Editorial

Fisheries and Coastal Resource Policy Research: A Network Priority

A recent report from an International Food Policy Research Institute (IFPRI) workshop which addressed forestry policy research needs starts by asking the question - What types of studies constitute policy research? Three types of policy research can be identified that support the dynamic process of policy change in most societies. The first is research to improve understanding of the existing situation and the problems and opportunities associated with it. The second is research to identify desirable changes in the present situation. The third involves research on how to bring about these changes, that is, what policy instruments and other mechanisms can be used to achieve these objectives.

Participants at the IFPRI workshop generally agreed that research designed merely to collect basic data and baseline information is not in itself policy research, though this type of information is often essential for the formulation of sound policies. The collection of data and the development of data bases are of little use unless guided by appropriate policies. Research priority-setting needs to explicitly recognize and take into account the dynamic nature of policy formulation. Research priority-setting must also take into account the existing policy research capacities in the country, which can vary greatly.

The workshop participants further recognized that policy issues are quite site- and situation-specific. Information at present is derived primarily from isolated case studies not designed for extrapolation. For all areas of policy research, a critical challenge is to design studies using standardized or comparable methods and carefully selected cases to provide rigorous empirical evidence that can be extrapolated to address broader policy concerns. Otherwise, research findings may appear to be contradictory, when in fact they reflect context-specific characteristics that are not generalizable.

The establishment of priority issues and topics is a first step in developing research on policy issues at the national level. In addition, there is a need to expand training and information programs that will build the capacity of a country to address actual fisheries and coastal resource policy issues. The AFSSRN has identified fisheries and coastal resources policy research as a priority research theme for the future. The Network, through training and collaborative research programs, will develop the capability of its members in the techniques of policy analysis. Common policy themes and research areas identified by AFSSRN members include a broad range of macro and micro issues, both within and outside the fisheries sector: trade and macroeconomic policies; markets and structural adjustment analysis; linkages and conflicts between fisheries and other economic sectors; effects of economy-wide and sectoral policies on natural resource degradation, institutional and legal structure, including property rights arrangements, of management; and household economics.

R.S. Pomeroy

Production-Related Risk in Rice-Fish Culture: A Target MOTAD Analysis

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Editor's Note: The following is a summary of the preliminary results of an AFSSRN-funded study on "Risk Programming of Rice-Fish Production Systems in the Philippines" conducted early this year by the AFSSRN-CLSU team.

Introduction

Rice-fish culture is a farming technique that can potentially increase both farm income and national fish output. Simply put, the culture of fish in paddies can raise the productivity of land by adding fish to the rice the farmer can harvest.

In the Philippines, however, although rice-fish culture has been an area of research for many years, it has not been adopted widely among rice farmers. Several problems constrain the adoption of the rice-fish technology (e.g., Bimbao et al. 1990; de la Cruz et al. 1990; Labios et al. 1990; Sevilleja and Cagauan 1992). Foremost among these are technical problems which oftentimes cause low fish harvest from a rice-fish production environment.

Although the risk of getting a low level of fish output, and thus low financial returns, from rice-fish culture is a hindrance to its adoption, the issue of production-related risk has not been investigated at all in the rice-fish literature. Because of this dearth in information, the Freshwater Aquaculture Center, Central Luzon State University (FAC-CLSU) Team of the Asian Fisheries Social Science Research Network (AFSSRN) conducted a study in January 1993 to analyze the impact of production risk on farm profitability and technology adoption. The preliminary results of the study, which will terminate by December 1993, are summarized in this paper.

Data

The production data utilized in the study were from rice-fish on-farm trials done by the FAC in Guimba, Nueva Ecija, Philippines, during the wet season of 1990 and the dry season of 1991. The FAC trials covered 15 farms per culture system and season. The culture systems compared were the rice-fish pond refuge system and rice monoculture, and covered the wet and dry seasons. The prices of inputs and outputs used in the financial

computations were taken through a survey of input and fish retailers in Muñoz, Nueva Ecija, an adjacent town where prices were closely similar to those in Guimba, Nueva Ecija.

Theory and Model

A basic assumption of the theory of the firm is that the main objective of the entrepreneur is to maximize profits given his resource constraints. For this study, the firm is the irrigated rice farm and the entrepreneur is the farmer who owns and operates it. The farmer aims to maximize returns from his farm operation given limitations on his land, labor, and capital resources and the production options available to him. In addition, his ability to maximize net return is dependent on his management skills and on risk associated to farm production.

Profit maximization given physical constraints and production options is a problem which can be handled by basic linear programming (LP). This analytical method provides the farmer an optimal set of production activities which, when followed, allows him to attain profit maximization. In particular, LP has been widely applied in maximization problems where production parameters, like output, are known with certainty. However, if output can divert downwards from their expected average values, the risk of incurring net financial losses exists and basic LP will no longer be useful as a method for analyzing maximization problems (e.g., Hazell 1971; Hatch et al. 1987).

A tool which is appropriate for farm planning under condition of risk in output is quadratic programming (QP). This tool, however, is computationally difficult and imposes several assumptions on the behavior of the farmer (e.g., Hatch et al 1987). Thus, the MOTAD (Minimization of Total Absolute Deviation) model, a linear alternative to QP which also incorporates risk into the analysis, was developed by Hazell (1971). Later, the MOTAD was modified into the Target MOTAD model by Tauer (1983).

The Target MOTAD is the model used in the study to analyze the effect of production-related risk on farm profitability and technology adoption. The model has already been applied in the analysis of production-related risk in aquaculture-based production systems (Hatch et al. 1987) and rice production systems (Israel et al. 1992).

AFSSRN-CLSU Team Leader Ruben Sevilleja (second from right) interviews a rice-fish farmer. Although rice-fish culture has been studied for many years, it has not been widely adopted among rice farmers.

Preliminary Results

Based on data averages, preliminary results show that rice-fish culture leads to a higher rice production compared to rice monoculture. Moreover, results indicate that the former is more labor- and fuel-intensive and less fertilizer- and pesticide-intensive than the latter.

For rice-fish culture, cost of fingerling and feed are relatively minor components of variable costs and pond repair, and maintenance and depreciation costs comprise only a small fraction of fixed costs. However, the initial capital needed to build the pond for rice-fish culture was high. This suggests that while the additional cost of raising fish may not be exorbitant, construction of the pond makes rice-fish culture a capital-intensive farming activity.

Gross returns and net returns are significantly higher from rice-fish culture than from rice monoculture for the wet and dry seasons. The higher returns from the former system are due to the higher *palay* output and added fish harvest. On the other hand, rice monoculture is marginally profitable as evidenced by its low net returns for both seasons.

Based on the Target MOTAD model, it was found that production-related risk is an important factor influencing the adoption of the rice-fish technology for the wet season. The optimal farm plan for the fully risk-averse farmer is to leave his land idle. In contrast, for the less risk-averse farmer, the optimal farm plan is to apply both rice monoculture and rice-fish culture and fully or partially utilize the land. The less risk-averse the farmer is, the more intense rice-fish culture is practised and the more land is used.

For the dry season, on the other hand, production-related risk is not a factor affecting the decision to adopt rice-fish culture. Irrespective of the level of risk acceptable to the farmer, the optimal farm plan is to operate rice-fish culture only using all the available land.

Conclusions

Based on the above preliminary findings, the authors conclude that rice-fish culture is more profitable but also more risky *vis-à-vis* rice monoculture during the wet season and more profitable and involves less risk in the dry season. To improve adoption among farmers then, the authors recommend that technical research must emphasize on technology refinement studies that will lessen the variability of fish output from rice-fish culture, specifically during the wet season. On the other hand, since it is found to be a superior technology for the dry season, an effective dissemination campaign must be exerted by concerned agencies to increase adoption of the technology among rice farmers during the dry season.

In terms of future research, the usefulness of the Target MOTAD risk

programming model in the analysis of fish culture technologies can be extended beyond what was done in this study. For instance, studies may be conducted comparing the basic pond refuge system with rice-fish-livestock and rice-fish-vegetable systems. Also, studies which expand the assumptions and resource constraints used in the present study may be conducted to render results more reflective of specific culture conditions.

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News Items

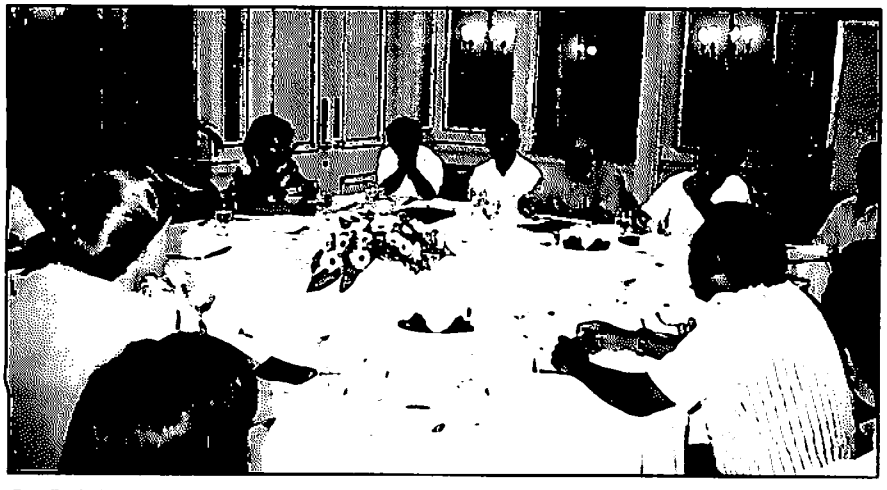
Team Leaders Meet in Manila

THE ASIAN FISHERIES SOCIAL SCIENCE RESEARCH NETWORK (AFSSRN) held its annual team leaders' meeting in Manila on 18 June with 12 team leaders in attendance. In addition, Dr. F. Brian Davy, Associate Director, IDRC Ottawa; Dr. John D. Graham, Regional Program Officer, IDRC Singapore; Prof. Parzival Copes, Simon Fraser University; Dr. Anthony Charles, St. Mary's University; and Dr. Gary Newkirk, Dalhousie University, also attended the meeting.

On top of the agenda was the future direction of the Network and search for additional funding for the next two years of Phase IV. Dr. Robert S. Pomeroy, AFSSRN Coordinator, reported that he would be making a trip to IDRC Ottawa in late July to meet with IDRC staff and then proceed to Europe to meet with Scandinavian donors. He would be presenting the Network as a well-established group of experts in the field of fisheries social science which can do collaborative research.

Dr. Davy told the group that IDRC is willing to assist the Network in looking for opportunities to involve it on a national level and in seeking ways for more donor funding. He stressed the need for national support in Network activities. He also encouraged members to quantify its accomplishments and package these for more donor support. The Network already has an advantage and is well-positioned in the area of fisheries social science research.

Dr. Charles and Dr. Newkirk joined the meeting to meet members and to explore possible areas of collaboration. Dr. Charles is currently working in the areas of aquaculture genetics and biodiversity. Dr. Newkirk, on the other hand, coordinates the Coastal Resource Research Network, which is also being funded by IDRC.



Dr. Bob Pomeroy (third from right), AFSSRN Coordinator, presides over the recent team leaders' meeting in Manila.

Network Members at 4th IASCP Conference

EIGHTEEN AFSSRN team leaders and members participated in the 4th Annual Common Property Conference on 16-19 June at the Philippine Village Hotel, Manila. They were Dr. Fuad Cholik (CRIFI), Ms. Tuti Susilowati (RIMF), Drs. Wiratno (UNDIP), Dr. Nik Mustapha Raja Abdullah (UPM), Dr. K. Kuperan Viswanathan (UPM), Dr. Jahara Yahaya (UM), Ms. Kwek Kian Teng (UM), Mr. Nelson A. Lopez (BFAR), Ms. Jessica Muñoz (BFAR), Mr. Ruben C. Sevilleja (CLSU), Mr. Renato F. Agbayani (SEAFDEC), Ms. Susana V. Siar (SEAFDEC), Ms. Cecilia T. Pestaño (UPV), Mr. Danilo L. Evangelista (UPLB), Ms. Marilyn Elauria (UPLB), Mr. Pongpat Boonchuwong (DOF), Dr. Ruangrai Tokrisna (KU) and Dr. Somsak Boromthanarat (PSU).