AQUACULTURE WITH SMALL FISH SPECIES HAS THE POTENTIAL TO IMPROVE NUTRITION AND COMBAT MICRONUTRIENT DEFICIENCIES

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Polyculture of carp species in homestead ponds is highly successful in Bangladesh, resulting in a large increase in the production of silver carp, and making it accessible and affordable for the poor. Concomitantly, freshwater capture fisheries have declined due to human population growth, embankment construction for flood control, filling up of open water bodies, and use of fertilizers and pesticides in rice production. This has resulted in a large decrease in total fish availability and consumption, as well as a substantial decrease in the proportion and frequency of consumption of small fish species. Small fish are well-liked, shared among all household members, and with the little oil, vegetables and spices which are used for cooking improve diet diversity. As many small fish are eaten whole, with head, organs and bones, they are particularly rich in bioavailable calcium, and some are also rich in vitamin A, iron and zinc. The consumption of large fish, such as silver carp, of which the edible parts are mostly the muscles, does not supply micronutrients. Polyculture of carps does not promote household fish consumption as the pond is stocked with fingerlings, at one time, and all adult fish are harvested, approximately four months later. The Bangladesh Agricultural University has developed a carp-small fish polyculture technology, focusing on the small fish, mola, rich in vitamin A, and darkina, rich in iron and zinc. Inclusion of small fish does not lead to a reduction in carp production, and thereby income from sale. However, the nutritional quality of the total fish production is greatly increased. Small fish breed in the pond and must be partially harvested frequently, favouring household consumption. A small production of 10 kg mola/pond/ year, in the estimated 4 million small ponds in Bangladesh can meet the annual Vitamin A recommended intake of six million children. A traditional Cambodian daily meal of rice and sour soup, made with the iron rich fish, trey changwa plieng can meet 45% of the daily iron requirement of a woman. The carp-small fish polyculture technology has gained wide recognition in Bangladesh, and is also being practised in Sunderbans, West Bengal and Terai, Nepal. This approach of combining large fish and micronutrient rich small fish is also applicable to production systems in wetlands.