

492-266

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 PD-ADD-SM-A1

PROJECT EVALUATION SUMMARY
 (Submit to MO/PAV after each project evaluation)

1. Mission or AID/W Office Name Philippines		2. Project Number 492-11-180-266 13p	
3. Project Title Aquaculture Production			
4. Key project dates (fiscal years) Project Agreement Signed June 1974		b. Final Obligation FY 1978	c. Final input delivered FY 1978
5. Total U.S. funding-life of project \$824,000		6. Date of this Evaluation Review July 1, 1977 (completed) Month/Day/Year	
7. Period covered by this evaluation From: July 1976 To: July 1977 Month/Year Month/Year	8. Evaluation number as stated in Eval. Schedule P. 233 of FY78 ABS)	9. Action Decisions Reached at Evaluation Review, including items needing further study (Note--This list does not constitute an action request to AID/W. Use telegrams, airgrams, SPARS, etc., for action) Joint USAID/GOP Committee will review problems related to research-extension linkage component and complete report (See Attachment A). Copy of final PES transmitted to GOP agencies. Review Aquaculture Production PROP. (Level in excess of face amount in PROP.) AR, UPCF and USAID will review project goals and commitments of agencies relative to research extension linkages and coordination of field activities to assure implementation and accomplishment of this component. Review availability and constraints of credit for fish farmers and delineate in a report. Prepare letter to NEDA, and Department of Public Highways if necessary, for USAID Director's signature which requests follow-up action on aid to BAC.	
10. Officer or Unit responsible for follow-up Mr. Johnie Grance, AD/AD in cooperation with BFAR, BAC and FAC AD/AD AD/AD, BFAR and UPCF BFAR, UPCF and AD/AD Mr. Percy Avram, AD/AD Messrs. Daniel Leary and Johnie Grance, AD/AD	11. Date action to be completed July 25, 1977 August 15, 1977 August 31, 1977 Accomplished during review July 15, 1977 August 15, 1977		

Clearances:		USAID	
Government of the Republic of the Philippines		Signature	Date
IC	<i>[Signature]</i> Date: 8/28/77	AD/AD	<i>[Signature]</i> 7/14/77
IC	<i>[Signature]</i> Date: 7/27/77	OC	<i>[Signature]</i> 7/27/77
AR	Felix Gonzales (draft signed) 8/4/77	PO	<i>[Signature]</i> 8/14/77
PCF	<i>[Signature]</i> 8/1/77	ODM:	Peter M. Cody <i>[Signature]</i>

13. **SUMMARY** - Summarize in about 200 words the current project situation, mentioning progress in relation to design, prospects of achieving purpose, major problems encountered, etc.

A. General

The Aquaculture Production Project (APP) is oriented toward improving nutrition and increasing incomes of fish producers. Its purpose is to increase brackishwater and freshwater fisheries production. There are three major components to the project strategy: a) research, b) extension, and c) training.

Research

The primary research objective is to establish a core of production information and technology which will increase pond-culture production on a significant scale. Research on milkfish is conducted primarily at the Brackishwater Aquaculture Center (BAC) in Leganes, Iloilo, which is operated by the UP College of Fisheries. Non-milkfish freshwater research, including rice-fish culture and Tilapia culture, is conducted at the Freshwater Aquaculture Center (FAC), also under the College of Fisheries but supervised by Central Luzon State University (CLSU) at Munoz, Nueva Ecija.

Extension

Extension efforts are concentrated in Panay Island (Region VI) and the Bicol River Basin (Region V), the pilot areas of the extension component. Milkfish production was stressed in the early stages of the project. Tilapia and other species are being added as new technologies develop. The Bureau of Fisheries and Aquatic Resources (BFAR) of the Department of Natural Resources has the responsibility for extension activities including the field testing and demonstrations of aquaculture technology. Personnel at FAC and BAC have provided limited assistance to the BFAR extension staff in setting up field trials and demonstrations. The roles and capabilities of these research centers in providing assistance to extension activities are being strengthened.

Training

An essential element of the extension component of the project is the strengthening of the capacity of BFAR to provide expanded extension services to aquaculture producers in the pilot areas. This is accomplished by upgrading the expertise of extension workers, provision of vehicles and field equipment, improved extension planning, increased use of demonstration techniques, and improved

accuracy and quality of information.

GOP support comes to approximately \$4.4 million during the life of the project. AID will provide assistance totaling \$824,000 of which about \$541,000 is for 10 person years of technical assistance, concentrated largely on research. The participant training component (\$170,000) includes 90 person months of graduate degree training programs and 60 person months of non-degree training programs. Graduate degree participant training is largely geared toward research and non-degree training is focused on aquaculture extension training. Commodity assistance (\$113,000) will include 98 vehicles, information/education equipment, field equipment, and laboratory equipment.

B. Current Project Situation

The project will clearly not increase the availability of pond-raised fish on a national basis to 6.4 kg. per capita per year by 1979 as stated in the PROP. This target will not be met because the target was somewhat over-estimated, there has been a slow rate of adoption of technology by producers, and due to external factors discussed in section 16. There are indications that per capita consumption of 6.4 kg. per year will be reached on Panay Island and possibly Region V by 1979.

FAC and BAC are now functional research institutions. Research on key problems has been undertaken, aquaculture technology is being developed and refined, and technical reports are being published. Linkages and cooperative efforts between the research centers and extension workers have not matured to the most productive stages, in part due to organizational, budgetary and functional problems and constraints often encountered during the early stages of major projects. Intensified efforts are being made to more clearly define roles, responsibilities and priorities of the participating agencies so that more effective linkages and coordination will occur.

14. **EVALUATION METHODOLOGY** - Describe the methods used for this evaluation, i.e. was it a regular or special evaluation? Was it in accordance with the Evaluation Plan in the PP with respect to timing, study design, scope, methodology and issues? What kinds of data were used and how were they collected and analyzed? Identify agencies and key individuals participating and contributing.

This is the third evaluation since the APP was launched in June 1974. The first evaluation was completed by a 3-man team of consultants (Dr. Francis Lebeau, Dr. James Avault, and Mr. Serapio Bravo) in May, 1976 and it focused largely on the technical aspects of the project.

The second evaluation (Project Appraisal Report) was completed in July, 1976 by USAID staff in cooperation with GOP officials. The purpose of the second evaluation report was to concentrate on measuring project performance against the targets established in the original Project Paper (PROP). This second evaluation highlighted various project design weaknesses and made specific recommendations on how these weaknesses could be alleviated. In response to recommendations made in both the first and second evaluation reports, a revised logical framework was prepared in July, 1976 reflecting more realistic output indicators at purpose and goal levels. In this evaluation (the third evaluation) the targets established in the revised logical framework were used as a frame of reference against which to measure project progress since July, 1976.

This is a regular evaluation and it is in line with the evaluation schedule in the PROP and in the FY 78 ABS. The evaluation was conducted in accordance with AID evaluation guidelines spelled out in M.O. 1026.1, Supplement I. Names of individuals who assisted in the evaluation are as follows:

Mr. Felix Gonzales, Director, BFAR
Dean Rogelio O. Juliano, Dean, UP College of Fisheries
Dr. Catalino dela Cruz, Project Leader, FAC
Dr. Arsenio S. Camacho, Project Leader, BAC
Mr. Abraham Gaduang, Chief, Extension Division, BFAR
Mr. Matias Guieb, Director, Region VI, BFAR
Mr. Frank Pili, Director, Region V, BFAR
Mr. Buddy Aquino, Extension Action Officer, Region V, BFAR
Mr. Herminigildo Magsuci, Asst. Director, Region VI, BFAR
Mr. Roger S. San Diego, Officer-in-Charge, Region III, BFAR
Mr. Rodolfo Arce, FAC
Dr. Emmanuel M. Cruz, FAC
Ms. Dolores A. Lapinid, NEDA/Manila
Mr. Emmanuel Lopez-Dee, NEDA/Manila
Mr. Keith W. Sherper, USAID/Manila
Mr. David J. Garms, USAID/Manila (Chairman)

Mr. Johnie H. Crance, USAID/Manila

Dr. Daniel F. Leary, USAID/Iloilo

Mr. Edward J. Ploch, USAID/Manila

Periodic research reports, GOP and AID progress reports, the May, 1976 Lobeau/Avault/Bravo evaluation report and the June, 1976 PAR were used as background material. These materials were reviewed with the intent of identifying issues/problems raised earlier that may not have been fully addressed or resolved as yet.

The scope of the review consisted of reviewing project progress toward the targets established in the revised logframe (July, 1976) and responding to the questions on pp. 53-56 in the Handbook on Project Evaluation Guidelines (Third Edition) regarding logical framework linkages. In addition, a number of issues were identified in writing (See Attachment B) prior to the first of a series of evaluation meetings and were circulated to all above mentioned team members in an effort to provoke thought and stimulate discussion.

15. Documents to be revised to reflect decisions noted pages 1 and 2

Project Paper (PP)

Logical Framework

16. Evaluation findings about EXTERNAL FACTORS - Identify and discuss major changes in project setting which have an impact on the project. Examine continuing validity of assumptions.

There are a number of external factors which have impeded project progress and have subsequently reduced the likelihood of project targets being met?

- a) The Department of Highways and the Provincial Government of Iloilo have not yet completed the road to BAC. This severely impedes travel and restricts the flow of supplies to BAC, particularly during the monsoon season when the road is impassable.
- b) The PL 480 Title I peso allocations provided to BAC and FAC for physical infrastructure construction are inadequate. Additional funds are required to complete construction work already started.

- c) Delay in AID/W approval for funds to finance procurement of the priority equipment needed by BAC to complete research on the acid-sulphate soils problem.
- d) It is sometimes difficult for operators or potential operators of small fish farms to obtain fertilizer or sufficient credit from banks. Crop farmers can usually acquire inputs and loans to finance inputs much easier.
- e) Leasing procedures for fish pond sites involve actions of several agencies of the Philippine Government and the complete process may require several months.
- f) During FY-1977, BAC has acquired inadequate operational funds restricting availability of electrical power, freshwater supply and laboratory operations.
- g) The lack of an overall coordinating body to establish relationships and research priorities among international and national aquaculture research and extension activities is the cause of concern among GOP aquaculture entities as well as to external donors.
- h) Heavy rains resulting in floods during 1974, destroyed many fish ponds and caused shortages of fish seedlings.

All above constraints except (b) and (f) were known during the second evaluation. External constraints have had an adverse impact on the project and little has been done since the June 1976 evaluation to alleviate the constraints. Therefore, most of the assumptions in the revised July, 1976 logframe must be rendered invalid. The only assumption which remains valid is (under C-4): "Research will solve soil acidity problem, a major impediment to key research activities in brackishwater fish culture." The AID-financed equipment needed to conduct this research has not yet arrived; however, the BAC research staff still maintains that the technology will be developed to alleviate the acid-soils problem and also, Auburn University (technical assistance contractor for this project) has advised that the equipment is being procured and should arrive within FY 77.

17. Evaluation findings about GOAL/SUBGOAL - For the reader's convenience, quote the approved sector or other goal, (and subgoal, where relevant) to which the project contributes. Then describe status by citing evidence available to date from specified indicators and by mentioning progress of other projects (whether or not U.S.) which contribute to same goal. Discuss causes can progress toward goal be attributed to project, why shortfalls?

The goal as stated in the July, 1976 logframe (attached) is: "Increase availability of fish protein from aquaculture sources; increase productivity and income of poor inland fish producers and increase employment of aquaculture related workers."

While there is a considerable amount of technology that can be used to increase aquaculture production and there have been encouraging developments in research and extension, many fish farmers are not yet using existing management practices that will provide higher production. Significant increases in production have been reported in certain ponds in Regions V and VI and in other ponds that belong to fish farmers who cooperated closely with extension workers. Production data for the nation and the two pilot regions during 1974, when the project was initiated, and 1975 and 1976, are as follows:

Fishpond Production^{1/} 1974 - 1975

	1974		1975		1976 ^{2/}	
	Has.	Kg/Ha	Has.	Kg/Ha	Has.	Kg/Ha
Nation	176,032	643	176,032	604	176,231	640
Region V	11,520	355	11,520	325	11,542	365
Panay Island	32,645	938	32,645	1004	32,681	1,025

^{1/} BFAR Fisheries Statistics

^{2/} Preliminary data.

There is not sufficient evidence available to show a major impact at the goal level to date at the National level. However, average production per hectare on Panay Island has increased about 10% since 1974. It was the consensus of the evaluation team that the target in the PROP to increase fish production from 3.0 kg. to 6.4 kg. per capita per year on a national level by CY 1979 will not be met. It is clear that even with a concerted extension effort during the last year (FY 1978) of the project the 6.4 kg. per capita target would not be met. Therefore, assuming there will be a moderately improved extension system during the last year of the project, a target of 4.0 kg. per capita nationally and a 6.4 kg. per capita for Regions V and VI could probably be met. The team also noted that the goal in the revised logframe referred to increased incomes and increased employment without providing indicators in A-2 to measure this. Upon further

discussion, the team decided to drop the reference to employment in the goal because it was felt that fish ponds were not labor-intensive relative to other agricultural activities, e.g., rice production, etc. Therefore, the goal is revised as follows: "Improve nutrition of Filipino poor and increase incomes of poor inland fish producers." Also, the revised logframe will contain measures of goal achievement (A-2) for improved nutrition and increased income.

There are other ongoing and proposed projects in fisheries in the Philippines financed by international donors, namely the Southeast Asia Fisheries Development Center (SEAFDEC), International Center for Living Aquatic Resources Management (ICLARM), IBRD, and FAO. To date, SEAFDEC has been conducting most of its research and training in marine aquaculture. However, it has recently branched out into freshwater aquaculture in Laguna de Bay and without proper coordination, this could ultimately result in a duplication of efforts by other agencies, e.g., FAC and BFAR. IBRD is planning to provide assistance to the UP College of Fisheries to expand its physical facilities and to BFAR to develop a credit program for fish producers. If the UP College of Fisheries (UPCF) expansion project moves forward, AID may provide \$3.5 million in loan assistance for staff development. FAO recently initiated a 3½ year project to provide assistance to BFAR to improve its brackishwater aquaculture extension program. None of the above projects have as yet had any impact on increasing production from fishponds.

One shortfall in the project has been a shortage of "technology packages" developed and too few fish farmers using the technology available. More concerted efforts will be required to identify and develop needed "technology packages" and to convincingly demonstrate the advantages of technology to local fish farmers.

18. Evaluation findings about PURPOSE - Quote the approved project purpose. Cite progress toward each End-of-Project Status (EOPS) condition. When can achievement be expected? Discuss causes of progress or shortfalls.

The purpose as stated in the July, 1976 logframe is: "Establish an aquaculture research and extension system to increase aquaculture fisheries production while simultaneously reducing aquaculture production costs."

Achievement Toward EOPS (B-2):

"a) Purposeful research completed and results published; extension workers developing and testing new technology; training programs underway for extension personnel; and fish farmers are using improved technology."

Achievement Against (a) Above to Date:

Several purposeful research activities have been completed and in some cases research has exceeded original expectations. Extension activities have been quite intensive in the two pilot regions and a significant increase in average production per hectare has occurred in Region VI, but not enough farmers are taking advantage of existing aquaculture technology to have a major impact on total production nationwide.

The team was advised during the course of the evaluation that training programs are currently underway for extension personnel and that the Department of Natural Resources, recently signed a Memorandum of Agreement with the Department of Agriculture (DA) and CLSU to cooperate in conducting extensive field trials in rice/fish culture. A major workshop for aquaculture extension workers is tentatively scheduled to be conducted by BFAR in Manila during October, 1976. Extension workers have attended extension training workshops conducted by BFAR, FAC, BAC and SEAFDEC.

"b) Yields for milkfish increased from an average of 570 kg/ha. in 1973 to 1,300 kg./ha. in 1979; production costs of milkfish reduced by approximately one half per unit production (production cost was ₱2.25/kg. in 1973); freshwater fish farm production increased from 4,000 mt in 1971 to 27,000 mt in 1978; fish production in irrigated rice fields increased from a negligible amount in 1973 to 300 mt in 1978."

Achievement Against (b) to Date:

The team felt that increases in milkfish production could average 1,300 kg/ha. by CY 1979 on Panay Island but not in Region V or as a national average. However, production costs even when adjusted for inflation could not be reduced by 50% per unit of production in any region by the end of the project. Researchers at BAC and FAC stated that it would be impossible, in view of their experience and given current prices, to reduce milkfish production costs much below the present ₱4.50/kg. Therefore, it was recommended that any reference to substantially reduced production costs be deleted from the logframe. FAC and BAC researchers felt that a reduction of up to 25% in production costs was a long term possibility but not a reasonable possibility during the life of this project. The almost sevenfold increase in freshwater fish farm production from 4,000 mt in 1971 to 27,000 mt in 1978 was also considered to be too optimistic. It was proposed that this be reduced to 15,000 mt. On the other hand, fish production in irrigated rice fields is expected to be in excess of the 300 mt estimate given in the logframe. FAC researchers feel that fish production in irrigated rice fields could be in excess of 1,000 mt nationally by 1979.

It was proposed that the project purpose be changed to incorporate the above thinking as follows: "Increase brackishwater and freshwater fisheries production."

19. Evaluation findings about OUTPUTS and INPUTS - Note any particular success or difficulties. Comment on significant management experiences of host contractor, and donor organizations. Describe any necessary changes in schedule or in type and quantity of resources or outputs needed to achieve project purpose.

a. Inputs

i) AID Inputs: AID financed inputs were generally provided on schedule and in the amounts specified except for delays in certain equipment and commodity deliveries. In addition, there was a delay in AID/W approval of USAID's request for funds to finance the technical assistance and equipment needed to complete priority research on acid-sulphate soils at BAC.

ii) GOP Inputs: Most of the GOP inputs were provided on schedule except that during the current year, the Operation Budget received by BAC has been only about 70% of the amount needed. The National Science Development Board (NSDB), a major contributor of funds to BAC since its inception, will no longer provide funds to BAC after December 1977. However, we were advised that the difference will be made up from an increase in the annual budget of the UPCF. Funds for research projects will continue to be provided by PCARR, NSDB and other agencies.

b. Outputs

It is anticipated that the outputs as specified in the revised logframe will be achieved. The project will strengthen the extension system in Regions V and VI; however, it will not be possible to establish equally capable extension systems in 55 provinces. Research on 10 key problem areas in freshwater and brackishwater fisheries has progressed. However, one FAC researcher cautioned that "research findings in a planned program often lead into other, unintended areas." Overseas and in-country training programs for BFAR, BAC and FAC personnel are generally on schedule.

20. Evaluation findings about UNPLANNED EFFECTS - Has project had any unexpected results or impact, such as changes in social structure, environment, technical or economic situation? Are these effects advantageous or not? Do they require any change in plans?

There have been some unexpected effects under this project. Research on rice-fish culture at FAC proceeded faster than expected. Initial findings indicate that small farmers can significantly increase their incomes by putting into practice rice-fish culture technology. This technology, being developed at FAC, has good potential of providing a large number of farm families with additional nutritious food to eat or to sell. Rice farmers in Central Luzon are very enthusiastic about raising fish (tilapia primarily) in irrigated rice paddies. Their interest is being demonstrated by their directly approaching FAC, primarily a research institution, for the new technology. BFAR extension workers (Region III) stationed at FAC assist in rice/fish field demonstrations to verify results obtained under experimental conditions at FAC. Field trials will be expanded under a memorandum of agreement between CLSU, DNR and DA to other areas of the country.

The BAC staff has launched a graduate level training program in aquaculture under the UP College of Fisheries and in cooperation with SEAFDEC. The results of this graduate training program are encouraging. About 20 students are currently enrolled. SEAFDEC provides some classroom and library facilities at Tigbauan and partial funding for the BAC teaching staff. This activity was not planned in the original PROP. The graduate student teaching program is a highly worthwhile and important activity but it detracts from the targets set forth in the original PROP by requiring about 50% of the BAC's staff time.

21. CHANGES in DESIGN or EXECUTION - Explain the rationale for any proposed modification in project design or execution which now appear advisable as a result of the preceding findings (items 16 to 20 above) and which were reflected in one or more of the action decisions listed on pages 1 and 2 noted in Item 15 on page 6.

The logframe has been changed to reflect more accurate targets at the purpose, goal and output levels. Also, the purpose and goal statements have been further refined and invalid assumptions have been deleted. This naturally means a reduced level of impact at the goal level during the life of this project. The revised logframe emanating from this evaluation appears in Attachment C. The July, 1976 logframe appears as Attachment D for reference and comparison.

Greater emphasis will be placed on improved research/extension linkages and coordinated efforts to expedite development of technology packages that can further increase inland fisheries production by the end of the project. The team recommended that a joint GOP/USAID committee conduct a study and recommend better ways to insure effective research-extension linkage and coordination. This report is being prepared.

22. **LESSONS LEARNED** - What advice can you give a colleague about development strategy - e.g., how to tackle a similar development problem or to manage a similar project in another country? What can be suggested for follow-on in this country? Similarly, do you have any suggestions about evaluation methodology?

The major lesson learned during this evaluation was that project design must incorporate adequate time for a research and extension program to become established in order to effectuate significant changes in age old management practices of fish farmers. Too little emphasis may have been placed on extension and the identification of what motivates fishfarmers to change from less productive to more productive practices. Future fisheries projects of this nature must be fully integrated in design - from socio-economics to research and the application of technology. Also, reliable baseline statistics and data and a system to provide reliable statistics and data on a timely and periodic basis are vital to aquaculture management programs and to the evaluation of projects. Such is usually not the case and must be considered in project design and evaluation. A follow-on project to the FAC freshwater fisheries component of the APP has been proposed in a Project Identification Document (PID) entitled "Freshwater Fisheries Development." This project proposes to initially conduct a market study in Central Luzon and to build on the knowhow and interest in freshwater fisheries. The project proposes the establishment of a seedling production and distribution facility with technical assistance and commodities to operate it and an extension training center. The training center would have a staff to train extension workers and to work directly with fish producers, chiefly rice-fish farmers. It is intended that the center will serve as an integrated freshwater fisheries development model - consisting of hatchery, extension, research, product development, and marketing components - that can be replicated elsewhere in the country. Moving forward with the follow-on project is of course contingent upon the GOP's commitment to constructing the physical facilities of the proposed center.

The proposal for a study on acid soils at BAC has been approved for partial funding by AID/Washington. This project will serve as an adjunct and follow-on of the BAC brackishwater component of the APP. It proposes to build on knowledge of how to deal with acid soil problems in brackishwater ponds.

23. **SPECIAL COMMENTS or REMARKS** (For AID/W projects, assess likelihood that results of project will be utilized in LDC's).

It is very likely that the results achieved in rice-fish culture at FAC are applicable to other countries in Asia. Since the problems encountered with acid soils at BAC are likely to be encountered in coastal areas of tropical countries through the world, the technology developed at BAC on how to cope with such problems will also very likely be applicable through the world where acid soils occur.

AIRGRAM

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Transmitted herewith are three copies of the Project Evaluation Summary for the Aquaculture Production Project No. 492-11-180-266 for period covering July 1976 to July 1977 for AID/W review and comment.

STULL

Attachment: 3 copies of Aquaculture Production Project Evaluation Summary

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Atts Sent 9-19-77

PAGE OF PAGES

DRAFTED BY	OFFICE	PHONE NO.	DATE	APPROVED BY:
AD:RPMarquez	AD/AD	473	9-7-77	AD:LEHeldcroft, Director

A. I. D. AND OTHER CLEARANCES

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