PD/A CRSP Eighteenth Annual Technical Report

Sources of Technical Assistance for Fish Farmers in the Peruvian Amazon

Eighth Work Plan, Adoption/Diffusion Research 1-2 (8ADR1-2)
Final Report

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Abstract

Data were collected from a sample of 146 practicing fish farmers in the Napo, Tamishiyacu, and Tahuayo river systems areas north and south of Iquitos, Peru, as well as in the Iquitos-Nauta Road area directly south of the city. Fish farmers were identified in selected communities who were provided technical assistance in aquaculture by CARE/Peru and several other nongovernmental organizations. The data suggest few differences in extension experience and perceptions by species cultured, but there is a notable pattern of differences across three measures of farm size. Larger operators tended to have more contact with extension and were slightly more likely to want extension contact in the future. There was little difference by farm size regarding contact with university technicians working in aquaculture or contact with government fish stations. Nearly all farmers wanted extension contact in the future.

Introduction

The reciprocal relationship between fisheries and aquaculture in the Peruvian Amazon is enhanced by the well-established patterns of fish consumption and marketing in the region. Fish are a central part of the *ribereños* diet; many species are accepted, and fish sales seem to be readily accomplished locally or at market centers. The purpose of this analysis is to examine the perceptions concerning the amount and kind of technical assistance available to fish farmers in the Peruvian Amazon as a function of the type of fish raised and the land holdings of the farmer.

In 1992 CARE/Peru began an effort to increase food security and raise incomes by working with families in nine villages along the Napo River, a tributary of the Amazon about 20 kilometers north of Iquitos, Peru. In 1995 a parallel effort was begun in six villages along the Tamishiyacu River and in another six villages along the Tahuayo River about 30 kilometers south of Iquitos. At each of the 21 villages, an initial pond was established for training and demonstration purposes. Subsequently farmers dug approximately 250 ponds— between 10 and 30 per village. Aquaculture is part of a broader strategy of community development, health education, and food security improvement.

The CARE/Peru project also provided fingerlings, nets, small loans for pond construction costs, and continuing technical support for aquaculture. One aquaculture technician works with previous extension contact villages while five others provide technical assistance to the Tamishiyacu and Tahuayo river regions. When cultured fingerlings were available, ponds were stocked with gamitana (*Colossoma macropomum*), the focal species of PD/A CRSP research in Peru. When cultured fingerlings are not available, farmers use wild-caught fry and juveniles or delay restocking until they can obtain seed stock. Each CARE/Peru pond is operated by a single family, primarily for food security purposes. As many of these ponds were built only in the last year, few had yet to harvest fish.

The Spanish nongovernmental organization (NGO) Agencia Española de Cooperación Internacional (AECI) supports the services of a technician who advises approximately 75 pond operators located primarily along the as-yet-incomplete Iquitos-Nauta Road. In 1998 approximately 15 ponds had achieved at least one harvest. The remaining pond operators were currently growing out their first crop of fish. The aquaculture technician is one of about five staff members working in various aspects of agricultural and community development in the Iquitos area. Farmers are provided technical assistance in pond construction and instruction in production management. Farmers can readily obtain fingerlings from river fishers. Terra Nuova, an Italian NGO supported by European Union funds, is extending the work initiated by AECI in this area.

Caritas is a Catholic assistance agency that targets poor communities not presently served by government programs or other NGOs. The Iquitos office is one of four in the Loreto Department. It has seven technicians—including one specialist in aquaculture—who spend two months in target communities followed by one week in Iquitos. With the exception of some lowland area communities where flooding makes fish culture impossible, most Caritas communities have families with functioning fish ponds. These villages are mostly located on rivers west of Iquitos and are farther from Iquitos than the communities served by other organizations in this discussion.

The regional headquarters of the Peruvian Ministry of Fisheries has ten offices in the Loreto Department. Each has a staff of between two and ten persons. Eleven aquaculture specialists, including those at the Iquitos headquarters, provide technical assistance and training programs throughout the region. Recently, efforts have been directed toward protein-deficient communities near the Ecuador frontier, largely composed of indigenous tribal people. These populations are in great need of assistance.

Fondo Nacional de Desarrollo Pesquero—Acción Promo-tora para el Desarrollo de la Acuicultura Unidad de Producción Acuícola Aguas Calientes (FONDEPES) is a Peruvian fisheries development agency. It operates a 10-ha fingerling production station near Nuevo Horizonte, 35 km southwest of Iquitos. The agency projects a shortfall in the stock of wild fingerlings and therefore plans to engage in production of grown fish for the market. Plans are to produce fingerlings for a variety of species, but this agency's strategy features boquichico *(Prochilodus nigricans*). This species requires a less intensive level of cultivation and is mainly suitable for home consumption and local markets. This species was the single most frequently reported kind of fish grown.

Each of these organizations is presently or potentially a partner with the PD/A CRSP. New technology for increasing the yield of current breeding techniques and expanding the period during which breeding is possible will provide widespread benefits for aquaculture producers in the selva (Kohler et al., 1999).

METHODS AND MATERIALS

Sample and Data Collection

Fish farmers were identified in selected communities who were provided technical assistance in aquaculture by CARE/Peru and several other NGOs in the Napo, Tamishiyacu, and Tahuayo River systems, which combine to form the Amazon, as well as in the Iquitos-Research Station Contact area south of Iquitos. Structured interviews were conducted with a sample of 146 fish farmers having accomplished at least one harvest in the past two years (Casley, 1988; Townsley, 1996).

The survey instrument was adapted from previous research conducted by Molnar et al. (1996) in five PD/A CRSP countries—Honduras, Thailand, the Philippines, Rwanda, and Kenya. The Peru survey, however, reflects the unique conditions and context of Amazonian fish culture, the diversity of species, and the singular relationship of aquaculture to the river fishery in the region. Ponds were identified in communities on three river systems north and south of Iquitos as well as the Research Station Contact area south of Iquitos. Data collection took place in early 1999 and was conducted by graduate students from the Department of Fisheries at Universidad Nacional de la Amazonia Peruana.

Analysis

The analysis tabulates the responses to five survey questions about technical assistance by type of fish raised and three measures of land holding. From this information, a number of patterns in farmer experiences and expectations for fish culture technical assistance are identified.

RESULTS

Type of Species Cultured

Table 1 shows contacts and experiences with extension by type of species cultured. The species are shown in order of the frequency in which they were grown by fish farmers in the sample. Boquichico was the most frequently cultured fish in the Peruvian Amazon, grown by 75% of the farmers. There were not many notable differences in perceptions of extension across the groups growing various species. Eighty-seven percent had contact with some type of extension in the previous two years. Overall, 4% reported contacts with university personnel working in aquaculture, with 16% of the Bujurqui farmers reporting such contacts.

Twelve percent of the sample had contact with personnel at government stations or technicians associated with these installations. Twenty-eight percent of the 25 Bujurqui growers in the sample had such contacts, a much higher proportion than any of the other species. Across all types of growers, nearly all (97%) wanted extension contact in the future.

Gamitana, the target species for PD/A CRSP research in Peru, was the second most frequently cultured fish. Technical

Table 1. Contacts and experiences with extension by type of species cultured, fish farmers in the Peruvian Amazon, 1999.

Survey Item	Yes Response by Species Cultured (%)									
	Boquichico (N = 106)	*Gamitana* (N = 90)	*Paco* (N = 85)	*Sábalo* (N = 69)	*Yaraqui* (N = 44)	*Bujurqui* (N = 25)	*Lisa* (N = 15)	*Oscar* (N = 55)	*Tucanare* (N = 58)	*All Species* (N = 141)
Have you had contact with any type of extensionist?	88	86	86	81	80	72	87	86	88	87
Have you had contact with any university technicians working in aquaculture?	5	6	5	7	9	16	7	6	2	4
Have you had contact with government station or technician?	13	12	13	16	18	28	13	18	12	12
Do you want extension contact in the future?	98	96	97	97	100	100	100	96	97	97

Table 2. Contacts and experiences with extension by pond characteristics, fish farmers in the Peruvian Amazon, 1999.

Survey Item	How Many Pieces of Land in Your Farm? (%)			How Much Land Owned? (%)			Compared to Other Farmers, How Much Land Do You Have? (%)			All (%)
	1–2 Parcels (N = 101)	*3–9 Parcels (N = 22)*	*10 + Parcels (N = 4)*	*< 1 Hectare (N = 6)*	*1–10 Hectares (N = 49)*	*> 10 Hectares (N = 73)*	*Less (N = 24)*	*Same (N = 89)*	*More (N = 19)*	*(N = 132)*
Have you had contact with any type of extensionist?	86	77	100	83	90	89	89	86	79	88
Have you had contact with any university technicians working in aquaculture?	4	4	50	0	4	4	4	2	16	5
Have you had contact with government station or technician?	8	27	50	17	12	12	17	10	16	14
Do you want extension contact in the future?	95	100	100	100	94	96	96	94	100	96

assistance perceptions for the 90 farmers who cultured this species differed little from the growers of other types of fish. Alcántara (1994) presents a detailed analysis of fish landings at Iquitos ports and the kinds of species that are brought to market.

Farm Size

Table 2 shows technical assistance perceptions tabulated by three measures of farm size. Seventy-seven percent of the sample owned one or two parcels of land. Holders of multiple parcels were primarily pond groups organized for constructing and maintaining fish ponds. While only half the sample owned more than 10 ha of land, 67% of the respondents felt that they owned the same amount of land as their neighbors.

Those owning three to nine parcels of land reported less contact with extension, in contrast to those holding 1 to 10 ha of land. A lower proportion of respondents who felt that they owned less land than their neighbors reported the most contact with extension. Farmers with more than ten parcels of land had more contacts with university technicians than farmers with fewer parcels of land. Few differences in contact were noted across land holding by area, but farmers who felt they owned more land than their neighbors had more contact with university technicians compared with those who felt they had the same or less land.

Contact with government stations tended to increase markedly with the number of parcels owned, but there was little difference by landholding. Those who felt they owned more land reported about the same level of contact with government stations or technicians. Respondents uniformly wanted more contact with extension in the future though smaller-scale farmers were slightly less interested when measured by parcel ownership and self-perception. Those who felt they owned more land than their neighbors also were more likely to want extension contact in the future.

Conclusions

The communication process linking experimental pond to farm practice involves several layers of translation and transmission. It is clear that the PD/A CRSP must work with the local network of institutions that provide technical assistance and services to rural producers if its research findings and insights into production practices are to provide widespread benefits to rural producers. In the Peruvian Amazon, a broad array of institutions and NGOs produce fingerlings and provide technical assistance to fish farmers. The enduring impacts of PD/A CRSP activities will be multiplied through the network of NGO partners and government agencies that utilize PD/A CRSP understandings and technologies in their ongoing programs of outreach and information assistance to villages and rural people throughout the selva.

Anticipated Benefits

The direct benefits of this study primarily accrue to CARE/Peru and other agencies endeavoring to promote and support fish culture among the rural poor in villages along the Amazon and its tributaries. Technicians and others working with farmers now have systematic information about the target population of rural producers and about their practices and needs. This study has provided some insight into the high level of receptivity to technical assistance in aquaculture in the PD/A CRSP target population.

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