

PROGRESS REPORT I
ON THE
PANAMA AQUACULTURE PROJECT
U. S. A. I. D. - AUBURN UNIVERSITY
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PANAMA AQUACULTURE PROJECT

Objective

The objective of the project is to test the feasibility of developing aquaculture as a non-traditional farm crop in order to provide an inexpensive source of animal protein and increase earnings of farm families in disadvantaged areas of Panama.

Background

Considerable progress has been made toward implementing the aquaculture project of the Government of Panama during the period February 3 - June 30, 1972. R. Oneal Smitherman, Project Leader from the International Center for Aquaculture, Auburn University, Auburn, Alabama, arrived Panama with family on February 3 to begin a 2-year tour. The initial assignment given the project leader by the GOP was to assess lands of the National Institute of Agriculture, Divisa, as an alternate site on which to build the combination fish hatchery-demonstration pond complex originally planned for La Raya de Santa Maria. It was stated that this development should receive priority over the research ponds and laboratory proposed for land of the Faculty of Agronomy, University of Panama, and that, if possible, all aquacultural research and development should be done at Divisa.

Soils at Divisa were determined suitable for pond construction, and an irrigation system from Rio Santa Maria was deemed adequate as a water supply for up to 20 hectares of ponds. Space was made available for approximately 3 hectares of small hatchery ponds, and was tentatively assigned for 8 hectares of production

ponds. Topography maps were made, hatchery ponds with water supply and drainage systems were designed, equipment was solicited from various GOP agencies, and construction was begun on April 28. The following summarizes the work to date on pond construction and various other phases of the aquaculture project.

Hatchery Ponds - (Phase I)

Construction is essentially complete for 29 ponds @ 500 m² and 4 ponds @ 400 m². Heavy equipment, working principally between May 2 and May 31, was provided by the Ministry of Public Works, the National Institute of Agriculture (INA) at Divisa, and Ingenio La Victoria (Ministry of Commerce and Industry). An interruption in construction occurred May 31 to June 13 as a result of a change in administration of INA, however, equipment for finishing Phase I was loaned to the project by Ingenio La Victoria and work was resumed on June 14.

Procurement of Piping and Hardware for Phase I

Bids have been accepted by the GOP, and delivery of these materials has been projected for July 1. With these materials, the ponds can be functional, weather permitting, by July 15.

Production Ponds - (Phase I)

Approximately 6.5 hectares of land adjacent to the 33 hatchery ponds at Divisa have been made available by INA for construction of 12 production ponds @ 0.25 to 0.5 hectare, and a lake of 1 hectare for demonstration of fish culture in

floating cages and bamboo corrals. On this land is also a suitable location for an office-laboratory-storage complex. Plans are currently being developed with biologists of the Fisheries Department, Ministry of Commerce and Industry, for the construction of this facility within the current calendar year. Equipment lists for the laboratory and office have been prepared and clearance is being obtained so that certain items may be procured through Mission - U.S. Government channels in the interest of conserving time and funds.

Participant Training at Turrialba, Costa Rica

Two employees of the INA, and 2 employees of the Ministry of Health received A. I. D. -sponsored training in fish culture at the FAO Agricultural Diversification Project at Turrialba, Costa Rica, during April 16 - May 28, 1972. It is anticipated that the 2 persons at INA will be active in the aquaculture project at Divisa, functioning mainly as extension agents, while the 2 persons from the Ministry of Health will aid in promotion of fish culture as a facet of nutritional improvement in community health projects of that Ministry.

Participant Training at Auburn University

Remberto Rosas, the second participant for study toward the Masters Degree in Aquaculture, enrolled in Auburn University June 13, 1972. Rosas was transferred to the Department of Fisheries from another agency of MCI, and will study fish nutrition and fish food technology at Auburn. This speciality will complement the study in fish production techniques of the first participant, Rene Sanchez, who enrolled at Auburn on February 8, 1972. Two additional participants must now

be identified to start programs of study at Auburn University in 1973. On June 22, Enrique Salerno, a former Assistant Professor in the Department of Biology, University of Panama, was interviewed by Smitherman and biologists of the Department of Fisheries (MCI) as a potential third participant. Salerno holds a B.S. in Biology from Northwestern State College in Oklahoma and has very good English proficiency.

Counterpart and Aquaculture Staffing - Department of Fisheries, MCI

Enrique Diaz, fisheries biologist with a Masters Degree in Fisheries from the University of Michigan, has been designated as counterpart for R. O. Smitherman during the implementation of the aquaculture project. It is anticipated that Diaz will thereafter be placed in charge of inland fisheries and aquacultural development in Panama. A second staff member was hired by the Ministry of Commerce and Industry on June 12 specifically for on-site monitoring of the aquacultural project at Divisa. This person, Carlos Chena, holds a Doctors Degree in Biology, approximately equivalent to a non-research Master of Science Degree in the United States, from the University of Padova, Italy. Mr. Chena, a Panamanian, only recently returned to his country after 8 years of study in Italy, the last 2 years of which were concentrated on brackish water aquaculture in Europe. At Divisa, he will be furnished living quarters by the INA, and will assist by teaching biology and aquaculture to it's students.

Interagency Cooperation

Interest in aquaculture remains high, as evidenced by the diversity of GOP agencies which have participated. An FAO expert, and other staff of the Water Commission, Ministry of Agriculture, collaborated on initial plans for Phase I pond construction. INA provided land, some heavy equipment and personnel for topography work and operation of equipment. The Ministry of Public Works provided the majority of heavy equipment for initial stages of Phase I pond construction, while the Ingenio La Victoria has furnished equipment for completion of Phase I. The Ministry of Health and INA each have sent 2 employees for A. I. D. -sponsored aquaculture training in Costa Rica. The Department of Fisheries (MCI) has provided operational costs for heavy equipment, and with technical assistance from R. O. Smitherman, U. S. A. I. D. /Auburn University, guided and coordinated all activities.

Procurement of Fish Stocks

Brood stocks of Tilapia mossambica and Tilapia hornorum have been obtained from the FAO Fishculture Project at Turrialba, Costa Rica, and are being held in temporary tanks at Divisa. Arrangements have been made for the introduction of 2 additional tilapias: T. melanopleura (Brazil) and T. nilotica (Puerto Rico) on approximately July 1. These 4 species represent the best of dozens of African species which have been tested in Africa, Asia, North America, and Latin America. In addition, 2 fish species present in Gatun Lake appear quite suitable for culture in ponds and lakes: Cichla ocellaris, sargento or peacock bass; and

Cichlasoma maculicauda, chogorro or bluegill. Several populations of freshwater shrimp, Macrobrachium americanum, have been located in freshwater ponds in the Province of Panama, where they grow to sizes exceeding 1 pound. From these will be selected brood stock for experimental ponds at Divisa.

Program for Fish Utilization and Distribution

The Department of Fisheries has developed a plan for stocking fingerlings expected to be available from the Divisa hatchery ponds approximately 3 - 4 months after stocking brood fish. With priority, certain fishes will be stocked into some experimental ponds of 500 m² to answer basic questions of protein yield in Divisa soil and water conditions. Excess fish from initial production of the hatchery units will be for sale to meet demands from the following:

1. fincas privados (6 requests already)
2. asentamientos campesinos (promoted by Reforma Agraria)
3. comunidades rurales (promoted by DIGEDECUM)
4. comites de salud (promoted by Ministry of Health)

Various government agencies (particularly the Ministry of Health) have already been promoting tilapia culture, and assisted in construction and stocking of 3 community ponds in early 1972. Unfortunately, fish used were of low quality, and no management information was made available to the communities involved. It is most likely that first crops of fish under these conditions will bring disappointment. It is the intention of the Department of Fisheries to henceforth coordinate all fish stocking in Panama, and to provide technical assistance in pond construction and management to each person or organization receiving fish.

Prognosis

The most serious obstacle at present to an orderly continued development of the aquaculture project (Phase I) in Divisa is the rainy weather, which will continue to Mid-December, and its effect on earthmoving equipment. A second question, requiring serious deliberation by U.S.A.I.D. and the GOP, is the nature of the University of Panama's future role in aquacultural research and teaching. Compounding the question considerably is the fact that changes of administration have recently occurred at both the Faculty of Agronomy, University of Panama, and the National Institute of Agriculture, Panama.