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PROJECT PAPER
PHILIPPINES
AGRICULTURE RESEARCH LOAN
PROPOSAL

UNITED STATES
AGENCY FOR INTERNATIONAL DEVELOPMENT
MANILA, PHILIPPINES

MARCH 14, 1975

revised

5/21/75

AR 24 RECD

UNITED STATES GOVERNMENT

Memorandum

TO : DISTRIBUTION

DATE: March 24, 1975

FROM : EA/CCD, Frank Collins, Jr. *FC*

SUBJECT: Agriculture Research Loan (\$5.0 million) PP - Philippines

We have scheduled a meeting for a preliminary review of the subject capital project document for 2:30 p.m. on Friday, March 28, 1975. The meeting will be held in Room 6210 N.S. Your participation is invited.

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PROJECT PAPER

PHILIPPINE AGRICULTURE RESEARCH LOAN

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PROJECT PAPER

PHILIPPINES ---- AGRICULTURE RESEARCH LOAN

PART I

A. Summary

To develop and improve the research capability of the Government of the Philippines (GOP), the proposed loan provides for additional facilities and equipment for four research centers plus the development of the required manpower. The contribution of AID resources through the Philippine Council for Agricultural Research (PCAR) will strengthen direction, coordination, programming and management of research. The strengthening of the institutional capability made possible by this project, will greatly enhance the ability of the GOP to focus on the development and dissemination of improved production technology and corresponding improvements in services to the small farmer, making it possible for more widespread use of production increasing practices.

The proposed project will provide partial financing for the development of a research capability at four research centers: (1) the La Granja Research Center in Negros Occidental, the principal center for research on soybeans and other legume seed crops; (2) the Southern Mindanao Agriculture Research Center, the principal center for research on corn and sorghum; (3) the Bicol Research Center consisting of the Bicol Rice and Corn Station and the Camarines Sur College of Agriculture at Pili and the Bicol University College of Agriculture at Guinobatan; and (4) the Central Luzon Research Center comprised of the Maligaya Rice Experimental Stations and the College of Agriculture Research Center of the Central Luzon State University.

While the project is essentially an institution building project, it is expected that research results applicable to the problems of small farmers will accrue during the project span. Immediate benefits will be measurable in terms of improved capability to conduct research, i.e., research centers with basic infrastructure, adequately equipped for the research mission and staffed with individuals capable of planning and conducting research who are able to translate the results into a form usable by agents of extension, supervised credit, agrarian reform, and cooperatives in assisting the small farmer improve his productivity. On the longer term basis the benefits will be measurable in terms of new or improved technology - new varieties, disease, insect, weed and pest control practices, soil fertility, water management practices and cropping systems -- adapted to the small

farmer needs. Thus, not only increasing total production of food and feed grains and legume-seed crops but increasing the productivity of the small farmer as a means of improving his income.

B. Recommendation

The Government of the Philippines urgently requests this loan, and has the administrative, fiscal and technical management capability to implement the project. It is, therefore, recommended that the loan be approved for implementation in FY 1975.

C. Project Development

1. Loan Committee

Dr. Frank W. Sheppard, Jr.
Assistant Director for
Agricultural Development

Mr. Willy D. Baum
Assistant Program Officer

Mr. Donald R. Mitchell
Deputy Assistant Director for
Agricultural Development

Dr. Francis LeBeau
Agricultural Research
Consultant

Mr. Thomas E. Johnson
Deputy Assistant Director
for Capital Development

Dr. James W. Cobble
Research Consultant and
former Dean of College of
Agriculture, University
of Rhode Island

2. Borrower: Government of the Republic of the Philippines (GOP)

3. Implementing Agency: The Philippine Council for Agricultural Research (PCAR)

4. Loan

a. Total Project Cost (See Tables 1 and 2)

b. Amount of AID Assistance

(1) Foreign Exchange \$ 2,320,000

(2) Local Cost Component 2,680,000

(3) Proposed Terms -

AID's standard terms for Development Loans, i.e., repayment within 40 years including a 10-year grace period, with interest at 2% during the grace period and 3% thereafter.

TABLE 1

Project Cost Summary
Four Agriculture Research Centers

	Total Cost of Project (\$000)					US Contribution		
	1975-76	1976-77	1977-78	1978-79	1979-80	Total	Total	As % of Total
Operations including professional salaries	1,440	2,104	2,530	2,655	2,770	11,499	0	0
Training including academic and short term within country and externally	200	450	450	450	344	1,894	1,000	52
Library - books, periodicals, journals, materials, etc.	50 ^{1/}	150 ^{1/}	50 ^{1/}			250 ^{1/}	250 ^{1/}	100 ^{1/}
Infrastructure - buildings, housing, utilities and land development	760	2,000	2,240	2,000	1,670	8,670	2,240	26
Equipment and machinery for laboratories and farms	600	800	400	87	50	1,937	1,160	60
Technical Advisory services	40	68	95	65	35	303	303	100
Total including operations cost	3,090	5,572	5,765	5,257	4,869	24,553	4,953	20
Total excluding operations cost	1,650	3,468	3,235	2,602	2,099	13,054	5,000 ^{2/}	38

^{1/} Requirements for library not separately budgeted by GOP but included in operations budget. The figure included here reflects a need for offshore procurement to strengthen libraries.

^{2/} Rounded.

TABLE 2

Summary of U.S. Contribution to Agriculture Research Project (\$000)

	1975-76	1976-77	1977-78	1978-79	1979-80	Total	Local Cur- rency Cost	Foreign Exchange Cost
I. <u>Technical Advisor</u>								
Short term	40	68	95	65	35	303		350
II. <u>Training and Manpower</u>								
<u>Development</u>								
Academic for PhD (1)	46	90	125	80	39	380		
Academic for M.S. (2)	35	76	77	77	35	300		
Upgrading Refreshers (3)	20	40	60	60	20	200		
Participation in scientific conferences and short term observation (4)	<u>20</u>	<u>30</u>	<u>30</u>	<u>20</u>	<u>20</u>	<u>120</u>		
Sub-Total	121	236	292	237	114	1000	440	560
III. <u>Library</u> - Books, Journals, Films, Materials, etc.	50	150	50	-	-	250		250
IV. <u>Infrastructure</u> - Buildings, Utilities and Land Development	140	1000	1100	-	-	2240	2240	
V. Research Equipment and Farm Equipment and Machinery and Vehicles	250	600	310	-	-	1160		1160
GRAND TOTAL	601	2054	1847	302	149	5000 (5)	2680	2320

(1) A total of 38 with 30 in local institutions and 8 in U.S. institutions.

(2) A total of 100 in local institutions.

(3) 20 trainees for 9-12 months each in U.S. or third country.

(4) 60 trainees for 3-6 weeks each in U.S. or third country.

(5) Rounded.

c. Borrower's Contribution	\$ 24,600,000
d. Other Donor Input	None

5. Description and Justification of Project

Agriculture research is undertaken to increase agricultural production. The research planned under this loan is for those crops grown primarily by small farmers and form a significant part of the nation's food supply.

The development of four research centers will decentralize current research efforts concentrated primarily in the Los Banos area and will strengthen the research capability in the regions where the stations are located. In this way research will be done in areas where the crop is important, nearer the targeted small farmers and at the lowest level possible consistent with effective research administration.

It is important to note that at end of the project period (1980) the manpower infrastructure and commodities will be in place to do the research work. The results of research cannot be expected to immediately be available. However, the research capability will be in place to make a significant contribution during the 1980s.

While the target is the small farmer, it is essential that a research infrastructure be developed to provide a mechanism for conducting research and serves as a channel for passing it on to the farmers. PCAR has demonstrated an administrative capability as exemplified in other sections of this paper for coordinating the agricultural research resources of the GOP. However the strengthening of PCAR, through the loan, is secondary to the development of the four research centers, but is essential if the stream of information and improved technology needed to increase production is to reach the small farmer.

Self-sufficiency in the production of basic food and feed grains is a goal of the GOP. At the present time it appears the Philippines is at a "shaky" self-sufficiency stage with about enough starchy staples to meet market demand. However, the food balance as a national average indicates a 15 percent caloric deficiency (1700 calories available vs. 2,000 established as the minimum daily requirement). Little or no reserve exists to meet scarcity that could result for severe weather conditions that are common in the Philippines. In addition, the population is currently increasing at an annual rate of three percent. By the year 2000, it is

estimated the population will double, exceeding 80 million. This means that agricultural production must also double to meet the food need. Since most of the arable land is now under cultivation, it is obvious that increased production must result from better management of resources on the farm level. Agriculture research is essential if food production is to be doubled in the Philippines over the next 25 years.

The GOP is very much concerned with food production as indicated by policies and action programs now underway. Credit is being extended at unprecedented levels through the banking system (currently over 200 million dollars is on loan to small farmers through the Masagana programs). Price supports are being administered for rice and corn to encourage production. An agrarian reform program is underway dividing rice and corn holding over 7 hectares among tenant farmers. The Mission feels that the GOP will continue to provide the policy and administrative structure framework that will encourage increased production by the small farmer. (See Logical Framework Matrix, Annex C.)

PART II

A. Project Background

1. History and Development

Faced with a rapidly increasing population and inadequate supplies of basic food and feed grains, the Philippines is seriously concerned about increasing its food production. With an annual growth rate of about three percent, the population of the Philippines increased from 27 million in 1960 to about 43 million in 1974. Without any substantial change in the growth rate, the population is expected to reach 50 million by 1980. This rapid population growth will present serious problems in meeting food requirements unless measures are taken to reduce the rate of growth and increase food production. The USAID Family Planning project working in conjunction with the GOP Population Commission is attempting to reduce the rate of population growth. This loan proposal will enlarge Philippine capability to provide farmers with the technology needed for increased agriculture production.

The importance of agricultural development in the economic growth of the Philippines cannot overemphasized. Almost one-third of the national income originating from agriculture, fisheries and forestry; approximately 70 percent of the population lives in rural areas; more than one-half of the labor force is employed in agriculture; and about 85 percent of the foreign exchange earnings come from agricultural exports. Consequently, improvements in agricultural productivity will contribute to economic growth through higher production within agriculture, provide adequate food supplies for the masses and raw materials for industry. Through a dynamic agricultural sector, it will be possible to expand exports, increase foreign exchange revenue and provide a major source of gainful employment for the labor force.

Rice and corn are the major staple food crops in the Philippines. Over the years these crops have come from both domestic production and imports. Rice is grown primarily under irrigation or rainfed paddy culture (80% lowland and 20% upland with about two-thirds of the lowland area being rainfed) and corn more generally under upland conditions.

The long term trends in national production shows an increase of 2.9 percent per year from 1911 to 1964 for rice and 3.1 percent for corn. Increase during this period were due mostly to expansion in the area of land under cultivation.

With the introduction of high yielding varieties and infrastructure development (especially irrigation) rice production and yield has increased substantially from the 1965 national average of 1.25 M.T./ha to the 1970 level of 1.68 M.T./ha. (See Table 3). Although the trends in productivity have been encouraging in recent years, when international comparisons are made, it is clear that yield per hectare is much lower than other countries in Southeast Asia (Table 4). With the declining availability of new lands to bring under cultivation and the increasing costs of developing such lands, the prospect for rapid growth in Philippine agriculture must depend more on new and modern technology plus modern inputs rather than on the traditional inputs of land and labor.

2. Host Country Objectives

The principal objectives of the Government of the Philippines 1974-77 Four-Year Development Program for the agricultural sector have been defined as follows:

1) Increased food production so as to achieve self-sufficiency in the basic plant foods -- rice and corn and also livestock and fish product.

2) Acceleration of the agrarian reform program of land transfer and distribution and expansion of services to new landowners.

3) Expansion of exports and import substitution.

4) Conservation and development of forestry resources.

Implicit in these objectives and more explicitly in the agricultural strategy statements, is the growing realization of the need to focus attention on assistance on the masses of small rice and corn farmers who make up approximately 70 percent of the 6.2 million farm people. Over 80 percent of the operating farms is limited to one to five hectares of land. It is further acknowledged that development of other sectors of the national economy depend upon increasing income of the rural masses.

With production per hectare for corn and rice in the Philippines much below the average for several comparable Asian countries, the prospects for rapid growth in productivity and assistance to the small farmer depends greatly upon new and applicable technology plus modern type inputs rather than on the traditional input of land and labor. In a recent GOP

TABLE 3

Past Trends in Production, Yield and Projected Increase Needed to Sustain a Per Capita Production of 135 kilograms Palay Assuming Approximately 3 Million Hectares

Year	Population x 1000	Percent Change	Production x 1000 MT	Percent Change	Yield MT/Ha	Percent Change	Production/Capita Kgs/ha
1955	23,550		3202.9		1.21		138
		17		3.14		1.48	
1960	27,500		3739.5		1.13		138
		17		1.32		2.04	
1965	31,600		3992.5		1.25		127
		17		5.27		6.09	
1970	36,684		5233.4		1.68		143
		34		27.00		32.00	
1980	49,304		6656.0		2.22		135
		34		34.00		34.00	
1990	66,252		8994.0		2.98		135

Source: First National Agricultural Systems Research Congress Crop Research Division Workshop Session No. 8 - Rice UPLB February 2-17, 1973.

TABLE 4

Yields in Metric Tons Per Hectare
in Selected Countries

	Year	Philip- pines	Thai- land	Indo- nesia	Malay- sia	Japan	U.S.A.
Rice	1971	1.57	1.99	2.41	2.91	5.24	5.30
	1972	1.49	1.81	2.44	2.90	5.85	5.25
Corn	1971	0.83	2.26	1.00	2.16	2.50	5.53
	1972	0.79	1.32	1.00	2.12	2.90	6.08

Source: FAO, Production Yearbook, 1972.

report,^{1/} recognition was given to the fact that growth in agricultural production in the past has been mainly due to expanded use of formerly new or uncultivated lands while it is, of course, limited in application. This practice follows the traditional pattern of growth in Southeast Asia. Greater and more intensive use of the small farm operation is paramount to the increase of returns for the farm family.^{2/} To bring new technology to the small farmer, a considerably strengthened research establishment as well as extension services will be required. Research has made gains in the development of high yielding varieties of rice and downy mildew resistant varieties of corn, but the technical base for these crops as well as for sorghum and soybeans must be expanded.

To develop a substantial and sustained rate of growth new technology must be generated and applied. Therefore, the future agricultural growth rests heavily on building strong research programs that will continually supply the needed technology for expanding and diversifying agricultural output.

3. A Research System Needed

Aware of the need for a better research capability to support the objectives of a more dynamic agricultural sector, President Marcos in February 1971, created an executive panel to "Develop a National Agricultural Research System". This panel composed of high level individuals from the various branches of the government and universities immediately undertook an exhaustive study of the research system-- physical facilities, equipment, manpower, programs, projects, etc. At the same time, a study of the research systems of other countries was undertaken by members of the panel.

AID, the Ford Foundation, the Agricultural Development Council and the National Food and Agriculture Council provided financial support for the work of the panel as well as help in analyzing the panel's findings and is developing recommendations through the services of the high level consultants.

^{1/} ILO Sharing in Development--A Program of Employment Equity and Growth for the Philippines. Prepared by the National Economic and Development Authority, Republic of the Philippines, 1974.

^{2/} Agricultural Sector Survey--Philippines (4 volumes); Vol. I, The General Report, Document of IBRD, May 2, 1973.

The findings and recommendations of the panel were presented in six volumes between 1971 and late 1972. Among the more significant findings were:

(1) Although a substantial amount of funds was being allocated by government for agricultural research, the useful research output was limited and was having little impact on the agriculture sector.

(2) There was inadequate planning and coordination at the national level. Research projects and programs were not necessarily related to national goals nor to plans for agricultural development.

(3) Research resources were highly fragmented as were the allocation of budgets. Funds were allocated to large numbers of discrete, unrelated and frequently overlapping activities. There was also a substantial diversion of appropriated funds to uses other than for the support of research for which they were budgeted, and

(4) Research was highly personalized in that activities were undertaken in accordance with the individual's personal interest rather than in support of planned programs designed to further national development.

4. Philippine Council for Agricultural Research (PCAR)

Against the background of findings, the Executive Panel, empowered to develop a national agricultural research system, recommended that a special body, the Philippine Council for Agricultural Research (PCAR), be established to give direction to and to coordinate research activities of government agencies and agricultural colleges and universities. This body was created by Presidential Decree #48 dated November 10, 1972. PCAR was established as an autonomous body attached to the Department of Agriculture for administrative purposes and responsible to a "Governing Council". See Figure 1 for detailed organizational structure of PCAR.

The Council has the following membership:

- Chairman - Chairman of the National Science Development Board (NSDB)
- Vice Chairman - Secretary of Agriculture
- Member - Budget Commissioner
- Member - Representative, National Economic and Development Authority (NEDA)
- Member - President, Association of Colleges of Agriculture in the Philippines (ACAP)
- Member - Chancellor, University of the Philippines at Los Banos
- Member - Outstanding Leader of Agricultural Business

The governing council makes policies and provides guidelines for implementation by the PCAR Secretariat. The Secretariat is composed of the Director-General, a Deputy Director-General for Programs and Operations, a Deputy Director-General for Station Development, management staff, six research directors and a director for technical services. They collectively work for the implementation of the policies and guidelines set by the Council toward fulfillment of the national goals for agricultural progress.

The research directors, one each for crops, livestock, fisheries, forestry, soil and water, and the socio-economics research division, program the research projects and works with twenty-nine commodity teams broken down as follows:

Crops	-	16	Livestock	-	4
Fisheries	-	2	Soil & Water	-	2
Forestry	-	3	Socio-Economics	-	2

Each research team is composed of scientists with specialization in the different aspects of each commodity. For example, the National Corn Research Team consists of a plant breeder, soil specialist, agronomist, entomologist, plant pathologist, agricultural engineer, a rural sociologist, a cereal processing specialist, agricultural economist, etc.

Among other functions, the research directors conduct periodic assessments of approved and on-going research projects and straighten out problems related to the process of implementing the National Agricultural Research Program. They also handle the readjustments in the allocation of staff and other resources when needed.

The director for technical services, aside from handling the public relation needs of PCAR, helps the research division in their outreach program.

The body to review the research programs of the different research divisions, the Technical Program Planning and Review Board (TPPRB), has the following membership:

- | | |
|----------------------|---|
| Chairman | - Director-General, PCAR |
| Vice Chairman | - Executive Director, National Food and Agriculture Council |
| Member | - Director, Agro-Industrial Projects Department, Board of Investment |
| Member | - Representative, National Economic and Development Authority |
| Member | - Chief, Planning Service, National Science Development Board |
| Member | - Chairman, Agriculture and Forestry Division, National Resources Council |
| Member | - Chief, Plans and Programs Services, Department of Agriculture |
| Member | - Representative of the Budget Commission |
| Members | - Three Research Directors from Colleges and Universities |
| Members | - Three Representatives, Agri-Business |
| Ex-Officio-Secretary | - PCAR Deputy Director-General-Programs and Operations. |

The PCAR-TPPRB also insures the coming together of expertise between the private sector and top government policy makers. This is vital in the establishment of a national agricultural research program.

During an existence of slightly over 18 months, PCAR has marked up an impressive record of accomplishments and has emerged as the GOP instrument for providing direction, effecting coordination and controlling the allocation of public funds in support of agricultural research^{1/}. In a recent paper presented by the Director-General of PCAR, a two-year history, development and accomplishments were reviewed (copy available in AID/W).

A detailed record of PCAR's first 18 months is set forth in a July 1974 report of Dr. A. H. Moseman, Rockefeller Foundation Consultant and recognized authority on organization and administration of agricultural research (copy available in AID/W). Several compilations by the PCAR Secretariat provide in still greater detail a record of PCAR's accomplishments. A listing of the principal documents and accomplishments is as follows:

a. Research in agriculture, forestry and fisheries. A listing of on-going projects as of August, 1974.

b. Total requirements for the full development of Philippine agricultural research capability - an inventory of infrastructure, materials, equipment, research manpower and research operating funds with projections of additional needs during the period of 1974-75 to 1981-82 including estimation of financial requirements.

c. Individual reports by the 29 commodity-discipline task forces setting forth the state of the art and research objectives, listing on-going projects for each, and identifying important gaps.

d. A special research project on administration of research which was completed in 1974 as a joint undertaking of SEARCA (Southeast Asia Regional Center for Agriculture) and the UPLB (University of the Philippines at Los Banos).

e. Organization of the first Agriculture Systems Research Congress of February 1973 at which was formulated a broad framework for agricultural research in keeping with national development priorities and plans.

^{1/} The First Two Years of PCAR, delivered by Dr. Joseph Madamba at the Second Anniversary Symposium, UPLB Campus, Los Banos, Laguna.

f. Development of a system for research project reporting and evaluation which is to enter the implementation phase in November-December 1974.

g. Agricultural research thrusts in the Philippines for the 1970s. (Priority areas for each of the 14 research centers and 56 testing/cooperating stations.)

h. Manpower resources in Philippine agriculture, fisheries, and forestry research, 1973-1974.

i. Development of formal memoranda of understanding to govern cooperative relationships with the International Research Centers (International Rice Research Institute and Asian Vegetable Research and Development Center). Similar agreements are expected to be developed with CIMMYT (Centro Internacional de Mejoramiento de Maiz y Trigo) and ICRISAT (International Center for Research in Semi-Arid Tropics) and with local commodity and private research institutes.

j. Organization of training programs on research station operations and administration of water management research, and on design and analysis of experiments.

k. Development of an outreach program for agricultural research in the Philippines which includes the following basic components: scientific literature review, subject matter specialist corp, Philippine Recommendation Series, media service and linkage conferences with extension and media.

With a solid foundation thus established for effective implementation of a research program geared to support the three main thrusts of the GOP Agriculture Programs - increase in food production, improvement of small farmer incomes and increases in earnings from agriculture exports, NEDA requested in July 1974 that AID study the feasibility of extending a loan to support the research effort. In late September 1974, a team of two consultants arrived in the Philippines to assess the feasibility of the GOP request and to assist in the development of a project.

5. The Philippine Government Program for Improvement of Agricultural Research

The Government of the Philippines (GOP) through the efforts of PCAR has made substantial progress toward defining research objectives and priorities within the context of the GOP 1974-77 development plan in general and more specifically the plan for the agricultural sector. Irrelevant activities have been terminated and a beginning has been made in the consolidation and rearrangement of highly fragmented activities into well rounded and balanced programs having a direct bearing on development programs of the country.

a. Agricultural Research Network

Through a national network of agricultural research centers and experiment stations, PCAR hopes to carry out impact projects and problem oriented research to provide immediate and relevant solutions to agricultural problems in the various regions. See Figure 2 for the locations of the country-wide research systems. Annex H provides the names and location, main commodity stations and the cooperating stations for various commodities of the national network.

b. Seven Year Research Program

A program for development of research capabilities and for implementation of research over a seven year period has been developed. This plan entails capital investment for improvements and additions to infrastructure, for laboratory equipment, library materials, farm equipment and for manpower development totalling approximately \$33 million. The corresponding projected outlay for recurring expenses for personnel and for operations is \$106 million. (See Table 5) Approximately 60% of the recurring budget is for operating expenses with the remaining 40% for personnel services.

By comparison, in 1970 the total expenditure of public funds for agricultural research was slightly under \$10 million. The 1974-75 budget is \$10.7 million for operating expenses and capital investment.

c. Manpower Development

A successful research program in agriculture, forestry and fisheries, regardless of the monies available for operations, facilities, infrastructure, etc., depends to a large extent on the capability of the research manpower. The total

TABLE 5

Summary of Total Financial Requirement for the Full Development of the Philippine Agricultural Research Capability (7 years)

I n M i l l i o n P e s o s								
Year	Infra-structure	Lab & Field Equipment	Personal Services	Operating Costs	Manpower Development	Invitational Travel	Research Administration	Total
1975-76	9.000	21.514	28.098	47.550	0.670	0.644	2.000	109.581
1976-77	16,000	8.631	32.968	53.823	1.490	0.798	2.400	118.115
1977-78	30,000	8.631	37.630	61.240	2.060	1.001	2.800	143.362
1978-79	34.000	4.312	40.135	64.281	2.630	1.015	3.300	149.673
1979-80	30.000	-	41.433	65.746	3.230	1.001	3.900	145.310
1980-81	20.000	-	44.781	71.412	3.520	0.966	4.600	145.279
1981-82	12.053	-	50.136	30.450	16.250*	0.959	5.000	164.848
Total Pesos	151.053	43.148	275.181	446.507	29.850	6.384	24.000	976.123
Total (U.S. Dollar) Millions	(\$21.579)	(\$6.164)	(\$39.286)	(\$63.786)	(\$4.435)	(\$0.912)	(\$3.43)	(\$139.446)

* Includes 8,9,10 years for manpower training.

7 Pesos = \$1.00

manpower training requirement for the PCAR research network in the next ten years is approximately 400 PhD and 900 MS scholars for research and other duties. A survey taken in 1973 by PCAR of government and private agencies involved in agricultural research shows a total of 2,213 research workers (1097 SMY). Forty percent of the workers is in the universities and colleges and 30% in the Department of Agriculture and Natural Resources Agencies. The remainder is in private industries, institutes and other government entities. The lower SMY figures for research results, chiefly from the high percentage of people in colleges and universities where teaching has the highest priority (2213 research workers).

Table 6
Five Year Project For Manpower Training (1973-78)

	Actual 1973	5 yrs. Expected to Complete	Less Est. Retirement Deaths	Est. Number 1978	% Change in Adv Degree Holders 1973 1978	
Ph. D	246	102	4	344	11.1%	14.9%
M.S.	520	232	39	713	23.5%	31.0%
B.S.	<u>1,447</u>	<u>84</u>	<u>294</u>	<u>1,237</u>	<u>65.4%</u>	<u>54.1%</u>
Total	2,213	418	337	2,294		

As expected Table 6 shows that increasing the number of highly trained staff members within a unit or system is rather slow due to several factors including length of training, retirements, deaths. It is, however, rather clear that a well organized plan for upgrading the capabilities of a research staff can make substantial progress even in a five year period. The survey noted that researchers from the college/university sector have been most productive in terms of volume and quality of research output although only 24 percent of their time is devoted to research. Approximately 70 percent of the current research staff holding M.S. or Ph.D degrees is concentrated in these institutions. Starting in 1973-74, PCAR has sponsored 28 scholars for M.S. degrees and 12 for Ph.D. in Agriculture at the University of the Philippines Los Banos, 2 M.S. scholars at UP-College of Business and 2 M.S. and 15 B.S. students at the UP-College of Fisheries. As of November, 1974, the total number is 59.

The program of investment, broadly outlined in previously presented Table 5, is phased over time as to content and emphasis. Although the GOP program covers a seven year time span, this AID project will be limited to no more than three years except in the case of training which is planned to extend over a five year period.

Initially, the focus will rest heavily on food and grain crops, fisheries and export crops. The GOP has requested AID assistance for expansion and improvement of research capability particularly in the food and feed crop sector. The commodity institutes are supported by a special levy on exports which will continue to provide the principal input for research related to exports. External assistances principally from Japan, UNDP and one USAID technical project will provide the necessary support for research in fisheries.

d. Outreach Program for PCAR

The main objective of this project is to strengthen the research capability of agricultural research technicians in the Philippines and the establishment of a central repository of agricultural literature. Some of the activities include:

(1) Scientific Literature Service (SLS) for Colleges, Experiment Stations and Research Centers

These units will be furnished by SLS "Content" pages from journals. Researchers can select articles in their field of interest and PCAR will provide a copy of the complete scientific article.

(2) Subject Matter Specialists

This group is new to PCAR and they will be stationed at Research Centers and Stations to provide a vital link between research and information users (policy makers, planners, extension agents, farmers, etc.)

(3) Philippine Recommends Series

This is a semi-technical guide containing the latest developments and/or technology in each 20 different commodities under the PCAR network.

(4) Media Service

This include the publication of an information sheet from PCAR, press releases to 128 newspapers, magazines, etc., Radio/TV releases to 163 stations, and PCAR farm news through radio and T.V.

(5) Linkage, Conferences with Other Agencies

These are workshop/conferences in agriculture including extension, instruction, mass media, policy makers, etc.

e. Memorandum of Agreement Program of PCAR

PCAR, in a determined effort to assist and to receive assistance from many GOP agencies as well as international research units in pursuing a most progressive and energetic approach to Philippine Agricultural Research Problem, has entered into Memorandum of Agreement with a number of agencies. These agreements cover working arrangements, mutual/joint cooperative efforts, joint library use, establish weather stations, research data exchange, graduate fellowship programs, etc. Annex J lists the institution/agencies and a brief objective of the several agreements now in effect plus several now being negotiated.

6. The Four Agricultural Research Centers Selected from the PCAR Network for Possible Assistance

The four centers chosen for support under this loan constitute the more important centers (excluding the Los Banos Center which is by far the largest, the best equipped and the most comprehensive in scope) in the research network. Moreover, they are the principal centers for research on the basic food and feed crops and consequently will be dealing directly with commodities which are of interest to the majority of the small farmers in the country. (See Figure 2 Research Centers Nos. 3, 6, 8 and 14).

a. Central Luzon Agricultural Research Center

This center is of special significance since it provides an ideal setting for research on development and adoption of production technology related to rainfed conditions under marked seasonal rainfall distribution. This differs from the setting at Los Banos and IRRI (International Rice Research Institute) where rainfall is distributed throughout the year. The Central Luzon Center will include research on cropping systems for these conditions. With the Central Luzon State University as a major part of the center, the

upgrading and improvement of facilities, library and staff quality will offer potential long term aid to undergraduate and graduate teaching programs to help meet the problems of trained agricultural manpower. The Maligaya Rice Research and Training Center has much to offer in terms of non-degree educational programs especially for farmers. Central Luzon State University presently has an undergraduate enrollment of 3,000 students, over 700 high school students and 20 M.S. degree students in horticulture, agricultural education and engineering.

b. Bicol Agricultural Research Center

This unit consists of the Bicol Rice and Corn Experiment Station, the Camarines Sur Agricultural College at Pili (300 college and 800 high school students), the Bicol University Colleges of Agriculture and Fisheries at Guinobatan (Students in Agriculture: College - 1001, High School - 747, and in Fisheries: College - 536 and 685 High School students), and several other units. The Bicol Center is, of course, of particular interest in that it will be complementary to the integrated area development project being assisted by AID. This, along with the fact that the region has a high population growth rate, and is an important rice and corn producing area, accounts for the institutions being included as a part of the proposed project.

c. La Granja Agricultural Research Center

The La Granja Center in Negros Occidental is one of the older research establishments of the Department of Agriculture. In the reorganization of the Center under the PCAR program, the Department of Agriculture entities will be integrated with the adjacent Philippine Sugar Institute research station. Since the Sugar Institute funds comes from a commodity tax, it will not be directly supported from the loan funds; however, its presence will provide a strong research center in the Visayas region. Aside from being the principal center for soybean and grain legume crops research, the station will focus heavily on cropping systems, sorghum and corn research as well as research in the area of soil and water resources. It is, also, located adjacent to the proposed UPLB training facility.

d. Southern Mindanao Agricultural Research Center

The Southern Mindanao Center is planned around the facilities of the Mindanao Institute of Technology. Excellent land facilities and a start in the development of infrastructure and equipment provides a good foundation for a research center. Close integration with the educational function will

strengthen the important link between teaching and research to the mutual benefit of both as well as to the PCAR network. The center is located in the principal corn producing area of the country and will broadly serve a rapidly developing area as new land is being opened to settlement. Sorghum is another crop that will be under study at the center and it potentially may offer an answer to the further development of livestock in Mindanao. The Mindanao Institute now has an undergraduate enrollment of 2,500 students in Agriculture plus 1,561 high school students. At the present no graduate degrees are being offered.

7. The Proposed Project for Aid Loan Financing

The purpose of the project is to develop and improve the agriculture research capability of these four major research centers of the GOP agricultural research network listed above. The project is essentially an institution building project; however, it is expected that considerable benefit will accrue during the project span by way of research results applicable to the problems of the small farmer. The immediate benefits will be measurable in terms of improved capability to conduct research - research centers with basic infrastructure, with adequate equipment for the research mission and staffed with individuals capable of planning and carrying out the research mission and able to translate the results in a form agents of extension, supervised credit, agrarian reform, and cooperatives can use for assisting the small farmer in improving his productivity. On the longer term basis the benefits will be measurable in terms of new or improved production technology - new varieties, disease, insect and weed pest control practices, soil fertility and water management practices and cropping systems -- adapted to the needs of the small farmer.

a. Crops and Cropping Systems

Over 1/2 (3.2 million ha.) of the total cropped area in the Philippines (6.1 million ha.) is devoted to rice while corn occupies 1/3 (2.4 million ha.) of the cropped area. Together these two crops employ nearly 70% of the total farm working population of 6.2 million people.

The research program on rice will be carefully coordinated with that at IRRI (International Rice Research Institute) with the view of supplementing and complementing the IRRI program by focusing especially on problems of rainfed production under the different rainfall conditions in the country. Special focus will be placed on cultural practices and cropping systems for improving productivity of land and labor. Pest control, including weed control, under different degrees of water control will receive special attention. Research methodology being developed at IRRI, for studying factors affecting the application of production technology by farmers under different climatic, soil and socio-economic conditions, including the testing of the technology itself, will be applied in order to develop a better understanding of the problems of the small farmer.

With respect to corn, high priority will be given to further development of downy mildew resistant or tolerant corn varieties. A high degree of tolerances has very recently been obtained in a white and yellow corn varieties. The task now is to introduce this character into other white and yellow varieties adapted to the various corn growing areas. The study of cultural practices in relation to mildew, other diseases, pest and in relation to different cropping systems will also be given high priority.

Research with sorghum, soybean and other legume seed crops will focus on exploration of the production potentials for these crops, determination of most appropriate cultural practices and determination of the place of these crops in different cropping systems.

More detailed descriptions of the status of research with these crops and research goals including projections of requirements in terms of manpower, facilities and operating budgets are provided in the reports of the PCAR teams for these commodities.

While the research centers have been given a commodity orientation, the economic aspects have not been neglected. Each of the task forces which are involved in defining research priorities and programs for the several commodities includes specialists in economics and/or rural sociology to assure that economic and social considerations are included in program and project planning. Moreover, special task forces on economics and rural sociology provide direction and research programming in those fields on a macro-level.

Cropping systems research to find alternatives to the more typical one-crop system in rice and corn areas will receive special attention. These studies will undertake to define cropping systems around corn and rice as the principal crops but including other crops which would lead to more efficient use of land and labor and to higher incomes for the small farmers. These studies will be carefully coordinated with the IRRI studies in cropping systems in relation to rice and will serve to extend the IRRI work beyond the limited agro-climatic conditions of the IRRI program.

b. Manpower Development

Essentially, in any major research efforts, the training, proficiency and/or research planning, design and management ability of staff members becomes highly important and a very

powerful factor. Recent studies of the agricultural research manpower in the Philippines indicate a great shortage in most, if not all, disciplines. As shown in Table 7, the four Agricultural Research Centers selected for partial funding under the proposed agricultural loan have a severe shortage in research manpower.

c. Infrastructure, Library, Utilities and Equipment

In the report entitled "Total Requirement for the Full Development of the Philippine Agricultural Research Capability" compiled by PCAR and the various commodity committees, there is a clear indication of a great investment need in permanent or long-term inputs for the nationwide agricultural research system. The long-term inputs include new research laboratories, upgrading of utilities, equipment storage, field and laboratory equipment, professional journals and reference textbooks plus land development. Staff housing which is a necessary incentive for researchers to stay on the job at many of the outlying field stations constitutes a major phase of the overall plans at the four centers.

The estimated funds needed for upgrading and the full development of the four agricultural research centers selected to be financed in part by the anticipated loan are shown in Table 9. The total input need for buildings, equipment and land development is approximately \$10.63 million or \$11.96 million including staff training.

8. USAID Activities in Support of Philippine Agriculture and the Development of the Rural Sector

The rural sector has been the principal area concentration of AID programs in the Philippines since 1970. This sector has, also, become a high priority in GOP development efforts as contrasted by the heavy emphasis given to the urban area during the 1950s and 1960s.

Specific AID-supported activities in agriculture and rural sector include the following:

a. Small Farmer Income and Production

Projects aim at:

(1) Development of program management and reporting system.

TABLE 7

Manpower Training Needs of the Four Selected
Agricultural Research Centers Shown in Scientist-Man-Year (SMY)*

Stations	S M Y*			S M Y			SMY-GAP Needing		
	Requirement			Presently in Centers			Training		
	PhD	M.S.	B.S.	PhD	M.S.	B.S.	PhD	M.S.	B.S.
Central Luzon Res. Center	28	65	68	6	20	25	22	45	43
Bicol Research Center	9	43	45	1	9	35	8	34	10
La Granja Res. Center	20	28	30	9	1	32	20	27	(2)
So. Mindanao Res. Center	17	79	80	1	8	8	16	71	72
Total	74	215	223	8	38	100	66	177	123

* SMY - Scientist Man Year

TABLE 8

Funds Needed for Upgrading and the Development of the Four Agricultural Research Centers (5 Years)

In Million Pesos							
Centers	Personal Services	Operations	Lab & Field Equipment	Laboratory Building	Staff Housing	Land Development	Training Manpower
<u>Central Luzon Agr. Res.</u>	10.083	15.566					
1. Central Luzon State U			2.80	5.21	4.65	1.20	2.80
2. Maligaya Rice & Training			0.35	0.29	-	-	
3. BFD Forestry Sta.			0.02	0.07	-	-	
<u>Bicol Agr. Research</u>	4.290	4.516					
1. Bicol Rice & Corn			0.72	3.90	1.29	0.54	1.32
2. Camarines Sur Nat. Ag. Col.			1.16	1.10	0.80	0.95	
3. Guinobatan Exp. Sta.			0.20	1.40	0.50	0.44	
4. Bicol Univ. College of Agr.			-	1.30	-	0.75	
5. Bicol Univ. Fish. College			0.68	1.40	-	0.15	
6. Ateneo de Naga			-	-	-	-	
<u>La Granja Agr. Res.</u>	7.338	11.159					
1. La Granja Exp. Sta.			3.00	10.20	3.10	3.82	1.42
2. La Granja Stock Farm			-	-	-	-	
3. La Granja Sugar Cane Sta.			-	-	-	-	
<u>Southern Mindanao Agr. Res.</u>	9.858	17.682					
1. Mindanao Inst. of Technology			4.67	7.50	5.68	4.50	3.80
Total Pesos	31,569	48.923	13.60	32.33	16.26	12.35	9.34
Total U.S. Dollars Million	(\$4.509)	(\$6.939)	(\$1.94)	(\$4.61)	(\$2.32)	(\$1.76)	(\$1.33)

- (2) Field testing research finding
 - (3) Development of a more efficient and effective credit system (PL 480 generated pesos have been important element in the activity).
 - (4) Research on control of rodent population (through U.S. Bureau of Sports Fisheries and Wildlife).
- b. The Rural electrification program has provided power to 160,000 customers representing over a million people.
 - c. A development program working in provinces to provide basic infrastructure such as feeder roads, irrigation systems and assisting in provincial planning and public administration.
 - d. Agrarian Reform - supports Philippine Government initiatives to reduce/eliminate rice and corn tenancy. The project is helping to strengthen GOP capabilities for rapid transfer of titles and transforming program beneficiaries into independent, more productive farmers.
 - e. Nutrition and family planning activities supported by AID are given heavy emphasis in the countryside.
 - f. Aquaculture Research - The goal of this project is the perfect fishpond technology, specifically to increase per hectare production of fish at lower cost. (Contract with Auburn University for service of scientists and academic training to Philippine scientists.)
 - g. Policy research - Agriculture Diversification and Marketing - Utilizing the services of two (2) USDA-ERS Economists.
 - h. Associated Agricultural activities - partial support to the two following programs:
 - (1) International Rice Research Institute (IRRI/AID/W)
 - (2) Southeast Asia Region Colleges of Agriculture - AID

The GOP priorities in agriculture places heavy stress on increased food production so as to improve the level of nutrition of the population, reduce the level of imports of basic foods and increase rural income. These programs focus on the development and dissemination of improved production technology and improvement in services to the

small farmer so as to make it possible for more widespread application of useful technology. The research program is designed to provide a continuous stream of information and improvements in technology applicable to a wide variety of conditions which prevail throughout the country. The strengthening of the institutional capability made possible by this project will greatly enhance the ability of the GOP to discharge this responsibility.

9. Other Resources Available for the Agricultural Sector

While many donors are providing, or plan to provide assistance for agricultural development in the Philippines, only limited resources are planned for supporting the research areas with which this project is concerned.

A newly completed UNESCO project provided certain educational and laboratory equipment and materials to a number of colleges of agriculture which make up a part of the research network as designed by PCAR. Some of the equipment has contributed to the research capacity of these institutions. Similarly an IBRD project for upgrading colleges of agriculture is expected to contribute to increasing research capability and especially the capacity for manpower development at the lower levels.

Assistance in coconut and fisheries research is being provided by the UNDP/FAO, while Japan is providing assistance in fisheries research through SEAFDEC. AID is providing assistance in Inland Fisheries research and extension, as well as for the Rodent Control Center at Los Banos.

The Ford Foundation made a grant to PCAR for "start-up" while Canada is providing assistance through SEARCA for the Scientific Literature Service program.

Other activities having similar objectives or relationships:

- (a) A UNDP/FAO soil fertility project which is nearing completion;
- (b) A UNDP/FAO project on soil classification;
- (c) UNDP/FAO project on grain handling, storage and processing. This is closely related to the IBRD loan for grain storage and processing.
- (d) A Federal Republic of Germany rodent control project.

The proposed AID loan does not duplicate any of these activities. On the other hand the activities to be assisted by the AID loan will complement a wide range of AID and other donor activities already listed, plus a Japanese loan to establish a network of seed processing and distribution installations, integrated area development projects in various stages of development by AID, IBRD, ADB, Japan and UNDP; irrigation development projects by the ADB in Mindanao, by the IBRD in Northern Luzon and Pampanga, and for ground water development by UNDP/FAO, an IBRD loan for grain storage and marketing.

The programs of the International Rice Research Institute and Centers (IRRI, CIAT, IITA, CIMMYT, AVRDC and ICRISAT) have definite relevance to the agriculture research programs overall and specifically to this project. Formal memoranda of understandings have been drawn up between PCAR and IRRI and PCAR and AVRDC to govern cooperative relations, to enhance complementarities and insure as much as possible against duplication of efforts. Similar agreements are expected to be entered into with the other international research centers. (See Annex G)

10. Views of Country Team

The Country Team recommends approval of this loan.

B. Project Analysis

1. Economical Aspects

Numerous efforts have been made to measure the economic impact of research. These measurements are difficult to make because, in general, gains in productivity which are attributable to improved technology involve a variety of inputs of which the technology itself derived from research is only one. Yet without the technology the utility of the other inputs is frequently minimal.

Recent studies in developing countries have shown a close correlation between the amount and quality of research and gains in productivity. Moreover, these studies have shown that the utility of borrowed technology is a function of the capability of the local research establishment. In studies on the impact of the green revolution -- wheat and rice -- it has been shown that as a general rule the impact as measured by yield of the introduction of the new varieties and corresponding technology packages was highest with the first adapters and decreased progressively with succeeding increments of area within any given country adopting the technology. As the percentage of the area adopting the new technology approached 50% of the total (as an upper limit) the impact in terms of yield increases approached zero. This is attributable to many factors among which is that of decreasing degree of adaptability of the technology as the range of ecological conditions is broadened.

This upper limit, however, varies greatly among countries, being highest in countries with the most developed national research system and the lowest (as low as 10%) in countries with the least developed systems. Results suggest that the utility, to any given country, of the green revolution package is proportional to that country's capabilities to test the adaptability to its own peculiar range of conditions and also to modify the package accordingly. Those countries with the better developed research system, being better able to test and modify the package, derives considerably more benefit from the new technology than those less able to do so.

In attributing the gains in productivity in the developing countries over the past several years it has been suggested that approximately 45 percent of productivity gains have been the results of indigenous research systems while 35 percent and 25 percent, respectively, have been

derived from transfers from other national research systems and from transfers from the green revolution International Centers.

In the case of basic food and feed crops considered here, the potential impact of productivity increasing technology is very large because of the very low average yields currently being attained. Rice yields average only about 1-2/3 tons of rough rice per acre. There has been little change since about 1969 or since the initial impact of the new varieties developed by IRRI, the Department of Agriculture and UPLB resulted in about a 25 percent increase in average yields during the period 1965-70. While other factors were also involved in achieving this increase, a considerable portion was due to the improvement of technology. Most of this increase was obtained from land with controlled irrigation. The development and application of better production technology from the rainfed rice areas which could result in as little as 10 percent increase in yields would mean approximately \$75,000,000 per year addition to the agricultural product at current prices. Given the current low yields in comparison with those of other countries, considerably greater increases would be possible. Corn appears to offer even greater potential. Current yields of about 0.8 metric ton are among the lowest in the world. There has been little change in yields during the past decade. The development of high yielding mildew tolerant varieties and accompanying improved production practices could easily increase corn yields by 50-100 percent. This could mean an increase in the agricultural product of about \$10 to \$20 million per year at current prices.

In terms of total production, sorghum, soybean, and other legume-seed crops are still of relatively little importance. In terms of providing an important element in the diet of the farming population, however, the legume-seed crops are of considerable importance.

Interests in these crops also stem from the expectation that these crops will play an important role as feed for obtaining higher yields of individual crops. Research in cropping systems could be equally effective in increasing total production and incomes, particularly of the small farmer with limited land areas, by making it possible to produce a succession of crops through the year which would make more effective use of land and labor.

Since three of the four centers contain colleges/ universities in their organization the long-term benefits of upgrading especially the library and the increased capabilities of the professors through the training programs will offer opportunities for much improved undergraduate and vocational technical high school education program on campus. With the proposed improvement in the staff members at the school involved it is assumed that they will be in the position to, in a few years, offer at least the M.S. level graduate training which will be vitally needed in the expansion of agricultural research under PCAR or in agricultural-related private research effort. Measuring the economical impact for the improved educational opportunities pose the same problem in accurate measurement as experienced with research and crop productivity. The Annex I illustrates, through membership on the three commodity committees -- corn and sorghum, rice and soybean, and other legumes, the long-range benefits of monies invested 10 to 20 years ago in human resource improvement. Their positions as developers of research priorities, evaluators and decision-making for agriculture and its growth are valuable assets for the Philippines worth much more than the original investment in advanced degrees.

Project Beneficiaries

The chief target of the proposed research program as stated, is to develop and improve the research capability of four major agricultural centers administered by PCAR. This is essentially an institutional building project including infrastructure, library additions and materials and finally a large amount of manpower training. While the chief purpose is to upgrade research capacity and efficiency, the centers were selected because of their major research efforts in the area of the food and feedgrain crops especially rice, corn, sorghum, soybeans and related legume-seed crops with corn and rice as the major crop.

a. Small Farmer

Benefits derived from this loan effort are expected to reach approximately 70 percent of the Filipino farmers involved in the production of corn and rice, tilling from 1 to 5 hectares of land. New technology will provide the small farmer with the opportunity to increase production on a limited land area. With the production per hectare both in rice and corn being among the lowest in

Southeast Asia it is conceivable that new technology could account for rather large gains during the life time of the project. It is believed that new more resistant corn varieties or more effective chemical controls could easily increase corn production by 50 percent within a few years. In addition to corn and rice farmer gaining from the research anticipated from the investment, the livestock farmers should receive potential advantages if crops like sorghum, soybeans, etc. can be profitably grown and replace some of the higher priced animal feed imports.

b. Small Farmer Profile

The average Filipino farmer has limited resources. Eighty percent have less than 5 hectares and over 40 percent have less than 2. Only about one-third own the land they are farming.

The average income of the 2.6 million rural farm families in 1971 was ₱2,463 (\$350). The typical small farmer sells from 1/4 to 1/2 of his total production, with the remainder going to feed his family of 5 to 7 children. He is productively employed about half of the year. His landholdings are generally too small to afford keeping a carabao (draft animal) so that he shares one with a neighbor. He lives in a very small partially weatherproof house without plumbing and electricity. He is often some distance from an all-weather road and public transportation. He consumes fewer than 2,000 calories a day and has 3-6 years of formal education.

Although poor, underemployed, underserved, and isolated, experience has shown that he will respond to economic opportunity and dedicated leadership.

c. Intermediaries

To reach the small farmer it is essential to train those who develop and extend the new technology. This project will provide higher educational opportunities for a total of 334 man-years of research training directed toward food and feed crops. The group of trained agricultural scientists will not only aid in solving present production problems but, also offer the added feature of being able to approach and solve problems that will surely arise within the next 10 to 20 years. Since three of the four centers under consideration include

colleges of agriculture, the benefit to be derived by high school, undergraduate and limited graduate student bodies (presently a total of 7,337 undergraduates, 4,493 Voc/Tech high schools and 20 M.S. degree students) from new infrastructure, laboratory and field equipment and especially improved library facilities will be important.

Since all researchers probably have some teaching assignments within the college, the improved staff training will probably have the greatest impact on the student and their long time service to the agricultural industry. To illustrate the impact, if all of the present undergraduates (over 7,000) actually entered agricultural extension work (using the ratio of one agent to 250 farmers) they could service the needs of slightly less than one-half of the present corn and rice farmers. This does indicate clearly that improved teaching in college by upper level staff can have a vital impact on agricultural activities of the future. It is doubtful that few, if any, inputs will produce greater returns on investment in agriculturally oriented nation than a pool of highly qualified group of agricultural scientists. This activity of training actually makes double use of money.

d. Institutional Development

As discussed previously, prior to the development of a National Agricultural Research Network, there were many wasteful organizational and management problems. With the organization of PCAR in 1972, much progress has been made in research management, including reorganization, accurate accounting of present facilities, assessment of manpower, review of research projects, well developed budgets and a much better understanding of research needs. The proposed research loan will enable PCAR to exert a strong leadership role in the administration and management of agriculture research resources. In this process, PCAR will be strengthened as an institution that can and will make a significant contribution to agriculture development.

3. Employment of Women in Agricultural Research

In an effort to determine the employment practices in relationship to women at the professional research level, a

review was made of the professional staff at the four research centers being included in the loan program. Table 10 indicates the results of the survey.

TABLE 9

Number of Professional Agricultural Staff
at the Four Agricultural Research Centers

Research Centers	Men	Women	Total
Central Luzon Center	72	15	87
Bicol Center	52	16	68
La Granja Center	32	13	45
Southern Mindanao Center	<u>32</u>	<u>5</u>	<u>37</u>
Total	<u>188</u>	<u>49</u>	<u>237</u>

Forty-nine professional women agriculturists, approximately 20 percent of total, are employed at the centers and their training includes disciplines as: plant, pathology, bio-chemistry, seed technology, food technology, etc. The PCAR Secretariat employs 23 women of a total staff of 49, or 46 percent. The directors of research at two centers, Central Luzon and Bicol, are women. The 29 National Commodity Research Teams under PCAR with a total membership of 378 outstanding agricultural scientists in the Philippines include 41 women scientists or about 11 percent of total.

Of the group of students now receiving PCAR support scholarships (59 awards -- 1974-75) for professional training, 21 or 35 percent are women. This includes one PhD, 14 M.S. candidates in agriculture, and six B.S. candidates of 15 awards for fisheries. The women are being trained in the following areas of disciplines: soil physics, food chemistry, pulp paper technology, marketing statistics, nutrition, family management, crop physiology, biometry, microbiology, meat processing, agri-business management, aquaculture, and fisheries.

Considering the positions now occupied and students in training, women appear to have an equal opportunity in any area or discipline in either agriculture or fisheries. It appears that selection for training or a research position

depend chiefly, if not totally, on qualifications, interest, and degree of training in the field. If present trends continue in the training area, the percent of women working in research under PCAR will surely increase.

4. Utilization of Research Results

The responsibility of transferring information obtained from research programs (on rice, corn, sorghum and soybeans or other legumes) to the farmers is the duty of the agricultural extension section of the Department of Agriculture, GOP. Through past performance this unit has demonstrated the ability to handle this important function in an adequate manner. This is not to say that the extension unit lacks room for improvement. Insufficient budgetary resources result in problems for the service through lack of facilities, low salaries resulting in a turnover of good staff personnel, inadequate transportation, etc.

The spread of high yielding rice varieties, illustrates the receptivity of the Filipino farmer to new and proven technology. New high yielding varieties spread rapidly or slowly in the Philippines, depending on (1) diffusion efforts by responsible government agencies, (2) reaction by farmers to the new variety, (3) how well a variety meets a "need" of the moment, and (4) how well the new variety performs on farmers fields.

At the time IR 26 was released in November 1973, it had all four factors in its favor. The Department of Agriculture actively encouraged farmers to use this variety to meet the acute epidemic of brown planthoppers and grassy stunt, virus disease, to which IR 26 is resistant. Two thousand one kilogram kits were distributed in seriously affected areas plus 6.6 metric tons of seed provided to the Bureau of Plant Industry (BPI) for multiplication followed by another 2.2 tons in March 1974. All LR 26 distributed to BPI went to selected seed growers and some to BPI stations -- selectively in the brown planthopper affected areas. As a result of this effort, within 12 months there was more than enough IR 26 seed to plant all of the 1975 dry season crop of 500,000 hectare.

In short, the Philippine Government has demonstrated the ability to spread the new technology to farmers. The farmers in turn reacted positively after reviewing the actual resistance of IR 26 to brown planthoppers and grassy stunt virus disease. This new variety met their need of the moment.

Finally, a superb dry season performance, yieldwise, of the variety made IR 26 an unqualified success only 15 months after its release by IRRI.

PCAR, as the center for the national program of agricultural forestry and fisheries research, has accepted a clear interest in seeing that research results move to the user as rapidly as possible. Through the PCAR outreach programs which provides extension specialist at the centers to convert information to more readily usable form, nationwide radio and T.V. coverage addressed to the farm population, improvement of communication between all government agricultural worker via seminars or workshops, and publications, etc., are a few of the ways this research unit hope to get greater use made of research results from its country wide research program.

Since research data from this project covering the food and feed grains, should be going to 70 percent or more of the farming population, the job of communications and the full utilization of findings becomes very important.

5. Outline of Philippine Government Plan Aimed at Keeping Researchers/Scientists in the Research Organization

In an effort to place the country on a sound scientific and technical footing, President Marcos directed his advisers to draw up programs designed to give Filipino savants added recognition and a larger role in national development efforts. Specifically, he has singled out the need for giving priority to a comprehensive review and a drastic revision of existing government policies that might have retarded the growth of science in the Philippines. Among these policies are: (a) low salary scales of Filipino scientists; (b) bureaucratic procedures that continue to hamper the conduct of research activities; and (c) incentives that would bring home from abroad Filipinos with advanced training to serve in the Philippine scientific research establishments as well as arrest the steady migration of Filipino scientists. Talented Filipinos have often remained in countries where they went to take advance studies. Local facilities for such level of training deserve to be strengthened to encourage such groups of Filipinos to remain at home.

PCAR, as the country's central authority for agricultural research, has drawn up the following general plan to keep researchers/scientists within the country's agricultural research system:

- a. PCAR scholars are required to sign a service contract to serve two years for every year or fraction thereof of scholarship.
- b. Work for the exemption of all researchers in agriculture, forestry, and fisheries from the qualifications in civil service eligibilities and the Wage Administration and Position Classification Office (WAPCO) standards (salary standardization for all government personnel).

The technical personnel of the U.P. College of Agriculture enjoy these exemptions and have a higher salary scale system than those in the ordinary bureaus/offices.

At present, the provision of honoraria (incentive pay) to researchers of PCAR and NSDB-financed research projects is helping to temporarily relieve the financial difficulties encountered by researchers.

- c. Work for a general increase in the salary scale of researchers/scientists. Spadework is underway on this.
- d. Work for increased opportunities for researchers to undertake post-doctoral short-term studies, as well as attendance in international scientific conferences.
- e. Strengthen staff housing facilities in the field stations.
- f. Improve library facilities in the station network as well as other ways of making technical information accessible to researchers.
- g. Through the initiative of PCAR, a workshop of some 100 research administrators, key budget officers, accounting officers and auditors of the Philippine government has formulated consensus on a comprehensive set of reforms in procedures for the budgeting, accounting and auditing of research funds aimed at bringing to the researcher his experimental materials and other logistics at the time and quantity needed.
- h. PCAR jointly with the National Science Development Board is about to implement a program of incentives to bring home from abroad Ph.D. degree holders in agriculture, forestry and fishery for assignment in the colleges and universities within the PCAR network of research centers and stations.

6. Policy

Since 1970, the Philippine Government has initiated numerous basic economic and social reforms to provide the policy and institutional environment for the attainment of economic and social goals. Between 1970 and the declaration of martial law in September, 1972, a number of significant reforms were undertaken. In early 1970, a foreign exchange reform involving a major devaluation of the peso and the adoption of a floating rate scheme was implemented. A stabilization program was also started as part of a stand-by arrangement with the International Monetary Fund. As pre-conditions for the formation of a Consultative Group in 1971, the Philippine Government complied with the terms of the stabilization program with the IMF, formulated a realistic four-year development plan, and took steps to increase its tax revenues. "Technocrats" were recruited into high-level posts in the government and the quality of development management was improved greatly as a consequence. Major studies and plans were also developed, particularly for the reorganization of government, and the restructuring of the tax and tariff, financial, and educational systems. These studies and plans laid the groundwork for the rapid implementation of many reforms initiated under martial law. The major reforms under martial law include the acceleration of the agrarian reform program; the reorganization of government; tax and tariff reforms to improve the investment climate; banking and financial reforms to help mobilize resources for development and to establish a more stable and better regulated financial structure; liberalization of regulations on foreign investments; reorientation of industrial policies towards export expansion, industrial dispersal, and labor intensification of production techniques; realignment of labor laws and policies to make them more employment-oriented; and the intensification of the population/family planning program.

A major focus of recent reforms has been the strengthening of the government's development planning and management capabilities. Under the ongoing government reorganization, the past disjointedness of planning activities has been remedied by merging the various existing agencies and ad hoc bodies involved in planning into a single planning agency, the National Economic and Development Authority (NEDA). The NEDA effectively links policy-making and planning to program and project implementation since its Board is presided over by the President and is composed of cabinet level officials involved in formulating and executing sectoral development activities. Program planning and budget planning and allocation have also been effectively linked with the creation of a Presidential Budget Coordination Committee (PBCC) in 1970. The PBCC has been retained as a permanent agency and has been attached to NEDA. The Committee continues to determine the

level and functional allocation of government expenditures. Also attached to NEDA is the Investment Coordination Committee which coordinates the investment policies of government financial institutions towards development priorities.

The ongoing reorganization also stresses the strengthening of the planning capacities at the department level. This should result in a pipeline of development projects reflecting sectoral objectives and should contribute to a more balanced and coordinated public investment mix. It is intended that the NEDA will operate in a review or control capability by setting technical standards, coordinating and integrating agency plans with overall economic and social priorities and reviewing financing implications in the light of competing needs.

Another important aim of the government reorganization is to decentralize the planning and implementation functions of the national government. Regional offices of national government line agencies are being established in each of the eleven administrative regions of the country. The planning and implementation activities of these regional offices will be coordinated by Regional Development Councils (RDCs) which are being established by the NEDA. Eight (8) RDCs have been set up and are now operational. The RDCs will also be responsible for the vertical coordination of plans and programs between the national government (through the regional offices of national agencies) and provincial governments. The planning and program execution capabilities of provincial governments are also being developed and upgraded. Most provinces now have a Provincial Development Staff which is responsible for the preparation of comprehensive provincial development plan that realistically reflects national priorities and inputs.

7. Financial Ability of GOP

Perspective of Development, 1975-1979

The Philippine enters the second half of the 1970s confronting serious economic and social problems. In the near term (1975 and possibly up to 1976), the economy has to contend with a continuing high inflation rate as well as a worsening of the balance of payments. Since mid-1973 consumer prices have been rising at an annual rate of more than 40 percent as a result of a substantial expansion in liquidity since the export boom began in 1973, and a number of cost-push factors, including the higher rate of world inflation, domestic food shortages, and the increased cost of petroleum. Monetary and fiscal policies have aimed at absorbing excessive liquidity and during the second half of 1974, the rate of inflation began to slacken. The annual rate of inflation

dropped to about 29 percent by the end of 1974. Assuming no new major upheavals in key commodity markets, the rate of price inflation should moderate further in 1975. Even if this were to happen, it is likely that inflation would still remain much above the secular trend and would continue to have unfavorable welfare implications especially for urban wage earners who have been most affected by the high rate of inflation since 1970.

In its November 1974 report on the Philippine economy, the IBRD projected a worsening of the balance of payments situation for the Philippines over the next two years. A current account deficit of \$650 million and \$1,070 million is projected for 1975 and 1976, respectively, compared to an estimated deficit of \$450 million in 1974. Given its present debt service ratio of about 15 percent, the economy has wide latitude for financing projected current account deficits through external borrowing. However, substantial amounts of additional external debt must be on concessional terms if a reversal to an excessive debt burden is to be avoided (see also "External Assistance Requirements and Sources").

Over the medium-term horizon and quite possibly beyond, the economy confronts the problems of reducing unemployment, and underemployment and improving the highly skewed income distribution. While employment opportunities have expanded appreciably over the last two years, unemployment and underemployment continue to be widespread. Aside from mopping up current unemployment and underemployment, the employment challenge for the economy during 1975-1979 is to absorb about 2 million new entrants to the labor force.

In the last two years, the Philippine economy expanded at rates above the secular growth trend. In 1973, GNP is estimated to have expanded by 9.8 percent. A 5-6 percent growth was estimated for 1974. The Philippine Government is committed to maintaining the growth momentum developed in the last two years and is pressing ahead with plans for a series of major agricultural, infrastructural, and industrial investments in order to lay the foundation for sustained growth in future years. Given the political will to maintain the growth momentum and the much improved policy environment, and provided that resource requirements indicated in the succeeding section can be met, "medium level" growth at 7 percent per year as targeted is feasible. This is higher than the average historical experience but lower than the Philippine's long-run potential, given her favorable resource endowments and human resources.

Growth during 1975-1979 is expected to broadly distribute among various sectors, particularly agriculture, industry, and

infrastructure. It should be possible to expand agriculture by a 4-5 percent in 1975 and probably maintain about the same rate in subsequent years. Greater dynamism can be expected from domestic-oriented agriculture as a result of land reform and other institutional changes, as well as the continued expansion in rural infrastructure, credit and other supporting services.

The expansion of export agriculture and its contribution to the balance of payments depends heavily on overseas market conditions. The demand prospects for sugar over the medium term appear bright. The demand for coconut and wood products has been affected in the near term by the slowdown in major foreign markets, and a recovery in demand by 1975-76 will depend on how quickly major export markets recover from their present slowdown. The conservation measures on forest resources and the government's program for phasing out log exports and increasing domestic processing of wood products, are expected to shift the export pattern of wood products from logs to processed products.

Favorable industrial performance over the next five years will depend on sustained agricultural growth, an expansion of manufactured exports, and success in the selective development of intermediate and capital goods industries. Sustained agricultural growth in the future will ensure a high level of domestic demand for manufactures. Exports of manufactures are being given incentives and have consequently increased greatly over the last 2 years. Continued growth is expected as major markets recover from their present slowdown. Some progress in the development of selected intermediate and capital goods industries will be achieved due to government incentives and expansion in domestic markets.

As indicated in the succeeding section, government spending for infrastructure is programmed to expand rapidly over the next five years in order to meet development requirements. During the next year or so an increase in infrastructure spending is also being planned to take up the slack in demand induced by the high inflation rate as well as the slowdown in the economy's major export markets.

Limited gains can be achieved in reducing unemployment and underemployment over the next five years but it is highly unlikely that the unemployment rate can be reduced to 3 percent by 1977, as targeted in the Philippine Government's Four Year Development Plan for 1974-1977. Future patterns of labor absorption are not expected to vary much from those of the past. The services sector is likely to absorb much of the increase in labor force. In agriculture, employment will be generated through more intensive land use made possible through irrigation, and through an expansion in cultivated area. Additional

employment opportunities will also be provided in industry through an expansion in production and use of labor-intensive techniques.

Improvements in income distribution can be expected over the next five years through land reform which immediately benefits tenants through reduced amortization payments, and also assures that agricultural improvements such as irrigation, credit, etc. accrue to the benefit of small farmers. Improvements in income distribution are also expected through present fiscal policies and programs such as an expanded tax effort (achieved partly by increased direct tax collection) and an expanded provision of social services. Income distribution is also expected to be improved through increased employment.

External Assistance Requirements and Sources

In its November 1974 review of the Philippine economy, the IBRD projected that the economy's foreign exchange requirements will amount to \$2,340 million for 1975 and 1976. The projected foreign exchange gap was based on the following major assumptions with respect to trade: (a) the deterioration in the external terms of trade which started in mid-1974 would continue over the next two years; and (b) import growth would be consistent with the investment and growth requirements of the Philippine economy. Under these assumptions, the trade deficit is projected to increase from an estimated \$680 million in 1974 to \$820 million and \$1,250 million in 1975 and 1976, respectively. Receipts from merchandise exports are projected to increase by about 30 percent in the next two years while import payments are projected to rise by almost 40 percent, including a 30 percent rise in prices. In real terms, exports are projected to grow more rapidly than imports over 1975-76, but this gain will be more than offset by a projected cumulative decline in the external terms of trade of about 23 percent. This would bring the terms of trade back to the level that prevailed in 1972, thus wiping out the gains made in the recent boom in export prices.

The current account deficit is projected to amount to \$650 million and \$1,070 million in 1975 and in 1976, respectively. In each of these years, loan repayments would amount to \$310 million annually. The Philippine external capital requirements for 1975-76 thus amount to \$2,340 million.

The IBRD projects that of the required external capital, about \$190 million is expected to be provided from net direct foreign investment. An enlarged inflow of foreign equity investment is forecast because of much-improved prospects for private foreign investment. Short-term trade credit is projected to provide about \$480 million. The greater use of short-term trade finance is consistent with the much higher level of import

payments and does not represent an unduly large accumulation of short-term private debt. About \$800 million is expected to come from disbursements or suppliers' credits and other medium- and long-term commercial loans to the private and public sectors. About \$280 million is projected to come from disbursements of concessional project assistance from Consultative Group Members. The balance of \$590 million (\$180 million in 1975 and \$410 million in 1976) would have to be provided from other borrowings.

The projected \$590 million gap could be financed by Central Bank short- and medium-term borrowings. This might even increase gross international reserves, but would reduce net reserves to a negligible level by 1976. This would leave the Philippines with very little room for maneuver if the terms of the trade continued to decline after 1976. Besides the possibility of very quickly having negative net reserves, additional short-term borrowing could result in having to roll over a large short-term debt, or to the extent that medium term borrowing is arranged on commercial terms, a medium-term debt management problem could occur. In view of these adverse implications for the reserve position and external debt management, the IBRD recommended that excessive recourse to short- and medium-term borrowing by the banking system be avoided.

As an alternative to short- and medium-term borrowings, the IBRD suggested the provision of an appropriate combination of quick disbursing commodity assistance with long maturities and medium- and long-term loans to meet projected foreign exchange shortfalls. A combination of commodity assistance from Consultative Group members (about \$75 million) and possible assistance from an IMF special oil facility would suffice to meet import requirements in 1975 and maintain at the same time a reasonable external debt profile. The much larger shortfall in foreign exchange availabilities projected for 1976 would have to be financed by a combination of commodity assistance (about \$75 million) and medium- and long-term loans to avoid an undue increase in debt burden in later years. The medium- and long-term loans would be used to finance capital goods imports which are projected to reach \$12. billion in 1976.

The IBRD concluded that if the projected inflows on the capital account are forthcoming, and if the projected shortfalls in foreign exchange availabilities are financed in the manner suggested, management of the external debt and debt servicing would not present serious problems. The IBRD projects that external medium- and long-term debt outstanding would rise from \$2 billion this year to about \$3 billion by 1976. The ratio of debt service payments to exports would fall from 15 percent this year to about 13 percent in 1976.

It would then grow somewhat mainly as a result of the projected increase in public and private commercial borrowing to about 16-17 percent by the latter part of the 1970s. This assumes that external terms of trade would stabilize beyond 1976.

8. Administrative Ability

As discussed under the section on PCAR p. 12 the Philippine Government has the administrative system established to plan, coordinate, and implement a wide range of agriculture research projects. It is the opinion of the team members, that PCAR has the administrative ability to fully utilize the various consultants, administer the funds for construction and commodities effectively and to select the type of manpower to be trained for the year ahead.

C. Project Implementation

1. Project Requirements

a. Resources and Activities

The Government of the Philippines (GOP) through the Philippine Council for Agricultural Research (PCAR), a network of 14 research centers and 56 cooperating or satellite stations which have been established in the aggregate, provides a resource base capable of making meaningful contributions to Philippine agriculture. Through PCAR significant progress has been made in agriculture research through reorganization and national planning, studying and reviewing the future research need by commodity groups, reviewing and recording the requirements for updating and modernizing infrastructure, research laboratory equipment, library holding, staff housing, etc. Also, a complete study has been made of staff training requirements both in-country and international.

This project has been developed to assist in improving the capability for agricultural research at four Research Centers by providing, in part, facilities, laboratory and field equipment and funds for manpower development. The four centers have major responsibilities in rice, corn, sorghum, and legume research which is vital to the economy and well-being of the small farmer families throughout the Philippines.

b. International Research Consultants

The requirement for international research advisory

assistance for this project is by comparison with similar loans very minimal. This results from the fact that PCAR has organized some outstanding and highly qualified agricultural scientists into a wide range of national commodity research teams. The team duties include, along with research directors and the PCAR secretariat, review of the commodity situation, pinpoint research in problem areas, review work underway, establishment of research priorities and evaluate research progress and performance. Technical services needed during the first three years of the program and funded under the loan will consist of six months (2 months per year) of a high level research administrator to assist the Director General of PCAR and the Station Superintendent and/or center Research Directors on research programming, direction and management of research, and training. Short time technical (66 man/month) advisory services on specific research problems relating to the basic food and feed grains will be provided on continuous and intermittent basis during a five year period. Table 10 provides information regarding technical assistance. USAID will provide on a grant basis, a direct hire Project Manager to assist with implementation of this loan as well as other research related activities.

c. Manpower Development

One of the serious problems confronting PCAR and the network of Agricultural Research Centers for the present and very immediate future, is the general lack of sufficiently well trained research staff in most, if not, all major disciplines. The staff development aspect of the project will supplement on-going manpower development programs and will rely to the maximum extent feasible on local training institutions. Approximately 20 percent of the total loan funds is allocated for manpower developments. Of this amount slightly less than one-half will contribute to the scholarship fund which is administered by PCAR. In cooperation with the graduate school of the University of the Philippines at Los Banos (UPLB), the training funds will be used to sponsor M.S. and PhD level scholars. Some training may be carried on at other colleges in the University of the Philippines, for example, the College of Business Administration. It is also expected that Central Luzon State University (CLSU) will be in the position in the near future to expand its M.S. degree programs.

- (1) In-country Training. The estimated needs for in-country M.S. and PhD level training for the

staff who are working or will work at the four centers under this project are presented in Table 11. The proposed training program includes funds for 100 M.S. and 30 PhD degrees. Based upon information from the Graduate School at UPLB and PCAR officials the estimated cost per M.S. and PhD degree is 21,000 (\$3,000) and 32,000 (\$4,600) pesos, respectively. Most of the research staff receiving the opportunity to participate in the graduate program will continue to receive their regular salary from the budget of their respective Agricultural Research Center.

- (2) International Training. Three specific types of international training have been proposed under the program to improve the capability of agricultural researchers in the four centers selected for partial funding and the members of the teaching and research staff at the UPLB College of Agriculture.

Degree training in foreign institutions will be limited to PhD level and in field wherein local institutional capability is limited. Some of the eight positions will be used to upgrade and/or to maintain the high quality of the UPLB faculty which has the chief task of supplying the agricultural research network operating through PCAR with over 300 PhD and 900 M.S. graduates within a 10 year period. The key for future growth and development of agriculture and the improved socio-economic status of the thousands of farm families throughout the Philippines, depends greatly on the capable graduates entering positions involving research, extension and agricultural industries in the country. For the same reasons indicated above, 20 positions of the post graduate type, 6-12 months, have been established under the loan for recent Philippine graduates completing PhD degrees, professors from UPLB and the research staff from the four research centers for obtaining upgrading or refresher experience. This will offer to the participants the opportunity to broaden and expand their knowledge and research breadth in their respective disciplines under a new environment where a different approach or point of view could exist.

TABLE 11

In-country Training of Research Staff from
Four Agricultural Research Centers
(2 years for M.S.; 3 years for PhD)

	Years					Total No.	Total Man/ Months	Cost \$ x 1000
	1	2	3	4	5			
<u>Crop Improvement</u>								
M.S.	2	2	3	3		10	240	30
PhD	1	1	1			3	180	14
<u>Crop Protection</u>								
M.S.	5	4	5	4		18	432	54
PhD	1	3	2			6	216	28
<u>Crop Prod. Mgt.</u>								
M.S.	2	4	4	3		13	312	39
PhD	-	3	3			6	216	28
<u>Economics</u>								
M.S.	4	3	4	3		14	336	42
PhD	1	1	1			3	108	14
<u>Plant Physiology</u>								
M.S.	2	2	3	2		9	216	27
PhD	-	1	2			3	108	14
<u>Crop Utilization</u>								
M.S.	3	5	3	3		14	336	42
PhD	1	1	1			3	108	14
<u>Soil and Water</u>								
M.S.	3	3	2	4		12	288	36
PhD	1	2	1			4	144	19
<u>Rural Sociology</u>								
M.S.	2	3	3	2		10	240	30
PhD	-	1	1			<u>2</u>	<u>72</u>	<u>9</u>
<u>TOTAL</u>								
M.S.						100	2400	300
PhD						30	1080	140

The research experience under this phase of the international program may be gained at U.S. universities, international research institutes as CYMMIT, IRRI, or other public or private research units. Provisions are, also made for defraying the cost of researchers and administrators from the four centers, UPLB campus and PCAR for attending international seminars, workshops combined with short term observational study at key institutions within or outside the region. Table 12 provides more information in regards to special areas or discipline in which training is anticipated.

d. Equipment, Library Additions and Professional Journals

Approximately 28 percent of the loan proceeds will be used for offshore procurement of laboratory equipment and materials, field machinery, portable power units for laboratories, reference books, professional journals in the plant science field, etc. Annex K lists the most needed library materials and equipment at the four agricultural research centers with an estimated cost of each item. Also, the list contains some special equipment designated for the PCAR secretariat. This equipment, including communication items, reproduction equipment, computer software, etc., will improve communications, assist with and upgrade library services (making copies of professional journal articles requested by researchers from the Station Network) now in operation among the several research centers, and provide computer service in project funding, equipment inventories, data-bank service, to researchers and general research administrators. The equipment will contribute to the efficient management of national network of agriculture research operations. Throughout the world the depository of knowledge in libraries has proven to be of utmost importance in any educational or research endeavor. The availability of new up-to-date reference books and professional journals at the four agricultural research centers is totally inadequate for the purpose of instruction and research. As might be expected a list of books and journals would be varied because of the many disciplines involved in the investigations of rice, corn, sorghum, soybeans and other legumes and cropping systems. For example, textbooks and journals would be needed in the areas of: plant breeding, genetics, plant pathology, entomology, plant culture, statistics, economics, sociology, marketing, weed control, soil and water, irrigation, handling, storage and processing of grain, agricultural engineering, project design, plant physiology, bio-chemistry, food science, etc.

TABLE 12

International Training of Research and Administrative Staff

I. PhD Training Program (Three Years)						Total	Total	Cost Dollars
	1	2	3	4	5	Number	Man/Months	x 1000
1. Plant Physiology	1					1	36	30
2. Soil and Water	1					1	36	30
3. Food Processing & Handling		1				1	36	30
4. Ag. Economics	1		1			2	72	60
5. Statistics		1				1	36	30
6. Microbiology	1					1	36	30
7. Biochemistry		1				1	36	30
Total						8	288	240
II. <u>Upgrading/Refresher for Staff</u> (6-12 Months - Average 9 Mos.)								
1. Crop Improvement		1	1	1		3	27	30
2. Crop Prod. Management			1	1		2	18	20
3. Crop Protection		1		1	1	3	27	30
4. Crop Utilization		1		1		2	18	20
5. Economics	1		1			2	18	20
6. Rural Sociology			1		1	2	18	20
7. Soil & Water		1		1		2	18	20
8. Crop Physiology			1	1		2	18	20
9. Administration	1		1			2	18	20
Total						20	180	200
III. <u>Scientific Conf. and Short Study/Observation 3-6 weeks</u>								
1. Crop Improvement	2	2	2	1	1	8	8	16
2. Crop Prod. Mgt.	1	1	2	1	1	6	6	12
3. Crop Protection	1	2	2	1	2	8	8	
4. Crop Utilization	1	2	2	1	2	8	8	
5. Economics	1	2	1	1	2	7	7	14
6. Rural Sociology	1	1	1	2	0	5	5	10
7. Water & Soil	1	2	2	1	1	7	7	18
8. Crop Physiology	1	1	1	1	0	4	4	8
9. Administration	1	2	2	1	1	7	7	14
Total						60	60	120
Grand Total							528	560

e. **Infrastructure**

The largest share (45 percent) of the loan proceeds has been programmed to be used for physical infrastructure - research laboratories, service buildings, staff housing and site development including utilities. In Table 8 previously presented shows the total requirements in terms of pesos and/or dollars required to meet the building items determined as necessary for making the units fully functional as research centers. Also Table 13 list the infrastructure selected for funding at each of the centers.

As will be noted in reviewing the infrastructure needs, over 26 percent of the requirements from the four centers for infrastructure is in staff housing. This is considered absolutely essential, given the present salary schedule to attract and retain qualified researchers at most of the outlying centers or satellite stations.

2. **Estimated Cost of the Project**

The program developed by the GOP for improvement of facilities and the expansion of a more efficient and effective research program at the four centers under consideration proposes expenditures of \$1.937 and \$8.670 millions respectively for research equipment and infrastructure over a five year period. A large proportion of the projected expenditure will occur during the first three years of the project, i.e. \$1.70 and \$5.00 millions for equipment and infrastructure respectively. The entire cost of operations including personnel salaries for the four centers which is projected to amount to about \$11.5 million for the first five years will be borne by the GOP. Table 1 summarizes the total project costs at the four research centers for a five year period and the expected U.S. contributions as a percentage of the total costs. Table 2 summarizes the U.S. contributions by year, areas of support, local currency costs and foreign exchange cost. The U.S. portion of expenditures for the total program for the four centers will be approximately 26 and 60 percent for infrastructure and equipment, respectively. During the first three years (the period for which U.S. loan proceeds are programmed) the U.S. contribution will be 45 and 64 percent, respectively, for infrastructure and equipment.

An allocation of \$250,000 is made for covering the foreign exchange cost of books, journals, equipment and materials for the scientific literature services of the Centers and PCAR. This service in addition to book, based largely on the libraries of UPLB, SEARCA and IRRI, is designed to provide personnel away from the Los Banos complex with a means of keeping up

TABLE 13

Infrastructure Selected for Funding at the Four Agricultural Research Centers

Research Centers	Infrastructure	Cost (US dollars)
1. <u>Central Luzon Center</u>		
Central Luzon State Univ.	1 Crop Research Laboratory	\$ 240,000
	10 Duplex Staff houses (20 families)	160,000
	Site development-Experimental farm	25,000
Maligaya Rice & Training Center	1 Greenhouse (renovation)	10,000
	2 Duplex Staff houses (4 families)	<u>32,000</u>
	Sub-Total	\$ 467,000
2. <u>Bicol Center</u>		
Bicol Rice & Corn Experimental Station	1 Crop Research Laboratory	240,000
	1 Greenhouse	22,000
	1 Screenhouse	9,500
	4 Duplex Staff Houses (8 families)	64,000
	Site development-Experimental farm	25,000
Camarines Sur Agr. College	1 Soil & Water Research Center	160,000
	4 Duplex Staff Houses (8 families)	64,000
	Site development-Experimental farm	<u>25,000</u>
	Sub-Total	\$ 609,500
3. <u>La Granja Center</u>		
La Granja Experimental Station	1 Crop Research Laboratory	240,000
	1 Greenhouse	22,000
	1 Screenhouse	9,500
	1 Service Building	75,000
	10 Duplex houses (20 families)	160,000
	Site development-Water supply	20,000
	Site development-Experimental farm	<u>30,000</u>
		\$ 556,500
4. <u>So. Mindanao Center</u>		
Mindanao Institute of Technology	1 Crop Research Laboratory	\$ 230,000
	2 Greenhouses	20,000
	1 Screenhouse	9,500
	1 Grain Processing Building	40,000
	1 Grain Storage Building	10,000
	1 Seed room - air controlled	10,000
	1 Insectarium	3,000
	1 Pathologium	3,000
	2 Field Buildings	36,500
	10 Duplex Staff houses (20 families)	160,000
	Site development-Exp. far 60 ha.	50,000
	Site development - Utilities	<u>25,000</u>
		Sub-Total
	TOTAL	<u>\$2,240,000</u>

with the more important work being published and to provide direct access to publication of special relevance to their' particular research.

The U.S. loan funds will cover all costs (approximately \$560,000) for foreign training. A U.S. contribution to the PCAR scholarship fund of approximately \$440,000 will provide for about 290 man years of training in local institutions, principally UPLB, or 44 percent of the projected degree training to be financed under the loan. At the present time the GOP through various agency scholarship funds is providing scholarships for 95 man years of training per year (1974-75) of which 59 are provided by the PCAR scholarship fund. Other sources of support for training in local institutions are provided by SEARCA and the American Development Council (ADC).

Technical advisory services for the project to be provided by the AID loan will cost approximately \$350,000 or approximately 7 man years service covering administrative and specialist in a number of discipline.

Approximately 45 percent of the U.S. input will represent foreign exchange costs.

3. Project Implementation

a. General

The project will be implemented within the framework of the existing Philippine institutional structure under the leadership and direction of the Philippine Council for Agricultural Research (PCAR). The director general of PCAR will be the project leader and will provide operational direction to the project. Policy and technical direction will be provided through the PCAR organization with the Governing Council providing broad policy direction and setting priorities and commodity discipline research teams for establishing priorities and technical research leadership within given commodities or disciplines.

The Governing Council, chaired by the Chairman of the National Science Development Board (NSDB) with the Secretary of Agriculture as Vice-Chairman, assures a close linkage between agricultural research and the National Science structure. The presence on the Council of a representative from the National Economic and Development Authority (NEDA) and the Budget Commission insures relevance to national development goals.

The formulation of commodity/discipline research priorities and programs is the responsibility of

research teams composed of key scientific personnel from the several government, educational, and private entities, working under the direction and leadership of one of the PCAR directors. Cross commodity/discipline problems are dealt with by joint study and discussion among the concerned members.

The proposals and recommendations of the commodity teams, after synthesis by the PCAR Secretariat, are reviewed by the PCAR Technical Program Planning and Review Board. The latter makes recommendations to the Governing Council.

All research projects in agriculture financed from public funds are reviewed on an annual basis (see portion on evaluation). The Budget Commission allocates funds for projects approved by PCAR.

In addition to exercising control over public financing of research, PCAR has special budget allocations it administers directly in support of research through grants-in-aid for specific research projects and a scholarship fund for manpower development. These mechanisms provide PCAR effective tools for exercising direction over the entire network as well as a considerable control over operations.

The allocation of loan funds will be administered by PCAR within limitations established in the approved budget plan. The research activities will be manned by Philippine personnel with advice from U.S. technical personnel. All operational costs of the research program will be covered by GOP budgets either through the Departments of Agriculture and Natural Resources agency budgets, commodity institutes, colleges, private centers within the PCAR network, or through PCAR administered budgets.

The AID loan financed project is programmed to have a life span of five years. However, the allocations for infrastructure development and commodity procurement are expected to be fully utilized within the first three years. It was the consensus of PCAR, the Mission and the consultants that the manpower development program and the technical services aspect of the project would be most useful to progress and effectiveness of the proposal using a five-year period. Most of the manpower development program is for graduate study at the M.S. and PhD levels requiring two to three years of study. Also, much less stress and pressure will occur on the graduate school at UPLB and on the four research centers in an effort to maintain quality and the program underway if a five-year period is utilized. There appears to be no problem in making effective use of infrastructure type input in this program during a three-year period.

b. Technical Assistance

The assignment of a USAID direct hire Agricultural Project Manager (Research) is the first priority upon the activation of a possible loan. This input would be effective in determining short-time consultant needs and availability, assist with programming international training needs, provide assistance in preparing commodity needs, provide assistance in preparing lists especially library additions, etc.

While it may be possible for PCAR to recruit directly the specialists and short-term consultants, PCAR may find it advantageous to contract with some university, university consortium or non-profit entity such as Institute of International Education (IIE) to recruit, hire, and among other things provide for continuation of fringe benefits as retirement, insurance, etc. or handle travel arrangements. In any event, it is anticipated that all such advisors will be directly contracted to the PCAR rather than the USAID Mission. The Mission will be available to provide suggestions on possible contracting units, available, staff, etc., from the available network in the U.S. or around the world.

c. Manpower Training

(1) Local Training. The funds will be made available to PCAR for granting scholarship for study in local institutions (UPLB chiefly) at the M.S. and Ph.D. level in various fields and/or discipline. With notable personnel gaps and relative to the needs of the basic food and feed crops research at the four centers, PCAR will phase the degree work best suited to programs in operation, select recipients, and prepare needed materials for acceptance to the UPLB graduate schools. Inasmuch as local training costs are strictly local currency in nature, it is planned to provide the requested assistance on an after-the-fact reimbursement basis by means of crediting a dollar Special Letter of Credit (SLC) in the U.S. for procurement of U.S. commodities. To assure adequate control and proper expenditure of funds, it is proposed that the GOP/PCAR advance funds for the scholarships that are agreed upon in regard to number and amount. Upon certification by the graduate schools involved of satisfactory completion of an academic year the SLC can be credited accordingly.

- (2) Offshore Training. Degree training in foreign institutions will be limited to fields or disciplines of critical shortage and for which local training facilities are also limited (crop physiology, soils and water management, macro-economics, statistics, and food science) and will be limited to the PhD and post-graduate levels. Such training will be planned so as to reduce the time in a foreign institution to a minimum and provide that thesis research and other research be conducted on problems of immediate importance to Philippine agriculture especially on the food and feedgrain crops. It is envisioned that the post-graduate or refresher type training can take place at universities and/or other research units as CYMMIT or private research institutes. In the selection of recipients for this phase of training the research and teaching professors at UPLB will be given full consideration. It is vital to the project that the high quality and capable faculty of UPLB be enhanced since the bulk of graduate degree training for the four research centers will be handled at this higher educational unit in the Philippines.

Most of the external training will be on a short-term basis (less than one month to nine months) for technical upgrading and for broadening personnel perspectives. Standard AID PIO/P financing and disbursement procedures will be utilized for off-shore training activities.

d. Commodity Procurement

The procurement of offshore commodities will be accomplished in accordance with AID Capital Project Guidelines. The capability of the local Education Project Implementation Task Force (EDPITAF) has been investigated in regard to commodity procurement and it has the abilities and background to handle this task under the project in accordance with AID capital project regulations. This entity was established specifically for procurement of educational materials under the International Bank for Reconstruction and Development (IBRD) loan (approximately \$35 million in three phases) for development of college level education.

As an alternative the GOP could consider a contractual arrangement with some U.S. entity to carry out the procurement as a university or IIE. Commodity procurement will be limited to the U.S. and AID Code 941 countries. No procurement of local commodities with loan proceeds is contemplated. Standard AID Letter of

Commitment (L/Com) financing procedures will be utilized for offshore commodity procurement.

e. Infrastructure Construction

Local construction of buildings, land development and improvements, water and power systems will be financed, shown in Table 2 on a fixed cost reimbursable basis by means of a tied dollar SLC in the U.S. Reimbursement of construction cost will be made only for completed and accepted structures for which prior agreement has been reached as to adequacy of design and cost estimates. In no case shall AID reimbursement exceed 75 percent of the previously agreed total construction costs.

PCAR is presently negotiating a contractual arrangement with the UPLB Department of Agricultural Engineering for planning and architectural design for facilities layouts. (The Department of Agricultural Engineering, UP College of Architecture and UP College of Engineering are forming a consortium unit.) The Department of Agricultural Engineering will supervise construction. Considering the consortium, it is believed that a contractual arrangement with the Department of Agricultural Engineering is a satisfactory contracting unit for performing the infrastructure phase of the project. PCAR indicates if this arrangement cannot be finalized satisfactorily with the entities described that an arrangement will be made with a qualified local private construction firm to handle this phase of the loan. See Table 14 for a timetable covering Infrastructure and Equipment Development.

TABLE 14

Timetable for Infrastructure and Equipment Delivery

TIMETABLE OF INFRASTRUCTURE AND EQUIPMENT DEVELOPMENT														
COMMODITY	YEAR 1				YEAR 2				YEAR 3					
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th		
① INFRASTRUCTURE	PLANNING													
	PLANS & SPECIFICATIONS													
	BIDS & AWARDS													
	CONSTRUCTION													
② LABORATORY AND FIELD RESEARCH EQUIPMENT AND MACHINERY	PLANNING & SPECIFICATIONS													
	BIDS & AWARDS													
	DELIVERY, INSPECTION AND INSTALLATION													

4. Evaluation

PCAR has developed a system, including formats for monitoring progress and evaluation of research projects on an annual basis. This evaluation is scheduled so that all projects are evaluated just before budget recommendations are made for the next fiscal year.

Evaluation is carried out by a team consisting of the PCAR Research Director of the commodity/discipline concerned or the commodity/team leader, the program specialist and one or more representatives of the implementing and/or funding agency. The evaluation is made on the spot with participation of research station personnel as may be appropriate.

The projects are evaluated with respect to: (a) technical performance in terms of work schedules and contribution to project purpose, (b) financial and administrative aspects, and (c) project priority and continuing relevance to research goals. The review team may make recommendations for changes in approach, termination, continuation expansion or reduction in scope.

This system of evaluation is believed to be adequate for AID purposes insofar as it evaluates actual performance of research undertakings. USAID through the project manager will participate in a limited number of evaluations as a further check on the system. For purposes of evaluating performance in the development of research facilities and procurement of equipment and materials, the records of procurement and delivery will provide a basis for evaluation of performance against a predetermined schedule. Since construction of facilities will be financed through reimbursement for completed structures and/or installations, the requirements for evaluation will be minimal.

With respect to the training component, the records of student performance from the Graduate Dean's Office of the training university and subsequent assignment will provide an adequate base for evaluation.

A logical framework outline has been prepared for the project to assist in evaluation.

5. The PCAR Research Monitoring Mechanism Guidelines

A uniform mechanism to follow up the progress of on-going research projects/programs is a must in any efficient

research system. The following guidelines have been formulated for the guidance of all concerned relative to the standard procedures of the PCAR Research Monitoring Mechanism.

a. Up-dating of all On-going Projects

- (1) Progress reports on all on-going projects shall be submitted not later than October 15 of each year. A report must consist, among other things, title and location of the project, the accomplishment and financial status of the project, problems encountered, and recommendation in relation to problems encountered.
- (2) Annual reports shall also be submitted not later than May 31 of each year. In addition to data required in the semi-annual report, these shall also contain abstracts or highlights of the research results, as well as requests for extension of the projects together with the financial requirement for the ensuing fiscal year or part thereof, as the case may be.
- (3) Terminal report shall be submitted to PCAR not later than two months after completion of the experiment/study.
- (4) New research proposals shall be submitted not later than December 20 of each year in order to qualify for possible inclusion in the ensuing fiscal year's budget.

b. Field Visitation of the Research Projects by PCAR Evaluation Team

- (1) Bureau and agency heads shall be informed of the schedule of field/laboratory evaluation of on-going projects at least two weeks in advance and they shall also designate their representative (s) to the PCAR Evaluation Team.
- (2) Actual field visits, by the Evaluation Teams will complement the progress reports submitted. These will verify the status of the projects.

- (3) An Evaluation Team is composed of the (a) Research Director concerned and/or the Commodity Research Team Leader, (b) the Program Specialist and (c) representative(s) of the implementing and/or funding agency, preferably a team member. Thus, an evaluation team is composed of at least three members. The agency shall shoulder the expenses of its representatives in the team.
- (4) All field evaluation shall be completed on or before November 30 of each year.
- (5) The Standard Evaluation Format shall be used for uniformity and easier collation of evaluation data.

c. Points to be Evaluated

Using the corresponding PARS Form No. 1 (Research Proposal) of on-going projects, the following shall be verified.

- (1) Competence of the research leader or proponent to undertake the project.
- (2) Correctness of the experimental design and methodology. If design is not appropriate considering topography, vegetation, exposure, etc. determine how it could be corrected to enable experiment to give desired information.
- (3) Progress versus the timetable indicated in the approved project proposal.
- (4) Actual financial support received by project versus approved project budget.
- (5) Adequacy of supplies, materials, equipment versus project timetable of operations.
- (6) Raw data keeping, frequency of data collection, etc.
- (7) Problems/difficulties, if any, encountered in project implementation.
- (8) For inaccessible projects, examine evidence of existence of actual research such as (a) establishment reports, (b) data so far gathered, (c) evidence of expenditures.

- (9) Determine what remains to be done in such projects as guide in ascertaining future plan for the project.

d. Submission of Evaluation Report

- (1) Within a week after completion of field evaluation, the evaluation team shall submit its report to the Research Division Director concerned with a copy furnished to the Office of the Director General.
- (2) The Research Director and Commodity Research Team Leader concerned shall evaluate the field reports, and submit to the PCAR Director General the required recommendations.
- (3) All project recommendations shall be in the hands of the Director General not later than December 20 of each year.

e. Recommendations After the Evaluation

- (1) Continuance of the project if found to be according to the project plan.
- (2) Modification of the project design to improve the chances of obtaining more significant and useful information.
- (3) Modification in the project budget i.e. downward or upward depending on its optimum requirement.
- (4) Transferring the project to another place or agency. Lack of competent personnel and/or adequate facilities for the proper implementation of the project could lead to this action.
- (5) Termination of the research project if found to be out of the research program, or of low priority, or a duplication of other researchers.

CHECKLIST OF STATUTORY CRITERIABASIC AUTHORITY

1. FAA 103; 104; 105;
106; & 107. Is loan being made
- a. for agriculture, rural development or nutrition;
 - b. for population planning or health;
- N.A.
- c. for education, public administration; or human resources development;
 - d. to solve economic and social development problems in fields such as transportation, power, industry, urban development, and export development;
 - e. in support of the general economy of the recipient country or for development programs conducted by private or international organizations.

N.A.

COUNTRY PERFORMANCEProgress Towards Country Goals

2. FAA § 201 (b) (5), (7) & (8); § 208

A. Describe extent to which country is:

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| <p>(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.</p> | <p>(1) Food production is top priority of the Philippine Government with goal of achieving self-sufficiency in rice and corn and accelerated production of livestock, poultry, fish, fruits and vegetables. Plans for expanded warehousing and distribution of the increased output of grains are being prepared and carried out with help from IBRD loan. The proposed project will partially contribute to this goal through support to irrigation, refrigeration, rice processing facilities, etc.</p> |
|--|---|

(2) Creating a favorable climate for foreign and domestic private enterprise and investment.

See FAA 620(e)(1) Item No. 4, below.

(3) Increasing the public's role in the developmental process.

(3) The four-year agriculture program is increasing the productive capability of Philippine farmers. The Department for Local Government and Community Development carries out programs at the barrio (village) level throughout the Philippines. A Decentralization Act providing more autonomy to the Province was enacted in 1967. The Provincial Development Assistance Program is operating in seventeen provinces.

Additionally, in an attempt to redistribute income and raise the rural standard of living, the GOP has recently embarked upon an aggressive land reform program, and is well under way with a country-wide rural electrification program.

(4) (a) Allocating available budgetary resources to development.

(a) More than 70 percent of national budget is allocated to social and economic development. One-fourth of the budget goes to education, nearly 10 percent to agriculture and natural resources and almost 20 percent to transportation and communications.

(b) Diverting such resources for unnecessary military expenditure (See also Item No. 20) and intervention in affairs of other free and independent nations.) (See also Item No. 11)

Less than 15 percent of the budget goes to national defense.

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- (5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.
- The GOP, ever since its establishment as an independent nation in 1946, has patterned its government after that of the United States, adopting the same democratic principles and strongly supporting a free and open society. On Sept. 22, 1972 President Marcos, citing a serious threat to their system from both the extreme left and right, invoked martial law and, ruling by decree, ordered an accelerated implementation of essential reforms long needed to improve the efficiency of the government, to reduce wide-spread crime and corruption, to speed development efforts aimed primarily at improving the social and economic well-being of lower income groups. However, under Martial Law political activity and freedom of the press has been curtailed. In this regard President Marcos is inaugurating an all-encompassing nationwide land reform program. Over the last five years the GOP has increased revenues through improved administration and new tax laws.
- (6) Willing to contribute funds to the project or program.
- Over the period of the Project, the GOP will be providing a total of ₱24,600,000.
- (7) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.
- (7) As a result of the disastrous summer of 1972 floods, the Marcos Administration has embarked on a large scale reconstruction program with the help of USAID. This program is directly meeting the needs of the devastated communities of Luzon. Included in the program are: a school reconstruction and textbook program as well as on road building, irrigation and other infrastructure programs.

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- B. Are above factors taken into account in the furnishing of the subject assistance? B. Yes

Treatment of U.S. Citizens and Firms

3. FAA § 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government? (3) No
4. FAA § 620(e) (1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? (4) The Parity Amendment, an Ordinance appended to the Philippine Constitution on March 12, 1947, and effective by its terms until July 3, 1974, permitted U.S. citizens, as distinguished from other aliens to acquire and hold "public agricultural land" and to operate public utilities with the same rights and privileges as citizens of the Philippines. The Supreme Court of the Philippines, in a decision now being appealed, has held that the right of U.S. citizens to acquire and hold such property and to operate utilities will expire on July 3, 1974. The GOP and U.S. Embassy are currently negotiating on this point. At the present there is no indication that the GOP contemplates any act contravening FAA S 620(e)(1).
5. FAA § 620(O); Fishermen's Protective Act. S 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters, N.A.
- a. has any deduction required by Fishermen's Protective Act been made?

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b. has complete denial of assistance been considered by A.I.D. Administrator?

Relations with U.S. Government and Other Nations

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|-----|---|---|
| 6. | <u>FAA § 620(a)</u> . Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba? | No |
| 7. | <u>FAA § 620(b)</u> . If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement? | Yes |
| 8. | <u>FAA § 620(d)</u> . If assistance is for any productive enterprise which will compete in the United States with United States enterprise, is there an agreement by the recipient country to prevent export to the United States of more than 20% of the enterprise's annual production during the life of the loan? | N.A. |
| 9. | <u>FAA § 620(f)</u> . Is recipient country a Communist country? | No |
| 10. | <u>FAA § 620(i)</u> . Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? | No |
| 11. | <u>FAA § 620(j)</u> . Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property? | 11. The GOP has taken all reasonable measures to protect U.S. property. On infrequent occasion when damage has occurred, proper compensation has been made without delay. |

12. FAA C 620(1). If the country has failed to institute the investment guarantee program for the specific risks of expropriation, in convertibility or confiscation, has the A.I.D. administration within the past year considered denying assistance to such government for this reason?
12. The Philippines has instituted an investment guarantee program with the full range of risk coverage.
13. FAA § 620(n). Does recipient country furnish goods to North Viet-Nam or permit ships or aircraft under its flag to carry cargoes to or from North Viet-Nam?
13. No
14. FAA § 620(q). Is the government of the recipient country in default on interest or principal of any A.I.D. loan to the country?
14. No
15. FAA § 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?
15. No
16. FAA § 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the A.I.D. Administrator in determining the current A.I.D. Operational Year Budget?
16. The Philippines is not in default with respect to its dues, assessments or other obligations to the U.S.
17. FAA § 481. Has the government of recipient country failed to take adequate steps to prevent narcotic drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in each country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?
17. No

18. FAA, 1973 § 29. If (a) military base is located in recipient country, and was constructed or is being maintained or operated with funds furnished by U.S., and (b) U.S. personnel carry out military operations from such base, has the President determined that the government of recipient country has authorized regular access to U.S. correspondents to such base?
18. Yes (Presidential Determination No. 74-14 dated January 20, 1974)

Military Expenditures

19. FAA § 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).
19. Annual defense budgets average less than 15% of the national budget. Approximately one-third of this amount is for maintenance of peace and order. Philippine foreign exchange resources used to acquire military equipment are negligible. We know of no diversion of either development assistance or of PL 480 sales to military expenditures. We are not aware of any diversion of Philippine resources for unnecessary military expenditures.

CONDITIONS OF THE LOAN

General Soundness

20. FAA § 201(d). Information and conclusion on reasonable - ness and legality (under laws of country and the United States) of lending and relending of terms of the loan.
20. The rate of interest is considered reasonable and repayment of the loan with interest is within the financial capability of the borrower. Interest through the grace period will be at the rate of 2% per annum, and 3% thereafter. This rate is not higher than the applicable legal rate of interest in the Philippines.

21. FAA § 201(b) (2); § 201(e). Information and conclusion on activity's economic and technical soundness. If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, has country submitted to A.I.D. an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?
21. All project development is covered by feasibility studies assuring viability. An application has been submitted to AID. See ANNEX ____.
22. FAA § 201(b)(2). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.
22. Section and Annex of this paper a satisfactory future capacity on the part of the Philippines to repay this loan. The GOP is the borrower and the prospects for loan repayment are good.
23. FAA § 201(b)(1). Information conclusion on availability of financing from other free-world sources, including private sources within the United States.
23. Financing is not considered to be available from other sources on terms comparable to this proposed loan.
24. FAA § 611(a)(1). Prior to signing of loan will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the United States of the assistance?
24. Yes
25. FAA § 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of loan?
25. All legislative authorities exists.
26. FAA § 611(e). If loan is for Capital Assistance, and all U.S. assistance to project now exceeds \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?
26. Yes. See Annex E.

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Loan's Relationship to Achievement
of Country and Regional Goals

27. FAA § 207; 113. Extent to which assistance reflects appropriate emphasis on: (a) encouraging development of democratic, economic, political, and social institutions; (b) self-help in meeting the country's food needs; (c) improving availability of trained manpower in the country; (d) programs designed to meet the country's health needs; (e) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (f) integrating women into the recipient country's national economy.
27. (a) The cooperatives to be formed under the project are non-political organizations directed by the interested citizens in the community. (b) The project will permit and encourage irrigation projects, thereby helping the Philippines increase their food production. (c) NEA is undertaking an intensive training program for its own staff and staffs of the cooperatives. Programs are also underway to train skilled electrical workers for use by the private contracting firm. (d) The project will facilitate installation of small potable water systems, food preservation and increased food production, thereby improving through improved water and increased nutrition, the health of the populace. (e) Electric cooperatives will be supported by the loan. Reliable electricity at reasonable rate is essential to most development activities. This project will have a beneficial effect on most of the areas of development mentioned. (f) See Section ___ of the paper.
28. FAA § 209. Is project susceptible of execution as part of regional project? If so why is project not so executed?.
28. No
29. FAA § 201(b)(4). Information and conclusion on activity's relationship to, and consistency with, other development activities, and its contribution to realizable long-range objectives.
29. This project is consistent with GOP objectives.

30. FAA § 201(b)(9). Information and conclusion on whether or not the activity to be financed will contribute to the achievement of self-sustaining growth.
30. A stream of agriculture technology is necessary to continue increased agriculture production. The information generated by this project is essential for self-sustaining growth.
31. FAA § 209; Information and conclusion whether assistance will encourage regional development programs.
31. N.A.
32. FAA § Section 111. Discuss the extent to which the loan will strengthen the participation of the urban and rural poor in their country's development, and will assist in the development of cooperatives which will enable and encourage greater numbers of poor people to help themselves toward a better life.
32. This project will benefit the rural poor by developing better farming systems to increased production. The major crops of concern in this project (rice, corn, sorghum, legume seeds) are produced predominantly by small farmers.
33. FAA § 201(f). If this is a project loan, describe how such project will promote the country's economic development taking into account the country's human and material resource requirements and the relationship between ultimate objectives of the project and overall economic development.
33. This loan will promote economic development through development of 4 research stations and upgrading research capability of staff thus enabling them to undertake more difficult problems in the future.
34. FAA § 281(a). Describe extent to which the loan will contribute to the objective of assuring maximum participation in the task of economic development on the part of the people of the country, through the encouragement of democratic, private, and local governmental institutions.
34. N.A.

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| <p>35. <u>FAA § 281(b)</u>. Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country: utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.</p> | <p>35. N.A.</p> |
| <p>36. <u>FAA § 201(b)(3)</u>. In what ways does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capabilities?</p> | <p>36. In attributing the gains in productivity in the developing countries over the past several years, it has been suggested that approximately 45% of productivity gains have been the results of indigenous research systems while 35% and 25%, respectively, have been derived from transfers from other national research systems and from transfers from the green revolution international centers.</p> |
| <p>37. <u>FAA § 601(a)</u>. Information and conclusions whether loan will encourage efforts of the country to:</p> <p>a. increase the flow of international trade;</p> <p>b. foster private initiative and competition;</p> <p>c. encourage development and use of cooperatives, credit unions, and savings and loan associations;</p> <p>d. discourage monopolistic practices;</p> <p>e. improve technical efficiency of industry, agriculture, and commerce; and</p> <p>f. strengthen free labor unions.</p> | <p>37.</p> <p>a. N.A.</p> <p>b. N.A.</p> <p>c. N.A.</p> <p>d. N.A.</p> <p>e. The generation of new technology will significantly contribute to the technical efficiency of agriculture production.</p> <p>f. N.A.</p> |

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38. FAA § 619. If assistance is for newly independent country; is it furnished through multilateral organizations or plans to the maximum extent appropriate?

38. N.A.

Loan's Effect on U.S. and AID Program

39. FAA § 201(b)(6). Information and conclusion on possible effects of loan on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving the U.S. balance of payments position.

39. Approximately 55% of the loan will be dollar costs, the remainder will be local currency costs.

40. FAA § 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources.

40. The loan will be channeled through intermediate credit institutions. Commodities and services will be from private sources.

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41. FAA § 601(b). Information and conclusion on how the loan will encourage U.S. private trade and investment abroad and how it will encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).
41. Private enterprise is being utilized to the maximum extent practicable under this loan.
42. FAA § 601(d). If a capital project, are engineering and professional services of U.S. firms and their affiliates used to the maximum extent consistent with the national interest?
42. Engineering and other professional services are being provided and financed under other AID projects.
43. FAA § 602. Information and conclusion whether U.S. small business will participate equitably in the furnishing of goods and services financed by the loan.
43. Small Business Notification procedures will be utilized.
44. FAA § 620(h). Will the loan promote or assist the foreign aid projects or activities of the Communist-Bloc countries?
44. No.
45. FAA § 621. If Technical Assistance is financed by the loan, information and conclusion whether such assistance will be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis. If the facilities of other Federal agencies will be utilized, information and conclusion on whether they are particularly suitable, are not competitive with private enterprise, and can be made available without undue interference with domestic programs.
45. Services financed under the loan will be from private US engineering firms and other non-governmental sources.

- 14 -

Loan's Compliance with Specific Requirements

- | | |
|---|--|
| 46. <u>FAA § 110(a)</u> ; 208(e). In what manner has or will the recipient country provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the Loan is to be made? | 46. The loan agreement will so provide and the planned administrative arrangements will assure it. The GOP is providing 5 times more funds than the loan during the life of the Project. |
| 47. <u>FAA § 112</u> . Will loan be used to finance police training or related program in recipient country? | 47. No. |
| 48. <u>FAA § 114</u> . Will loan be used to pay for performance of abortions or to motivate or coerce persons to practice abortions? | 48. No. |
| 49. <u>FAA § 201(b)</u> . Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year? | 49. Yes. |
| 50. <u>FAA § 201(d)</u> . Is interest rate of loan at least 2% per annum during grace period and at least 3% per annum thereafter? | 50. Yes. |
| 51. <u>FAA § 201(f)</u> . If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise? | 51. The Philippine private sector will supply commodity services for projects. |
| 52. <u>FAA § 604(a)</u> . Will all commodity procurement financed under the loan be from the United States except as otherwise determined by the President? | 52. Yes. |
| 53. <u>FAA § 604(b)</u> . What provision is made to prevent financing commodity procurement in bulk at prices higher than adjusted U.S. market price? | 53. N.A. |

- 54. FAA § 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will loan agreement require that marine insurance be placed in the United States on commodities financed by the loan?

54. Yes.
- 55. FAA § 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?

55. N.A.
- 56. FAA § 604(f). If loan finances a commodity import program, will arrangements be made for supplier certification to AID and AID approval of commodity as eligible and suitable?

56. N.A.
- 57. FAA § 608(a). Information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.

57. U.S. Government excess property is being utilized where practicable in lieu of new items.
- 58. FAA § 611(b); App. 101. If loan finances water or water-related land resource construction project or program, is there a benefit-cost computation made, insofar as practicable, in accordance with the procedures set forth in the Memorandum of the President dated May 15, 1962?

58. N.A.
- 59. FAA § 611(c). If contracts for construction are to be financed, what provision will be made that they be let on a competitive basis to maximum extent practicable?

59. Construction contracts will be financed by the GOP. Competitive procedures will be utilized.

- 60. FAA § 612(b); 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the United States are utilized to meet the cost of contractual and other services.

60. The GOP will provide all local currency required for completion of the project. The Philippines is not an excess currency country and foreign currency is not available to be utilized in lieu of dollars.
- 61. App. § 113. Will any of loan funds be used to acquire currency of recipient country from non-U.S. Treasury sources when excess currency of that country is on deposit in U.S. Treasury?

61. The Philippines is not an excess currency country.
- 62. Section 30 and 31 of PL 93-189 (FAA of 1973). Will any part of the loan be used to finance directly or indirectly military or paramilitary operations by the U.S. or by foreign forces in or over Laos, Cambodia, North Vietnam, South Vietnam, or Thailand?

62. No.
- 63. Section 37 of PL 93 - 189 (FAA of 1973); App. 111. Will any part of this loan be used to aid or assist generally or in the reconstruction of North Vietnam?

63. No.
- 64. FAA § 612(d). Does the United States own excess foreign currency and, if so, what arrangements have been made for its release?

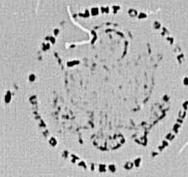
64. No.
- 65. FAA § 620(g). What provision is there against use of subject assistance to compensate owners for expropriated or nationalized property?

65. No.
- 66. FAA § 620(k). If construction of productive enterprise, will aggregate value of assistance to be furnished by the United States exceed \$100 million?

66. No.

- 67. FAA § 636(1). Will any loan funds be used to finance purchase, long-term lease, or exchange of motor vehicle manufactured outside the United States, or any guaranty of such a transaction? 67. No.
- 68. App. § 103. Will any loan funds be used to pay pensions, etc., for military personnel? 68. No.
- 69. App. § 105. If loan is for capital project, is there provision for AID approval of all contractors and contract terms? 69. No.
- 70. App. § 107. Will any loan funds be used to pay UN assessments? 70. No.
- 71. App. § 109. Compliance with regulations on employment of U.S. and local personnel. (AID Regulation 7). 71. No.
- 72. App. § 110. Will any of loan funds be used to carry out provisions of FAA 209(d)? 72. No.
- 73. App. § 112. Will any of the funds appropriated or local currencies generated as a result of AID assistance be used for support of police or prison construction and administration in South Vietnam or for support of police training of South Vietnamese? 73. No.
- 74. App. § 114. Describe how the Committee on Appropriations of the Senate and House have been or will be notified concerning the activity, program, project, country, or other operation to be financed by the loan. 74. A description of the project was included in the FY 1975 Congressional Presentation.
- 75. App. § 601. Will any loan funds be used for publicity or propaganda purposes within the United States not authorized by Congress? 75. No.

76. App. § 604. Will any of the funds appropriated for this project be used to furnish petroleum fuels produced in the continental United States to Southeast Asia for use by non-U.S. nationals?
76. No.
77. MMA § 901.b; FAA § 640C.
- a. Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed with funds made available under this loan shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.
- b. Will grant be made to loan recipient to pay all or any portion of such differential as may exist between U.S. and foreign-flag vessel rates?
77. a. The Loan Agreement will contain a provision requiring compliance with this requirement.
- b. No.



ANNEX B

C6

Department of State

TELEGRAM

AMEMB MANILA

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ACTION: AID-8

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JAN. 24, 1975

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BT
UNCLAS STATE 016088

AIDAC

E.O. 11652: N/A

TAGS:

SUBJECT: PROPOSED AGRICULTURE RESEARCH LOAN

REF: MANILA 0463

1. EAPAC NET, CONSIDERED AND APPROVED PRF FOR PROPOSED SUBJECT LOAN JAN. 14, 1975. ISSUES RAISED WHICH SHOULD BE ADDRESSED IN PROJECT PAPER (PP) ARE DISCUSSED BELOW. FYI. AD/AD SHEPPARD AND ASS'T P.O. BAUM ATTENDED MEETING.

2. ISSUES FOR INTENSIVE REVIEW INCLUDE:

(A) LOG FRAME: SHOULD BE IMPROVED TO MORE CLEARLY SHOW LINKAGES BETWEEN OUTPUTS-PURPOSE-GOAL. SPECIFICALLY ONE SHOULD CLEARLY SEE THE LINK BETWEEN THE IMPROVEMENT OF INSTITUTIONAL RESEARCH CAPABILITY AND THE GOAL OF SELF-SUFFICIENCY IN FOOD CROPS. ALSO GOAL AND PROJECT PURPOSE LEVEL INDICATORS SHOULD BE QUANTIFIED WHEREVER POSSIBLE. AS STATED IN PRP, QUOTE STABLE SUPPLY UNQUOTE AND QUOTE MINIMAL IMPORTS UNQUOTE BASICALLY SUBJECTIVE. ADDITIONAL COMMENTS MAILED AD/CD DANGLER. See Annex C.

(B) CONGRESSIONAL MANDATED PP NEEDS TO SHOW HOW RESULTS OF RESEARCH WILL REACH AND ESPECIALLY BENEFIT SMALL FARMERS, RECOGNIZING FACT THAT THERE IS A TIME LAG BETWEEN RESEARCH AND FARMER ACCEPTANCE AND USE. PROJECT PAPER SHOULD SHOW HOW BENEFITS WILL ACCRUE TO SMALL FARMERS AND THAT THERE ARE IDENTIFIABLE INDICATORS ASSURING THAT SUCH WILL OCCUR. BENEFICIARIES DO NOT RPT NOT INCLUDE TECHNICIANS OR PCAR AS AN INSTITUTION. THESE ARE IN FACT DEVELOPMENT INTERMEDIARIES. See Page 36.

(C) CONSISTENT WITH (B) ABOVE, PP SHOULD INCLUDE A WELL DEVELOPED PROFILE OF THE TARGET BENEFICIARIES AND THE

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PAGE TWO UNCLASSIFIED

PCAR OUTREACH PROGRAM TO THESE BENEFICIARIES. THIS WOULD INCLUDE SMALL FARM FIELD TRIALS UNDER REALISTIC CONDITIONS TO PROVE BENEFITS. See Page 37.

(D) PP SHOULD DETAIL COST OF THE PROJECT INCLUDING GOP INPUT, FOREIGN EXCHANGE AND PORTION INCLUDED IN PAR. REGARDING LAST, PP SHOULD SHOW DETAILED MISSION PLANS AND ESTIMATES OF FOREIGN AND LOCAL CURRENCY BREAKDOWN OF CONSTRUCTION SERVICES AND RELATED EQUIPMENT AND MATERIALS AND FOR FACILITY INSPECTIONS AND REIMBURSEMENT APPROVAL. BREAK DOWN SPECIFICS FOR FOUR PROJECT SITES. See Pages 55-63.

(E) GOP COMMITMENT NEEDS TO BE DETAILED INCLUDING BUDGETARY IMPACT OF BOTH MAINTENANCE AND SALARY COST INCREASES AS A RESULT OF THE PROGRAM. CONSIDERATIONS OF PROBABLE FUTURE SCIENTIFIC SALARY INCREASES (TO ATTRACT AND HOLD PERSONNEL) SHOULD BE FULLY EXPLORED WITH GOP. See Page 41.

(F) NEED A CLARIFICATION OF WHO IS CONTROLLING AGRICULTURE RESEARCH FUNDS AND HOW PCAR ACTIVITIES ARE COORDINATED WITH OTHER AGENCIES AND COMPLEMENT OTHER RESEARCH ACTIVITIES. See Page 12.

(G) REGARDING PHYSICAL PLANT CONSTRUCTION, NEED ANALYSIS PROGRAM-ORIENTED UTILIZATION EXISTING RESEARCH FACILITIES, INSPECTION PLANS AND SITES DETERMINATION, LAND PLANNING AND THE ECOLOGICAL/ENVIRONMENTAL IMPACT OF SUCH CONSTRUCTION. See Annex F and Pages 23-27.

(H) NEED OVERALL ENVIRONMENTAL IMPACT ASSESSMENT REGARDING AGRICULTURE RESEARCH. AT A MINIMUM, THIS STATEMENT SHOULD SHOW THAT ISSUES ON THE ENVIRONMENT WERE ASSESSED ACCORDING TO THE AGENCY ENVIRONMENTAL ASSESSMENT GUIDELINES MANUAL. IF THERE ARE SPECIFIC QUESTIONS AND CLARIFICATIONS AID/W WILL BE PREPARED TO OFFER SUGGESTIONS AND ASSISTANCE. SEE W.C. 1214.1. See Annex .

(I) NEED NARRATIVE OF LOG FRAME WITH SUPPORTING EVIDENCE IN PP LUMP ANY ASSUMPTIONS MADE. LOG FRAME INDICATORS AND EVALUATION PLAN SHOULD BE CONSISTENT. See Page 5.

3. AID/W FORCES NO PROBLEM WITH FIVE YEAR DISBURSEMENT PERIOD WHICH MUST BE JUSTIFIED IN PP, AND FINANCING OF LOCAL SCHOLARSHIPS. HOWEVER, THERE ARE STILL QUESTIONS ON HOW BOTH SHOULD AND CAN BE JUSTIFIED. MISSION SHOULD DISCUSS WITH A. HASELEY, PPC/DIRE DURING MANILA TDY. KISSINGER

PS:

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**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Life of Project:
From FY 1977 to FY 1980
Total U.S. Funding: \$5 million
Date Prepared: December 19, 1976

Project Title & Number: Agricultural Research

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																																																												
<p>Program or Sector Goal: The broader objective to which this project contributes: (A-1)</p> <p>Contribute to increasing the income of small farmers, national self-sufficiency in rice, corn, sorghum, soybeans and other legumes, and improved national nutritional levels.</p>	<p>Measures of Goal Achievement: (A-2)</p> <ol style="list-style-type: none"> 1. Imports of food and feed grains reduced by 25% of the 1970-75 average by 1980. 2. Stable supply and price of food and feed grains. 3. Calorie consumption above the minimum acceptable levels. 4. A 30% increase in the real income of small farmers by 1982. 5. 90% of the corn and sorghum used in locally manufactured feeds will be produced locally by 1980. 	<p>(A-3)</p> <ol style="list-style-type: none"> 1. GOP data on imports, production, consumption, price and income. 2. Supplemental data from other sources available. 	<p>Assumptions for achieving goal targets: (A-4)</p> <ol style="list-style-type: none"> 1. That the GOP will maintain policies favorable to the application of new production technology (e.g. policies on pricing, credit, etc.), and that complementary services and programs will be adequately available (e.g. extension services, agrarian reform, transportation, irrigation, etc.). 2. That the research centers will be able to provide the technology required, and that the progress of the research stream will not be constrained by lack of adequate budget, management, personnel, etc. 																																																												
<p>Project Purpose: (B-1)</p> <p>To improve the research capability of the La Granja, Southern Mindanao, Bicol and Central Luzon agricultural research centers to provide a continuous stream of information and technological improvements for the production of rice, corn, sorghum, soybeans, other legumes and other food and feed crops which may become important in the future.</p>	<p>Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)</p> <ol style="list-style-type: none"> 1. The four research centers performing the required research in the quantity and quality necessary. 2. Improved technology being introduced into the production of food and feed grains on a regular, continuing basis. 3. An increased capability for graduate training in agriculture at universities and colleges. 4. Other research centers producing more and better research as a result of interaction with the four assisted centers. 	<p>(B-3)</p> <ol style="list-style-type: none"> 1. Research results and reports on research published by the Centers and related organizations. 2. Reports on extension services, GOP data on planning, use of inputs, production, incomes, etc. 3. Data from universities and colleges on enrollment, subjects offered, quantity and quality of faculty, etc. 	<p>Assumptions for achieving purpose: (B-4)</p> <ol style="list-style-type: none"> 1. That the resources provided will be sufficient to adequately staff and equip the centers so that they are in an unconstrained position to undertake a research program. 2. That the crops to be researched are not downgraded in importance or that self-sufficiency (or, minimally, significantly increased crop production) is not abandoned or displaced as a national goal. 																																																												
<p>Project Outputs: (C-1)</p> <ol style="list-style-type: none"> 1. Consolidation of PCAR as the GOP agency for developing, coordinating, programming, and evaluating research policy and programs in agriculture. 2. The four centers adequately staffed and equipped to make maximum utilization of latest technical information and research methodology, and carrying out well-planned research programs and projects on basic food and feed crops. 3. An information system for PCAR in cooperation with UPLB, SEARCA, and IRLI libraries to provide timely access to key scientific literature for researchers at the various centers. 4. Improved quantity and quality of output in related organizations, such as other research centers and training institutions. 	<p>Magnitude of Outputs: (C-2)</p> <ol style="list-style-type: none"> 1. PCAR managing and administering at least 50 percent of GOP budget resources devoted to agricultural research by 1977, and at least 75 percent by 1980. 2. Annual PCAR publications explaining on-going and completed research, and detailed evaluation of completed research results. 3. Research projects aimed at various aspects of increasing production of all basic food and feed crops underway by 1976, and continuing during life of the project, with research reports published on a regular basis. 	<p>(C-3)</p> <ol style="list-style-type: none"> 1. PCAR records and reports. 2. Various research center's records and reports. 	<p>Assumptions for achieving outputs: (C-4)</p> <ol style="list-style-type: none"> 1. That the GOP supports PCAR as the agency to develop, coordinate, program, and evaluate research policy and programs in agriculture. 2. That the research centers and other institutions have sufficient budget to undertake the necessary programs. 																																																												
<p>Project Inputs: (D-1)</p> <p><u>U.S. Inputs</u></p> <p>A. Advisory Services short term</p> <p>B. Equipment and Machinery</p> <p>C. Library books, journals, and materials</p> <p>D. Physical facilities</p> <p>E. Training</p> <p>MS local institutions</p> <p>PhD local institutions</p> <p>PhD external institutions</p> <p>non degree short term</p>	<p>Implementation Target (Type and Quantity) (D-2)</p> <p align="center"><u>Target Schedule (\$1000)</u></p> <table border="1"> <thead> <tr> <th></th> <th>1975-76</th> <th>1976-77</th> <th>1977-78</th> <th>1978-79</th> <th>1979-80</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>40</td> <td>18</td> <td>95</td> <td>65</td> <td>35</td> </tr> <tr> <td>B</td> <td>121</td> <td>236</td> <td>292</td> <td>237</td> <td>114</td> </tr> <tr> <td>C</td> <td>50</td> <td>150</td> <td>50</td> <td></td> <td></td> </tr> <tr> <td>D</td> <td>140</td> <td>1000</td> <td>1100</td> <td></td> <td></td> </tr> </tbody> </table> <p align="center"><u>Numbers in Training (man years)</u></p> <table border="1"> <thead> <tr> <th></th> <th>1975-76</th> <th>1976-77</th> <th>1977-78</th> <th>1978-79</th> <th>1979-80</th> </tr> </thead> <tbody> <tr> <td>E</td> <td>25</td> <td>50</td> <td>50</td> <td>50</td> <td>25</td> </tr> <tr> <td>MS local institutions</td> <td>10</td> <td>20</td> <td>30</td> <td>20</td> <td>10</td> </tr> <tr> <td>PhD external institutions</td> <td>3</td> <td>6</td> <td>8</td> <td>5</td> <td>2</td> </tr> <tr> <td>non degree short term</td> <td>12</td> <td>19</td> <td>21</td> <td>16</td> <td>12</td> </tr> </tbody> </table>		1975-76	1976-77	1977-78	1978-79	1979-80	A	40	18	95	65	35	B	121	236	292	237	114	C	50	150	50			D	140	1000	1100				1975-76	1976-77	1977-78	1978-79	1979-80	E	25	50	50	50	25	MS local institutions	10	20	30	20	10	PhD external institutions	3	6	8	5	2	non degree short term	12	19	21	16	12	<p>(D-3)</p> <ol style="list-style-type: none"> 1. USAID or PCAR records. 	<p>Assumptions for providing inputs: (D-4)</p> <ol style="list-style-type: none"> 1. That loan funds will be available, and other factors such as conditions precedent can be met. 2. That costs of equipment, machinery, construction, etc., remain reasonable. 3. That suitable sources for the advisory services can be identified.
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Annex D

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
Manila, Philippines

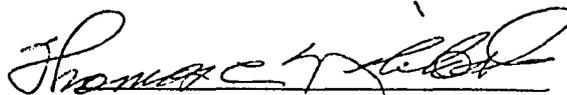
Ramon Magsaysay Center
1680 Roxas Boulevard

Telephone: 59-80-11

CERTIFICATION PURSUANT TO SECTION 611 (e)
OF THE FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, THOMAS C. NIBLOCK, the principal officer of the Agency for International Development in the Philippines, having taken into account, among other things, the maintenance and utilization of projects in the Philippines previously financed or assisted by the United States, do hereby certify that, in my judgment, the Philippines has both the financial capability and the human resources capability to effectively maintain and utilize the proposed Agricultural Research Loan.

This judgment is based upon the project analysis as detailed in Agricultural Research Project Paper and is subject to the conditions imposed therein.



Thomas C. Niblock, Director
USAID/Philippines

7 March 1975
Date

CAPITAL ASSISTANCE LOAN AUTHORIZATION

Provided from: Food and Nutrition
(Philippines: Agricultural Research Loan)

Pursuant to the authority vested in me as Assistant Administrator, Bureau for East Asia, Agency for International Development ("A.I.D."), by the Foreign Assistance Act of 1961, as amended, (the "Act") and the Delegations of Authority issued thereunder, I hereby authorize the establishment of a loan pursuant to Part I, Chapter I, Section 103 and Chapter 2, Title I the Development Loan Fund, to the Government of the Republic of the Philippines ("Borrower") acting through the Philippine Council for Agricultural Research ("PCAR") of not to exceed Five Million Dollars (\$5,000,000). The proceeds of this loan will be used to assist in improving the capability for agricultural research at four selected Research Centers by providing, in part, facilities, laboratory and field equipment and funds for manpower development. The loan shall be subject to the following terms and conditions:

1. Interest Rate and Terms of Repayments

The loan shall be repaid by the Borrower within forty (40) years after the date of the first disbursement under the loan, including a grace period of not to exceed ten (10) years. The interest on the unrepaid principal balance of the loan shall be from the date of first disbursement at the rate of (a) two percent (2%) per annum during the grace period, and (b) three percent (3%) per annum thereafter.

2. Currency of Repayment

Provision shall be made for repayment of the loan and payment of interest in United States dollars.

3. Other Terms and Conditions

Unless A.I.D. otherwise agrees in writing,

- (a) Goods and services financed under the loan shall have their source and origin in the Philippines or in countries included in A.I.D. Geographic Code 941 (Selected Free World).

Annex E - Cont'd

- (b) The loan agreement shall provide that prior to the disbursement of loan proceeds, the Borrower shall submit or cause to be submitted, the following in form and substance satisfactory to A.I.D.:
- (1) A project implementation plan for the life of the project prepared by PCAR, including a projection of funds available to finance the various elements of the project as well as the annual operating budgets of the Research Centers.
 - (2) Written assurance from the Borrower that sufficient funds will be made available to PCAR pursuant to (1) above in order to assure timely and orderly implementation of the project.
 - (3) Such other conditions as A.I.D. may deem advisable.

Garnett A. Zimmerly (Acting)

Date

Annex F

ENVIRONMENTAL INPUT STATEMENT

The impact on the environment of this loan can be regarded in two ways, one being the impact of the facilities to be constructed and the other being the environmental impact of the agricultural research stimulated by this loan.

The impact of the physical facility will likely be neutral to mildly positive. The four agricultural research centers selected to participate in the proposed AID agriculture loan are all located at developed and active research and teaching units so no completely separate or new research centers will be established. It is chiefly additions to existing operations. It is assumed few, if any, trees or shrubs will be destroyed or other problems as pollution will be increased by the proposed infrastructure additions, and there appears little likelihood that environmental quality of the four will be adversely affected. In fact, the new laboratory building will replace some building now in very poor condition and they add little to the appearance of the present campuses. Also, the replacement of some of the present housing around the units with new modern duplex houses should add to the building and ground aspect of enhancing the beauty and landscape of the area. Improvement in water supply, irrigation changes, drainage, and electrical service will not detract but should offer several advantages to the communities in terms of sanitation and other possible health hazards. At several of the centers, equipment is being purchased that will be used to make continuous checks on residues resulting from spray programs being carried out under proposed research programs.

Over 50 percent of the total loan proposal will be utilized for manpower training, equipment, technical assistance, and library additions which is not expected to relate to any particular physical environmental deterioration. On the other hand, the social or human living or working environment will be greatly enhanced by the inputs anticipated.

The impact of the research to be stimulated will be strongly positive, i.e., the research will in almost all aspects contribute to improvement of the environment. This positive influence will be manifested in several ways. One, it will help get more production per unit of land. This will enable the Philippines to achieve adequate production from level, high quality land. Marginal lands will not have to be used for basic food crop production, and thus can remain in forests or grass, both uses for which it is suited. Two, the research will contribute to the reduced use of chemicals for agricultural production. This will occur in several ways. One way is through the more efficient use of fertilizers, such as phosphorus and potassium, perhaps almost doubling efficiency of use. Some of this work is already underway. Another way to reduce the quantity of chemical nitrogen fertilizer is by increasing the use of biological nitrogen. Chemical use will also be reduced by genetic improvement of crops to breed insect and disease

Annex F - Cont'd

resistance and by cultural practices to help achieve weed control. Three, agricultural research will help prolong the life of irrigated land. Irrigation almost always results in some accumulation of salt in the soil. This build up is accelerated if too much water is used and if there is improper drainage. Soil and water management research will provide the technology that will help prevent this destruction.

Through the PCAR all of the agricultural research in the Philippines is carefully coordinated as research projects are designed and evaluated. PCAR will study the environmental impact of all research proposals giving cognizance to long and short time effects.

Annex C

National Network of Agricultural Research Centers and Cooperating Stations of PCAR

Map Number	Name and Location Agricultural Research Centers	Main Station for	Cooperating Station for
1	National Agricultural Research Center, Los Banos, Laguna	Abaca, Fruit, Oils & Spices, Rice, Vegetables, Horticulture, Dairy, Forestry, Wildlife, Soil, Water, R. Sociology, Macro-Econ.	Cacao, Tea, Coffee, Coconut, Corn, Cotton, Forage/Pasture, Root Crops, Sorghum, Soybeans, Sugarcane, Tobacco, Poultry, Swine.
2	Cagayan Valley Agricultural Research Center, Echague, Isabela	Tobacco	Corn, Cotton, Oils & Spices, Rice, Sorghum, Soybeans, Soil & Water.
3	Central Luzon Agricultural Research Center, Munoz, Nueva Ecija	Cotton and other fiber crops and sericulture	Forage/Pasture, Oils & Spices, Rice, Vegetable, Beef, Dairy, Poultry, Swine, I. Fisheries, Water, Rural Socio-Econ.
4	Navotas Fishing Complex, Navotas, Rizal	Marine Fisheries	-
5	National Livestock Research Center Alabang, Rizal	Poultry, Swine	-
6	Bicol Agricultural Research Center Camarines Sur	-	Abaca, Coconut, Corn, Rice, Root C., Sorghum, Soybeans, Vegetable, I. Fisheries, Soil, Water, R. Sociology, Econ.
7	National Fishery Research Center Leganes, Iloilo	I. Fisheries (Brackish-Bangus), I. Fisheries (Brackish-Shrimps) Soybeans, Sugarcane	-
8	La Granja Agricultural Research Center, La Carlota City	Soybeans, Sugarcane	Cotton, Corn, Rice, Sorghum, Vegetables, Beef, Swine, Soil & Water Resources, R. Sociology Economics,
9	Palawan Agricultural Research Center, Aborian, Palawan	-	Cacao, Coconut, Coffee, Fruit, Oils, Soybeans, Tea, Beef, Soil Resources.

Annex G - Cont'd

<u>Map Number</u>	<u>Name and Location Agricultural Research Centers</u>	<u>Main Station for</u>	<u>Cooperating Station for</u>
10	Eastern Visayas Agricultural Research Center, Baybay, Leyte	Root Crops	Coconut, Corn, Rice, Sorghum, Sugarcane, Beef, Water, R. Sociology, Economics
11	Central Mindanao Agricultural Research Center I, Malaybalay, Bukidnon	Forage/Pasture, Beef	Cacao, Coffee, Tea, Dairy, Forestry, Wildlife, Soil,
12	Central Mindanao Agricultural Research Center II, Musuan, Bukidnon		Corn, Forage/Pasture, Rubber, Sorghum, Soybeans, Beef, Water, R. Sociology, Economics
13	Davao Agricultural Research Center, Davao City	Cacao, Coconut, Coffee, Tea	Abaca, Cotton, Fruit, Soybean, Spices, Horticulture, Beef, Soil.
14	Southern Mindanao Agricultural Research Center, Kabacan, Cotabato	Corn, Rubber (for small holders system), Sorghum	Cotton, Fruit, Oils, Rice, Root Crops, Soybeans, Vegetables, Native Tobacco, Beef, Poultry, Swine, Soil & Water Resources

<u>Map Number</u>	<u>Name and Location Cooperating Station</u>	<u>Coordinated by Center No.</u>	<u>Commodity(s) to be researched</u>
1	PVTA Nangalisan Experimental Station, Laoag, Ilocos Norte	2	Virginia Tobacco
2	Ilocos Norte Institute of Technology, Bafac, Ilocos Norte	1	Soil Resources, Water Resources
3	Bantay Cotton Experimental Station, Bantay, Ilocos Norte	3	Cotton
4	Baguio Experimental Station Baguio City	3	Sericulture
5	BFD, Experimental Station Baguio City	1	Forest Product. and Parks & Wildlife Management

Annex G - Cont'd

<u>Map Number</u>	<u>Name and Location Cooperating Station</u>	<u>Coordinated by Center No.</u>	<u>Commodity(s) to be researched</u>
6	Mountain State Agricultural College, La Trinidad, Benguet	1,13	Coffee, Fruit, Corn, Horticulture, Tea, Vegetables, R. Sociology and Macro-economics
7	Cagayan Valley Agricultural College, Lal-lo, Cagayan	10	Root Crops
8	Camalaniugan BF Fishery Station, Camalaniugan, Cagayan	7	Inland Fisheries
9	Cagayan Valley Experimental Station, San Mateo, Isabela	1	Rice
10	PTA Tumauni Experimental Station, Tumauni, Isabela	2	Native Tobacco
11	BFD, Magat Experimental Station, Diadi, Nueva Vizcaya	1	Forest Prod. and Parks & Wildlife Management
12	PVTA Virginia Tobacco Experimental Station Rosario, La Union	2	Virginia Tobacco
13	BF Fishery Station Lucap/Alaminos, Pangasinan	7	Inland Fisheries
14	PVTA Station Urdaneta, Pangasinan	2	Virginia Tobacco
15	PTA Station Cabiao, Nueva Ecija	2	Native Tobacco
16	Luzon Experimental Station Floridablanca, Pampanga	3	Sugarcane
17	BVE Fishery School Malolos, Bulacan	7	Inland Fisheries
18	Philippine Atomic Research Center, Quezon City	1	Rice
19	Bureau of Agricultural Economics, Quezon City	1	Macro-economics

Annex G - Cont'd

<u>Map Number</u>	<u>Name and Location Cooperating Station</u>	<u>Coordinated by Center No.</u>	<u>Commodity(s) to be researched</u>
20	National Food & Agriculture Council Marketing Research Unit, Quezon City	1	Macro-economics
21	ITA Tobacco Research & Development Center, Quezon City	2	Native Tobacco
22	Alabang Central Soil Research Station, Alabang, Rizal	1	Soil Resources
23	Don Severino National Agricultural College, Indang, Cavite	13	Cacao, Coffee, Tea
24	Manuel A. Roxas Memorial Experimental Station, Lipa City	1	Fruit Crops
25	BF Fishery Station Calatagan, Batangas	4	Marine Fisheries
26	PCA Coconut Station Alaminos, Laguna	13	Coconut
27	Tiaong Coconut Experimental Station, Tiaong, Quezon	13	Coconut
28	BF Fishery Station Mercedes, Camarines Norte	4	Marine Fisheries
29	Tigaon Abaca Seedbank Tigaon, Camarines Sur	1	Abaca
30	Albay Parks & Wildlife Research Station, Albay, Albay	1	Forest Prod. and Parks & Wildlife Management
31	Milagros Stock Farm Milagros, Masbate	11	Forage/Pasture Beef/Carabeef
32	Victoria Horticultural Center, Victoria, Oriental Mindoro	1	Fruit Crops

Annex G - Cont'd

<u>Map Number</u>	<u>Name and Location Cooperating Station</u>	<u>Coordinated by Center No.</u>	<u>Commodity(s) to be researched</u>
33	BF Fishery Station Nauja, Oriental Mindoro	7	Inland Fisheries
34	Mindoro Demonstration Farm, San Jose, Occidental Mindoro	2 & 3	Virginia Tobacco Cotton
35	Mindoro Parks & Wildlife Research Station, San Jose, Occidental Mindoro	1	Parks and Wildlife Management
36	Malampaya Fishery Station Malampaya, Palawan	4	Marine Fisheries
37	Palawan Wildlife Management Station, Puerto Princesa	1	Forest Prod. and Parks & Wildlife Management
38	University of Eastern Philippines, Catarman, Samar	1,10,13	Coconut, Root Crops, Spices, R. Sociology, Macro-economics
39	Abuyog Experimental Station Abuyog, Leyte	1	Abaca
40	Mandaue Experimental Station Mandaue, Cebu	1	Fruit Crops
41	University of San Carlos Cebu City	1	R. Sociology Macro-economics
42	Cebu Reforestation & Wildlife Research Station, Cebu City	1	Forest Prod. and Parks & Wildlife Management
43	Guimaras Fruit Station Guimaras Island	1	Fruit Crops
44	Central Philippine University Iloilo City	1	Rice
45	Visayas Rice Experimental Station, Iloilo City	1	Rice, Water Resources
46	Iloilo National College of Agriculture, Lambunao, Iloilo	13	Cacao, Coffee, Tea

Annex G - Cont'd

<u>Map Number</u>	<u>Name and Location Cooperating Station</u>	<u>Coordinated by Center No.</u>	<u>Commodity(s) to be researched</u>
47	Siliman University Dumaguete City	1	Ind. Oils & Spices
48	Xavier University Cagayan de Oro City	13	Rural Sociology Macro-economics
49	MSU Naawan Fishery Station Naawan, Misamis Oriental	7	Inland Fisheries
50	BPI Horticultural Station Claveria, Misamis Oriental	1,2	Vegetable Crops Native Tobacco
51	Twin Rivers Research Center Tagum, Davao del Norte	1	Fruit, Vegetables
52	PCA Research Station San Ramon Penal Colony Zamboanga City	13	Coconut
53	Zamboanga School of Fishery Zamboanga City	7	Marine Fisheries
54	Zamboanga Forest Experimental Station, Zamboanga City	1	Forest Prod. and Parks & Wildlife Management
55	U.P. Land Grant Station (Research Center for Commercial Rubber Prod) Basilan City	13,14,1	Coconut Fruit, Rubber
56	MSU Bongao Fishery Station Tawi-Tawi	4	Marine Fisheries

Annex H

Membership on Commodity Teams Involved in Project and Membership of PCAR Secretariat

Rice and Wheat

Pedro B. Escuro	Team Leader Crop Improvement	PhD, Univ of Minn
Anacleto Paras	Small Too Devt	M.S., UPLB
Emiliano Bernardo	Insect Control	PhD, Kansas State
Eduvigis Pantastico	Crop Physiology	PhD, UPLB
Aurelio Briones	Water, Soil, & Fertilizers	PhD, U of Hawaii
Ernesto Abarientos	Production Economics	PhD, U of Hawaii
Delfin Lapis	Disease Control	PhD, U of Minn.
Erlinda Pili	Seed Technology	M.S., Miss. U.
Angelita Mundo	Food Professing	M.S., UPLB
Silvestre Andales	Crop Processing	M.S., UP
Antonio Bustrillos	By-Prod. Utilization	PhD
Eugenio Sabalvoro	Cultural Management, Multi-cropping	PhD, Aberden University
Roger Cuyno	Rural Sociology	PhD, UPLB
Agapito Tauro	Weed Control	M.S., UPLB
Lorenzo Lagandaon	Marketing	
Ponciano Batugal	Clonal Adoptation and Improvement	Ph.D.
Leticia Manzon	Pest Control	M.A., Miss. Univ.
Ricardo Gloria	Cultural Management, Cropping Systems	M.S., UPLB
Modesto Yao	Quality Control	PhD
Epifanio Sandique	Prod. Includ. Economics	
Onofre Grino	Plantation Technique	
Ramon Asagra	Production Technique	
Jorge Davide	Soil Chem. & Fertility	PhD, Purdue U.
Nestor Navasero	Small Tools & Devt	B.S., UPLB
Ruben Barraca	Crop Physiology	M.S., UPLB

Corn & Sorghum

Antonio Mercado	Team Leader	PhD, Nebraska U.
Senen Alcos	Extension Education	M.S., UPLB
Ofelio Exconde	Plant Pathology	PhD, Kansas State
Gino Orticio	Feed Grain/Econ./Mktg.	B.S., UPLB
Romeo Quintana	Culture & Management	PhD, Texas A&M

Annex H - Cont'd

Maize & Sorghum (contd)

Armando Palis	Crop Physiology	PhD, Kansas State
Abel Tiongson	Marketing	PhD, Cornell U.
Polito Custodio	Entomology	B.S., UPLB
Max U. Onate	Utilization	PhD, Iowa State
Roberto Virtucio	Crop Improvement	B.S., UPLB
Armando Madrid	Weed Control	B.S., CSNAS
Armando Villano	Engineering/Processing	B.S., UPLB
Armando Pacardo	Physio. & Nutrition	Ph.D.
Armando Reyes	Soil Chem. & Fertility	Ph.D., U of Calif.
Armando Raymundo	Storage, Utilization	PhD., Cornell U.
Armando Lantim	Eng'g, Small Tools	PhD, Iowa State
Armando Villegas	Cultural Improvement	PhD, Iowa State
Armando Bartolome	Culture & Management	M.S.
Armando Megino	Prod. & Industry	M.S., UPLB
Armando Handog	Extension Education	B.S., UPLB
Armando Dallente	Marketing	
Armando Sanchez	Farm Org. & Credit	

Bean and Other Field Legumes

Armando Quebral	Team Leader	
Armando Lantican	Plant Pathology	Ph.D., Illinois U.
Armando Rosario	Crop Improvement	PhD, Iowa State
Armando T. Corpus	Eng'g, Small Tools	B.S., UPLB
Armando Cagampang	Soil & Soil Fertility	PhD, Cornell U.
Armando Rejesus	Culture & Management	PhD, Purdue U.
Armando Mercado	Entomology	PhD
Armando Garcia	Weed Science	PhD, Iowa State
Armando Huelgas	Food & Ind. Utilization	M.S., Iowa State
Armando Corcolon	Prod. & Ind. Econ	B.S., UPLB
Armando Legaspi	Marketing	B.S., UPLB
Armando Mondragon	Extension Education	B.S., UPLB
	Seed Technology	B.S.

Administrative Secretariat

Armando Madamba	Director General	PhD, U of Illinois
Armando Valmayor	Dep Dir Gen Programs & Operations	PhD, U of Florida

Annex H - Cont'd

PCAR Secretariat (Contd)

Francisco Tetangco	Dep Dir Gen Sta. Development	
Romeo A. Obordo	Crops Research Director	PhD, Texas A&M
Alfonso Eusebio	Livestock Res. Director	PhD, U of Maryland
Filiberto Pollisco	Forestry Res. Director	PhD, Syracuse U.
Aida Librero	Socio-Econ Res. Dir. Soil & Water Res. Dir.	PhD, U. of Minn.
Elvira O. Tan	Acting Fisheries Re- search Director	PhD, Kiel U.
Thomas Flores	Technical Service Dir.	PhD, U of Wisc.
Genaro Revilla	Admin Officer	
Manuel Frias	Chief Accountant	
Ambrosio Catalla	Auditor	

Annex I

PCAR AGREEMENTS WITH OTHER INSTITUTIONS

Institution	Objectives	Date Signed
1. Department of Agriculture and Natural Resources (BPI, BAI, BF, BFD, B3)	Mutual/joint efforts for development of the research capabilities of certain experiment stations of these bureaus.	7 June 1973
2. Association of Colleges of Agriculture in the Philippines (ACAP)	Mutual/joint efforts for development of selected experiment stations of the member colleges which are tapped to be part of the PCAR Network.	7 September 1973
3. University of the Philippines at Los Banos	Setting up a "PCAR Graduate Fellowship-Study Grant" to provide training grants to staff members of government institutions engaged in research in agriculture, forestry and fisheries, (Initial fund deposit P200,000). This is part of PCAR program to strengthen research institutions through staff development.	15 November 1973
4. Twin Rivers Research Center (Private Sector)	Establishing a regular research working arrangement aimed at the promotion of the production of dollar-saving and dollar-earning crops.	29 November 1973
5. International Rice Research Institute (IRRI)	Making IRRI library holdings available to PCAR's Scientific Literature Service (SLS).	8 January 1974
6. National Computer Center (Department of National Defense) (NCC)	Establishing with the assistance of NCC, a computer-based PCAR Information System.	24 April 1974
7. University of the Philippines at Los Banos.	Making UPLB library holdings available to PCAR's Scientific Literature Service (SLS).	22 May 1974
8. University of the Philippines	Setting up a PCAR Fellowship-study grant in the U.P. College of Fisheries.	20 June 1974

Annex I - Cont'd

<u>Institution</u>	<u>Objectives</u>	<u>Date Signed</u>
9. Weather Bureau	Establishing an agrometeorological station at the La Granja Agricultural Research Center, the first center being established under the PCAR Network of research stations. Agromat instruments and facilities and observer to be provided by Weather Bureau; PCAR to provide site, building, light, water and accommodation to observer. (Similar agreement being worked out for three centers)	9 July 1974
10. International Rice Research Institute (IRRI)	Scientific and technical cooperation in research on rice and multiple cropping technology. (Primarily 1) exchange of scientific literature, information and methodology, and 2) use by IRRI of PCAR station network).	15 August 1974
11. University of the Philippine System	Setting up a PCAR Agribusiness Fellowship-Study Grant in the U.P. College of Business Administration.	10 October 1974
<u>Under Negotiation with</u>		
1. Asia Vegetable Research and Development Center (AVDRC) Taiwan	Cooperative research work on vegetable crops. One of the stations of the PCAR research network will serve as an outreach station of AVDRC.	(To be signed soon)
2. International Maize and Wheat Improvement Center (CIMMYT), Mexico	Cooperative research work on corn and wheat.	
3. Centro Internacional de Agricultura Tropical (CIAT), Columbia	Cooperative research work on root crops, legumes, livestock, and cropping systems.	

Annex J

Tentative List of Research Equipment and Materials

ITEM	NUMBER OF UNITS FOR:				TOTAL	EST. UNIT COST \$	TOTAL COST
	CLARC	BARC	LOARC	SMARC			
1. Field Research	:	:	:	:	:	:	:
Equipment and Machinery	:	:	:	:	:	:	:
Battery creping	:	-	-	1	1	9,600	9,600
Battery, sheeting	:	-	-	1	1	4,800	4,800
Boiler	:	1	1	-	2	600	1,200
Bulk density soil sampler	:	-	-	2	2	600	1,200
Bus, mini	:	2	2	2	7	7,800	54,600
Breeder kit (plant)	:	-1	-	-	1	1,000	1,000
Camera	:	1	1	1	4	350	1,400
Car, staff	:	1	1	1	4	6,500	26,000
Coagulating, units with tank	:	-	-	1	1	9,600	9,600
Collecting tank with trailer	:	-	-	1	1	1,800	1,800
Crumbling unit	:	-	-	1	1	25,200	25,200
Curometer	:	-	-	1	1	1,800	1,800
Emulsifier	:	-	-	1	1	1,920	1,920
Engine, blackstone	:	-	-	1	1	6,000	6,000
Fertilizer, distributor	:	1	1	1	4	1,500	6,000
Fumigun soil	:	2	-	2	6	240	1,440
Generator, electric	:	1	-	1	2	7,370	14,740
Grain aerator	:	-	-	1	1	2,400	2,400
Germinator	:	1	-	1	1	300	300
Grain, aerator, Hi-power	:	1	-	-	1	85	85
Grain, Dryer, set	:	1	1	-	3	4,800	14,400
Gravimeter	:	-	-	1	1	1,200	1,200
Harrow	:	-	-	1	2	2,200	4,400
Huller	:	1	-	1	2	60	120
Jeep (Ford Fiera)	:	2	2	2	8	3,000	24,000
Machine, centrifuge latex	:	-	-	1	1	4,200	4,200
Machine, flexing	:	-	-	1	1	1,080	1,080
Machine, pelleting	:	-	-	1	1	60	60
Machine seed treating	:	1	1	-	1	1,000	1,000
McGill Miller #3	:	1	-	-	1	1,100	1,100
McGill, sheller	:	1	-	-	1	770	770
Parshall flumes 3"	:	-	-	3	3	180	540
Parshall flumes 6"	:	-	-	3	3	360	1,080
Pick-up (Ford Fiera)	:	3	2	2	8	5,800	46,400
Plastometer	:	-	-	1	1	1,200	1,200
Press hydraulic (5-ton capacity)	:	-	-	1	1	1,200	1,200
Plow	:	-	-	4	4	1,450	5,800
Pump, centrifuge, PORTABLE	:	1	2	-	4	1,740	6,960

ITEM	NUMBER OF UNITS FOR					TOTAL	EST. UNIT COST \$	TOTAL COST \$
	CLARC	BARC	LGARC	SMARC				
2. Laboratory Equipment								
Air conditioner	2	1	2	2	7	1,350	9,450	
Analyzer, Auto	-	-	1	-	1	600	600	
Analyzer, infrared	-	-	1	-	1	2,200	2,200	
Applicator, micro-pesticide (automatic)	-	-	1	-	1	240	240	
Applicator, pesticide	1	1	-	-	2	350	700	
Autoclave	3	1	2	2	8	738	5,904	
Balance, Analytical	1	-	2	1	4	2,150	8,600	
Balance, Autogram	-	1	-	-	1	370	370	
Balance, Beam	-	1	2	-	3	84	252	
Balance, Mattler	-	1	1	1	3	3,400	10,200	
Balance, moisture, det.	1	1	2	-	4	570	2,280	
Balance, rough	1	1	2	-	4	360	1,440	
Balance, Toledo beam	-	2	-	-	2	80	160	
Balance, Torsion	2	1	2	1	6	275	1,650	
Balance, Triple beam	-	-	5	1	6	84	504	
Breeding kit (plant)	1	1	-	-	2	180	360	
Bunsen burner	11	-	12	-	23	10	230	
Bulk density soil samples	-	-	-	1	1	600	600	
Calculator, electronic	4	2	2	2	10	900	9,000	
Calculator, manual	2	4	4	3	13	800	10,400	
Calculator with programmable	1	-	1	-	2	1,700	3,400	
Camera, Accessories	2	-	-	1	3	400	1,200	
Camera, Movie	1	-	-	-	1	10,800	10,800	
Camera, Vertical	1	-	-	-	1	3,000	3,000	
Centrifuge, ordinary	-	-	1	-	1	1,630	1,630	
Centrifuge, refrigerated	-	-	1	-	1	4,100	4,100	
Chem. carts, stainless	-	-	2	-	2	90	180	
Chromatograph, gas	1	-	1	-	2	12,800	25,600	
Clothing, protective	2	-	-	2	4	40	160	
Conductivity bridge	-	-	1	-	1	620	620	
Cork borer	-	-	4	2	6	125	750	
Counter	-	-	3	1	4	250	1,000	
Counter, geiger	1	-	-	-	1	600	600	
Cutter, paper	-	1	-	-	1	3,440	3,440	
Cutter, Stencil (elec.)	-	1	-	-	1	3,000	3,000	
Dehumidifier	1	-	-	-	1	5,500	5,500	
Demineralizer cartridge	1	-	-	-	1	250	250	
Dessicator	-	-	3	2	5	150	750	
Digestion apparatus Kjeldahl	-	-	2	-	2	350	700	
Digestion apparatus Micro-Kjeldahl	1	-	-	-	1	220	220	
Distilling apparatus Kjeldahl	-	1	2	1	4	610	2,440	
Distilling apparatus	-	-	3	2	5	550	2,750	
Distiller, water	-	1	1	1	3	11,500	34,500	
Double boiler	1	-	2	-	3	18	54	

Annex J - Cont'd

ITEM	NUMBER OF UNITS FOR				TOTAL	EST. UNIT COST \$	TOTAL COST \$
	CLARC	BARC	LGARC	SMARC			
Engraver apparatus (Elec. equipment)	-	-	1	-	1	18	18
Evaporator, rotary	1	-	-	-	1	600	600
Evaporator, vacuum	-	1	-	-	1	600	600
Extractor, oil	1	-	-	-	1	1,000	1,000
Flame photometer	-	1	1	1	3	3,500	10,500
Fermentor	-	1	-	-	1	210	210
Fume hood	2	1	3	2	8	1,200	9,600
Germinator	1	-	-	-	1	280	280
Glassware (includes test tubes, flask, beakers, pipettes, etc.)							
			(Supplies)			1,000	1,000
Gloves, protective	-	-	-	2	2	30	60
Grinder, sample	-	-	-	1	3	1,100	3,300
Growth chamber	-	-	1	-	1	4,650	4,650
Hot plate	1	1	8	4	14	240	3,360
Humidifier	-	-	-	1	1	5,480	5,480
Hydrometer	1	-	4	4	9	12	108
Hygrothermograph	-	-	1	-	1	430	430
Incubator	1	-	-	2	3	2,300	6,900
Inoculation chamber	1	-	1	2	4	300	1,300
Jogger, paper	-	1	-	-	1	1,020	1,020
Laboratory chem. cart	-	1	-	-	1	170	170
Laboratory tool kit	-	1	1	-	2	115	230
Lightometer	2	-	-	-	2	45	90
Machine, copying electrostatic	1	-	-	1	2	2,400	4,800
Machine, mimeographing	1	-	-	1	2	1,800	3,600
Machine, seed treat	1	-	-	1	2	1,000	2,000
Meter, grain moisture	-	-	-	1	1	300	300
Meter, moisture	2	-	-	4	6	900	5,400
Meter, pH	3	1	2	1	7	820	5,740
Microlamp	-	-	-	1	1	240	240
Microscope, compound	1	1	2	1	5	1,400	7,000
Microscope, dissect.	1	-	2	1	4	1,300	5,200
Microscope, stereo	1	-	2	1	4	850	3,400
Microtone	-	-	-	1	1	2,000	2,000
Microtome, rotary	1	-	1	-	2	1,400	2,800
Mount, ricker	48	-	-	24	72	2.50	180
Mount, ricker	-	-	24	-	24	3	72
Oven, electric	-	-	-	1	1	1,050	1,050
Oven, forced circulation	2	1	2	2	7	1,380	9,660
Oven, ordinary	2	1	2	2	7	1,050	7,350
Pershall flumes 3"	-	-	-	3	3	180	540
Pershall flumes 6"	-	-	-	3	3	360	1,080
Pershall flumes 9"	-	-	-	3	3	500	1,500
Photo-micrographic set	-	-	1	-	1	1,630	1,630
Photo-micrographic equipment	1	-	-	-	1	1,500	1,500

Annex J - Cont'd

ITEM	NUMBER OF UNITS FOR				TOTAL	EST. UNIT COST \$	TOTAL COST \$
	CLARC	BARC	LGARC	SMARC			
Phyrbeliograph	1	-	-	1	2	420	840
Pressure plate apparatus vacuum pump	1	1	-	1	3	1,200	3,600
Probe, soil neutron (with rate meter)	-	-	-	1	1	600	600
Probe, soil neutron (with rate meter)	-	1	-	-	1	240	240
Projector, Movie	-	1	-	-	1	10,800	10,800
Project, Slide	2	2	-	1	5	620	3,100
Public address system	-	-	-	1	1	720	720
Pump, vacuum	-	-	1	2	3	1,700	5,100
Radio, Communication Network Equipment	-	1	-	-	1	30,000	30,000
Range, gas	1	-	1	1	3	950	2,950
Recorder, micro-volmeter	-	1	-	-	1	60	60
Recorder, tape	-	-	-	1	1	350	350
Refractometer	2	-	1	-	3	3,540	10,620
Refrigerator	2	2	2	2	8	1,000	8,000
Respirator	5	-	-	1	6	7	42
Sacrifier	1	-	-	-	1	120	120
Seitz filter	2	-	2	2	6	115	690
Sieve, brass	-	-	-	1	1	72	72
Sieve, set	2	-	-	2	4	48	192
Shaker	1	1	2	1	5	700	3,500
Soil auger	-	-	-	2	2	45	90
Soil ceil thermistor	-	-	30	-	30	450	13,500
Soil moisture temp. meter	-	-	1	-	1	30	30
Soil sampler	-	-	-	2	2	33	66
Soil sampling, equip. set	-	-	2	-	2	260	520
Spectrophotometer	-	-	1	-	1	2,650	2,650
Spatula, stainless	5	-	6	-	11	5	55
Steam bath	2	-	-	-	2	300	600
Steel tanks (50 x 60 x 60 cm)	-	-	-	6	6	55	330
Stethoscope, Ford	2	-	-	1	3	10	30
Stereoscope, Pocket	1	1	-	1	3	40	120
Stereoscope, Mirror	1	1	-	1	3	320	960
Stirrer	1	-	2	-	3	420	1,260
Stirrer, magnetic	-	-	-	1	1	415	415
Stove	-	-	-	1	1	240	240
Stove	1	-	-	-	1	600	600
Tenderometer	1	1	-	-	2	240	480
Test kit, chloride	-	-	-	1	1	20	20
Test kit, sulfate	-	-	-	1	1	20	20
Tester, moisture	1	-	2	2	5	900	4,000
Thermometer	-	-	-	1	1	15	15
Thermometer, clinical	2	-	-	-	2	12	24
Thermometer, max-min	2	-	-	1	3	55	165
Thermometer, max-min	-	2	-	-	2	120	240

Annex J - Cont'd

ITEM	NUMBER OF UNITS FOR					TOTAL	EST. UNIT COST \$	TOTAL COST \$
	PCAR	CLARC	BARC	LGARC	SMARC			
Thermograph, soil-air water (at three levels)	-	-	-	1	1	2	1,300	2,600
Tissue culture set	-	-	-	1	-	1	12,000	12,000
Tissue grinder, willey	-	-	-	2	-	2	220	440
Transformer, variable	-	-	-	-	1	1	150	150
Trapping, equipment	-	2	1	1	-	4	110	440
Typewriter, electric	-	1	-	-	-	1	1,000	1,000
Typewriter, manual	-	2	3	3	2	10	600	6,000
Ultra-violet hand light	-	2	-	-	-	2	100	200
Sub-Total							\$ 420,500	

3. Library, Production, Communication and Related Materials

Card Catalog	1	-	-	-	-	1	700	700
Collator	1	-	-	-	-	1	2,350	2,350
Variety per, complete	1	-	-	-	-	1	7,950	7,950
Embossing Machine	1	-	-	-	-	1	1,020	1,020
Headliner (Variety per)	1	-	-	-	-	1	5,220	5,220
Micro-film reader								
Printer and Cabinet	1	-	-	-	-	1	12,000	12,000
Mimeograph Machine	-	2	2	1	1	6	1,600	9,600
Postage Machine	1	-	-	-	-	1	240	240
Books, Journals,								
Science Publication	14020	25000	25000	27500	27500	-	-	119,020
Computer (software)	4000	-	-	-	-	-	-	4,000
Library, shelves								
Furniture, Ventilations	-	10000	12400	12400	12400	-	-	47,200
Library Supplies								
binding	-	7400	7400	7500	7500	-	-	29,800
Copying service	-	4400	2000	1000	1000	-	-	8,400
Exposure Cabinet	2500					-	-	2,500
Sub-Total							\$ 250,000	
Grand Total of Three Areas							\$1,410,500	

CLARC - Central Luzon Agricultural Research Center
 BARC - Bicol Agricultural Research Center
 LGARC - La Granja Agricultural Research Center
 SMARC - Southern Mindanao Agricultural Research Center

Annex I

AMEMB MANILA

CONTROL 1617

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Classification

FEB. 23, 1975
2:25 AM

R 221601Z FEB 75
ACTION FM SECSTATE WASHDC
AID-3 TO AMEMBASSY MANILA 3420
BT
INFO UNCLAS STATE 040645
AMB AIDAC
MIN
ADM E.O. 11652: N/A
EON
CRU TAGS:

13/sh SUBJECT: TDY ENVIRONMENTAL SPECIALIST
REF: (A) MANILA 1874 (B) STATE 016088

1. AID/AM REVIEW OF ENVIRONMENTAL EQUIPMENTS FOR AG RESEARCH AND SMALL SCALE PROJECTS DOES NOT SEEM TO WARRANT TDY ENVIRONMENTAL SPECIALIST AT THIS TIME. WE BELIEVE ENVIRONMENTAL ANALYSES AND/OR APPROACH TO THESE PROJECTS INCLUDING SECTIONS FOR INCLUSION IN PROJECT PAPERS CAN BE PREPARED AT MISSION WITH FOLLOWING GUIDANCE:

2. FOR SMALL SCALE IRRIGATION: SINCE ENVIRONMENTAL ASSESSMENT OF IRRIGATION PROJECTS IS VERY SITE-SPECIFIC, AND ALL SITES ARE NOT YET FIRMLY CHOSEN, SUGGEST ENVIRONMENTAL ANALYSIS BE UNDERTAKEN IN MANNER SIMILAR TO THAT FOR SEDERHANA IRRIGATION PROJECT CURRENTLY UNDER CONSIDERATION FOR INDONESIA, UNDER SEDERHANA PLAN. ENVIRONMENTAL IMPACT IS IDENTIFIED BY MEANS OF CHECKLIST COMPLETED AT TIME OF INDIVIDUAL SUB-PROJECT INVESTIGATION AND DESIGN, WITH SUBSEQUENT REVIEW AT PROVINCIAL LEVEL BY KNOWLEDGEABLE ENGINEERS. IF SUCH CHECKLIST REVIEW INDICATES NEED FOR FURTHER INVESTIGATION AND POSSIBLE

REDESIGN OR IMITATION OF CONTROLS TO MINIMIZE ADVERSE ENVIRONMENTAL IMPACT, ADDITIONAL STUDIES CAN BE UNDERTAKEN AT THAT TIME. TOM JOHNSON MAILED COPY OF SEDERHANA PROJECT PAPER TO USAID FOR GUIDANCE AS TO THIS APPROACH. PROJECT PAPER UNFORTUNATELY DID NOT INCLUDE ORIGINAL SEDERHANA REPORT AND SAMPLE CHECKLIST EXEMPT BY REFERENCE; THEREFORE, COPY OF THIS REPORT AND SAMPLE CHECKLIST FORWARDED TODAY TO D. DANGLER. BECAUSE REVIEW OF CHECKLISTS AT PROVINCIAL LEVEL MUST BE UNDERTAKEN BY ENGINEERS KNOWLEDGEABLE IN ENVIRONMENTAL CONSEQUENCES

UNCLASSIFIED
Classification

PAGE TWO UNCLASSIFIED

OF IRRIGATION PROJECTS, USAID MAY WISH TO CONSIDER HOLDING AN INSTITUTIONAL SEMINAR FOR RISA ENGINEERS THAT WILL BE INVOLVED IN INVESTIGATIONS PRIOR TO COMPLETING CHECKLISTS AND IN REVIEWING CHECKLISTS FOR ADEQUACY AND IDENTIFICATION OF POTENTIAL ADVERSE EFFECTS AS INTEGRAL PART OF PROJECT.

3. FOR AG RESEARCH: WE BELIEVE ASSESSMENT OF ENVIRONMENTAL IMPACT OF CONSTRUCTION OF LABORATORIES AND OTHER BUILDINGS ON EXISTING RESEARCH SITES, AS WELL AS IMPACT OF USE OF TRAM MACHINERY AT RESEARCH SITES, CAN BE PERFORMED BY MISSION PERSONNEL UNDER DIRECTION OF D. DANGLER AND WITH GUIDANCE FROM AID'S ENVIRONMENTAL ASSESSMENT GUIDELINE MANUAL OF SEPTEMBER 1974. SUCH IMPACTS RESULTING FROM ADDITIONAL LAND CLEARINGS, SOIL EROSION, CHEMICAL USE, POTENTIAL STREAM POLLUTION BY NEW OR EXPANDED FACILITIES, ETC., SHOULD BE ADDRESSED. WITH RESPECT TO REF TO PARA 2. (C) FIRST SENTENCE, THIS NOT MEANT TO IMPLY IMPACT OF END-PRODUCTS OR RESULTS OF RESEARCH WOULD BE ASSESSED SINCE SUCH END-PRODUCTS NOT READILY IDENTIFIED AT THIS TIME. HOWEVER, IT WOULD BE DESIRABLE TO INCLUDE STATEMENT THAT FOAR WILL BE ENCOURAGED TO ASSESS NATIONAL IF NOT WORLD-WIDE IMPACT OF NEWLY DEVELOPED FOOD GRAIN STRAINS OR OTHER AGRICULTURAL PRODUCTS OR PROCESSES DERIVED FROM RESEARCH PRIOR TO RELEASING SUCH NEW PRODUCTS FOR WIDE DISSEMINATION AND USE. SUCH A STATEMENT COULD BE REINFORCED BY INDICATION THAT HISSIN AND FOAR HAVE INDEED HELD DISCUSSIONS TOWARD THAT END. ALSO, EVIDENCE THAT TRAINING INPUT AS DESCRIBED AS RESEARCH PRP PAGES 10-11 INCLUDES ENVIRONMENTAL AWARENESS IN CURRICULUM FOR TRAINEES WOULD STRENGTHEN SUCH A STATEMENT.

ABOVE APPROACH FULLY DISCUSSED WITH JOHNSON.

KISSINGER

CP

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