ATTACHMENT A

PD-AAD-949

International Rice Research Institute (IRRI)

Program Description

January 1, 1975 through December 31, 1975

11p

Project Objectives

With the goal of helping to solve the world's food problem, the primary objectives of IRRI are: (1) to increase the quantity and quality of rice produced throughout the world, and (2) to improve the well being of those who produce and utilize rice.

One of IRRI's most challenging tasks is to effectively influence the research and production programs in rice-growing areas throughout the world. To be influential, IRRI must maintain and even increase its flow of genetic materials and new technologies to rice-producing nations and in the long run develop the capacity of rice-growing areas to produce their own materials and technologies. This second objective of helping national programs must be accomplished without jeopardizing programs for the development of new technology.

One third of the world's population — 1.3 billion people — depends upon rice for more than half of its food. For another 400 million people, rice is a major secondary staple, providing 25 to 50 percent of their diets.

Rice is the primary staple food for 90 percent of the really poor people of the world -- those with less than US$300 per capita annual income. The average annual income of those who depend upon rice is only US$80. Most of those who produce rice are small farmers who till on an average of less than two hectares each. Their livelihood and well being is greatly influenced by the new varieties and technologies developed through the IRRI and cooperating national research programs.

Population pressures in rice-consuming countries are remarkably high and are growing. An increase of 30 percent in the domestic demands for rice in the next 10 years is anticipated for these nations. The precarious balance between the supply and demand for this staple food is illustrated by the near catastrophic effect of adverse weather conditions in 1972.

Projected Activities and CY 74 Accomplishments

The two major components of the research and training (R & T) program at IRRI are: (a) rice production and (b) cropping systems in which rice is grown. Each of these programs requires interdisciplinary research and training efforts at the IRRI headquarters in the Philippines as well as coordination with cooperative national research and training programs in rice-producing nations.

Rice production focus in 1975 will account for 75% of the R & T program while cropping systems will utilize 25%. The following major research and training programs are included.

Genetic Evaluation and Utilization of Rice:

The primary goals of this interdisciplinary program are to systematically evaluate the abilities of different rice strains to resist or tolerate natural enemies, and, through selective breeding, to incorporate into new rice varieties as many as possible of these favorable genetic characteristics, i.e., high yields, resistance to diseases and pests, high levels of protein, and others. Most of the screening to identify such favorable characteristics is done at the IRRI headquarters. Samples of promising genetic materials are then furnished to cooperators to use in their national breeding programs.

The development of high-yielding, fertilizer-responsive varieties is one of IRRI's most important contributions. There is great potential for further exploitation of the genetic resources of the rice plant with an ultimate goal of developing varieties that are resistant to insects and diseases; that will tolerate drought, adverse soil conditions, deep water, and cold weather; and that contain a higher protein content than present varieties. The 30,000 samples in the IRRI germ plasm bank must be thoroughly characterized to determine which of the many lines and varieties carry the desired characteristics to be bred into practical farm varieties. Once characterized, this breeding materials must be included not only in IRRI's genetic improvement program but also in national rice research programs throughout the world.

To capitalize on the initial successes at IRRI, an institute-wide "genetic evaluation and utilization" (GEU) program has been developed. Teams of scientists in each of the major problem areas will thoroughly explore the genetic potential of the rice plant to resist or tolerate its enemies and adverse ecological conditions. This systematized approach will not require an increase in the size of the senior staff but will require additional land, some new facilities, and an increase in supporting personnel and operation funds.

Other countries contribute to this program and benefit from it; 4,000 new accessions drawn from cooperating countries were added to the IRRI germ plasm bank in 1973. More than 8,000 samples were sent from the IRRI germ plasm bank to cooperators for use in country rice improvement programs. Likewise, about 6,000 samples of promising new genetic materials developed at IRRI were shared with cooperators throughout the rice-growing world. The international testing program gathered momentum, being patterned after the rice blast nurseries which have been in operation for 11 years.

Control and Management of Rice Pests:

Cultural, biological, and chemical means are used in this program to manage insect, disease and weed pests of the rice plant. Special attention is given to the field evaluation of low cost control and management techniques.

IRRI continued its search for genetic resistance to economically important insects and diseases. A new variety, IR26, was released. IR26 is at least moderately resistant to six of the major insects and diseases, including the brown planthopper, which is causing severe crop losses in parts of the Philippines and India. It is the first of a series of lines which have multiple disease and insect resistance and which may be candidates for release as varieties. The marked strides in genetic improvement are illustrated by the fact that about 70% of the entries in the IRRI replicated yield trials in 1973 had resistance to 5 or more of the major insects and diseases. A year ago less than 5% had such a range of resistance.

Tolerance or resistance to other environmental and pest enemies of the rice plant is being sought. Lines and varieties with a marked degree of tolerance to drought have been identified among the 30,000 accessions in the IRRI germ plasm bank. Likewise, materials with tolerance to adverse soil conditions such as salinity, alkalinity, acidity, and iron deficiency were identified. Lines were also found with protein content 20 percent higher than usual. These characteristics will be incorporated into a more systematized "genetic evaluation and utilization" program and will be made available by IRRI to cooperators throughout the world.

The effectiveness of root-zone applications of insecticides was further evaluated, and a single root-zone treatment has been found to be as effective as four comparable spray treatments. The potential for "integrated pest control" — combining such low-level pesticide treatments with a least moderate host resistance — is promising.

An informal network of cooperators working on weed control was established. IRRI scientists distributed chemicals for 142 experiments to cooperators in 15 Asian countries. Relatively inexpensive and effective herbicides have been identified through this program.

Irrigation Water Management:

This program encompasses the development and testing of improved systems of delivering irrigation water to rice farmers and of innovative social organizations to assure the continuation of these systems. This activity is important because water management appears to be a critically limiting factor in rice production.

Inefficient management of irrigation water is a major constraint to rice yields. Even where major canal systems have been properly laid out, the on-farm delivery is inefficient and untimely due to inadequacies of both engineering and social structures.

A request is made for a senior scientist to provide the leadership for a water management program. He will work with donors and national irrigation schemes to measure the efficiencies of specific delivery systems, to design new systems, and to ascertain the effectiveness at the farm level of these new layouts.

Soil and Crop Management for Rice:

This program is concerned with soil characteristics which affect rice and with the effect of soil management, nutrient inputs and crop culture on rice yields. The current fertilizer shortage and the spiraling prices for these chemicals have made this a high priority area.

Research to increase the effectiveness of low rates of applied fertilizer was expanded. The addition of at least part of the fertilizer just before panicle initiation gave the best results when only low rates of fertilizer were applied. Slow-release sulfur-coated urea was effective where the land could not be continuously flooded.

Nitrogen fixation at the roots of the rice plant at rates of up to 60 kg N per hectare were observed under flooded soil conditions in the laboratory. Under such conditions vital oxygen and nitrogen for rhizospheric nitrogen-fixing organisms is excreted from the rice roots. Means of enhancing this important nitrogen-fixing process are being sought.

Environment and Its Effects on Rice:

Environmental factors, such as solar radiation, humidity, light, and others, that affect rice plant growth and the response of rice to environmental differences and changes are studied in this program. The effects of microclimate differences on rice insects and diseases and the comparative responses of different rice varieties to environmental changes are investigated.

The newly constructed phytotron offers IRRI scientists an opportunity to accurately measure the response of the rice plant to differences in environmental factors such as temperature, solar radiation, atmospheric carbon dioxide concentration, humidity and soil moisture stress. Under field conditions, years are required to accurately determine such measurements; in the controlled environment chambers, they can be determined in a matter of few months.

The effects of factors such as humidity and temperature on the viabilities of insects and diseases will be evaluated in the fields. Factors associated with and/or responsible for insect and disease outbreaks will be investigated with special micro-climatic studies coupled with epidemiological studies. .

Agro-Economic Network (Constraints):

In spite of the demonstrated potential of improved technology and of the high-yielding varieties, adoption of these new innovations by farmers throughout the rice growing areas of the world has been disappointing. Biological, social, and economic factors have tended to preclude acceptance of the new technology by farmers. Numerous constraints and roadblocks discourage or prevent adoption. In some cases, the technology is not as workable on farmers' fields as it is on experiment stations, while in other cases, socio-economic and political factors are the stumbling blocks.

The constraints which prevent farmers from adopting the new technology and varieties must be identified, and methods to remove these constraints must be developed. The initiation of an interdisciplinary network of cooperating researchers, economists, social scientists, and agronomists to thoroughly ascertain the constraints to the yields achieved by farmers under different agroclimatic and socio-economic conditions is proposed. Techniques developed and pilot-tested by IRRI's home-based scientists will be used in multilocation studies to implement the program.

Techniques for determining the constraints on rice yields in farmers' fields were developed and tested. A network of cooperating social scientists in six countries participated in one survey and worked with farmers in 30 Asian villages. Insects and diseases were found to be the most serious constraints to rice production, especially during the wet season. Suitable modern varieties were not available for some villages, particularly those where frequent flooding was a threat.

Increasing Rice Yield Potentials:

This program encompasses activities, including basic research, directed toward gaining new knowledge to enhance the productive potential of the rice plant. This research is aimed primarily at breaking through existing biological and ecological barriers to improving rice productivity.

A country-wide demonstration of a package approach to increase rice production was implemented in the Philippines. Termed "Masagana 99," this country-wide action program was based on cooperative field demonstration results obtained by a team of Philippine government and IRRI scientists. Rice production in 1973 rebounded from the low levels to which floods and drought had driven them; despite fertilizer and pesticide shortages, rice production is at near-record levels in the Philippines.

Cropping Systems:

Ascertaining and developing productive and practical cropping systems which involve rice in different agroclimatic zones of the rice-growing areas of the world are components of this study area. Cropping systems, the newest of IRRI's research programs, offers great potential for increasing world food production. Among the systems being studied are: (a) simple changes which permit one crop in addition to rice, and (b) more complex systems which involve intercropping, sequential cropping, and integrated control of pests.

A simple cropping system was evaluated which permits two crops of rice to be grown during a season where only one crop of rice had been grown before. This was made possible by the availability of short-season IRRI lines which mature in 100 days rather than the 120 to 180 days required for traditional varieties, and a direct seeding technique which utilizes herbicides for weed control. This new technology was first demonstrated in Central Luzon and will be tried next year by the Philippine government on a large-scale basis.

A hectare of intercropped upland rice and corn produced as much as 1.33 hectares when each crop was grown separately. Mixed cropping also appears to help control weeds and insects, for example, intercropping corn and mung lowers the need for weeding.

Machinery Development:

This program includes the testing of machinery for use by small farmers and small millers; consideration is given to the indigenous capabilities to manufacture, market, and use the products developed through this IRRI program. Primary attention is given to the design and development of machinery for: (a) crop production, (b) post-harvest handling of rice on farms and in villages, and (c) crops grown in systems which include rice. Encouragement of timely operations, which will not only increase the amount of food delivered to the consumer, but also will permit maximization of labor inputs, is top priority in this program.

Indigenous manufacturers in Asia are encouraged to build the machines which are generally much cheaper than those imported from the more

developed nations. In the past, this work has been financed under a special grant but has been implemented mostly at IRRI's headquarters in Los Baños. The present proposal is to integrate this research into the IRRI core program and to expand its focus to include work on small tillage implements for upland cropping and for cropping systems. Also, research to improve small village rice mills and on-farm drying of rice will be expanded.

Post-Harvest Management of Rice:

Storage, processing, distribution, and marketing of rice are considered in this area, with emphasis placed on small farm operations. A relatively small part of IRRI's research and training funds are used in this program since production problems appeared to require attention first. Modest expansion is justified, especially in the development of machinery, improved rice drying facilities and procedures, and small village milling operations.

Research-Related Formal Training:

IRRI's staff and institutional support for the research training of young scientists and educators from the rice-growing areas of the world is included in each of the research programs above. Some of the recipients of training at IRRI are enrolled in formal degree programs at the University of the Philippines at Los Baños. Others participate in practical on-the-job short courses which prepare them for field-oriented research and training programs in their home countries.

Of the 126 graduate students and 6-month production trainees from rice-growing countries trained at IRRI in 1973, 92 were in research-oriented programs. Most were enrolled in M.S. and Ph.D. programs at the University of the Philippines at Los Baños.

Outreach Program (International Activities):

IRRI's outreach program is assuming an ever increasing significance. Efforts are being expanded to help cooperating countries by furnishing biological materials and sharing results from the IRRI programs. In addition, IRRI is assisting selected rice-growing countries through special coopera-

tive projects which provide for resident IRRI scientists to work as members of national teams. Furthermore, the Institute collaborates with researchers in these countries on international testing programs, such as those designed for evaluating new lines and varieties for insect and disease resistance, and those involving cooperative fertilizer and pesticide trials. Cooperative planning efforts with Bangladesh, Vietnam, and Indonesia focus on the long range rice research and training needs in these countries. In addition, formal and on-the-job training programs were conducted at IRRI for 126 scientists and educators from 14 countries.

IRRI's international program continued to expand, both in participating IRRI staff and in on-going cooperative programs. Nearly a third of IRRI's scientists are now in the international programs; they work in Indonesia, Bangladesh, India, Egypt, Sri Lanka (Ceylon), South Vietnam, and the Philippines. International testing nurseries in cooperation with local scientists are in operation for blast, sheath blight, and bacterial blight diseases. An international yield nursery is also underway. These nurseries are planned during the annual international rice research conferences, which provide forums for discussions of research findings and ideas.

Seventy-five scientists from 20 countries participated in the 1973 Rice Conference held at IRRI. A special conference on rice machinery development, sponsored jointly by IRRI and the United Nations Industrial Development Organization (UNIDO), attracted 75 participants.

Summary of Support for IRRI
(as of November 14, 1974)

Total requirements	$8,070,000 1/
AID contribution	1,925,000 2/
Support from other donors	6,145,000 3/
AID as proportion of total	23.85% 4/

1/ Requirement is $250,000 below figure cited in June 1974 budget document due to advance of German funds for building program. It is subject to further adjustments both downward and upward; the actual core expenditure is expected to be less than noted above and would bring total down to 7.74 million; on the other hand, construction bids have not been received yet and may be higher than budgeted; inflation may also be more than budgeted. Of the total budget, $3.15 million is for capital projects.

2/ Based on estimated budget of $7.74 million noted in footnote 1 subject to adjustment.

3/ Australia, Ford Foundation, W. Germany, IDRC, Japan, Rockefeller Foundation, United Kingdon, UNEP, and World Bank/IDA. There is a possibilit that the Japanese contribution may be increased considerably.

4/ Would be 24.9% if actual total requirement is $7.74 million.

Special Provisions

1. Reports

A. The following reports shall be submitted to the TA/AGR Technical Specialist as stated in B below:

(1) Comprehensive Annual Report on overall program and fiscal matters for CY 1975 in 100 copies

(2) Report prepared in connection with annual International Centers Week. (This report will describe proposed program and funding requirement for CY 1976 in five copies)

(3) Reports that may be prepared from time to time on various program activities.

B. The AID/Technical Specialist is: Dr. Guy B. Baird
Associate Director Research
Technical Assistance Bureau
Office of Agriculture
Washington, D.C. 20523

General Grant/Program questions can be addressed to:

Mr. Ryland Holmes, Chief
Program Division
Technical Assistance Bureau
Office of Agriculture
Washington, D.C. 20523

C. In addition to the report requirements of A above, Grantee shall send one (1) copy of the technical and annual reports (item 1 and 3 above to all AID Missions. Grantee will be advised, by the Technical Specialist of these recipients and changes as they occur.

2.

A. PIO/T is subject to AID regulations governing grants of funds.

B. Except as specifically authorized by AID/W, all services financed with funds from this grant agreement must be obtained from U.S. sources.

C. Except as specifically authorized by AID/W, the purchase of commodities financed under this PIO/T must be limited to the U.S. under Geographic Code 000.

D. The Federal Reserve Letter of Credit (FRLC) method of financing is to be used and funds are to be advanced periodically as needed by the Grantee in accordance with AID's terms and conditions for such reimbursement.

IRRI.
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CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

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ICW/75

July 15, 1975

TO: Participants in International Centers Week

FROM: Executive Secretariat

SUBJECT: Commentary on the 1976 Program and Budget of the International Rice Research Institute (IRRI)

Attached for information of members of the Consultative Group and of the Technical Advisory Committee is a paper giving the Secretariat's observations on the 1976 budget submission of the International Rice Research Institute (IRRI).

Attachment

The 1976 Program and Budget of the International Rice Research Institute (IRRI)

Observations of the Consultative Group Secretariat

I. INTRODUCTION

1. This Commentary is presented in line with the recommendations of the Consultative Group Subcommittee on Center Review Procedures dated November 1973. It follows a visit to Los Banos by the Secretariat Scientific Adviser (J. K. Coulter) and M. Ruddy of the Bank's Far East Regional Office. This review has used the revised budget for 1976 but the report on the 1974 research program was not available at the time of the review.

2. IRRI is the oldest of the centers, having been established in 1960: after a period of fairly stable conditions, it proposes rapid growth during the 1974-76 period (Table I). In 1974 the total staff complement was 750, including 32 international staff, the 1976 budget proposes 1,113 posts, including 44 international staff. This represents a growth of 38% in senior staff and 48% in support staff in 2 years. Much of the latter increase, 494 to 720, is in 'other staff' (mostly field laborers).

3. IRRI's 1976 total core budget for operations and capital expenditures totals $9.15 million, compared with an original 1975 budget of $8.5 million and a revised budget of $8.7 million. For the total core budget, the increase is $493,000 or 5.7% over the revised 1975 budget. Recurring costs for core operations are budgeted at $6.9 million in 1976 or $1,457,000 above the 1975 revised budget of $5.4 million, an increase of 26.9%. The capital budget for 1976 totals $2.27 million; it is about $964,000 lower than the expected 1975 level of capital expenditures. An explanation of the revised 1975 budget and an analysis of 1976 requirements follow.

II. PROGRAM AND BUDGET

The Research Program

4. In 1973 IRRI reorganized a number of its rice activities into a Genetic Evaluation and Utilization Unit (G.E.U.) in which scientists from a range of disciplines collaborate in producing varieties that have a wide spectrum of resistance to pests and diseases as well as adverse ecological conditions, salinity, toxicity and drought. This program carried out over 3,000 crosses in 1974 and released 3 new varieties with resistance to 7 major pests and diseases and with 105 to 115 day maturation periods. IRRI has extended this strategy to training rice scientists from the region so that they too can learn the techniques of working in an inter-disciplinary team. The G.E.U. now accounts for approximately 34% of the total research and training budget of the center.

5. The second largest program is that on cropping systems, directed towards intensifying production on the rice lands of Asia with other crops as well as rice. This program has grown rapidly since it started in 1973 and now accounts for approximately 23% of the Center's research and training budget. In addition to providing information on intercropping, sequential cropping and integrated control of pests in a number of agroclimatic zones in South East Asia, the program has given IRRI staff members an excellent opportunity to work on models of production systems in this region.

6. Machinery development takes a relatively modest part (8%) of the budget but it is having a considerable impact on small farm machinery development in South East Asia. About 22,000 of the IRRI type machines have been produced commercially in a number of countries of South East Asia.

7. For some years IRRI's rice improvement research has had strong links with national programs and in its off-campus work the Center operates four networks. An international rice testing program evaluates material from IRRI and elsewhere under a range of environmental and pest pressures. An international agro-economic network measures the rate of adoption of new rice technology and identifies constraints. An international cropping system network is being used to test cropping patterns in farmers' fields in different climatic zones. A farm machinery development network is being used to accelerate the production and evaluation of farm machinery.

8. During 1974, nearly one-third of IRRI's scientists were working in international programs in Indonesia, Bangladesh, Egypt, Sri Lanka, Vietnam and the Philippines. For the 20 scientists working in these countries a budget of $2,040,000 was provided by 8 different donors under special projects. This accounted for approximately 28% of the total (core plus special funded) IRRI budget.

1975 Program and Budget

9. In January 1975, IRRI's management informed its Board of Trustees that the original 1975 core operations and capital budget of $8.570 million as submitted to the CG in April 1974 substantially understated IRRI's requirements in two important respects. First, the original core operating budget made provision for only 15% for price increases, whereas, based on more up-to-date information, overall price increases were expected to be close to 30%, requiring an additional $684,000. Secondly, based on firm bids for major items in the capital budget, IRRI's original capital requirements were understated by $328,000.

10. In view of the substantial understatement of requirements, a Secretariat mission visited IRRI in March 1975 to determine (a) the extent to which IRRI's new estimates of 1975 core and capital costs were soundly based and (b) whether, after taking account of IRRI's 1975 funding and funds carried over from 1974, additional funds would be required. The Secretariat mission recommended that, if funds were available, IRRI's 1975 core operating budget should be revised upwards by $355,000 to take account of the following three adjustments:

(a) an increase of $160,000 to offset the higher than budgeted cost of inflation - allowing for an overall inflation factor of 19% in 1975;

(b) an increase of $140,000 for major items of equipment and supplies inadvertently left out of the original budget, and

(c) an increase of $55,000 to cover the cost of the TAC review in November/December 1975 which had not been provided for in IRRI's original budget.

11. The mission concluded that because of additional contributions made after the CG pledging session in October 1974, (ADB $300,000, additional Japanese contribution of $410,000 and a Canadian grant of $350,000) and because of a carry-over of 1 million dollars from 1974, IRRI could carry out its core operations within the revised budget and handle capital disbursements of up to $3.4 million without further additional funding in 1975.

12. Based on the mission's recommendations, the Secretariat informed IRRI that it would recommend to donors that IRRI's 1975 budget ceiling be increased. The Secretariat understands from IRRI's budget presentation, which estimates 1975 core operating costs at $5,420,000, that the revision now requested totals $309,000, excluding the $55,000 for the TAC review mission. The Secretariat recommends that the Group accept IRRI's revised 1975 core operating budget of $5,475,000 ($5,420,000 for estimated operating costs plus $55,000 for the TAC mission).

13. As regards IRRI's capital budget, the Director has now assured the Secretariat that IRRI can disburse the whole of the carry-over on capital from 1974 in addition to that provided in 1975, thus making a total capital disbursement of $3.899 million in 1975. On this basis, IRRI's total requirements for funds in 1975 would be as set out in Table I.

Table I - Sources and Application of funds assuming full disbursement of 1974 carry-over and 1975 capital
($ millions)

Sources		Application	
Core unrestricted	6.510	Core operational	5.420
Core restricted	1.668	TAC Review	.055
Unexpended balance	.662 1/	Capital	3.899
Earned income	.246 2/	Working Capital	.380
Working capital	.380		
Total	9.466		9.754
Additional funds needed		0.288	

1/ Secretariat estimate of carry-over from 1974.

2/ Secretariat estimate of earned income.

1976 Program and Budget

14. Whilst resources devoted to irrigated rice in the 1976 program are remaining fairly constant in absolute terms, IRRI is putting additional resources into rainfed and deep water rice. Irrigated rice probably accounts for less than 20% of the region's rice production; about 37% of the Center's rice budget is devoted to this crop. Conditions at IRRI are, of course, particularly suited to work on this crop. However, conditions for deep water and floating rice, toxic soil conditions, drought and cold tolerance can only be simulated on a small scale at IRRI and the Center is thus dependent on collaborative programs elsewhere, e. g. deep water rice in Thailand. Eventually, however, more resources may have to go into off-campus research on these aspects.

15. It would appear that IRRI's outreach program has a much smaller budget ($1.106,000) available for 1976 than for 1975 ($2,595,000). This will obviously mean a considerable reduction in work unless additional resources are mobilized. The underlying reasons for this reduction are not clear to the Secretariat.

16. The budget for the cropping systems program has grown from $259,000 in 1974 to a projected $994,000 in 1976. The number of staff positions (4) in the multiple cropping department has not changed; however, additional staff has been recruited into other departments to work on cropping systems and the actual staff involved in this program is equivalent to 8 man-years.

17. Another relatively small program, with important implications for the future, is that on irrigation water management, which has one staff position in 1975 and two proposed for 1976, at a cost of $181,000. Preliminary work done by IRRI on irrigation projects in the Philippines has quantified the losses resulting from maldistribution of water and this project could provide for additional studies of this nature in order to develop better delivery and management systems.

18. The 1976 budget calls for an increase of $1.45 million for core operations, an increase of 26.9%. According to IRRI's calculations, $.93 million or 64% of the increase is accounted for by price changes (an estimated inflation rate and salary increases of 17% in 1976) with real growth of proposed program expansion costing $526,000. The real growth in 1976 is about 10%.

19. Table II compares major elements of IRRI's 1976 budget with comparable data for 1974 and 1975.

Table II - IRRI's Core Operations

Staffing (Man-Years)	1974 Actual	1975 Revised Budget	1976 Budget	Increase (%) 76/75	76/74
International Staff	32	43	44	2.3	37.5
Locally Recruited Staff	718	937	1,067	13.8	48.6
Total	750	980	1,111	13.4	48.1
Fill Rate on Authorized Positions	97.9%	99.5%	99.7%		
Expenditure (US$'000)					
Research Programs	1,992	3,347	4,258	27.2	113.7
Conferences & Training	237	302	348	15.2	46.8
Library & Documentation	272	337	434	28.8	59.5
General Administration	456	490	624	27.3	36.8
General Operating	736	852	999	17.2	35.7
All Other	-	44	71	61.4	-
Contingency	-	48	143	197.9	-
Total	3,693	5,420	6,877	26.9	86.2

20. As Table II shows, in nominal terms, IRRI's core operating costs will nearly double between the end of 1974 and 1976 if the asking budget is approved. It is difficult to measure with great precision what the real growth has been over this period, but based on staff growth rates, it is of the order of 40%. Most of the real growth is in the research programs where several major programs have been intensified or added.

21. IRRI's 1976 budget request for capital items totals $2,153,000. It included $1,193,000 to complete items requested in 1974 and 1975, and $960,000 to start construction on new capital items. The capital program as originally conceived and costed is shown in Table III, together with budgeted costs to complete the facilities.

Table III - IRRI Capital Plan (1974-1977)
(US$'000)

Items in original 1974 and 1975 Plans	Total Original Estimate	of which included in original Annual Budgets 1974	1975	1976	1977	Total Latest Revised Estimate 1/
Laboratory/Conf. Center	540	540	1,530	620		3,200
Staff Housing (11 units)	325	325	480	80		910
Greenhouse/Headhouse	30	30	120	200	230	655
Vehicles (27 units)	40	40	66	50	15	169
Renovation of Existing Buildings			160	100	150	257
External Works			270			406
Farm Development	170	170	343	393	300	1,131
Total original Plan Budgets	1,105	1,105	2,969	1,443	695	6,728
Additional requested for 1975			328			
Revised Budget through 1975	1,105	1,105	3,297	1,443	695	6,728
New Items in 1976 and 1977 Budgets						
Dormitories	650				650	650
Screenhouse	40			40		40
Germ Plasm Bank	2,100			500	1,600	2,100
Tanks and Beds	70			70		70
Microwave/Computer System	100			100		100
Total 1976 & 1977	2,960			710	2,945	2,960
Total Capital Plan 1974-1977	4065	1,105	3,297	2,153	2,945	
Actual or current Estimates 1/	-	1,283	3,237	2,153	2,945	9,618

1/ Figures provided by IRRI for CG Secretariat Commentary.

22. With respect to the original 1974 capital plan, there has been over a fivefold increase in costs since 1973 when the plan was first presented to the CG in connection with IRRI's 1974 budget proposals. While a significant part of the increase can be attributed to an unusual period of high worldwide inflation, most of the increase reflects serious underestimates in the cost of the original plan.

23. Several new capital items are included in IRRI's 1976 budget. The major item for which one-half million dollars is requested in 1976 is to start construction of a $2.1 million facility to house a germ plasm bank and provide space for some staff of the Genetic Evaluation Unit. The Genes Board has recommended that IRRI needs improved storage for its very valuable collection of rice germ plasm and the Secretariat is in full agreement with this.

24. The other important capital item is for a micro-wave system/mini computer ($100,000) so that IRRI can have a link with a large-scale computer in Manila. The need for larger-scale facilities arises from proposals of the Genes Board for a data recording and retrieval system for the Center's germ plasm collection and for increasing needs for computer facilities for the research program. The Center purchased a mini computer in 1974 so the Secretariat assumes that this cannot cope with the information system needed for the germ plasm collection.

Beyond 1976

25. IRRI's core operating budget (Table IV) is expected to increase steadily over the next three years. The main increase in the capital budget, however, is in 1976 and 1977 after which it is expected to continue at a much reduced level.

Table IV - Budgets (1975-1979)
(US$ Millions)

	1975 (Revised)	1976	1977	1978	1979
Research	3.3	4.3	4.5	4.7	4.7
Conferences and Training	0.3	0.4	0.4	0.4	0.4
Library, Documentation and Information Services	0.3	0.4	0.4	0.4	0.4
General Administration	0.5	0.6	0.6	0.6	0.6
General Operating Costs	0.9	1.0	1.0	1.0	1.0
Other operating Costs (including provision for price changes)	0.1	0.2	1.6	1.9	2.3
Total Core-Operating	5.4	6.9	8.5	9.0	9.4
Capital Costs (including additions to working Capital)	3.2	2.2	2.9	0.8	0.8
Total Core	8.6	9.1	11.4	9.8	10.2

Historically, IRRI, like all other centers, has substantially revised upwards in later budgets its estimated requirements for future years.

III. ISSUES

Issues on the Operating Budget

26. The Secretariat has two technical problems with IRRI's core operating budget: (a) the high fill rates on authorized positions estimated for 1975 and budgeted for 1976; and (b) the reasonableness of the assumed rate of inflation in 1976.

27. First, the Secretariat is a little uncomfortable with the estimated fill rates on the authorized positions. For 1975, IRRI is now estimating that on an authorized staffing level of 985 positions, it will realize 980 man-years, a fill rate of 99.5%. At the time the Secretariat mission visited IRRI in March 1975, manpower yields for 1975 were estimated at 895 man-years and this figure was in balance with the salary budget as adjusted for full inflation. We believe the current 1975 estimate of 980 man-years of staffing is inconsistent with IRRI's

1975 estimate of Personal Services costs, and optimistic in terms of IRRI's own recruiting history and the experience in all other centers. While the Secretariat believes the 1975 manpower figure is high, the Director has given his assurance that the estimated manpower figure of 980 man-years is realistic. Given the limited number of vacant positions in March 1975, the Secretariat has difficulty understanding how this level of manpower can in fact be achieved.

28. The Secretariat also has difficulty with IRRI's assumed 17% overall rate of inflation. The World Bank is operating on the assumption that inflation in the Philippines in 1976 will be on the order of 10-11%. This assumption is in line with, but slightly higher than the government's own expectations regarding the 1976 rate of inflation. IRRI in part justifies the high rate of inflation on the grounds that substantial structural salary adjustments are necessary in order to retain skilled locally recruited scientific and other support staff.

29. It is not possible from IRRI's budget presentation fully to understand how the assumed rate of inflation was determined either in total or for major expenditure categories. The Secretariat is inclined to accept the inflationary increases in the personal services budget, on the assumption that this figure is tied to a detailed staffing plan and aligned with basic compensation policy, but would recommend reducing the price change provision for most other items to 10 or 11% and for travel to 7.5%.

30. IRRI's 1976 asking budget for core operations is compared in Table V with the budget adjusted to take account of the lower rate of assumed inflation.

Table V - IRRI's 1976 Core Operation Budget
(US$'000)

	1975 Estimated	1976 Budget As Proposed by IRRI	Increase 76/75 %	1976 Budget As Adjusted	Increase 1976 Adj/1975 %		
						Of Which	
					Total	Volume	Price
Man-Years	980	1,111	12.8	1,111	13.4	13.4	
Personal Serv.	2,865	3,603	26.0	3,657	25.8	12.8	13.4
Supplies	650	859	32.2	800	23.1	12.8	10.3
Equipment	274	387	41.2	340	23.1	12.8	10.3
Travel	432	512	18.5	475	10.0	2.3[a/]	7.7
All Other	1,199	1,516	26.4	1,485	23.8	12.8	11.0
Total	5,420	6,877	26.9	6,757	24.7	11.2	13.0

a/ Volume increase of 2.3% is based on the budgeted increase in IRRI's senior staff growth.

As the Table shows, if IRRI's full program of operations is accepted for 1976, technical adjustments would suggest a budget ceiling of about $6,757,000 or $120,000 less than requested.

Issues on the Capital Budget

31. IRRI has produced preliminary designs and costing of its germ plasm bank facility, the total cost of which is projected at $1,950 million. If funds are made available for 1976, the Center plans to start development in January 1976. The total area will be approximately 2,000 m^2, of which about 800 m^2 would be used for actual storage of germ plasm. The remainder will be used for seed processing and laboratories and offices for the scientists involved in the rice evaluation and breeding program and the international rice-testing program. While there is obvious merit in having all these programs in one building, the Secretariat would point out that IRRI is already in the process of building a 2,000 m^2 laboratory, about half of which is planned for use in the rice program. The Secretariat endorses the need for improved facilities for handling and storage of IRRI's very large collection of rice germ plasm and would agree that $500,000 should be included in the 1976 budget for work on such a facility. However, it has reservations on the need for a building of such a size. Space is provided for six senior staff in the proposed building but IRRI's projected staffing, 1976 through 1979, does not show any provision for this increase. The Secretariat is suggesting therefore that the TAC review the mission report on this aspect of the capital program.

Issue on Estimating Funds Required in 1976

32. To implement its 1976 core operating and capital plan, and maintain its working capital position, IRRI is requesting pledges from the CG totalling $9,150,000. IRRI's budget presentation with respect to its statement of requirements from the CG is difficult to interpret since its 1974 audit statement shows the accounts at year end on a commitment basis of accounting rather than on an accrual basis, with all 1974 funding earmarked as fully obligated. Consequently, the 1974 audited financial statements, and IRRI's 1976 budget presentation obscure the unexpended capital and core operating balances carried over from 1974 to 1975.

33. In Table VI, the Secretariat has tried to reconstruct on an accrual basis IRRI's statement of the sources and application of funds and to compare this presentation with IRRI's request as set out in its 1976 budget. The Table also takes into account the technical adjustments in the operating budget and the possible deferral of capital expenditure both mentioned above.

Table VI - IRRI's Sources and Application of Funds and Funds Required from the CG
(US$'000)

	As Reported by IRRI on Commitment Acct. Basis		As Recommended by Secretariat on Accrual Basis IRRI Budget		Secretariat Recommended Budget
	1975	1976	1975	1976	1976
Core Budget					
Sources of Funds					
I. Carry-over from previous year					
a) 1974 Capital Grant			1,283		
Less Estimated 1974 Expenditures			621		
Unexpended Balance			662		
b) Working Capital	380	380	380	380	380
Total Carry-over			1,042	380	380
II. Funds Pledged by CG in October 1974					
a) Additional pledges during year:	7,118		7,118		
Japanese Government	410		410		
ADB	300		300		
Canadian Government	350		350		
Sub-Total	8,178	8,950	8,178	8,950	8,830
b) Earned Income	200	200	246[a]	200	200
II. Total Funds Available	8,758	9,530	9,466	9,530	9,410
Application of Funds					
Core Operations	5,475	6,877	5,475	6,877	6,757
Capital Expenditures	3,237	2,153	3,899[b]	2,153	2,153
Working Capital Balance	380	500	380	500	500
Total Application	9,092	9,530	9,759	9,530	9,410
Carry-over (shortfall)	(334)	-	(288)		
Funds Required from CG	334	8,950	288	8,950	8,830

Estimated by CG missions in March 1975.

Based on the Director's assurance that the unexpended 1974 capital funds will be required in 1975 and that disbursement will be made on the full Capital Plan for 1975.

July 15, 1975