

**Nutrient accumulation and water use efficiency of ponds in integrated agriculture-aquaculture farming systems in the Mekong delta. In: A.J. van der Zijpp, J.A.J. Verreth, L.Q. Tri, M.E.F. van Mensvoort, R.H. Bosma, M.C.M. Beveridge (Ed), Fish ponds in farming systems.**

**Wageningen Academic Publishers, 147-157.**

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**Abstract**

To further develop integrated agriculture-aquaculture (IAA) farming systems, better integration of ponds with terrestrial crops and human activities should be considered. In the Mekong delta, improving resource use efficiency is the main factor influencing the adoption of the IAA-farming. In the Mekong delta on-farm by-products or residues, particularly livestock manures, contributed about 80% of the total food nitrogen (N) inputs of the pond. Pond water use efficiency was low, due to high water exchange rates practiced in manure-fed ponds. About 10-20% of the total food N input was recovered in harvested fish, while most of the remaining fraction were accumulated in pond sediments. Multivariate analysis distinguished three pond systems with different levels of water exchange, waste and home-made feed utilisation. The trials showed that adjusting water exchange rates to fertilisation, especially from pig manure, contributed to the reduction of environmental pollution, while fish production was almost maintained or improved strongly, depending on the system. A trial to prune the longan trees showed that the mixed fruit-fish system can only be judged in the long run: with fish providing the main income while trees are young, but fish becoming secondary once the fruit production becomes good.

**Keywords:** *integrated agriculture-aquaculture; water use efficiency; nutrient accumulation; Vietnam.*