

CLASSIFICATION PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol: 67P

1. PROJECT TITLE Agricultural Research	2. PROJECT NUMBER 492-0280 Loan #492-T-039	3. MISSION/AID/W OFFICE Philippines
---	--	--

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit, e.g. Country or AID/W Administrative Code, Fiscal Year, Serial No., beginning with No. 1 each FY) 1

REGULAR EVALUATION SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING A. Total \$ 24,553 B. U.S. \$ 5,000	7. PERIOD COVERED BY EVALUATION	
A. First PRO-AG or Equivalent FY 75	B. Final Obligation Expected FY 75	C. Final Input Delivery FY 80		From (month/yr.) 5/76	To (month/yr.) 11/79

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. <u>Unresolved issues</u>		
(a) Short-term international training. Negotiate with GOP/NEDA a resolution to the per diem issue as it relates to short-term international training for loan funded participants. If accommodation cannot be reached, reprogram funds for other project components or deobligate at PACD.	T. Rishoi OCD	June, 1980
(b) Extension of the PACD to June 23, 1981. The purpose of extension is to accommodate completion of the last term of in-country training and provide time to complete disbursement for reordered vehicles. The supplier originally shipped vehicles with the wrong type of engines.	W.H. McCluskey OAD	June, 1980

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)	A. <input type="checkbox"/> Continue Project Without Change	
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T		B. <input type="checkbox"/> Change Project Design and/or	
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)	<input checked="" type="checkbox"/> Change Implementation Plan	
<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project	

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)		12. Mission/AID/W Office Director Approval	
William H. McCluskey Chief, Research Division	<i>W.H. McCluskey</i>	<i>Anthony M. Schwarzwald</i>	Anthony M. Schwarzwald
			Date 21 March '80

I. Summary

A.I.D. Loan 492-T-039 provided \$5.0 million to assist in partial financing of infrastructure, research equipment, references, training and technical assistance to help improve and expand indigenous research capability at 4 of 17 identified research centers. The Philippine Council for Agriculture and Resources Research (PCARR) is the implementing agency.

Although implementation of the project was retarded during the first 1.5 years, the rate of implementation has accelerated and the overall level of accomplishment is now 83 percent (Table 1).

Table 1. Loan I Overall Accomplishment *

	Cost (In Million) (\$)	% of Loan	Percent of Accomplish- ment	Overall Accomplish- ment
1) Infrastructure	2.25	45	100)	
2) Equipment	1.41	29	95)	
3) Manpower				
a) In-country	0.44	9	100)	
b) International	0.56	11	37)	83%
4) Technical Assistance	0.30	6	23)	
5) Uncommitted ^{1/}	<u>.04</u>	<u>-</u>	<u>-</u>	
	\$5.00	100		

^{1/} To be committed for additional equipment.

* Accrued expenditure basis.

Only the international training and the technical assistance components remain seriously behind schedule at this time. However, as a result of the development of program guidelines for the use of Technical Assistance, it appears likely that the remaining funds in that component can be used as designed. The outlook for utilizing the international training funds remains poor unless the GOP procedures can be modified to reflect current costs. Reprogramming of some funds is under discussion.

Details as to the status of project inputs are as follows:

A. Infrastructure

1. Loan financed - Reimbursement of \$2,194,399 has been made for 92 units completed with 2 units eligible for reimbursement of \$55,050 now 98% complete. Overall completion is 99%.
2. GOP Financed - ₱19.44 million of ₱52.16 million scheduled for support of infrastructure has been disbursed; ₱24.99 million is under construction and ₱5.31 million bid and/or ready for construction.
3. Of the total infrastructure scheduled at an estimated cost of ₱68.96 million (approximately \$9.32 million), 89% has been completed and/or is under construction.

B. Equipment

1. Loan Financed - of \$1.410 million allocated for commodity procurement, \$1.404 million or 99% has been committed in contracts. Approximately \$1.28 million of equipment has been delivered to Manila and research centers with additional items in transit.
2. GOP Financed - 82% of the ₱4.69 million allocated has been used. The ₱0.864 million balance still subject to bidding is awaiting the release of funds.

C. Manpower Development

1. In-country Academic

Of the \$440,000 scheduled, all has been committed to training of 26 Ph.D. and 106 M.S. candidates. There will be a shortfall of approximately \$76,369 as a result of increased costs. It is anticipated this will be made up from uncommitted funds in the international training component.

2. International Training

Of the \$500,000 scheduled for Ph.D., refresher/upgrading and short term observation/workshop training, approximately \$225,000 has been committed and \$209,000 disbursed, leaving a balance of approximately \$335,000 uncommitted.

D. Technical Assistance

Of the \$303,000 allocated, two contracts have been executed for a total of \$60,663 or approximately 23%. A number of additional consultants have been identified in the Technical Assistance Program recently formulated by PCARR and draft contracts for \$52,000 have been reviewed and approved by USAID.

II. Evaluation Methodology

The purpose of this evaluation was to assess the progress of implementation, identify constraints to implementation, and recommend measures to eliminate and/or minimize identified constraints rather than to attempt an in-depth overall assessment emphasizing attainment of project purpose and goals given the long-term nature of developing research capability.

Therefore, this methodology was limited to measurements of progress versus the original timetable, the actual financial support received by the project versus the approved project budget and assessing the timeliness and adequacy of supplies, materials, equipment versus the project timetable. Also, there was a general examination of other problems/difficulties encountered in the project implementation.

The evaluation was carried out by a joint GOP-USAID team consisting of representatives from PCARR, the Ministry of the Budget, the National Economic and Development Authority and USAID. PCARR prepared an initial report which was reviewed, discussed, and modified by the evaluation team during three working sessions in September and October, 1979. Data sources were project planning, commitment, contracting and other relevant documents. Since by-monthly site visits had been made, the team determined the time and costs for additional visits were not justified.

III. External Factors

There have been no major changes in project setting except those in GOP priorities strengthening the implementing government agency.

- A. To begin with, PCARR's position as the lead agency responsible for developing, coordinating, programming and evaluating research programs has been greatly strengthened by the GOP through the issuance of the following Presidential Decrees:

1. P. D. No. 461 which attached PCARR to NSDB for better coordination of national scientific program in the country;
2. P. D. No. 507 which expanded the functions of PCARR to include mines research;
3. P. D. No. 1249 which granted authority to PCARR to generate foreign funds for research; and
4. P. D. No. 1502 which provided for incentives and administrative reforms to promote productivity and efficiency in scientific and technological research.

The first two decrees enabled PCARR to:

- (a) Review all research program proposals in agriculture and natural resources (refer to Annex C).
- (b) Recommend research proposals to the Ministry of the Budget for funding.

In addition PCARR has established a program whereby the research priorities were developed and are updated at three year intervals in consonance with all relevant GOP agencies at both the regional and national levels as well as educational institutions and the private sector. Over 600 scientists, policy and implementing representatives participate in this exercise.

The GOP has demonstrated their support by increasing PCARR's budget to support their expanded functions (Table 6) and PCARR was one of the few GOP agencies to successfully cope with the new budget process which was a factor in obtaining increased budget support.

IV. Inputs

1. Infrastructure

As a whole, there was minimum change in the research related infrastructure so that what was originally programmed has been fully implemented. The major constraint was a 16 month delay in the initial release of funds thereby delaying both loan and GOP-financed structures for one year. Other delays were due to PCARR's unfamiliarity with FAR Agreements and USAID approval procedures, a shortage of PCARR and USAID engineers, inclement weather and short-term shortages of materials. These problems have since been resolved.

2. Commodity Procurement

Here there were also delays amounting to two years against the original schedule due to AID's underestimation of PCARR's and the centers' capacity to cope with myriad details and steps involved with procurement under AID regulations. These problems ranged from lack of reference catalog at research centers necessary for commodity identification and specification, PCARR's unfamiliarity with IFB's and to inadequate coordination between planning entities and the Ministry of the Budget. Nevertheless, nearly all loan financed procurement has now been committed in contracts and due to experience gained, it is believed that future loan funded procurement will proceed with a minimum of delays.

3. Manpower Development

In-country training has proceeded with only minor modification of the original schedule. Four Ph.D. slots were converted to six M.S. slots, changing the total of 130 to 132 scholars. There will be a small number of scholars yet enrolled at the PACD since the academic year terminates 4 months after the PACD.

International training has continued to lag behind schedule for a number of reasons. It was not possible to identify qualified Ph.D. candidates that could be released for 3 years by the end of the second year of the loan because an IBRD loan which was approved earlier had provided the opportunities necessary for available candidates. Short-term and refresher type training has been restrained by the lengthy nomination, approval and documentation process required by the GOP and the inadequate GOP-approved levels of per diem/living allowance which has discouraged a number of candidates from participating and which represents a level below that adequate to provide basic needs.

4. Technical Assistance

PCARR has been unable to take advantage of this component because trained and equipped staff have only recently been established as a result of delays mentioned. But now PCARR has been able to initiate consultancies for identified research areas and project evaluations which should all be contracted and **completed before the PACD.**

V. Outputs

1. The planned outputs for the project were:

a) Consolidation of PCARR as the GOP agency for developing, coordinating, programming and evaluating research policy and programs.

- b) The four centers adequately staffed and equipped and carrying out well planned research programs.
- c) An information system for PCARR in cooperation with UPLB, SEARCA and IRRI to provide timely access to researchers at the various centers.
- d) Improved quantity and quality of output in related organizations, such as other centers and training institutions.

Significant progress has been made in upgrading facilities and limited personnel from the four centers are in training and/or recently returned from training. All centers have initiated research programs in the commodities assigned to them under the priorities established with their participation (see Table 9). Development of those activities planned for the centers are nearly complete but it is recognized that envisaged development will continue to evolve over several years as staff gain essential experience and additional needs are addressed.

Since its establishment in 1973, PCARR's Scientific Literature Service (SLS) has expanded to service 30 libraries in the PCARR Research Station Network. Journals provided by the SLS include Asian as well as other foreign editions. To further intensify scientific information dissemination, PCARR has produced many publications and has conducted seminars, workshops and conferences utilizing books, journals and library reproduction equipment provided through the Loan Project which amounted to approximately \$250,000.00 (see Table 8).

Research priorities have been established for other centers and cooperating stations and research is underway (see Table (9)). Staff from other centers are receiving training, both in-service and in the academic program. Working agreements have been developed with private sector research units as well. Altogether, the quantity and quality of ongoing research projects have increased as well as being focused upon priority problems. However, it is recognized that development of experienced research personnel will require years and that the conduct of replicated and duplicated field trials require several growing seasons to obtain valid results. Although significant progress has been made, it would be premature to anticipate impact at this time.

VI. Purpose

Although progress towards EOPS cannot be concisely determined at this time, there are indications of progress supporting the validity of the project design. For example, in-service training for staff at regional centers and cooperating stations in the preparation of research proposals and statistical analysis of research data have improved the ability of staff to submit better research proposals as well as to analyze agricultural results for improved reporting.

The prioritizing of research efforts to meet regional and national needs, increased research funding support and an expanded and improved scientific literature service to regional centers have all contributed to improving research efforts at the target centers as well as at other centers.

VII. Goal

Evaluation of project goals is also not pertinent at this time but a modest surplus has been achieved in the Philippines' rice production and near self-sufficiency in corn production and some of these gains are recognized as the direct result of research coming in part from PCARR's efforts. An accelerated program of research on root crops is underway, directed to food, feed and alcohol production. Many other expanded efforts could be cited but are properly left for a more in-depth evaluation.

VIII. Beneficiaries

Experience in both developed and developing areas has demonstrated a significant lag time between research findings and wide scale adoption by producers, e.g., hybrid corn in the U.S. 12 years; and terracing and contour farming in the U.S. 18 years. It would be extremely premature to expect wide-spread development and acceptance of new technology by small producers at this stage. Nevertheless, it is widely acknowledged that new and improved technology is neither transferred or developed in the absence of an indigenous research capability. Efforts under this project are directed to developing that capability.

There are good reasons to assume that given the necessary time and other essential conditions (market incentives, credit, supplies), a majority of the small Filipino producers, and in time consumers, will benefit.

IX. Unplanned Effects

Not pertinent at this time.

X. Lessons Learned

1. Plan a realistic time frame for achieving research results and for development of research capabilities. It is irrational to anticipate any significant research findings in less than 5-10 years and even in a well developed environment, there is usually an 8-12 year lag time between initial research findings and a significant impact at the farm level. It will likely take longer

developing areas characterized by low educational levels poorly developed marketing systems and limited communication networks to achieve impact.

2. Indigenous research capability cannot be developed more rapidly than the development of the research personnel. Therefore, training should be one of the first tasks undertaken as both training and experience are essential to research competency.
3. Recognize that the AID procurement regulations contain a myriad of details and that host-country implementing agencies will need 1-2 years to become familiar with them before being able to move in a timely manner on procurement. Allow about a year of additional time for host-country procurement over direct AID procurement.
4. Recognize that the AID review and approval procedures are much more time consuming than commonly believed and that the time required is exponentially related to the number of offices involved in the review and approval procedures. Every effort should be made to minimize paper work, to limit reviews and approvals to an absolute minimum both within AID and the host-government, and to seek other measures to streamline the system in order to avoid unnecessary costs resulting from non-productive delays.
5. Eliminate loan funding for international training unless the host-government can present a system that provides adequate subsistence levels for participants.
6. Provide a procedure whereby loan funds can be used for support of critical research studies in the developing country on an ad hoc basis.
7. Project officer should maintain contact with budget/financial personnel of host-country implementing agency through his counterpart to identify potential counterpart funding problems. Contacts are most important during the budget request preparation period and again during period of finalizing the work and financial plans.

XI. Special Comments

There are no significant policy or program management implications at this time.

The following are titles of relevant Tables attached:

Table 2. Fund Requirement Per Implementation Plan (Thousand Pesos)

Table 3. Overall Accomplishment of the Infrastructure Project.

Table 4. Comparison of Loan I In-Country Manpower Development Program Against Actual Implementation.

Table 5. Comparison of Loan I International Manpower Development Program Against Actual Implementation.

Table 6. PCARR Budget (1972-78)

Table 7. Summary of Research Proposals Submitted to PCARR Evaluation Mechanism (1972-78) by PCARR Divisions

Table 8. PCARR's Major Publications (As of 1978)

Table 9. Research Responsibilities of Loan Assisted Research Centers.

Table 2. Fund Requirement Per Implementation Plan (Thousand Pesos)

	1976		1977		1978		1979		1980		Total	
	GOP	FOREX	GOP	FOREX	GOP	FOREX	GOP	FOREX	GOP	FOREX	GOP	FOREX
1 Manpower training and development		936		1,764	971	2,187	3,539	1,804	3,539	806	8,049	7,497
2 Equipment		10,575	4,695								4,695	10,575
3 Operating cost of centers	6,193		8,581		11,508		15,173		20,537			62,192
4 Infrastructures	12,001	15,191 ^{1/}	22,408	1,961 ^{1/}	12,093		2,958				49,460	17,152 ^{1/}
5 Technical Assistance				2,272								2,272
Total	18,194	26,704	35,684	5,997	24,572	2,187	21,670	1,804	3,539	806	124,396	37,496

Actual Funding Released (Thousand Pesos)

1 Manpower training and development				1,764	971	2,060	3,539	2,738	3,539	935	8,049	7,497
2 Equipment			2,931	10,575			1,764				4,695	10,575
3 Operating cost of centers			8,581		11,508		21,556		20,547			62,192
4 Infrastructures			25,018	1,961	21,455	15,195	3,857				50,330	17,156
5 Technical Assistance				10				490		1,772		2,272
Total			36,530	14,310	33,934	17,255	30,716	3,228	24,086	2,707	125,266	37,500

^{1/} This only represents the 75% reimbursable amount from AID and the actual estimated actual cost is P 22,869,000.00

Table 3: all Accomplishment of the Infrastructure Project

Status	Accomplishment	of Total
1. Total Infrastructure Budget	P 68.96 million	100
2. Amount Completed	36.24 million	53
3. Amount Under Construction	21.00 million	36
4. Amount Ready for Construction	3.02 million	4
5. Amount Bidded	2.29 million	3
6. Amount Ready for Bidding	0.65 million	1
7. Amount for Design Contract	1.77 million	3

BEST AVAILABLE COPY

Table 4: Comparison of Loan I In-Country Award Development
Project Against Total Intl. Allocation

Year	Programmed			Awarded			Balance	
	Ph.D.	M.S.	Total	Ph.D.	M.S.	Total	Ph.D.	M.S.
¹ (1976-77)	5	23	28	4	21	25	1	2
² (1977-78)	13	20	33	11 ^{1/}	23	34	2	3
³ (1978-79)	12	27	39	11	62 ^{2/}	73	1	(35)
⁴ (1979-80)	-	24	24	-	-	-	-	-
Total	30	100	130	26	106	132	4 ^{3/}	

1/ Include 2 awarded Ph.D. scholarship slots; and

2/ One M.S. scholarship slot which was inadvertently missed in the list of 1977 awardees forwarded to USAID, Manila.

3/ Converted to 6 M.S. slots.

() Over-subscribed to compensate the previous year balance.

NOTE: To convert 4 Ph.D. slots to M.S. slots:

Financial requirement of:

1 M.S. = \$20,000.00
 1 Ph.D. = \$30,000.00
 4 Ph.D. slots = 6 M.S. slots

The total number of slots for Ph.D. and M.S. of 130 was fully utilized, although there was a slight modification of four (4) Ph.D. slots converted to six (6) M.S. slots. Another revision was in the utilization of Ph.D. and M.S. slots. Some of the slots were used for other research stations included in the PCARR network not identified under loan project. The USAID agreed to the changes since the loan project (Loan I) is only a part of the total PCARR research station development program.

BEST AVAILABLE COPY

Table 5: Comparison of Loan I International Manpower Development Program Against Actual Implementation

Year	Programmed			Awarded			Balance		
	Ph.D.	RC1/	GP2/	Ph.D.	RC	GP	Ph.D.	RC	GP
1976	4	2	10	-	-	-	4	2	10
1977	3	4	15	1	-	-	2	4	15
1978	1	6	15	-	8	17	1	(2)	(2)
1979	..	6	10	-	7	20	-	(1)	(10)
Total	8	18	50	1	13^{1/2}	27^{1/2}	7^{1/2}	5	23

1/ Refresher Course (average of 9 months)

2/ Observation Tour (average of 1 month)

3/ Converted to short term training (1 month to 12 months)

4/ This represent the actual number who completed the training, and thus is less than the number awarded which includes those deferred by the GOP or unable to participate.

BEST AVAILABLE COPY

TABLE 6: FCARR Budget (1972-79)

	1972-73	1973-74	1974-75	1975-76 (Up to June, 1976)	CY 1976 (July to De- cember, 1976)	1977	1978
• Current Operating Expenses	P 1,500,000	P 6,000,000	P 15,000,000	P 14,504,410	P 6,998,000	P 25,818,000	P 27,004,000
• Fixed Ex- penditures	-	-	-	150,000	75,000	150,000	315,000
• Capital Outlays	-	-	-	1,000,000	-	25,979,000	37,000,000
GRAND TOTAL	P 1,500,000	P 6,000,000	P 15,000,000	P 15,654,410	P 7,073,000	52,947,000	64,319,000

BEST AVAILABLE COPY

Table 7

Summary of Research Proposals Submitted to PCARR Evaluation Mechanism (1972-78)
by
PCARR Divisions

PCARR Division	Proposals Received/ Processed But not Approved		Proposals Received/ Processed/Funded By PCARR		Proposals Processed By PCARR But Funded By Other Agencies		Total	
	No.	PCost	No.	PCost	No.	PCost	No.	PCost
FOR D	82	11,557,162	69	6,204,900	183	21,905,796	334	39,667,856
SWRRD	139	16,796,669	57	4,249,305	67	10,220,315	263	31,266,284
MRD*	10	10,118,869	3	1,123,946	-	-	13	11,241,915
FIRD	139	16,066,686	60	3,146,546	10	1,192,154	259	20,305,385
LRD	138	22,445,387	48	9,378,829	36	4,327,714	222	36,151,930
CRD	511	46,908,318	194	18,304,502	150	16,258,410	955	81,471,230
SERD	35	5,445,291	84	6,981,777	41	6,734,751	160	19,161,819
TOTAL	1,104	129,338,381	515	49,388,905	587	60,639,135	2,206	258,528,240

- FOR D - Forestry Research Division
- SWRRD - Soils and Water Resources Research Division
- MRD - Mines Research Division
- FIRD - Fisheries Research Division
- LRD - Livestock Research Division
- CRD - Crops Research Division
- SERD - Socio-Economic Research Division

MRD* was operationalized in January 1977.

Table 8

PCARR'S MAJOR PUBLICATIONS
(As of 1978)

A. Forestry Research Division

1. Resource papers on status of research at the international level on Leucaena. (Output of the International Consultation on Ipil-Ipil Research, 2-4 September 1976).
2. Leucaena: promising forage crop for the tropics. (Output of the International Consultation on Ipil-Ipil Research, 2-4 September 1976).
3. Detailed research and development program for the Philippines on Leucaena. (Output of the Ipil-Ipil Research and Development Program Workshop, 26-28 August 1977).
4. Philippines Recommends for Timber 1975. (Being updated).
5. Philippines Recommends for Dipterocarps I Lumber, 1977.

B. Soil and Water Resources Research Division

1. Philippines Recommends for Soil Conservation, 1977.
2. Philippines Recommends for Soil Fertility Management, 1978.
3. Philippines Recommends for Irrigation Water Management, Vol. I, 1978.
4. Philippines Recommends for Irrigation Water Management, Vol. II (Still under preparation).
5. Manual on Standardized Methods of Analysis for Soils, Plants, Water and Fertilizers. (Still under preparation).
6. Map on Monthly Rainfall and Cyclones in the Philippines, 2nd ed., 1977.
7. Soil Texture. Map of the Philippines, 1977.

8. Proceedings, First National Workshop on Standardization of Methods of Analysis for Soils, Water, Plants and Fertilizers. 22-23 March 1976, College, Laguna.
9. Proceedings, 3rd PCARR Team Leaders Conference. 4-6 January, 1977, Kawit, Cavite.
10. Proceedings, Seminar-Workshop on Determinants of Developing Country Irrigation Problems. 10-13 January 1978. Los Baños, Laguna.

C. Mines Research Division

1. Proceedings, First National Mines Research Congress. March 1977, Baguio City.
2. Proceedings, Mines Research Seminar-Meeting, February 1978, Laurel, Batangas.
3. Proceedings, Seminar-Workshop on Non-Metallic Mineral Resources Development. November 1978, Caliraya, Laguna. (Still under preparation).

D. Fisheries Research Division

1. Proceedings, First Fisheries Forum. 28 January 1975, Manila.
2. Proceedings, Second Fisheries Forum, 17 June 1975, Manila.
3. Proceedings, Third Fisheries Forum. 29 August 1975, Manila.
4. Proceedings, Fourth Fisheries Forum, 22 October 1975, Manila.
5. Proceedings, National Seaweed Symposium Workshop. 17-19 January 1977, Manila.
6. Proceedings, National Symposium/Workshop on Mangrove R-esearch and Development, 28-30 July, 1977, Manila.
7. Proceedings, International Workshop on Mangrove and Estuarine Area Development for the Indo-Pacific Region. 14-19 November 1977, Manila.

8. Philippines Recommends for Bangus, 1975. (Being updated).
9. Philippines Recommends for Tilapia, 1977.
10. Philippines Recommends for Mussel and Oyster, 1977.

E. Livestock Research Division

1. Proceedings, National Livestock Commodity Research Teams Workshop, 18-20 March, Tagaytay City.
2. Philippines Recommends for Beef Cattle Production 1976. 1975.
3. Philippines Recommends for Broiler Production 1976. 1976.
4. Philippines Recommends for Pork Production 1976. 1976.
5. Philippines Recommends for Egg Farming 1977. 1977.
6. Philippines Recommends for Duck Raising 1977. 1977.
7. Philippines Recommends for Goating Farming 1977. 1977.
8. Philippines Recommends for Carabao Production 1975. 1975.

F. Crops Research Division

1. Proceedings, First National Rubber Research and Extension Workshop, 11-13 July 1974, Kabacan, Cotabato.
2. Proceedings, First National Coconut Research Symposium, 17-19 November, 1975, Tacloban City.
3. Proceedings, First National Tobacco Research and Extension Workshop, 24-26 March, 1976, Bauang, La Union.
4. Proceedings, National Vegetable Research Workshop, 25-31 March 1976, Muñoz, Nueva Ecija.
5. Proceedings, Potato Round Table Conference, 6-7 May 1976, 6-7 May 1976, College, Laguna.

BEST AVAILABLE COPY

6. Proceedings, Public Forum on the Utilization of Winged Beam, 13-14 January 1978, Manila.
7. Proceedings, International Winged Beam/Workshop/Forum 9-11 January 1978, Los Baños, Laguna.
8. Proceedings, Second Regional Symposium on Pathogens and Pests of the Potato in the Tropics, 9-16 February 1978, Baguio City.
9. Proceedings, Workshop-Symposium on Ornamental Horticulture, 16-17 March 1978, Davao City.
10. Proceedings, National Consultation on Coconut Research: Series No. 4 Marketing 14 April 1978, Manila.
11. Proceedings, First National Workshop on Fruits, 4-9 June 1978, Davao City. (Still under preparation).
12. Proceedings, FAO/Philippine National Workshop on Development and Management of Rainfed Crop Production, 1 August 1978, Los Baños, Laguna (Still under preparation).
13. Proceedings, National Root Crops Research Seminar Workshop, 16-20 October 1978, Baybay, Leyte. (Still under preparation).
14. Philippines Recommends for Abaca, 1977.
15. Philippines Recommends for Coconut, 1975
16. Philippines Recommends for Coffee, 1976.
17. Philippines Recommends for Grapes, 1976.
18. Philippines Recommends for Mango, Revised ed. 1978.
19. Philippines Recommends for Orchids, 1977.
20. Philippines Recommends for Papaya, 1977.
21. Philippines Recommends for Peanut, 1978.

22. Philippines Recommends for Pineapple. 1976.
23. Philippines Recommends for Rice. 1977.
24. Philippines Recommends for Root Crops (Cassava). 1976.
25. Philippines Recommends for Sorghum. 1975.
26. Philippines Recommends for Soybeans. 1976.
27. Philippines Recommends for Cotton. 1975.
28. Philippines Recommends for Rubber. 1975.
29. Philippines Recommends for Tobacco. 1975. (With Ilocano translation, 1975.)
30. Philippines Recommends for Mungo. 1977.
31. Philippines Recommends for Vegetables Crops. 1975.
32. Philippines Recommends for Corn. Rev. ed., 1978.
33. Ipil-Ipil: The Wonder Tree. 1977.
34. Guidelines for Preparation and Submission of Research Proposals. 1972.

G. Socio-Economics Research Division

1. Proceedings, 2nd Biennial Meeting of the Agricultural Economics Society of Southeast Asia. 3-6 November 1977, Iloilo City.
2. Proceedings, Research Network Consultation. 8-9 November 1977, Los Baños, Laguna.
3. Proceedings, Workshop Seminar on Technology Generation, Verification and Dissemination in Asia. 25-26 April 1976, Iloilo City.
4. Philippines Recommends for Integrated Farming System. 1976. (Being updated).

6. Data Series on Rice Statistics, Philippines, 2nd Rev., 1976.
7. Bibliography of Research Studies in Agriculture, Forestry, and Fisheries in Northern Luzon 1976; in Southern Luzon 1976; in Bicol, 1975; in Western Visayas, 1975; in Central and Eastern Visayas, 1975; in Northern Mindanao, 1976; in Western Mindanao, 1976; and in Southern Mindanao, 1976.

Other PCARR Publications

1. Research Auditing Manual. (For limited distribution only).
2. PCARR Annual Reports - from 1972 to 1976.
3. Proceedings, various activities of the Research Management (Asia) Philippines Project. (For limited distribution only).
4. Directory of Researches in Agriculture, Forestry, Fisheries and Mines in the Philippines. Vols. 1-3, 1978.
5. Manpower Resources in Philippine Agriculture, Fisheries, Forestry and Mines Research, 1976.
6. Monitor, monthly newsletter of PCARR.
7. Various PCARR library publications, including bibliographies.
8. Individual reports on PCARR research projects. (Available upon request).
9. National Research Programs, by year/division. (Available upon request).
10. PCARR Farm News.
11. Proceedings, Media/Extension Linkage Conferences.

Table 9

Research Responsibilities of Loan Assisted Research Centers

<u>Center</u>	<u>Main Responsibilities</u>	<u>Other Responsibilities</u>
1. Central Luzon Agriculture and Resources Research Consortium (CLARC)		
1. Central Luzon State University Munoz, Nueva Ecija	Carabeef (ranch operations)	Fiber crops (jute, kenaf, ramie and sericulture) Fruit crops Legumes Sunflower Vegetables Farming Systems
2. Forest Research Institute Station, Carranglan, Nueva Ecija	-	Reforestation Watersheds
3. Freshwater Aquaculture Center (FAC) CLSU	Aquaculture (freshwater)	Inland water
4. Maligaya Rice Research and Training Center BPI Munoz, Nueva Ecija	-	Rice
5. National Irrigation Administration Munoz, Nueva Ecija	-	Water Resources
II. Bicol Agriculture and Resources Research Consortium (BARRC)	Regional Test Center for Region V	
1. Bicol Rice and Corn Station Pili, Camarines Sur	-	Corn, Sorghum, Legumes, Rice Vegetables Farming Systems
2. Bureau of Soils Pili, Camarines Sur	-	Soil Resources Root Crops
3. Camarines Sur Agricultural College Pili, Camarines Sur		Applied Sociology macroeconomics
4. Bicol River Basin Council Pili, Camarines Sur		Soil Resources Water Resources Applied Sociology Macroeconomics

III. La Granja Agriculture and Resources Research Consortium (LGARRC) La Carlota City, Negros, Occidental	Regional Test Center for Region VI	
1. PHILSUCOM Station	Sugar Cane	
2. BPI Station	Legumes (Mungo, Soybean, peanuts)	Corn, Sorghum vegetables Farming Systems
3. BAI Livestock Station		Pork Chevon Beef Carabeef (backyard)
IV. Southern Mindanao Agriculture and Resources Research Center Kabacan, North Cotobato (SMARRC)		
University of Southern Mindanao	Corn Sorghum Rubber Regional Test Center for Regions XI and XII	Fiber Crops Fruit Crops Legumes Coffee, Cacao spices Rice Root Crops Sugar Cane Vegetables Carabeef Pork Farming System Seed Resources Inland Water Applied Sociology Macroeconomics

JOINT GOP - USAID EVALUATION
OF THE
AGRICULTURAL RESEARCH PROJECT
A.I.D. Loan No. 492-T-039
October 31, 1979

Evaluation Team Members

P. A. Batugal, PCARR
Z. M. Euan, PCARR
W. A. Fraser, USAID
W. H. McCluskey, USAID
J. S. Montero, NEDA
E. L. Morales, NEDA
S. M. Miranda, PCARR
P. B. Tetangco, PCARR
R. M. Tomas, MOB
G. D. Torres, PCARR
S. J. Walworth, USAID

I. Summary

A.I.D. Loan 492-T-039 provided \$5.0 million to assist in partial financing of infrastructure, research equipment, references, training and technical assistance to help improve and expand indigenous research capability at 4 of 17 identified research centers. The Philippine Council for Agriculture and Resources Research (PCARR) is the implementing agency.

Although implementation of the project was retarded during the first 1.5 years, the rate of implementation has accelerated and the overall level of accomplishment is now 89 percent (Table 1).

Table 1: Loan I Overall Accomplishment

Project Components	Cost (In Million)	% of Loan	Percent of Accomplishment	Overall Accomplishment
1. Infrastructure	\$ 2.25	45	100	89%
2. Equipment	1.41	29	99	
3. Manpower				
a. In-country	0.44	9	100	
b. International	0.56	11	41	
4. Technical Assistance	0.30	6	23	
5. Uncommitted ^{1/}	<u>.04</u>	<u>-</u>	<u>-</u>	
	\$ 5.00	100		

^{1/} To be committed for additional equipment.

Only the international training and the technical assistance components remain seriously behind schedule at this time. However,

as a result of the development of a comprehensive five year manpower development program and development program guidelines for the use of Technical Assistance, it appears likely that the remaining funds can be used as planned, assuming the cooperation of the approving bodies.

Details as to the status of project inputs are as follows:

A. Infrastructure

1. Loan Financed - Reimbursement of \$2,194,399 has been made for 92 units completed with 2 units eligible for reimbursement of \$55,050 now 98% complete. Overall completion is 99+%.
2. GOP Financed - P19.44 million of P52.16 million scheduled for support of infrastructure has been disbursed; P24.99 million is under construction and P5.31 million bid and/or ready for construction.
3. Of the total infrastructure scheduled at an estimated cost of P58.96 million (approximately P9.32 million), 89 has been completed and/or is under construction.

B. Equipment

1. Loan Financed - of \$1.410 million allocated for commodity procurement, \$1.404 million or 99% has been committed in contracts. Approximately P0.807 million of equipment has been delivered to Manila and research centers.
2. GOP Financed - 87% of the P4.69 million allocated has been used. The P0.804 million balance still subject to bidding is awaiting the release of funds.

C. Manpower Development

1. In-country Academic

Of the \$440,000 scheduled, all has been committed to training of 26 Ph.D. and 106 M.S. candidates.

2. International Training

Of the \$560,000 scheduled for Ph.D. refresher/upgrading and short term observation/workshop training, approximately \$225,000 has been committed leaving a balance of approximately \$335,000.

D. Technical Assistance

Of the \$303,000 allocated, two contracts have been executed for a total of \$66,663 or approximately 23%. A number of additional consultants have been identified in the Technical Assistance Program recently formulated by PCARR and draft contract formats reviewed with USAID.

II. Background

In 1971, the GOP initiated a panel to review agricultural research programs, resources and needs. On the basis of the recommendations of the panel, PCARR was created by P.D. Number 48 issued on November 10, 1972. The initial meeting of the Governing Council was held on November 17, 1972 and appointed the first Director General and approved the organizational structure for the Secretariat. Soon thereafter PCARR identified a national network of 16 research centers to service the research needs throughout the many agroecological zones of the nation. To strengthen the research capability of the network, a long-term development program in manpower training,

infrastructure and equipment support was formulated.

In April, 1974, Dr. Albert Roseman evaluated the progress of PCARR and concluded that the timing was appropriate for AID development loan assistance. AID consultants Dr. Fran Le Beau and Dr. Jim Cobble assisted in development of the Loan Project Paper which was submitted in May, 1975. Funds were authorized in October, 1975, the Loan Agreement signed December 23, 1975, and the Conditions Precedent satisfied April 22, 1976.

The Agricultural Research Loan was designed to assist in development of the first phase of the overall program. The following four centers* were selected for the first phase:

- 1) Central Luzon Agricultural Research Complex (CLARC),
- 2) Bulac Agricultural Research Complex (BARC),
- 3) La Granja Agricultural Research Center (LGARC), and
- 4) Southern Mindanao Agricultural Research Center (SMARC).

The total cost for the first phase at the four centers is \$24.6 million of which \$5.0 is provided from the loan. Implementation was started in 1976 and completion is expected before the end of CY 1980.

The objectives of this evaluation were:

1. To measure progress of implementation.
2. To identify constraints to implementation.
3. To recommend corrective measures to eliminate and/or minimize constraints.

* The original names of the four research centers were maintained to be consistent with other Loan I documents.

III. Project Review

A. Project Inputs

1. Infrastructure

Annex A shows the proposed original structures as well as the revised list of structures. The revisions, however, were confined primarily to housing facilities. This was true for the Maligaya Rice Research and Training Center (MRRTC) (GOP Component) where there was a considerable change from the housing component to research related infrastructures. There was also a slight change at the Bicol Rice and Corn Experiment Station (BRCES) where the amount intended for the housing facilities, power and water facilities were used for housing development and renovation. As a whole, there was a minimum change in the research related infrastructure so that what was originally programmed was actually implemented. Based on the actual implementation, all of the research stations have the basic infrastructure support (crop research laboratory, greenhouse, screenhouse, headhouse and experimental farm) for research as well as housing facilities.

The major constraint was the 16 month delay in the initial release of funds. As a result, the implementation of loan-financed structures was delayed by one year; consequently, the construction of the GOP-financed structures was also delayed since the funds were first used as "seed funds" to construct loan-financed structures. Table 2 indicates the release of fund requirement as compared to actual need.

Table 2. Fund Requirement Per Implementation Plan (Thousand Pesos)

	1976		1977		1978		1979		1980		Total	
	GOP	FOREX	GOP	FOREX	GOP	FOREX	GOP	FOREX	GOP	FOREX	GOP	FOREX
1 Manpower training and development		236		1,764	274	2,187	3,549	1,804	3,549	809	8,049	7,496
2 Equipment		10,575	4,495								4,495	10,575
3 Operating cost of centers	6,593		8,581		11,508		15,173		20,547		62,192	
4 Infrastructure	12,001	15,191 ¹	22,405	1,961 ¹	12,043		2,958				49,463	17,152 ¹
5 Technical Assistance				2,272								2,272
Total	18,594	25,791	34,881	5,697	24,823	2,187	21,470	1,804	55,096	809	124,396	37,243

Actual Funding Released (Thousand Pesos)

1 Manpower training and development				1,764	971	2,060	3,549	2,748	3,549	935	8,049	7,607
2 Equipment			2,931	10,575			1,764				4,495	10,575
3 Operating cost of centers			8,581		11,508		21,556		20,547		62,192	
4 Infrastructure			25,018	1,961	21,455	15,197	3,857				50,330	17,156
5 Technical Assistance				10				490		1,772		2,272
Total			36,530	14,310	33,934	17,257	30,716	3,228	24,096	2,707	125,266	37,500

¹ This only represents the 75% reimbursement amount from AID and the actual estimated actual cost is P 22,865,000.00

BEST AVAILABLE COPY

BEST AVAILABLE COPY

This delay was, at least in part, due to PCARR's unfamiliarity with the budgeting procedure and inadequate coordination between planning entities and the Ministry of the Budget (MOB). Limited delays were the result of unfamiliarity with the Fixed Amount Reimbursement Agreements (FARA), USAID approval procedures and initially, a shortage of engineers within both PCARR and USAID to review and approve Architectural and Engineering (A & E) plans and documents. Inclement weather and short term shortages of materials retarded construction for relatively brief periods.

Notwithstanding the significant delay in the original release of funds, about 89 percent of all construction, both GOP and Loan financed, has been completed or is well underway (Table 3). Over 99 percent of the Loan financed infrastructure has been completed and reimbursed.

Table 3: Overall Accomplishment of the Infrastructure Project

Status	Accomplishment	of Total
1. Total Infrastructure Budget	68.96 million	100
2. Amount Completed	36.24 million	53
3. Amount Under Construction	24.99 million	36
4. Amount Ready For Construction	3.02 million	4
5. Amount Bidded	2.29 million	3
6. Amount Ready for Bidding	0.65 million	1
7. Amount for Design Contract	1.77 million	3

It now appears that the concept and procedure for undertaking infrastructure development under FARA's are well understood, PCARR's familiarity with the GOP budgeting procedure and coordination with the MOB were acknowledged by the MOB member of the evaluation panel. PCARR added additional engineers to their staff to provide closer monitoring of construction and it is believed that USAID is now in a position to offer a more rapid review of A & E documents.

There is every reason to assume that future infrastructure activities will move forward in a more timely manner.

2. Commodity Procurement

A detailed comparison of the original schedule for procurement to actual implementation was made by PCARR (Annex B). The graph reflects a delay of slightly over two years in loan financed procurement. However, the original schedule was exceedingly optimistic and failed to recognize the myriad details and steps involved with procurement under A.I.D. regulations as well as the time necessary to consolidate, categorize and prepare detailed specifications for a very wide array of laboratory and field equipment as well as library equipment and references. A serious lack of reference catalogs in the research centers placed the burden of preparation of specifications upon a small staff at PCARR. Coordinating with outlying centers in verification of specifications added several months to the task.

A lack of familiarity with AID procurement regulations and Invitation for Bid (IFB) documentation necessitated several rewrites which were delayed additionally due to slow review by USAID.

The original schedule failed to provide a time allotment for USAID approval of the IFB's as well as allowing time for opening of Letters of Commitment (L/Com's) and issuing Letters of Credit (L/C's).

The lack of awareness in the beginning of the AID restrictions prohibiting procurement from AID Code 935 countries also contributed to the overly optimistic original schedule. This same lack of awareness on the part of some U.S. suppliers contributed to additional delays in the approval of contracts and necessitated rebidding of some equipment. The panel agreed that the restriction as to source/origin also resulted in no bids being submitted on a few items which had to be canvassed.

A delay in procurement of limited library reference material resulted from the need to prepare a waiver.

Actual receipt of commodities has required more time than programmed. Delay in shipments, slow arrival of shipping documents, delays in customs and in port have all added to the time required for receipt, inspection and release of funds retained to ensure performance.

Despite the problems and delays encountered, approximately 99.5 percent of the loan funds allocated for procurement have been committed in contracts. As to future procurement, the panel agreed that it should move forward with fewer delays as a result of the following actions taken and experience gained.

- a. PCARR staff have become familiar with Handbook 11 and the restriction as to source/origin.
- b. Experience has been gained in the preparation of IFB's.

- c. PCARR has formed a special committee to prepare a list of basic laboratory and field research equipment and to review and evaluate the lists submitted by the regional centers.
- d. A waiver for procurement of selected references and equipment from AID Code 935 origin has been made.
- e. USAID will attempt to reduce the time taken for review and approval of bid evaluations and contract approvals to ensure that the contracts can be executed within the bid validity date.
- f. PCARR will work closely with the brokerage firm in an effort to secure a more rapid release of shipments from the port and customs.

3. Manpower Development

a. In-country Academic

The implementation of in-country training as compared to the original schedule is shown in Table 4.

Table 4: Comparison of Loan I In-Country Manpower Development Program Against Actual Implementation

Year	Programmed			Awarded			Balance	
	Ph.D.	M.S.	Total	Ph.D.	M.S.	Total	Ph.D.	M.S.
¹ (1976-77)	5	23	28	4	21	25	1	2
² (1977-78)	13	20	39	11 ^{1/}	23	34	2	3
³ (1978-79)	12	27	39	11	62 ^{2/}	73	1	(35)
⁴ (1979-80)	-	24	24	-	-	-	-	-
Total	30	100	130	26	106	132	4 ^{2/}	

1/ Include 2 awarded Ph.D. scholarship slots; and

2/ One M.S. scholarship slot which was inadvertently missed in the list of 1977 awardees forwarded to USAID, Manila.

3/ Converted to 6 M.S. slots.

(⁴) Over-subscribed to compensate the previous year balance.

NOTE: To convert 4 Ph.D. slots to M.S. slots:

Financial requirement of:

1 M.S. = ₱20,000.00
 1 Ph.D. = ₱30,000.00
 4 Ph.D. slots = 6 M.S. slots

The total number of slots for Ph.D. and M.S. of 130 was fully utilized, although there was a slight modification of four (4) Ph.D. slots converted to six (6) M.S. slots. Another revision was in the utilization of Ph.D. and M.S. slots. Some of the slots were used for other research stations included in the PCARR network not identified under the loan project. The USAID agreed to the changes since the Loan Project (Loan I) is only a part of the total PCARR research station development program.

b. International Training

This sub-component was planned to include a limited number of Ph.D. scholarships, refresher/upgrading courses of 3 to 12 months, and short-term training to accommodate observational tours and participation in workshops, conferences and symposium. Table 5 shows the number of positions planned for each type of training as compared to actual utilization.

Table 5: Comparison of Loan I International Manpower Development Program Against Actual Implementation

Year	Programmed			Awarded			Balance		
	Ph.D.	RC ^{1/}	OT ^{2/}	Ph.D.	RC	OT	Ph.D.	RC	OT
1976	4	2	10	-	-	-	4	2	10
1977	3	4	15	1	-	-	2	4	15
1978	1	6	15	-	8	17	1	(2)	(2)
1979	-	6	10	-	7	20	-	(1)	(10)
Total	8	18	50	1	13 ^{4/}	27 ^{4/}	7 ^{3/}	5	23

^{1/} Refresher Course (average of 9 months)

^{2/} Observation Tour (average of 1 month)

^{3/} Converted to short term training (1 month to 12 months)

^{4/} This represent the actual number who completed the training, and thus is less than the number awarded which includes those deferred by the GOF or unable to participate.

As to Ph.D. training it was necessary that participants enroll by 1977 in order to complete the three years normally required. However, it was not possible to identify eight qualified candidates that could be released for three years in 1976 and 1977 since an IBRD loan approved shortly before had provided opportunities for available candidates.

Consequently, only one candidate departed and the funds were reprogrammed to increase the number of positions for short-term and refresher type training.

Although Table 5 indicates that a majority of the slots programmed for refresher and short-term training have been filled, it fails to illustrate that approximately 59 percent of the total funds available for international training remain uncommitted. This situation is due in part to those funds from the unused Ph.D. slots and in part because the refresher type training programs averaged about five months rather than nine months as planned.

Another constraint to timely implementation has been the lengthy nomination, approval and documentation process required by the GOF which has resulted in a number of candidates being approved too late to participate. This has been exacerbated by approval of inadequate levels of per diem/living allowance which has discouraged a number of candidates from participating.

Despite the significant number of participants that have received training under the international training sub-component, the PCARR is aware that this activity is behind schedule in the utilization of funds. To address the issue, a comprehensive training program was developed and approved in principle by the PCARR Governing Council. Seventy-five potential candidates have been identified and the balance of funds should be used if the approval process functions in a timely manner. An alternative plan is to send research staff for course work abroad rather than for entrance into the more restrictive and time consuming degree programs

abroad. This procedure would make academic training abroad available for more candidates while reducing their stay abroad and permitting their research to be carried out locally addressing local problems.

4. Technical Assistance

This component was designed to provide consultants to assist on a variety of research problems over the life of the project. However, in the beginning phase of the project, the myriad problems inherent in improvement of facilities, procurement of research equipment and staff training made heavy demands on the limited PCARR staff. It was also assumed that until facilities could be upgraded, the contributions from consultants as well as benefits to the program would be limited and less relevant. Now that PCARR staff has developed experience with the many operations of physical development and the research centers are better equipped, PCARR has formulated a program for utilization of consultancies. A copy was provided to USAID.

The program reserves \$30,000 for the final evaluation of the Loan I. In addition, the program has identified pertinent needs as well as establishing guidelines for operation of the consultancies such as, that each consultant will have Filipino counterparts who will be responsible for implementation of activities jointly planned with the consultants. Specific commitments have been generated for the following:

- a. Forestry - a consultant to assist in the review and reprogramming of research and to provide technical backstopping in nursery establishment.
- b. A consultancy to assist in planning and establishment of experiments in small ruminants.
- c. An extension of the on-going socio-economic studies consultancy.
- d. Consultants - to provide key papers and team leadership for an international symposium on tropical fruit and vegetable research needs as well as assisting in the development of cooperative research programs.

In addition, prospective consultants in the areas of soil classification and seaweed research have been contacted to determine their availability. With these developments it appears highly likely that the funds allocated for technical assistance will be used to advance local research programs.

E. Project Output

1. The planned outputs for the project were:
 - a. Consolidation of PCARR as the GOP agency for developing, coordinating, programming and evaluating research policy and programs.
 - b. The four centers adequately staffed and equipped and carrying out well planned research programs.
 - c. An information system for PCARR in cooperation with UPLB, SEARCA and IRRI to provide timely access to researchers at the various centers.

- d. Improved quantity and quality of output in related organizations, such as other centers and training institutions.

2. Actual outputs

- a. PCARR's position as the lead agency responsible for developing, coordinating, programming and evaluating research programs has been greatly strengthened by the GOP through the issuance of the following Presidential Decrees:
 1. P.D. No. 451 which attached PCARR to NSDB for better coordination of national scientific programs in the country;
 2. P.D. No. 864 which expanded the functions of PCARR to include mines research;
 3. P.D. 1249 which granted authority to PCARR to generate foreign funds for research; and
 4. P.D. No. 1502 which provided for incentives and administrative reforms to promote productivity and efficiency in scientific and technological research.

The first two decrees enabled PCARR to:

1. Review all research program proposals in agriculture and natural resources (refer to Annex C).
2. Recommend research proposals to the Ministry of the Budget for funding.

In addition PCARR has established a program whereby the research priorities were developed and are updated at three year intervals in consonance with all relevant GOP agencies

at both the regional and national levels as well as educational institutions and the private sector. Over 600 scientists, policy and implementing representatives participate in this exercise.

The GOP has demonstrated their support by increasing PCARR's budget to support their expanded functions (Table 6).

- b. Significant progress has been made in upgrading facilities and personnel at the four centers and all have substantial research programs underway in the commodities assigned to them under the priorities established with their participation. Development of those activities planned for the centers are nearly complete but it is recognized that development will continue to evolve over several years as staff gain more experience and additional needs are addressed.

TABLE 6: PCARR Budget (1972-78)

	1972-73	1973-74	1974-75	1975-76 (Up to June, 1976)	CY 1976 (July to De- cember, 1976)	1977	1978
I. Current Operating Expenses	\$ 1,500,000	\$ 6,000,000	\$ 15,000,000	\$ 14,504,410	\$ 6,998,000	\$ 25,818,000	\$ 27,604,000
II. Fixed Ex- penditures	-	-	-	150,000	75,000	150,000	315,000
III. Capital Outlays	-	-	-	1,000,000	-	25,979,000	37,850,000
GRAND TOTAL	\$ 1,500,000	\$ 6,000,000	\$ 15,000,000	\$ 15,654,410	\$ 7,073,000	\$ 52,947,000	\$ 65,773,000

c. In 1973, PCARR organized and started the operation of a Scientific Literature Service (SLS) with the following objectives:

- a) The development and implementation of current awareness of services for colleges and universities of agriculture, experiment stations, research centers, as well as individual scientists.
- b) The establishment of a central repository of Philippine and Asian publication with the inclusion of these materials in the current awareness program.

Since its establishment in 1973, the SLS has serviced 30 libraries in the PCARR Research Station Network. The service provided journals in agriculture and related fields. These journals were made available through the library facilities of IRRI-UPLB for which a memorandum of agreement was signed to this effect. The participants in the SLS increased to 40, then to 66 during the period from 1975 to 1977. Furthermore, journals were to include Asian as well as other foreign editions.

To further intensify scientific information dissemination, PCARR has produced many publications (Annex F) and has conducted seminars, workshops and conferences (Annex G). This information dissemination was further strengthened by the procurements of books, journals and library reproduction equipment through the Loan Project which amounted to approximately US\$250,000.00

d. Research priorities have been established for other centers and cooperating stations and research is underway. Staff from other centers are receiving training, both in-service and in the academic

program. Working agreements have been developed with private sector research units as well. Altogether, the quantity and quality of on-going research projects have increased as well as being focused upon priority problems. However, it is recognized that development of research staff and the conduct of replicated and duplicated field trials are activities that require several growing seasons to bring to fruition. Hence, although significant progress has been made, it would be premature to evaluate this activity at this time.

IV. Conclusions and Recommendations

Despite a retarded beginning, the rate of implementation has accelerated and it appears that the infrastructure, commodity procurement and in-country training components will be easily completed in 1980. These activities represent approximately 83 percent of the loan funds. The international training and technical assistance components are retarded but it appears highly probable that the planning efforts completed by PCARR during recent months will make it possible to utilize these funds, assuming they receive cooperation of approving bodies.

As for the impact of the project, there are no identifiable constraints that cannot be surmounted in attaining the project purposes, sub-goals and goal. The organization and environment of the project has not changed significantly to warrant changes at this time in project design.

As a result of this review the evaluation team renders the following recommendations for the various components.

A. Infrastructure

1. The implementing agency should ensure coordination with the Ministry of the Budget (MOB) to ensure that local currency "seed" funds are made available on time.

This is now being done relative to the second phase (Loan II). The MOB participated in the loan negotiations.

2. That all sites for specific structures be adequately surveyed and definitely identified to ensure that no delays due to changes in location will be necessary.

B. Commodity Procurement

1. That PCARR and USAID jointly develop a definitive procedure for procurement of library references.
2. That PCARR and USAID accelerate their respective actions to ensure that evaluation of bids, and review/ approval of bid evaluations are concluded promptly so that contracts can be executed within the validity period of the bids.
3. That PCARR and USAID will explore ways to ensure that L/Coms and L/O's are opened and closed more promptly. There is also a need for both Bank of America and the

Philippine National Bank to be more responsive in providing information on L/C's.

4. PCARR will explore ways to accelerate clearing, release and inspection of commodities upon arrival in the Philippines.

C. International Training

1. PCARR will seek to arrange longer term refresher training programs so that the average period more closely approximates 9 months as planned.
2. Ensure that in future loans that candidates for international academic training are identified and nominated within 6 months after activation of the loan.
3. That PCARR and the GOP explore ways to streamline the nomination and approval procedure for short-term trainees and to provide them an adequate level of per diem.
4. That if the action called for in No. 3 cannot be successfully achieved, that the balance of training funds be reprogrammed for commodity procurement, especially books and journals.

D. Technical Assistance

That the recently formulated program on the utilization of funds identified for technical assistance be implemented more vigorously.

ANNEX "A"

COMPARISON OF LOAN I INFRASTRUCTURE DEVELOPMENT PROGRAM
AGAINST IMPLEMENTATION

<u>Original Proposed Structure</u> (1)	<u>Revised Proposed Structures</u> (2)	<u>Year Programmed</u> (3)	<u>Year Implemented</u> (4)	<u>Remarks</u> (5)
I. CLARE				
A. CLSU (Loan Financed)				
1. Crop Research Laboratory	NC ^{1/}	1976	1977	} Delay due to delayed release of funds
2. 2 BR Duplex (10 units)	20 Units 2-BR Staff House	1976	1977	
3. Experimental Farm	NC	1976	1977	
B. CLSU (GOP)				
1. Horticulture Laboratory	Farm Shop Building	1977	1978	} GOP funds were availed for loan financed structures
2. Greenhouse	-	1977	1978	
3. Screenhouse (2 units)	Screenhouse (1 unit)	1977	1978	
4. Power and Water Facilities	-	1977	1978	
5. 4-BR Apartments (2 units)	4 units 5-BR Apartments	1977	1978	
6. Service Building	(NC)	1979	1978	
7. Hoodhouse	(NC)	1978	1978	
8. Field and Structures	(NC)	1979	1978	
9. Forage and Pasture (50 Ha.)	(NC)	1979	1978	
10. Inland Fishery Expansion	(NC)	1978	1978	
11. 2-BR Duplex (4 units)	6 units 2-BR Staff House	1978	1978	
12. # BR House (*units)	6 units 3-BR Staff House	1978	1978	

^{1/} NC - (No Change)

<u>Original Proposed Structure</u> (1)	<u>Revised Proposed Structures</u> (2)	<u>Year Programmed</u> (3)	<u>Year Implemented</u> (4)	<u>Remarks</u> (5)
C. MRRTC (Loan Financed)				
1. Greenhouse (Renovation)	Screenhouse	1976	1977	} Delay due to delayed release of funds
2. 2-BR Duplex (2 units)	4 units 2-BR Staff Housing	1976	1977	
D. MRRTC (GOP)				
1. Greenhouse Renovation	} Dormitory Crop Res. Laboratory (Renovation) Greenhouse	1977	1977	
2. Screenhouse		1977	1977	
3. 2-BR Duplex (2 units)		1978	1978	
4. 3-BR House (3 units)				
5. 4-BR Apartments (2 units)				

II. BARC

A. BRCS (Loan Financed)

1. Crop Research Laboratory	(NC)	1976	1977	} Delay due to delayed release of funds
2. Greenhouse	(NC)	1976	1977	
3. Screenhouse	(NC)	1976	1977	
4. 2-BR Duplex (4 units)	2 units 3-BR Staff House and 6 units 2-BR Staff House	1976	1977	
5. Experimental Farm Dev.	Water System Improvement	1976	1978	

B. PRCS (GOP)

1. Greenhouse	(NC)	1977	1979	} GOP funds were availed for loan
2. Screenhouse	(NC)	1977	1979	
3. Headhouse	(NC)	1977	1978	
4. Storage & Crop Processing Building	Service Building			

<u>Original Proposed Structures</u> (1)	<u>Revised Proposed Structures</u> (2)	<u>Year Programmed</u> (3)	<u>Year Implemented</u> (4)	<u>Remarks</u> (5)
II. B. PRCES (GOF) . . . cont'n.				
5. Administrative Building (Renovation)	(NC)	1977	1978	} financed structure
6. Vet Station	(NC)	1977	1976	
7. 3-BR. House (3 units)	(NC)	1977	1978	
8. 4-DR Apartment (2 units)	} Housing Development and Renovation	} 1978	} 1978	
9. Guesthouse				
10. Power & Water Utilities				
C. CSAC (Loan Financed)				
1. Soil and Water Research Center	(NC)	1976	1977	} Delay due to delayed release of funds
2. 2-BR Duplex (4 units)	8 units 2-BR Staff House	1976	1977	
3. Experimental Farm Dev.	(NC)	1976	1977	
D. CSAC (GOF)				
1. On-Farm Water Management Building (2 units)	(NC)	1976	1978	} GOF funds were availed for financed structures
2. Service Structures	(NC)	1977	1978	
3. Power and Water Facilities Improvement	(NC)	1977	1978	
4. 3-BR House (2 units)	(NC)	1977	1978	
5. 4-DR Apartment (2 units)	(NC)	1977	1978	
6. Office/Auditorium, Library, Lecture, & Workshop Room	(NC)	1978	1978	

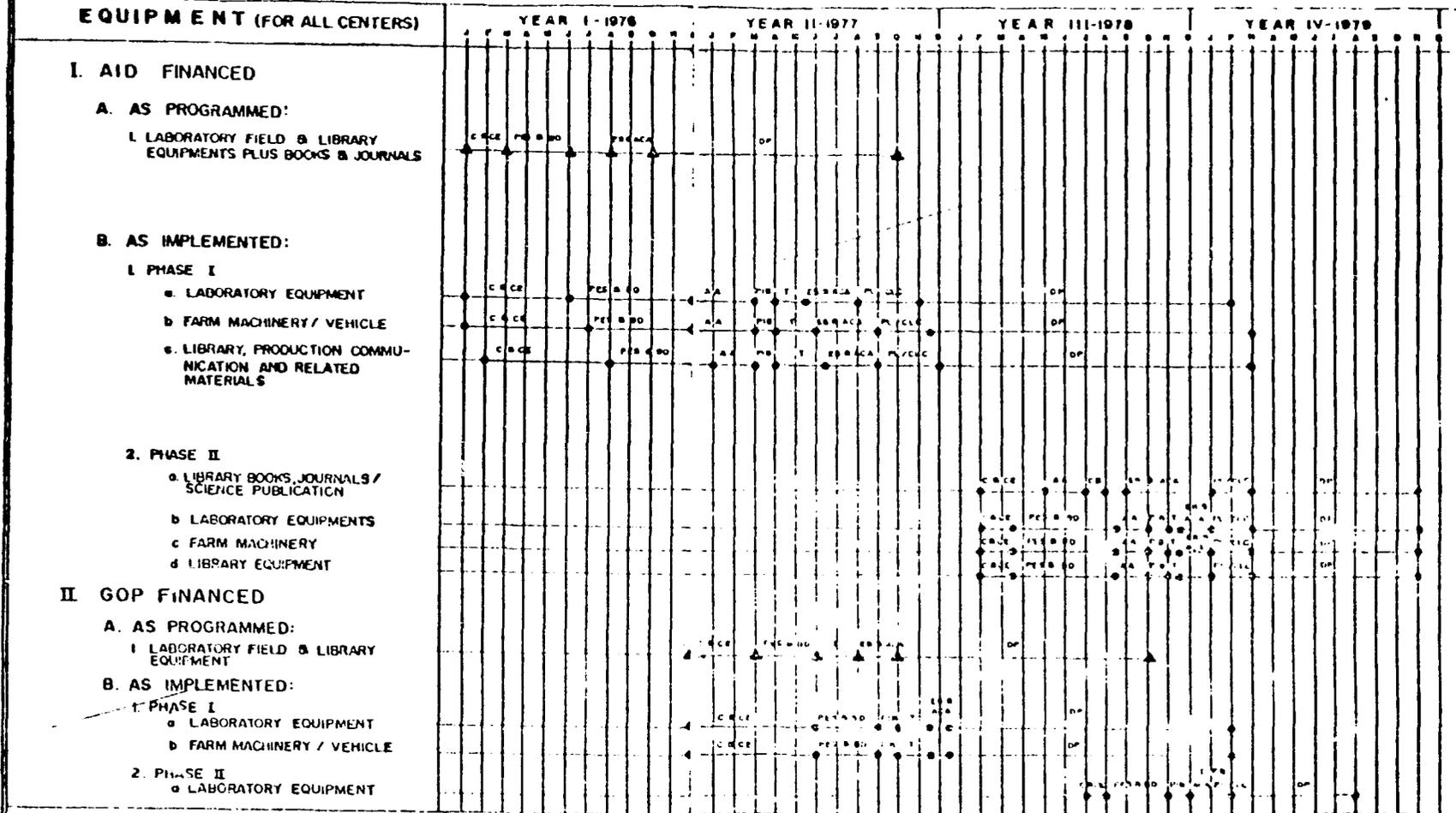
<u>Original Proposed Structures</u> (1)	<u>Revised Proposed Structures</u> (2)	<u>Year Programmed</u> (3)	<u>Year Implemented</u> (4)	<u>Remarks</u> (5)
E. BUCA (GOP)				
1. Screenhouse	(NC)	1977	1979	} Implementation temporarily held by PCARR Governing Council
2. Greenhouse	(NC)	1977	1979	
3. Headhouse	(NC)	1977	1979	
4. Abaca Processing Center	(NC)	1977	1978	
5. Experimental Farm Site Dev.	(NC)	1977	1978	
F. BUCA (GOP)				
1. Fish Research Laboratory	(NC)	1978	1978	}
2. Farm Development and Utilities	(NC)	1978	1978	
III. LGARC				
A. LGARC (Loan Financed)				
1. Crop Research Laboratory	(NC)	1976	1977	} Delay due to delayed release of funds
2. Greenhouse	(NC)	1976	1977	
3. Screenhouse	(NC)	1976	1977	
4. Service Building	(NC)	1976	-	
5. 2-BR Duplex (10 units)	20 units 2-BR	1976	1977	
6. Experimental Farm Dev.	Joint USAID-GOP Project	1976	1978	

<u>Original Proposed Structures</u> (1)	<u>Revised Proposed Structures</u> (2)	<u>Year Programmed</u> (3)	<u>Year Implemented</u> (4)	<u>Remarks</u> (5)
E. IGARC (GOP)				
1. Administration and Auditorium Building	(NC)	1977	1978) GOP funds were available for loan-financed structures
2. Greenhouse (2 units)	(NC)	1977	1979	
3. Screenhouse (2 units)	(NC)	1977	1979	
4. Headhouse	(NC)	1977	1978	
5. Beef/Carabeef Swine Res. Lab.	(NC)	1977	1979	
6. Service Facilities	(NC)	1977	1978	
7. Livestock Field Structures	(NC)	1977	1978	
8. Agro-Net Station	(NC)	1977	1976	
9. BAI Experimental Farm Site Dev.	} Included in the joint USAID & GOP Experimental Farm Dev.	1977	1978	
10. PFI Experimental Farm Site Dev.		1977	1978	
11. PHELSON Experimental Farm Development		1977	1978	
12. Housing Area Development	(NC)	1977	1978	
13. Irrigation Reservoir	(NC)	1977	1978	
14. Power Facilities Improvement	(NC)	1977	1978	
15. Waste Water Treatment System	(NC)	1978	1979	
16. 3-BR House (11 units)	3-BR House (8 units)	1978	1978	
17. Guesthouse	(NC)	1977	1978	
18. 4-BR Apartment (4 units)	4-BR Apartment (3 units)	1978	1978	

<u>Original Proposed Structures</u> (1)	<u>Revised Proposed Structures</u> (2)	<u>Year Programmed</u> (3)	<u>Year Implemented</u> (4)	<u>Remarks</u> (5)
IV. SMARC				
A. SMARC (Loan Financed)				
1. Crop Res. Laboratory	(NC)	1976	1977	} Delay due to delayed release of funds
2. Greenhouse	1 unit Greenhouse	1976	1977	
3. Screenhouse	(NC)	1976	1977	
4. Service Buildings	(NC)	1976	1977	
5. Insectarium-Pathologium Bldg.	(NC)	1976	1977	
6. 2-BR Duplex (10 units)	2-BR Staff Houses (20 units)	1976	1977	
7. Experimental Farm Dev.	Field Buildings	1976	1977	
8. -	Site Dev. Utilities	1976	1977	
B. SMARC (GOP)				
1. Greenhouse	(NC)	1977	1978	} GOP funds were availed for loan financed structures
2. Screenhouse	(NC)	1977	1978	
3. Headhouse	(NC)	1977	1978	
4. Service Building	(NC)	1977	1978	
5. Experimental Farm (Additional)		1977	1978	
6. Power and Utilities Improvement	(NC)	1977	1978	
7. 3-BR House (5 units)	(NC)	1977	1979	
8. 2-BR Duplex (15 units)	2-BR Staff Houses(16 units)	1977	1978	
9. 4-BR Apartment (10 units)	4-BR Apartment(7 units)	1977	1978	
10. Guesthouse	(NC)	1977	1978	
11. Animal Research Laboratory	(NC)	1978	1978	

<u>Original Proposed Structures</u> (1)	<u>Revised Proposed Structures</u> (2)	<u>Year Programmed</u> (3)	<u>Year Implemented</u> (4)	<u>Remarks</u> (5)
V. NARC (GOF)				
1. FRR National Headquarter Bldg.	(NC)	1976	1976	
2. Crop Research Laboratory	(NC)	1977	1977	
3. Service Building	(NC)	1977	1977	
4. -	Headhouse		1977	} Additional
5. -	Screenhouse		1978	
6. -	Greenhouse		1978	

COMPARISON OF EQUIPMENT PROJECT CRITICAL PATH CHART AS PROGRAMMED AGAINST ACTUAL IMPLEMENTATION



▲ AS PROGRAMMED
● AS IMPLEMENTED

LEGEND:

C/CE	CONSIDERATION & LATERIZATION OF PROJECT	ED/EA/ALA	ESTIMATION OF BIDS & APPROVAL OF CONTRACT
PES/BD	PREPARATION OF EQUIPMENT SPECS & BIDDING	PL/CLC	PREPARATION OF LETTER OF COMMITMENT & LETTER OF INTENT
AA	AID APPROVAL	DP	DEVELOPMENT OF PROJECT
PIB	PUBLICATION OF INVITATION TO BID		

ANNEX C

Summary of Research Proposals Submitted to PCARR Evaluation Mechanism (1972-78) By PCARR Divisions.

PCARR Division	Proposals Received/ Processed But Not Approved		Proposals Received/ Processed/Funded By PCARR		Proposals Processed By PCARR But Funded By Other Agencies		T o t a l	
	No.	FCost	No.	FCost	No.	FCost	No.	FCost
FORD	82	11,557,162	69	6,204,900	183	21,905,796	334	39,667,856
SWRRD	139	16,796,669	57	4,249,305	67	10,220,315	263	31,266,284
MRD*	10	10,118,869	3	1,123,046	-	-	13	11,241,915
FIRD	139	16,066,685	60	3,146,546	10	1,192,154	259	20,305,385
LRD	138	22,445,387	48	9,378,829	36	4,327,714	222	36,151,930
CRD	511	46,908,318	194	18,304,502	150	16,258,410	955	81,471,230
SERD	35	5,445,291	84	6,981,777	41	6,734,751	160	19,161,819
TOTAL	1,104	129,338,381	515	49,398,905	587	60,639,135	2,206	258,528,240

FORD - Forestry Research Division
 SWRRD - Soils and Water Resources Research Division
 MRD - Mines Research Division
 FIRD - Fisheries Research Division
 LRD - Livestock Research Division
 CRD - Crops Research Division
 SERD - Socio Economic Research Division

MRD* was operationalized in January 1977.

ANNEX D

PCARR'S MAJOR PUBLICATIONS
(As of 1978)

A. Forestry Research Division

1. Resource papers on status of research at the international level on Leucaena. (Output of the International Consultation on Ipil-Ipil Research, 2-4 September 1976).

2. Leucaena: promising forage crop for the tropics. (Output of the International Consultation on Ipil-Ipil Research, 2-4 September 1976).

3. Detailed research and development program for the Philippines on Leucaena. (Output of the Ipil-Ipil Research and Development Program Workshop, 26-28 August 1977)!

4. Philippines Recommends for Timber 1975. (Being updated).

5. Philippines Recommends for Dipterocarps I Lumber, 1977.

B. Soil and Water Resources Research Division

1. Philippines Recommends for Soil Conservation, 1977

2. Philippines Recommends for Soil Fertility Management, 1978.

3. Philippines Recommends for Irrigation Water Management, Vol., I, 1978

4. Philippines Recommends for Irrigation Water Management, Vol. II (Still under preparation)

5. Manual on Standardized Methods of Analysis for Soils, Plants, Water and Fertilizers. (Still under preparation).

6. Map on Monthly Rainfall and Cyclones in the Philippines. 2nd ed., 1977.

7. Soil Texture, Map of the Philippines, 1977.

8. Proceedings, First National Workshop on Standardization of Methods of Analysis for Soils, Water, Plants and Fertilizers. 22-23 March 1976, College, Laguna.

9. Proceedings, 3rd PCARR Team Leaders Conference. 4-6 January, 1977, Kawit, Cavite.

10. Proceedings, Seminar-Workshop on Determinants of Developing Country Irrigation Problems. 10-13 January 1978. Los Baños, Laguna.

C. Mines Research Division

1. Proceedings, First National Mines Research Congress. March 1977, Baguio City.

2. Proceedings, Mines Research Seminar-Meeting. February, 1978, Laurel, Batangas.

3. Proceedings, Seminar-Workshop on Non-Metallic Mineral Resources Development. November 1978, Caliraya, Laguna. (Still under preparation).

D. Fisheries Research Division

1. Proceedings, First Fisheries Forum, 28 January 1975, Manila.

2. Proceedings, Second Fisheries Forum, 17 June 1975. Manila.

3. Proceedings, Third Fisheries Forum, 29 August 1975. Manila.

4. Proceedings, Fourth Fisheries Forum, 22 October 1975, Manila.

5. Proceedings, National Seaweed Symposium Workshop. 17-19 January 1977, Manila.

6. Proceedings, National Symposium Workshop on Mangrove Research and Development. 28-30 July, 1977, Manila.

7. Proceedings, International Workshop on Mangrove and Estuarine Area Development for the Indo-Pacific Region. 14-19 November, 1977, Manila.

8. Philippines Recommends for Bangus, 1975. (Being updated).

9. Philippines Recommends for Tilapia. 1977.

10. Philippine Recommends for Mussel and Oyster. 1977.

E. Livestock Research Division

1. Proceedings, National Livestock Commodity Research Teams Workshop. 18-20 March, 1976. Tagaytay City.

2. Philippines Recommends for Beef Cattle Production 1976. 1975.

3. Philippines Recommenda for Broiler Production 1976. 1976.

4. Philippines Recommends for Pork Production 1976. 1976.

5. Philippines Recommends for Egg Farming 1977. 1977

6. Philippines Recommends for Duck Raising 1977. 1977

7. Philippines Recommends for Goat Farming 1977. 1977

8. Philippines Recommends for Carabao Production 1978. 1978.

F. Crops Research Division

1. Proceedings, First National Rubber Research and Extension Workshop. 11-13 July 1974, Kabacan, Cotabato

2. Proceedings, First National Coconut Research Symposium, 17-19 November, 1975, Tacloban City.

3. Proceedings, First National Tobacco Research and Extension Workshop. 24-26 March, 1976, Bauang, La Union

4. Proceedings, National Vegetable Research Workshop 29-31 March, 1976, Muñoz, Nueva Ecija.

5. Proceedings, Potato Round Table Conference 6-7 May 1976, College, Laguna.

6. Proceedings, Public Forum on the Utilization of Winged Bean, 13-14 January 1978, Manila.

7. Proceedings, International Winged Bean/Workshop/Forum. 9-11 January 1978, Los Baños, Laguna.

8. Proceedings, Second Regional Symposium on Pathogens and Pests of the Potato in the Tropics. 9-15 February 1978. Baguio City.

9. Proceedings, Workshops-Symposium on Ornamental Horticulture. 16-17 March 1978, Davao City.

10. Proceedings, National Consultation on Coconut Research: Series No. 4 Marketing 14 April 1978, Manila.

11. Proceedings, First National Workshop on Fruits. 4-9 June 1978, Davao City. (Still under preparation).

12. Proceedings, FAO/Philippine National Workshop on Development and Management of Rainfed Crop Production. 1 August 1978, Los Baños, Laguna (Still under preparation).

13. Proceedings, National Root Crops Research Seminar Workshop. 16-20 October 1978, Baybay, Leyte. (Still under preparation).

14. Philippines Recommends for Abaca. 1977.
15. Philippines Recommends for Coconut. 1975.
16. Philippines Recommends for Coffee. 1976.
17. Philippines Recommends for Grapes. 1976.
18. Philippines Recommends for Mango. Revised ed., 1978.
19. Philippines Recommends for Orchids. 1977.
20. Philippines Recommends for Papaya. 1977.
21. Philippines Recommends for Peanut. 1978.
22. Philippines Recommends for Pineapple. 1976.
23. Philippines Recommends for Rice. 1977.
24. Philippines Recommends for Root Crops (Cassava). 1976.
25. Philippines Recommends for Sorghum. 1975.
26. Philippines Recommends for Soybeans. 1976.

27. Philippines Recommends for Cotton. 1975.
28. Philippines Recommends for Rubber. 1975.
29. Philippines Recommends for Tobacco. 1975. (With Ilocano translation, 1975.)
30. Philippines Recommends for Mungo. 1977.
31. Philippines Recommends for Vegetables Crops. 1975.
32. Philippines Recommends for Corn. Rev. ed., 1978.
33. Ipil-Ipil: The Wonder Tree. 1977.
34. Guidelines for Preparation and Submission of Research Proposals. 1972.

C. Socio-Economics Research Division

1. Proceedings, 2nd Biennial Meeting of the Agricultural Economics Society of Southeast Asia. 3-6 November 1977, Iloilo City.
2. Proceedings, Research Network Consultation. 8-9 November 1977, Los Baños, Laguna.
3. Proceedings, Workshop Seminar on Technology Generation, Verification and Dissemination in Asia. 25-28 April 1976, Iloilo City.
4. Philippines Recommends for Integrated Farming System. 1976. (Being updated).
5. Lending Agencies for Rice and Corn Farmers. 1975.
6. Data Series on Rice Statistics, Philippines, 2nd Rev., 1976.
7. Bibliography of Research Studies in Agriculture, Forestry, and Fisheries in Northern Luzon 1976; in Southern Luzon, 1976; in Bicol, 1975; in Western Visayas, 1975; in Central and Eastern Visayas, 1975; in Northern Mindanao, 1976; in Western Mindanao, 1976; and in Southern Mindanao, 1976.

Other PCARR Publications

1. Research Auditing Manual. (For limited distribution only).
2. PCARR Annual Reports - from 1972 to 1976.
3. Proceedings, various activities of the Research Management (Asia) Philippines Project. (For limited distribution only).
4. Directory of Researches in Agriculture, Forestry, Fisheries and Mines in the Philippines. Vols. 1-3, 1978.
5. Manpower Resources in Philippine Agriculture, Fisheries, Forestry and Mines Research, 1976.
6. Monitor, monthly newsletter of PCARR.
7. Various PCARR library publications, including bibliographies.
8. Individual reports on PCARR research projects. (Available upon request).
9. National Research Programs, by year/division. (Available upon request).
10. PCARR Farm News.
11. Proceedings, Media/Extension Linkage Conferences.

ANNEX E

SEMINARS, WORKSHOPS, CONFERENCES AND SIMILAR PROGRAMS
CONDUCTED BY PCARR^{1/} (1972-1978)

A. Forestry Research Division

*1. International Consultation on Ipil-Ipil Research,
2-4 September 1976, College, Laguna.

*2. Ipil-Ipil Research and Development Program Work-
shop, 26-28 August 1977, Agoncillo, Batangas.

B. Soil and Water Resources Research Division

*1. First National Workshop on Standardization of Methods
of Analysis for Soils, Water, Plants and Fertilizers,
22-23 March 1976, College, Laguna.

*2. Farming Systems National Workshop, 9-11 January
1976, Nalinao, La Union.

*3. 3rd PCARR Team Leaders Conference, 4-6 January
1977.

*4. International Seminar-Workshop on Hilly Land
Development, 3-6 August 1977, Legaspi City.

*5. Benchmark Soils Project 2nd Annual Coordination
Meeting, 9-10 August 1977, Manila.

*6. Seminar-Workshop on Determinants of Developing
Country Irrigation Problems, 10-13 January 1978.
College, Laguna.

*^{1/} Programs were conducted either singly or in collaboration
with other agencies.

* Proceedings were prepared.

*7. National Conference Workshop on Soil Resources Inventory and Evaluation for Countryside Development, 18-21 January 1978, Manila.

*8. National Seminar-Workshop on Soil Conservation, 28-30 July 1978, Los Baños, Laguna.

*9. Seminar-Workshop on Minimum Sets of Data for Field Experiments on Crops. 29-30 September 1978, Los Baños, Laguna.

C. Mines Research Division

*1. First National Mines Research Congress, March 1977, Baguio City.

*2. Mines Research Seminar-Meeting, February 1978. Laurel, Batangas.

*3. Seminar-Workshop on Non-Metallic Mineral Resources Development, November 1978, Caliraya, Laguna.

D. Fisheries Research Division

*1. First Fisheries Forum, 28 January 1975, Manila.

*2. Second Fisheries Forum, 17 June 1975, Manila.

*3. Third Fisheries Forum, 29 August 1975, Manila.

*4. Fourth Fisheries Forum, 22 October 1975, Manila.

*5. First Fisheries Forum, 12 February 1976, Manila.

*6. Second Fisheries Forum, 7 April 1976, Manila.

*7. Third Fisheries Forum, 9 September 1976, Manila.

*8. Fourth Fisheries Forum, 20 October 1976, Manila.

* Proceedings were prepared.

*9. Fifth Fisheries Forum, 21 December 1976, Manila.

*10. National Seaweed Symposium Workshop, 17-19 January 1977, Manila.

11. Symposium on Mollusk the Resources and Its Development, 7 March 1977, Manila.

12. Brackishwater and Freshwater Fish Culture the Status and Its Prospects for Development, 21 April 1977. Manila.

*13. National Symposium/Workshop on Mangrove Research and Development, 28-30 July 1977, Manila.

14. Symposium on Fish Processing: Its Status and Prospects for Development, 20 October 1977, Manila.

*15. International Workshop on Mangrove and Estuarine Area Development for the Indo-Pacific Region, 14-19 November 1977, Manila.

16. First Fisheries Forum Lecture on Coral Reefs, 2 February 1978, Manila.

17. Second Fisheries Forum on Fishing Gear, Its Status and Prospects for Development, 20 June 1978, Manila.

18. Third Fisheries Forum Advances in Fisheries 19 October 1978, Manila.

E. Livestock Research Division

*1. National Livestock Research Teams Workshop, 18-20 March 1976, Tagaytay City.

F. Crops Research Division

*1. First National Rubber Research and Extension Workshop, 11-13 July 1974, Kabacan, North Cotabato.

* Proceedings were prepared.

*2. First National Coconut Research Symposium, 17-19 November 1975, Tacloban City.

*3. First National Tobacco Research and Extension Workshop, 24-26 March 1976, Bauang, La Union.

4. Ornamental Horticulture Workshop, 11-13 February 1976, La Trinidad, Benguet.

*5. National Vegetable Research Workshop, 29-31 March 1976, Muñoz, Nueva Ecija.

*6. Potato Round Table Conference, 6-7 May 1976, College, Laguna.

7. First National Consultation on Coconut Research, 3-4 November 1977, Los Baños, Laguna.

8. Second National Consultation on Coconut Research, Coconut Processing and Product-Development, 21 December 1977, Los Baños, Laguna.

*9. Public Forum on the Utilization of Winged Bean, 13-14 January 1978.

10. Third National Consultation on Coconut Research, 10 January 1978, Los Baños, Laguna.

*11. International Winged Bean Workshop/Forum, 9-11 January 1978, Los Baños, Laguna.

*12. Workshop on Bacterial Wilt of Potato, 5-13 February 1978, Los Baños, Laguna.

*13. Second Regional Symposium on Pathogens and Pests of the Potato in the Tropics, 9-16 February 1978, Baguio City.

*14. Workshop-Symposium on Ornamental Horticulture, 16-17 March 1978, Davao City.

*Proceedings were prepared.

*15. National Consultation on Coconut Research, Series No. 4 Marketing, 14 April 1978, Manila.

*16. First National Workshop on Fruits, 4-9 June 1978, Davao City.

*17. FAO/Philippine National Workshop on Development and Management of Rainfed Crop Production, August 1978, Los Baños, Laguna.

*18. National Root Crops Research Seminar Workshop, 16-20 October 1978, Baybay, Leyte.

G. Socio-Economics Research Division

1. Symposium on Agricultural Policy and Development, 1 March 1974, Quezon City.

2. Agrarian Reform and Credit in the Philippines: First National Agricultural Credit Workshop, 25-29 September 1974, Tagaytay City.

3. Workshop on Agricultural Credit, 11 December 1976, Manila.

*4. 2nd Biennial Meeting of the Agricultural Economics Society of Southeast Asia, 3-6 November 1977, Iloilo City.

5. Seminar on Agricultural Credit Non-Repayment, 21 January 1977, Manila.

6. International Workshop on Livestock Inventory and Statistics, 24-26 January 1977, Manila.

7. Symposium Forum on Operation Land Transfer, 3 June 1977, Quezon City.

*8. Research Network Consultation, 8-9 November 1977, Los Baños, Laguna.

* Proceedings were prepared.

*9. Workshop Seminar on Technology Generation, Verification and Dissemination in Asia, 25-28 April 1978, Iloilo City.

10. Seminar on Data Series Preparation, 30 June 1978, Los Baños, Laguna.

11. Field Level Bottom Upward Planning and Development of Small Scale Low Income Fisherman Communities in the Philippines, 5-26 July 1978, Cagayan de Oro, Bacolod City, Lucena and Metro Manila.

12. Technology Generation, Verification and Dissemination in Corn, 4 August 1978, Los Baños, Laguna.

13. Soil Resources and Rice Demand of Metro Manila and Surrounding Cities and Municipalities, 18 August 1978, Los Baños, Laguna.

*14. Comparative Input, Output and Financial Analysis for Palay, Corn, Tobacco, etc., 1 September 1978, Los Baños, Laguna.

15. Technology Generation, Verification and Dissemination in Tobacco, 15 September 1978, Los Baños, Laguna.

16. Technology Generation, Verification and Dissemination in Timber Products, 6 October 1978, Los Baños, Laguna.

17. Growth Yield and Economic Rotation of Forest Tree Species, 20 October 1978, Los Baños, Laguna.

Other Regular Programs

1. National Research Consultation Congresses/Meetings
2. Various Commodity Team Consultations/Meetings
3. Design and Analysis of Experiments and Survey Workshops (1974-1978) - total of 10 as of May 1978.

* Proceedings were prepared.

4. Experiment Station Management and Development Workshops (1974-76) - total of 3 as of June 1976.

*5. Research Management Workshops (1976-1978) - total of 3 as of January 1978.

* Proceedings were prepared.