



PROMOTING SUSTAINABLE RICE-FISH AQUACULTURE IN IRRIGATED SYSTEMS IN MALI

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INTRODUCTION

Through a series of hands-on trainings in Mali and China from mid-2008 to 2010, rice producers in Mali learned and applied modern techniques for producing crops of fish in their rice fields. The AquaFish CRSP Mali Project partnered with Mali's Direction Nationale de la Pêche (DNP) and China's Shanghai Ocean University on this work. Project activities brought in various stakeholders from Mali's aquaculture industry, including farmers, extension and technical personnel, and members of local NGOs. In little under two years, the project identified appropriate strategies for the implementation of integrated rice-fish farming, adapted rice-fish technologies from China to Mali (two Malians trained in China), set up and ran rice-fish demonstration plots in the Baguineda irrigation area, and conducted workshops on appropriate aquaculture technologies for Mali.



STUDY TOUR IN CHINA

Two DNP technicians were trained in China in September of 2008. The trainees spent two days visiting field sites in Zhejiang Province, where rice-fish culture has been practiced for centuries and is now recognized as a Globally Important Agricultural Heritage System (GIAHS) by the FAO. They observed both traditional and improved rice-fish systems, focusing on their physical characteristics and general management. Discussions with farmers helped the Malians understand the important roles that rice-fish culture play in generating ecological, economic, and social benefits for communities. Ideas were developed on how rice-fish culture could be adapted to Malian conditions and a rice-fish culture model suitable for Mali was proposed.



WORKSHOPS

On their return from China, the trainees began actively promoting the development of rice-fish culture in Mali. In addition to working with farmers in the field, they organized and led the following workshops for farmers and government technicians:

- *Up-to-Date techniques for Rice-Fish Culture* (June 2009): 21 trainees
- *Appropriate Aquaculture Post-Harvest Techniques* (November 2009): 22 trainees
- *Training and Extension Capacity Building for Rice-Fish Culture* (November 2009): 27 trainees
- *BMPs - the Issues and Challenges* (January 2010): 20 trainees

FIELD DEMONSTRATIONS

Demonstration plots were prepared in the fields of four farmers in the Baguineda irrigation area (see map) during the 2009 season. The physical layout of fields was based on the model suggested from the training in China. Tilapia and/or African catfish were stocked in July and harvested in November. Mr. Samaké, the most successful farmer, harvested 305 kg of rice (~3.6 T/ha) and 115 kg of food fish (~1360 kg/ha). The sale of rice, food fish, and fingerlings produced in this field resulted in a net profit of CFA 150,210 (~US\$315) in cash for Mr. Samaké. The addition of fish to the rice field resulted in a net profit of CFA 60,720 (~US\$127) more than would have resulted from using the entire field for rice alone—a 67.8% increase.



RESULTS

Simple Economic Analysis of Mr. Samaké's Crop

CFA	US\$
Net profit when field used for rice-fish:	150,210. 315.
Estimated net profit if field used only for rice:	89,490. 188.
Extra net profit due to addition of fish to rice:	60,720. 127.

Multiplier Effects

After observing the results of the demonstrations, at least 22 new farmers elected to modify their fields and stock fish during the 2010 season. These new farmers, with oversight from the DNP, are experimenting with additional field layouts for comparison with the model used in the original demonstration plots.

SUMMARY

These project activities have generated a great deal of interest among rice producers in the Baguineda irrigation area. Local interest in rice-fish increased five-fold following the initial demonstrations. Having witnessed the successes their neighbors have achieved, at least 22 new farmers invested their own resources in this new rice-fish enterprise in 2010. DNP technical officers continue to monitor the preparation and stocking of fields, and several new designs for the layout of fish sumps and access channels in the fields are being tested. The rice-fish farmers have formed a cooperative to better organize themselves for sharing and spreading this new technology. Also, farmers far from the original test sites have indicated their interest to DNP technicians, who plan to begin extending rice-fish technologies to new areas in the next year. After many reported failures in rice-fish culture in Mali, this experience speaks to success and a way forward for small-scale farmers in Mali.



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