



BUILDING CAPACITY FOR INTEGRATED RICE-FISH SYSTEMS THROUGH THE REGIONAL RICE INITIATIVE AND SOUTH-SOUTH COOPERATION



MAKE AGRICULTURE, FORESTRY AND FISHERIES
MORE PRODUCTIVE AND SUSTAINABLE

THE DEVELOPMENT CHALLENGE

As global population soars and various climate and environment challenges emerge, food and nutrition security remain a distant reality for many populations in the rural world.

In rice production areas, overuse of pesticides and chemical fertilizers decreases terrestrial and aquatic biodiversity while negatively impacting human health. While using fertilizer and pesticides increases productivity in the immediate term, over the long term it contributes to a loss of aquatic and terrestrial biodiversity, negative health impacts due to direct exposure to toxic pesticides and contaminated water, pest resurgence, degradation of natural resources and decreases in production.

Moreover, aquatic biodiversity from rice-based ecosystems, often underappreciated and undervalued, makes a significant contribution to food security in rural rice growing households as well as to the proper nutrition of the family. In order to increase production in a socially, environmentally and economically sustainable manner, resources need to be used more efficiently, and human health and natural resources should be protected without the expansion of agricultural land. Sustainable intensification is needed to produce more with less.



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THE DEVELOPMENT SOLUTION

Rice-Fish farming (RF) is an ancient technique practiced throughout the world, which is now receiving renewed interest. Rice-fish systems encompass a wide range of aquatic species (including finfish, crustaceans, mollusks, reptiles, insects, amphibians and aquatic plants) used for consumption and/or sale, and integrated farming systems (concurrent, rotational, side-by-side using the same water resources) which are practiced in various intensities of input-use from the harvesting of wild fish to the introduction of cultured fish. These techniques have brought triple-win benefits to farming families by increasing yields, incomes, and levels of nutrition.

- Farmers using Rice-Fish systems benefit from more diversified revenue streams from the same plot of land (intensification and livelihood) thereby **increasing marketing opportunities, diversifying products** and achieving **higher incomes**;
- Higher aquatic biodiversity provides for household consumption of a variety of aquatic species (supporting good nutrition) while also contributing to **food safety**. For example, in Lao People's Democratic Republic, two-thirds of aquatic species consumed by rural households is caught in rice-based ecosystems.

THE SOLUTION EXCHANGE

South-South Cooperation (SSC) initiatives on RF techniques have mainly used the Farmer Field Schools (FFS) approach, as well as conducting trainings and workshops across the globe:

- RF-FFS have already been set up in Latin America (Guyana and Suriname), Africa (Burkina Faso, Guinea-Bissau and Mali) and Asia (Indonesia, Philippines and Vietnam). With SSC/FFS support from FAO, experts from one Southern country have used their experience to train master trainers and facilitators from other developing countries;

- In 2016, 33 people attended the Regional Rice Initiative *Workshop cum Study Tour on Knowledge Exchange on FFS Curriculum Development for Promotion of Efficient Rice Farming Practices and Value Chains* in Indonesia. Participants were representatives from government agencies, research centres, NGOs, and universities of Indonesia, Lao PDR and the Philippines;
- Field visits were organized by the FAO country office in Indonesia in collaboration with the Ministry of Marine Affairs and Fisheries, and international civil society organizations and local partners;
- Future exchange visits are envisioned to support ongoing FAO projects in West Africa to share the expertise and good experiences inter-regionally, showing the importance of SSC for the expansion of this approach.

KEY RESULTS AND LESSONS LEARNED

- Innovative RF farming techniques stress the efficient and **effective use of natural resources (land and water)**;
- Fish production from RF culture can vary significantly from 0.3 tonnes per ha in the Philippines, up to over 3 tonnes per ha in Bangladesh, China and Indonesia.
- In a review of 34 RF studies, FAO found that on average **the rice production increases by 0.5 tonnes per ha** when integrated with fish.
- **Revenue increases more than input costs** (fish feed and seed), so the overall profit is almost double;
- The increased input costs require a financing mechanism to help farmers and cooperatives invest initially. Once started, the projects are **financially sustainable**.



- **Strengthened collaboration among farmers** is essential because of the shared communal resources, especially irrigation waters;
- **Cooperative structures and participatory training approaches**, especially FFS, support long-term anchorage;
- **South-South Cooperation** is a cost efficient tool that can be used to strengthen and scale up this technique.

POTENTIAL FOR UP-SCALING

In the context of the Sustainable Development Goals (SDGs), more specifically No Poverty, Zero Hunger, RF and aquaculture in general can be part of a solution to feed a growing world population, while also allowing farmers to have a second revenue stream and offering an efficient and sustainable use of a limited resource: freshwater.

- **What is needed to upscale Rice-Fish farming systems?**
 - Institutional support through the mainstreaming of supportive policies and awareness raising at the national level;
 - Collaboration among different ministries committed to implementing this technique;
 - Training and education, especially through FFS and other participatory approaches,
 - Fingerling supply and fish feed production through decentralized hatchery programmes to make critical inputs more available to farmers;
 - Financing support through micro-credit and farmer organization schemes;
 - Better linkages to local markets and support to local and regional markets for sustainable products.

South-South and Triangular Cooperation can enable the further spread of these techniques by facilitating exchange of expertise, techniques and capacity building.

CONTACT US

Interested partners are invited to get in touch with FAO for more information

TCS-Director@fao.org

farmer-field-fschools@fao.org

FIAA-Chief@fao.org

