

## RICE-FIELD FISH RINGS IMPLEMENTED BY WORLD FISH IN BANGLADESH

One of the interesting methodologies adopted in Jagannathpur village, Jhalokhati district (Bangladesh) in the framework of the CGIAR initiative-WorldFish is the [Rice-Field Fish Ring](#).

Fish rings are man-made microhabitats where aquatic species such as fish can live, feed, and breed. Fish rings maintain the biodiversity of ecosystems and make sure that fish thrive in rice fields. The monsoon season in Bangladesh brings extremely variable weather conditions and tidal flows. Some fish enter rice fields from nearby rivers and canals but they can be trapped in depressions when water levels recede and eventually succumb to the harsh terrain in rice fields. If a habitat in the form of a fish ring is maintained at the onset of the monsoon season, it can ensure that fish remain and survive in rice fields, meaning that there will be more nutritious fish for consumption and food security.

A Fish ring is a small cement ring (76cm across and 1 meter deep). The cemented ring is dug into the ground in the rice field. When the rice field floods in the monsoon period (May-October), fish that come into the rice-field naturally gather where there is deeper, cooler water, which they find in the cement rings. Instead of dying in the field due to drought, high temperatures, or high levels of dissolved oxygen in the shallow water, the cement ring (acting as a microhabitat) provides a sanctuary where fish can thrive and breed. By the end of the monsoon season, the field and rings can have many fish and juveniles which can be used for eating, selling, or stocking in household ponds.

[WorldFish](#) is an international, non-profit research organization and leads the CGIAR Research Program on *Aquatic Agricultural Systems* (AAS) which seeks to reduce poverty and improve food security for many small-scale fishers and farmers depending on aquatic agriculture systems.

*Aquatic Agricultural Systems* are farming and fishing systems where the annual production dynamics of natural freshwater and/or coastal ecosystems contribute significantly to the household livelihood, including income and food security. The farmers, fishers, and herders who depend upon aquatic agricultural systems pursue complex, highly adaptive livelihood strategies. They cultivate crops, raise livestock, farm or catch fish, gather fruits and other tree crops, and utilize natural resources such as timber, reeds, and wildlife to overcome the constraints they face and reduce vulnerability in the face of external shocks.



The CGIAR Research Program of World Fish supports these communities through research and technical assistance in order to improve their productive systems in order to provide opportunities for growing or harvesting food and generating income. CGIAR research is carried out by the 15 centres who are members of the CGIAR Consortium in close collaboration with national and regional research institutes, civil society organizations, academia, and the private sector. The Fish rings are one of the examples of simple technologies implemented by the research programme.

In many parts of Asia, rice farming provides a major source of income. Rice paddies and fish have long coexisted incidentally, since many fish species find their way into flooded rice fields for reproduction and habitation. Farmers have intentionally imported fish into their rice fields. The advantages of integrated rice-fish farming include a more productive and nutrient-rich rice crop, because fish increase the availability of phosphorous and nitrogen in soils; a reduction in disease-carrying aquatic weeds and algae, which compete with rice for nutrients but are a favoured food among fish and an extra source of income for farmers who can find markets for their fish. In Bangladesh, where approximately 80 percent of its total cultivable land is devoted to rice farming, [researchers from Charles Darwin University](#) in Australia studied the benefits of integrating fish into rice cultivation in 2010. They found that for the most popularly raised rice variety in Bangladesh, the yield was 12 percent higher in integrated systems than in rice monocultures, and fertilizer and pesticide inputs were reduced. In addition, another researcher from Shimane University in Japan found that rice-fish farmers had 5-11 percent higher revenue than farmers of rice monocultures.

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[National Food Balance in Bangladesh – World Food Program](#)

