

Integrated Agriculture-Aquaculture Systems for sustainable development in Rural Nepal

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Abstract

Food security with sustainable development is a major issue being faced by the ever growing population in the world. Integrated Agriculture- Aquaculture (IAA) systems are increasingly recognized as vital for food and nutrition security particularly in the face of global challenges such as climate change, resource scarcity, and food insecurity. By harmoniously integrating crop farming with aquaculture practices, IAA systems enable efficient recycling of nutrients and water, reduce reliance on external inputs, and enhance overall farm productivity and resilience. Further, the integration of aquaculture into agricultural landscapes offers a practical pathway to circular economy practices and climate-smart agriculture. Aquaculture is a fast growing food-production sector that recently overtook fisheries as the main source of fish for human consumption. In Nepal different aquatic systems represent a total of 252 fish species. Among them 236 species are indigenous while 16 species are exotic. These species belong to 15 orders, 40 families and 120 genera. Carps of the order Cypriniformes are the major fishes cultivated in Nepal. These includes Indian Major Carps; Rohu (*Labeo rohita*), Mrigal (*Cirrhina mrigala*), and Chinese Major carps; Grass carp (*Ctenopharyngodon idella*), Silver carp (*Hypophthalmichthys molitrix*) and Bighead carp (*Hypophthalmichthys nobilis*). Two varieties of Common carp; Scale carp (*Cyprinus carpio* var. *communis*) and Mirror carp (*Cyprinus carpio* var. *specularis*) are cultivated also. Recently exotic catfish Pangas (*Pangasianodon hypophthalmus*) and exotic perch Nile tilapia (*Oreochromis niloticus*) are cultivated also. Annual fish production of Nepal is 113736 metric tons with the contribution of 92736 metric tons from aquaculture and 21000 metric tons from the inland capture fisheries, indicating per capita fish production 3.8 kg only. Pond fish culture accounts for 72.3% of the current total fish production. The Terai belt which makes up 88% of the entire pond area, is crucial to fish production due to its favourable environment. The support from the government certainly helped the expansion of fish farming to fulfil its potential to meet the national demand and for nutritional support of the people and employment opportunities towards sustainable development of the nation.

