

CRSP Introduces Rice-Fish Culture to Malian Farmers

Hands-On Training Ensures Success

“Rice-fish culture has a bright future”

— *Alhassane Touré, DNP Technical Officer*

The landlocked West African country of Mali has one of the world’s largest freshwater fisheries. Over 100,000 tons are caught annually from lakes and rivers largely situated in the southern regions of the country. Malians fish on a daily basis, consuming an estimated 10.5 kg per person each year. Even with over 700,000 fishers bringing in daily catches, the rising demand of both a growing population and expanding export markets is outstripping supplies. While Mali’s economy is centered on agriculture and fisheries, crops and livestock are the major industries for marketable products and employment. Although a relatively small economic player, aquaculture is an emerging subsector. With declining wild fish stocks and the potential to tie into irrigated agriculture systems, fish farming is the next promising frontier for economic growth. For poor rural farmers who adopt the sustainable technologies promoted by AquaFish CRSP, aquaculture offers additional income and food security for their families and local consumer markets.

From 2007–2010, AquaFish CRSP collaborated with Mali’s Direction Nationale de la Pêche (DNP) on an aquaculture training and research program targeted directly at farmers, fishers, and extension support personnel. Funded under an Associate Award from USAID/Mali, the program included a rice-fish component for stakeholders in the inland delta region of the Niger River. Employing a South-South approach, CRSP Chinese experts from Shanghai Ocean University and the Network of Aquaculture Centres in Asia-Pacific collaborated with DNP personnel to hold hands-on workshops and set up



Mme. Diallo Madeleine BA, Minister of the Ministère de l’Élevage et de la Pêche, and her entourage of Malian farmers and government officials enjoy an enthusiastic explanation by DNP officer Alhassane Touré (to her left) of the rice-fish culture system on display at the farm of Mr. Mamadou Samaké.

field demonstrations to help local farmers successfully integrate aquaculture into their irrigated rice cropping practices. The project started in September 2008, with a training held in China for Malian extension personnel. Two DNP fisheries officers traveled to Shanghai for a short course led by Dr. Liping Liu and Dr. Wu Zongwen of Shanghai Ocean University. While there, Alhassane Touré (regional fisheries director of the Koulikoro Region) and Tiéman Traoré (fisheries service officer of Kati, DNP) visited field sites in Zhejiang Province, where rice-fish culture has been practiced for centuries. FAO has designed this area as a Globally Important Agricultural Heritage System. Timed during harvest, the farm visits gave the Malians a view of both traditional and modern rice-fish systems. Local farmers shared their experience, emphasizing the role that rice-fish culture plays in generating ecological, economic, and social benefits for their communities. Working with their Chinese trainers, Touré and Traoré developed a plan for adapting rice-fish culture to Malian rice production cycles and irrigation systems. Their goal was to

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Tiéman Traoré and Liping Liu discuss rice-fish culture practices on display at a traditional farm in China, where the rice harvest is underway.

raised him to the status of a model adopter for the rice producer community. Although modest by first world standards, the initial 115 kg fish harvest from Mr. Samaké's 0.084 ha rice field brought in US\$121 in extra income. Extrapolated up to a hectare-size field, this first modest harvest was equivalent to 1360 kg of fish. For those farmers who have traditionally enjoyed a small fish harvest of wild fish (up to 25 kg) that have migrated into their irrigation channels, the promise of a formalized rice-fish culture is significant. In an impoverished country that ranks among the poorest in the world, this additional income is a significant profit for the average Malian farmer who typically earns only US\$1500 for a year's work. As word of Mr. Samaké's success spread through the Baguineda rice producer community, the profit potential of rice-fish systems led 22 farmers to adopt the new technology for their fields in the 2010 season.

With two trained extension personnel in place, CRSP sponsored four workshops in November 2009 and February 2010 for stakeholders at all levels. Ninety fish farmers, fishers, middlemen, traders, and government officers attended. Since Malian women are primarily involved in post-harvest activities, their 38% attendance (9 of 24 attendees) at the November 2009 fish processing workshop was significant. The trainings were designed to build capacity along the value chain and within the service sector in all aspects of aquaculture including production and post-harvest technologies, Best Management Practices, aquaculture techniques and systems, and government policy. Working side-by-side with their Chinese colleagues, Touré and Traoré led the workshops, exemplifying the CRSP model that stresses capacity building designed for local circumstances and needs and delivered by local experts.

develop a low-cost technology using local techniques that would fit into the existing rice culture practices. Throughout the life of the project, the Chinese partners made frequent visits to Mali to assist with trainings and supervise the demonstration plots from pond construction through harvest.

Work in Mali began in June 2009. The Malian-Chinese team set up demonstration sites in four farmers' fields in the Baguineda irrigation area of Mali's Koulikoro Region. Following the DNP plan, farmers constructed fish ponds or sumps at the corners of their irrigated rice fields, connecting the pond to a system of water channels surrounding the field. To guard against flooding and fish escape, they raised the surrounding field embankments with the excavated soil. Once the rice seedlings were planted, the cooperating farmers stocked the ponds with Nile tilapia and African catfish fingerlings in August.

Four months later in mid November, the fish were ready for harvest. A celebratory event, Mme. Diallo Madeleine BA, Minister of the Ministère de l'Élevage et de la Pêche attended the first harvest at the farm of Mamadou Samaké, whose enthusiastic adoption of the new rice-fish technology



A DNP official inspects the fish sump of a completed rice-fish system near Baguineda.

By using a comprehensive training method that started at the top with extension personnel coupled with an international collaboration with Chinese experts, AquaFish CRSP successfully introduced rice-fish culture to Mali. The training program helped establish a dependable extension support system for farmers and provide stakeholders with a strong foundation on which to successfully build their livelihoods. The local focus, with a rice-fish culture system designed to fit Malian conditions, will ensure the continued growth and spread of this new, income-generating technology. The multiplier effect was in evidence early, with the success of Mr. Samaké's first fish harvest. As Alhassane Touré foresees the diffusion, the "Dissemination of the technology of rice-fish culture has a bright future in Mali...rice + fish = increased food security, food safety, environmental protection, increased incomes, and employment."



Trainees pose with their trainers for a post-workshop portrait outside the offices of the Office du Perimetre Irrigue de Baguineda (OPIB).



This research was made possible by the United States Agency for International Development (USAID) through the Aquaculture & Fisheries Collaborative Research Support Program (AquaFish CRSP) under Cooperative Award No. EPP-A-00-06-00012-00 and by participating US and Host Country institutions.

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