SOME SOCIO-ECONOMIC ISSUES IN THE DEVELOPMENT OF THE BANGOS INDUSTRY

by

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The aquaculture industry in the Philippines is dominated by the culture of bangos. It is estimated that fishponds and fishpens occupy an area of about 176,000 and 6,000 hectares, respectively, of which 90 per cent is devoted to bangos culture. Bangos is important from the viewpoint of both production and consumption. First, it provides a source of income and employment to many Filipinos, and second, it provides a major source of food and protein, a great concern especially in the Philippines because of its high rate of population growth.

One of the goals of the national government is to increase fish production and possibly attain self-sufficiency. In this regard, Presidential Decree No. 43 was signed to provide for accelerated development of the fishery industry of the country. For this purpose, the government "shall promote, encourage, and hasten the organization of, provide assistance to, and help integrate the activities of all persons, associations, cooperatives, and corporations engaged in the industry so that the nation may achieve self-sufficiency in fish supply and fishery products... "Furthermore, under the Decree, the government would ..." provide financing, training, extension services, technical assistance and infrastructures for production storage, processing, transportation, marketing and distribution of fish and fishery products." Formulation and implementation of a development program for the aquaculture industry in general and the bangos industry in particular would require social and economic studies. In fact, the aquaculture conference sponsored by the Southeast Asian Fisheries Development Center (SEAFDEC) and participated in by an interdisciplinary group of researchers gave socio-economic research very high priority. Hence, the SEAFDEC and the Philippine Council for Agricultural Research (PCAR) have decided to jointly undertake a research program entitled "A Socio-Economic Survey of the Aquaculture Industry in the Philippines." A description of this program is presented in this paper. The latter section identifies socio-economic research issues for the bangos industry development.

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Socio-Economic Survey of the Aquaculture Industry

In general this program has a five-fold objective, namely:

1. To describe the economic status of the aquaculture industry from fry gathering and raising fingerling to rearing, processing, marketing and consumption.

2. To study the socio-economic conditions of fry gatherers and fishpond operators.

3. To assess the management practices and estimate costs and returns in fish culture operations.

4. To determine rates of inputs used and sources of input supplies.

5. To study the market structure of the aquaculture industry.

6. To identify existing and potential aquaculture resources in the country.

The program covers fry gatherers, fry concessionaires/dealers (dealers if there are no concessionaires in the area), nursery pond operators and fishpond and fishpen operators. By species, it covers bangos, prawns, oysters, mussels, seaweeds, eel, tilapia, hito and various combinations. Seven (7) sets of questionnaires were designed for the first phase of the program; these are: (1) fry gatherer, (2) concessionaires, (3) nursery, (4) fishpen, (5) fishponds which include bangos, prawns, eels, tilapia, hito and combinations, (6) oyster/tahong, and (7) seaweeds.

As a national survey, all 11 administrative regions are presented in the sample, comprising a total of 43 provinces and 208 municipalities. Fishponds were classified into privately-owned and government-leased and were stratified into three categories according to size, namely, (1) less than one hectare, (2) 1 to 10 hectares, and (3) greater than 10 hectares. The sample consisted of about 20 per cent of the total number of fishponds distributed proportionately according to fishpond population in the provinces sampled. Likewise, 50 per cent of the oyster/mussel farms, which abound mainly in the Ilocos, Cagayan and Southern Tagalog regions, were sampled. A complete enumeration of nurseries, concessionares, and fishponds of some other species like eels and prawns was attempted.

Personally interviewed were either the owner or caretaker, or both. The survey operations are almost completed now, and the distribution of sample respondents (completed and expected to be completed) is presented in Table 1. A total of 2,484 respondents were interviewed

of which 1,416 were bangos fishpond operators and 154 bangos fishpen operators. The fry gatherers, fry concessionaires, are mainly of bangos.

The information collected from the different respondent classes are as follows:

A. Fry Gatherers

1. Location of fry grounds in 1974 and 1975.
2. Previous experience on fry gathering.
3. Gathering practices and sources of inputs.
4. Patterns of fry gathering - data on monthly collection, prices and values for the period January 1974 to March 1975.
5. Patterns of expenditures - data on quantity, prices and values of various items of supplies, equipment, labor and other items.
6. Disposal and marketing of fry.
7. Capital investment.
8. Financing.
9. Attitudes, aspirations and values.
10. Problems.
11. Sources of technical information and concessionnaire/gatherer relation.
12. Family information - age, education, occupation, income, months employed in fry gathering, other occupations and months unemployed.

B. Fry concessionaires/dealers

Information gathered from the concessionaires/dealers may be classified in the same manner as those for the fry gatherer. However, instead of patterns of fry gathering, data on monthly volume, prices and values of fry purchases and sales were asked. In addition, data on personnel number, period worked and rates were obtained.

C. Nurseries, Fishponds and Fishpens

Information obtained for nursery ponds, fishpens and fishponds of various species may similarly be classified as those for fry concessionaires except that data on

stocking and cropping patterns were obtained. In addition, labor utilization for various operations based on source of labor (i.e., owner, caretaker, family and hired) were collected. Cash farm expenditures were obtained for each cropping period. General information on the rate of development of the land area originally acquired, whether through purchase, inheritance or lease, were also asked.

An analysis of the data is expected to point some policy implications.

Cultural practices as used in the study involve operations from pond preparation to harvesting of the crop and includes practices used for pest eradication, fertilizer application, stocking and care of the fry, supplementary feeding and harvesting. There is a continum of economic activity ranging from the most primitive to capital intensive methods of cultivation. Together with production figures, these will help assess present technology at different stages of fish culture and determine the research areas that may be required to improve the situation. It will also provide information on the needs of an extension and technical assistance program, the demand for inputs, the location and distribution of input supplies including sources of fry, and infrastructure requirements.

Policies on fry distribution need basic data on demand, supply and the seasonal and geographical distribution of fry that are available and required. Relevant here are the fry gathering patterns, the purchase and sale of fry by concessionaires, the purchase and sale of fingerlings by nurseries, and the purchase of fingerling by rearing ponds. The behavior of prices of bangos at various stages of growth (fry, fingerling and adult) with time also needs to be reckoned with.

Production functions, that is, the relationship between the output (i.e., bangos) and the various inputs used in production (i.e., fertilizer, feeds, labor, fry and others) will be estimated using multiple regression and analysis. These estimates would show how the output responds to the different quantities of each input used and, therefore, would show under actual pond conditions the efficiency of resource use. Thus, it would be possible to make comparisons between results obtained under experimental conditions and those under actual farm conditions, point out the gaps in productivity, and determine the constraints to increasing productivity. Policy alternatives may be identified to reduce, if not remove, these constraints.

The study of bangos culture in fishponds and fishpens would also provide a comparison of the effectiveness of the two systems of management.

Development in the bangos industry would redound to the benefit of producers, consumers and workers in the industry. Certainly, there

is a need to study the employment absorption capacity of the bangos industry and the income derived by such workers. From the point of view of the producers what are the peak periods of labor requirement? lean periods? Are they able to find laborers when needed? On the other hand, how secure is the employment of these laborers?

How much income do the small fry gatherers derive from their occupation? How is this income distributed within the year? Do they have other sources of income for their livelihood? If fry were produced under controlled conditions what would be the implications to this sector of the economy?

What are the capital requirements of the various stages of production? Here, we also need the proportion provided by different sources, e.g., own savings and borrowings. Credit policies would have to be guided by the requirements of the industry.

Some Socio-Economic Research Issues in Bangos

1. Integrating economic studies into aquaculture research experiments

While studies are being done to determine the effectiveness and efficiency of inputs like fertilizer, feeds, management practices and others, micro-economic studies have to be undertaken simultaneously. Even in attempts to produce fry from bangos in captivity, economic studies must be incorporated.

2. Pricing policy for bangos and for inputs.

During the last annual meeting of the Federation of Fishpond Operators, some members asked why the price support policy for fertilizer applied only to rice and corn. Since fish is also a food product, they, therefore, suggested that a request be made to proper authorities to include fish production in the low price privilege. However, in the ensuing discussion, others pointed out that this might result to a price control for fish which may even worsen the welfare of the producers. This probably indicates a lack of understanding of price determination. Since the fishpond operator's response to new technology is tied up to price expectation and the government can influence price, an understanding of the pricing process is important. The effects of changes in input and output prices must be analyzed. At the same time, marketing policies should be based on a firm understanding not only of marketing margins but also costs of services in the marketing process.

3. Studies on the use of fishpens and their implications to other fishermen.

The development of the fishpen industry is of economic significance and may well contribute to an increase in bangos production. However, lake area are fixed and, therefore, the more fishpens are constructed the less free area is left for fishing. What are the implications of using fishpens on the other sectors of the fishing industry? How much do fishpens contribute to national production of bangos? What are the implications of limiting the area? These and other aspects of fishpen cultivation and related policies must be examined.

4. Studies on the supply and demand for bangos.

With the current emphasis on nutrition programs, the factors affecting the quantity of fish consumed in relation to ther sources of protein must be analyzed. The response of fish consumption to changes in income, prices and prices of other commodities must be estimated. Comparative costs of protein from fish and other sources must be studied to help meet the objective of increasing protein availability.

5. Channels of distribution, flow system, and trading practices.

These would study the regional and seasonal flow of bangos, the marketing practices employed, costs and ultimately determine the road, transportation and other infrastructure requirements as well as post harvest technology needed to assure flow of high quality product to the consumer.

6. Communication structure studies for bangos.

These would determine channels and mechanisms for dissemination of new technology from researchers to the end-users and for effective extension approaches.

7. The improvement of the statistical base for bangos

The need for accurate and reliable statistics, cannot be overemphasized. Macro-economic data on area, production, yields, prices and others have to be improved.