the main constraint in improving the yield stability. Low yields are attributed in part to low inherent fertility of the soil. The importance of socioeconomic issues associated with the cultivation of upland rice is recognized and a study of these socioeconomic issues is proposed. The problems are proposed to be solved in terms of a short-range and a long-range program.

The Sukarami Research Center is suggested as base of the project and the Maros Research Center as the link center for Eastern Indonesia. AARD has identified scientists from Sukarami Research Institute for Food Crops (SARIF), Bogor Research Institute for Food Crops (BORIF), Maros Research Institute for Food Crops (MORIF), Sukamandi Research Institute for Food Crops (SURIF), and scientists from the Center for Soils Research to participate in the collaborative work. Three full-time expatriate scientists are suggested: a plant breeder, a plant pathologist and an agronomist/soil scientist. A series of short- to medium- term consultancies is suggested to guide and help carry out the socioeconomic study and other complementary and supplementary aspects.

The project is proposed for five years with a total budgetary requirement of US$4,461,000.

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PROJECT PROPOSAL

Research on Upland Rice and its Integration into Upland Rainfed Farming Systems

The Problem

Upland rice in Indonesia is at present cultivated on an estimated 1.2 million ha. Almost 40% is located in Sumatra. An additional 12 million ha is considered as potential land for cultivating upland rice, mainly located in Sumatra, Kalimantan, S.E. Sulawesi and Irian Jaya. While yields of wetland irrigated rice in Indonesia have increased steadily during the last decade, the national average yield of upland rice has remained around 1 ton/ha and the yield shows great variability from year to year. Blast disease is considered the main constraint to improving the stability. Low yields can be attributed in part to the low inherent fertility of the soil. Newly opened land shows drastic yield reduction in the course of 3-4 years. Such land is often abandoned by the farmers. However, technologies have been developed to sustain productivity over long periods when upland rice is cultivated as part of cropping pattern. This proposed research effort seems to be realistic as crop management technologies have already been developed at upland rice-based cropping pattern test sites. Research is needed on an understanding of the mechanism and environmental conditions that cause blast incidence.

The stability of upland rice production is the primary goal, not necessarily maximum yields. The second goal is to double upland rice grain yields in a sustainable production system within a span of 5

years. The project aims to help solve some of the socio-economic problems associated with farming systems involving upland rice thru a maximization of farmers income. This would allow specially the transmigrants to become less and less dependent of government subsidies and in fact to become independent. The environment particularly the soil where upland rice is grown is very fragile, the project likewise seeks solutions to maintenance of soil fertility and to maintain ecological balance in areas where upland rice is a part of the farming systems.

Strategy

AARD* and IRRI* propose to enter into a collaborative research program on upland rice. The Sukarami Research Center will be the base of the project with the Maros Research Center as a link center for eastern region of Indonesia. The overall objective of this research effort will be to increase upland rice production in a way that is acceptable to and will result in better income to farmers. Every effort will be made to use existing experience and research information to improve ongoing production programs. Research will be initiated to quickly identify constraints to production that may be studied and solutions developed within a relatively short (2-3 years) period of time. A longer-term research effort will be required to carry out the major breeding effort to develop adapted upland rice varieties that have acceptable blast resistance and appropriate complementary management practices.

---

* AARD - Agency for Agricultural Research and Development
IRRI - The International Rice Research Institute

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Execution of these strategies will require judicious use of personnel and facilities along with skillful merging and coordination of research efforts. This research effort in upland rice is expected to double yields and improve stability and sustainability of upland rice which subsequently would be reflected in increased income for the farmers.

The research and development component of this proposed project is divided into two discrete phases which must be started simultaneously as resources would become available.

1. Short-Range Program
   - o Collection, collation and interpretation of previous upland rice research
   - o Packaging and utilization of known technology for development of production program.
   - o Selection of improved varieties from traditional upland ecotypes.
2. Long-Range Program
   - o Varietal improvement to generate cultivars with blast resistance and tolerance to adverse soils. Basic and applied studies on blast suppression.
   - o Soil and climate analysis and environmental classification.
   - o Development of a network or transect of upland rice research sites throughout Indonesia where upland rice cropping system trials and satellite component research trials can be conducted.

Blast is considered to be the primary constraint in obviating instability in yield of upland rice. There are two types of blast -- leaf and neck. At present, as soon as improved cultural practices which enhance yields are employed, this disease becomes epidemic. Thus, if improved production per unit area per year is to be anticipated, blast must be controlled.

Blast-resistant materials should be evaluated for tolerance to problem soils (low pH and high Al) and drought. Tolerance to these adverse soil fertility conditions will be advantageous. But management techniques which involve application and placement of fertilizers and lime will be the primary means of overcoming these constraints.

Short-range Program

The major thrust of this research phase will be to move available useful technology from research institutes to the farmers' fields as quickly as possible, to identify and remove production constraints that may be solved with new but existing technology, and to develop the staff and facilities for longer-term breeding and production programs.

1. Implementation of Existing Technology

Technology for upland rice has been developed by the various research disciplines in the CRIFC (Central Research Institute for Food Crops) of AARD. This technology has been further evaluated and improved upon the by Cropping Systems Research Program. Cropping patterns including upland rice have been developed that are productive, acceptable to, and are more profitable for the farmers. Widespread adoption is dependent upon the development of production programs and their implementation through the agricultural services. These programs

have begun in some provinces, but would be further accelerated by a more specific compilation and presentation of existing technology and improved rice varieties for which seed is readily available.

2. Rapid Identification and Removal of Constraints

It is imperative that available research expertise and facilities be mobilized to develop methodologies and identify research problems that can be quickly solved. This effort would provide momentum for longer-term research and provide a training environment for less experienced staff who will ultimately provide the expertise and the leadership for the longer-term research. The senior research scientists and facilities available at the Bogor Research Institute for Food Crops (BORIF) would provide these requirements. During this interim period, facilities in Sukarami would be further developed and scientists from SARIF would undergo special training and would work with the BORIF colleagues as they would gradually assume major responsibilities. The total program would provide for training of upland rice scientists on a national basis so that ultimately expertise would be available whenever upland rice is of major consequence. Three IRRI scientists of three different disciplines would be actively involved in this research effort as members of the collaborative team.

Plant breeding is by its very nature a long-range program. However, it is possible to improve the yielding capacity of some of the traditional upland ecotypes through selection within these populations. This process could effect substantial improvement in a short period of time for immediate utilization and provide parental material for more sophisticated and long-range breeding programs.

The research effort would be mostly devoted to development of research methodologies for blast research, laboratory and field screening techniques, identification of genetic materials for breeding purposes and crosses.

The existing cropping system sites and major upland rice producing areas would be characterized through soil and climatic classifications. Furthermore, assessments of yield losses and determination of economic thresholds for major pests and diseases would be carried out at appropriate sites. Existing technologies for chemical control of blast, fertilizer and lime placement, soil and water conservation and residue and green manure management would be further evaluated on site for agronomic and economic acceptability.

3. Strategies to Manage Blast

3.1 Cultural Practices

3.1.1. N management

3.1.2. Time of planting

3.1.3. Cropping

3.1.4. Select within traditional ecotypes for improved yield and earlier maturity

3.1.5. Explore the possibility of using varietal mixtures

3.1.6. Set up a seed technology program to provide prompt increase of new selections and monitor use of mixture

3.2 Chemical Control

3.2.1. Seed treatment

3.2.2. Foliar sprays (timing, economic analysis)

Long-range Program

This phase would be implemented simultaneously with the short-range program, but it will be of long-term nature. It is not anticipated that this research would provide any significant production impact in less than 3 or 4 years.

It is proposed that a transect of sites be established in the present and potential upland rice growing regions throughout Indonesia. Long-term research on upland rice and upland rainfed farming systems would be conducted. Research at these sites would incorporate all known component technology into the cropping pattern. Component technology trials would be conducted in association with the cropping pattern trials. Then would include variety trials, fertilizer efficiency and soil management trials and blast research. The sites would be characterized and monitored to determine the environments which they represent, and to enable wide extrapolation of the results in future production programs.

1. Blast

When a new area is opened for cultivation to upland rice, blast is soon in evidence if reasonably high fertility practices are employed. Blast must have grass species as its host. These hosts would be identified. More knowledge of wild hosts would be an invaluable aid in controlling and/or suppressing this disease.

An integrated approach to keeping this endemic disease under control appear to be the best technique. Effort would be made to identify the most resistant varieties. These must be subject to the best agronomic management practices and economical fungicidal control

techniques to maximize their potential output. This integrated package of technology would be evaluated within the framework of the cropping systems sites which have been strategically located in different soil and climatic environment and provide a means of measuring the performance of different packages of practices under farm conditions.

1.1 Management Strategies

1.1.1 Breeding for resistance (long-term)

1.1.1.1 Gene rotation

1.1.1.1.1 Monitoring blast incidence in Indonesia

1.1.1.1.2 Race prediction

1.1.1.1.3 Identifying parents (local land races, exotics, elite lines) -- use backcross to retain most traditional traits but shorten maturity and improve blast tolerance.

1.1.1.1.4 Recombination, screening, evaluation

1.1.1.1.5 Seed production and distribution

1.1.1.2 Pyramiding genes using recurrent selection (backcrossing)

1.1.2 Related research

1.1.2.1 Epidemiology of neck blast

1.1.2.1.1 Methodology for screening

1.1.2.1.2 Correlation between leaf and neck blast

1.1.2.1.3 Effect of dew period

2. Soil and Climatic Analysis

All research stations and field sites would be characterized by internationally recognized soil classification systems (Soil Taxonomy, FAO) and by agroclimatic data (rainfall distribution, temperature, humidity, solar radiation and sunshine duration) collected on location or from sources nearby. The major constraint to these efforts has been the difficulty to rapidly store, tabulate and interpret data. The major thrust of this research program will be to develop procedures for more rapid interpretation and use of the data for on site research as well as for technology transfer.

2.1 Characterization of Representative Sites

The farming systems program has established an extensive network where upland rice is already included as part of the cropping pattern. The characterization of the physical environment should involve both soil and climatic conditions, while the characterization of socio-economic environment should involve information on present land use, population pressure, farmer's income structure, resources, access to markets, infrastructure, etc.

2.2 Soil Characterization

The sites will be mapped, soil profile description be made, and the various soil units will be classified.

The topography of the site will be described as it not only relates to possible erosion hazards but also contributes to the soil water balance.

2.3 Climate Characterization

As upland rice is rain-dependent, the rainfall pattern will be described. If available, long-term 10-day rainfall totals will be analyzed instead of monthly totals. Although the LI environment implies long wet seasons, the year-to-year variability will be assessed and probabilities of occurrence of dry spells during the growing season will be calculated. Long-term daily rainfall data will be retrieved from the PMG (Pusat Meteorologi dan Geofisika or National Meteorogical Services) for representative sites as close as possible to the testing sites.

A national characterization of the upland rice environment is needed. The terminology of LI (long rainy season, infertile soil); SI (short rainy season, infertile soil); LF (long rainy season, fertile soil); SF (short rainy season, fertile soil) is tentative and attempts will be made to come up with precise quantitative definitions. In order to do so, more precise information is needed relative to the location of the major upland rice-growing areas. Once the upland rice-growing areas are delineated and existing soil and agroclimatic maps are superimposed upon them, it will be possible to improve our ability to predict.

3. Varietal Improvement

3.1 OBJECTIVES

3.1.1 General

* Disease, insects tolerance/resistance mainly blast, brownspot, sheath blight, stemborer, BPH
* Stability (yield), including drought resistance
* Agronomical characteristics (no lodging, no shattering)
* Grain quality

3.1.2 Specific for long growing season/infertile soils (LI) environment

* 110 - 120 days
* Field goal: 2/2.5 t/ha in farmers' fields for short to medium term (5-6 years)
  3/3.5 t/ha in farmers fields for medium long term (10-12 years)
* High response to low or medium inputs (short term) and to medium - high inputs (long term)
* plant height ± 100-110 cms
* Good tillering ability, but not too high
* Good germination and vigorous in early stages (for good establishment and weed competition)

3.2 STRATEGIES

Starting from = Traditional upland cultivars

= Locally improved varieties

= imported improved varieties

3.2.1 Collection and evaluation of traditional cultivars (short term) in addition to the ones already made.

3.2.2 Summary of already available tradition/improved/ promising varieties.

3.2.3 Screening and testing of traditional/improved on a range of sites.

3.2.4 Crosses traditional/traditional, traditional/improved and improved/improved.

3.2.5 Mutation on traditional varieties

3.3 PROCEDURES

3.3.1 Choice of key site(s) - 1 or 2 - for basic studies, crosses, and primary screenings.

3.3.2 Choice of sites where representative constraints occur (soil, disease, etc.), 4 to 6 sites seem to be a good base.

3.3.3 Evaluation: Uniform evaluation and screening at the different sites.

3.3.4 Crosses and mutation

* made at key sites(s)
* F1 grown at key site(s)
* F2/ F3 evaluated at key sites
* F3/ F4 and succeeding generation at other sites

4. Soil and Crop Management

4.1 Soil fertility management

Research to determine crop nutrient requirements basic fertilizer and liming recommendations.

Soil amendments.

Evaluate incorporation of organic matter on soil fertility and water-holding capacity.

Long-term fertility experiments.

Investigate nitrogen fixation in the upland rice rhizosphere.

4.2 Studies of Root System Development as Affected by Soil Chemical and Physical Properties.

Tolerance of root growth to acid/Al toxic soils.

Root growth, water extraction and drought tolerance (East Indonesia and IRRI)

Root penetration of hardpans.

4.3 Farming Systems and Development

Farming/cropping systems research in humid areas of Indonesia has developed cropping patterns and component technologies including improved rice varieties that are productive and acceptable to farmers.

This research effort will focus on problems and development issues that need further study. From the beginning, existing technologies will be further evaluated under farmers' conditions through existing farming system research.

4.4 Management Practices to Minimize Effects of Adverse Soil and Climatic Conditions

It is expected that varieties will be developed which will have improved blast resistance and tolerance to adverse soil and climatic conditions. However, in addition to the major breeding and screening effort, other strategies will be evaluated which can increase the probabilities of success.

4.4.1 Fertilizer and Lime Placement

Application of lime and fertilizers can greatly improve plant growth and production. Deep placement of the materials can induce deeper root penetration and increase the volume of soil encompassed by plant roots and the available soil water.

4.4.2 Soil and Moisture Conservation Practices

Soil and water conservation are critical to the sustainability of upland agriculture. Management practices, including contour farming, strip cropping, slope cropping and terracing will be evaluated for effectiveness and economic feasibility. Guidelines will be developed to include the various environmental conditions that exist in the field.

4.4.3 Residue Management and Green Manuring

In addition to fertilizer and lime management, maintenance and increasing of soil organic matter is critical to sustain soil fertility and crop production. Cropping system research has shown the value of

maintaining the soil organic matter content and ways in which it can be done. The simplest technique is to return the residues from all the crops back to the soil. However, it might be more profitable to use these materials for animal feed. Also, there are unanswered questions concerning carry-over of pests and diseases. Further research is needed to evaluate the biological and economical aspects of cover crops and green manure, and gain more knowledge of the physical environment of the upland rice areas. This exercise would also help to extrapolate our research findings and would help to identify potential upland rice areas.

SOCIO ECONOMIC COMPONENT

Issues

While the focus of the project will be on improving upland varieties for blast resistance and drought tolerance, the importance of socio-economic issues in development of technology for the uplands is recognized. Socio-economic issues are likely to be more important in the uplands than they are in irrigated areas for several reasons. Rice is often intercropped in upland areas and farm decision making is strongly influenced by relative profitability of other crops. This means that a farming systems approach is high by appropriate. AARD already has upland cropping systems work on-going in Lampung, West Sumatra, West Java, Central Java, and South Sulawesi. This work can provide the basis for a socio-economic characterization of upland

environments in Indonesia, and identification of the most important economic constraints for further study. A second issue important in the uplands is the limited access to markets for selling rice or purchasing inputs. Transportation infrastructure is poor in many of the outer island areas where upland rice is grown. Even though fertilizer in Indonesia is subsidized and sold at a uniform price throughout the country, delivery of fertilizer may be delayed or irregular in remote upland areas. Farmers may hesitate to expand rice production if they cannot sell their rice surplus without incurring substantial transportation costs. Socio-economic research could identify where investment in transportation infrastructure would be a production complement to technology extension.

Limited access to markets adds marketing and price risks to the risk of yield variation. The high incidence of disease and drought in upland rice means that risk is likely to be a more important determinant of farmer behavior than in the irrigated lowlands, where past research has grown that risk is not important. Better documentation of the incidence of crop failure and better understanding of farmer's strategies to avoid risk would aid researchers in evaluating trade-offs between yield improvement and yield stability.

Many upland rice cultivators are transmigrants. They face more severe constraints on cash, labor, and market outlets than long term upland residents. It will be useful for setting research priorities to know whether new upland technologies are likely to be adopted by both new settlers and permanent residents, or whether research must be targeted for each type of farmer.

When upland rice is cultivated on newly cleared slopes, new cropping systems must prevent soil erosion and preserve soil resources. Farmers may not perceive long term investments to sustain soil resources to be profitable.

Strategy

The first step for the socio-economic component would be an overall characterization of the socio-economic environments in which upland rice is cultivated. This could be based on data already collected by the AARD farming systems program. It would provide the basis for identification of selected issues to be studied in particular areas. The goals of these studies might be:

1) determine profitability of new upland technologies in the major socio-economic environments
2) determine the importance of yield risk and marketing risk in farmer decisions
3. determine where infrastructure investment would most complement technology extension efforts
4. determine constraints to adoption of long-term investments for sustaining yields

In order to implement such studies, both outside assistance and further training of AARD farming systems economists is needed. Outside assistance will be most effective if there is a continuing relationship between one University and AARD. Therefore, it is proposed that a series of short to medium term consultants guide and carry-out the studies. The first consultancy would carry-out the characterization of the uplands and define the scope of later studies. At the same time,

one AARD staff from each of the 6 upland FS sites will be sent to the university for master's training in agricultural economics. Master's thesis might then be tied in with the second round of specific studies. This approach should be more effective in generating long term capacity in AARD than hiring consultants for individual studies on an ad-hoc basis.

MANPOWER DEVELOPMENT

The AARD has assigned several scientists to upland rice. For the most part, these scientists are young and inexperienced. Training will be made available on a short-term basis both for scientists assigned to upland rice research and their support staff. Also a select cross-section of scientists will undergo advanced graduate studies in disciplines which would better equip them to assume senior scientist leadership in this area of research.

INSTITUTIONS AND SCIENTISTS INVOLVED

Collaboration between AARD and IRRI has been of long standing and has involved many different aspects of rice research and human power development. For the past several years, AARD and IRRI scientists and administrators have been meeting each year to discuss and come to agreement on research projects that scientists of the two institutions will jointly implement. The proposed project on upland rice and the integration of upland rainfed farming systems in one of the research areas identified for AARD and IRRI collaboration.

For this project -

IRRI: 1. Will station 3 scientists in Indonesia to work directly with AARD institutes. These three scientists will help to develop, coordinate and complete research.

Three disciplines:

- Plant Breeder
- Plant Pathologist
- Agronomist/Soil Scientist

2. Will provide short term consultants on frequent basis.

AARD: Scientists from the following food crops research institutes have been identified to carry out the research identified:

- Sukarami Research Institute for Food Crops (SARIF)
- Bogor Research Institute for Food Crops (BCRIF)
- Maros Research Institute for Food Crops (MCRIF)
- Banjarbaru Research Institute for Food Crops (BARIF)
- Sukamandi Research Institute for Food Crops (SURIF)

Scientists from the Center for Soils Research have also been identified to participate in the work.

TIME SCHEDULE

It is proposed that the Project be funded for 5 years. During this period, the short term objectives of the project will be completed, and the long term research program will be initiated. It is expected that an extension of the project will be required to complete the long term program.

BUDGET

The budgetary requirement for the proposed project is attached.

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Proposed Budget for
AARD/IRRI Collaborative Project on Upland Rice and its
Integration into Upland Rainfed Farming Systems
For a Five-Year Period
(in US $)

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Salaries and Wages	$180,000	$199,200	$220,500	$244,000	$ 270,000	$1,113,700
2. Overhead	25,600	28,400	31,400	34,700	38,400	158,500
3. Fringe Benefits & Allowances	218,900	241,400	265,700	292,700	322,600	1,341,300
4. Travel & Transportation	110,000	103,000	84,500	124,700	160,900	583,100
5. Equipment, Materials, & Supplies	165,000	60,000	65,000	120,000	80,000	490,000
6. Consultants	38,500	50,600	46,400	50,800	55,700	242,000
7. Training	57,400	85,300	115,900	127,500	146,300	532,400
T O T A L	$795,400	$767,900	$829,400	$994,400	$1,073,900	$4,461,000

/s
9/27/84

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