

# THE DYNAMICS OF AQUACULTURE DEVELOPMENT IN THE PHILIPPINES: INTENSIFICATION AND EXTENSIFICATION IN THE MILKFISH AND TILAPIA PRODUCTION SECTORS

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## Abstract

Philippine aquaculture ranks 4th in the world in terms of volume produced. Without including the productions of seaweeds and shellfish, this sector is dominated by three species: milkfish (*Chanos chanos*), tilapia (*Oreochromis niloticus*) and prawn (*Penaeus monodon*), with respective productions evaluated in 2002 at 230,000, 122,000 and 35,000 m<sup>3</sup>.yr<sup>-1</sup>. While milkfish and tilapia productions have increased spectacularly over the last ten years, prawn industry collapsed due to pathological diseases. A closer observation of these developments reveals a trend towards an extensification of the farming systems for these three species: less inputs and lower stocking densities.

The main production tool of fish farming in the Philippines is the brackish water coastal pond, with over 250,000 ha, 85% of the milkfish production, the entire prawn production and a slowly rising tilapia production. An extensive polyculture is being practised with an association of milkfish, prawn, crabs and, in certain regions, tilapia. An attempt to intensify the prawn production systems on wide areas of fishponds with the development of monoculture between 1982 and 1995 ended in dramatic failure. The return to extensive polyculture is now the rule with an increasing role of tilapia in prawn oriented polyculture.

The fairly recent introduction of the Nile tilapia *Oreochromis niloticus* in 1972 led to the development of mostly intensive monoculture. By 1993, the Philippines was the number one tilapia producer in the world with nearly 100,000 mt yr<sup>-1</sup>, densely stocked cages in open water being the main farming system. A combination of unfavourable factors rapidly led to a lowering of productions in the vicinity of 70,000 mt.yr<sup>-1</sup>. Nevertheless, in the late 90's a new farming system developed in the central plain of Luzon Island where thousands of small fishponds were built, mainly on rice farms. This tilapia monoculture in ponds is characterised by lower production cost than in cages and its development induced to a new increase of the national tilapia production to over 120,000 mt in 2002. Today, fishponds of the central region of Luzon contribute to one third of the tilapia production in the Philippines.

Aside from the extensive brackish water pond farming and intensive tilapia monoculture, many attempts to implement or re-implement intensive monoculture of prawn

(in ponds) and milkfish (in cages and pens) are observed. These systems show fluctuating successes.

A study of the tilapia, milkfish and prawn market is showing stable prawn price but sharply dropping tilapia and milkfish prices over the last years. This trend can be correlated with the increase of production for these fish which suggests a saturation of the market. This might also contribute to explain the trend towards the development of farming systems with lower input costs.

The Philippine aquaculture sector shows a remarkable adaptability and vitality. The trends of the economic environment with the variations in market prices and opportunity costs of the production factors is determinant of whether a more intensive or more extensive production systems would be used.

In the Filipino context of fast demographic growth, of urbanisation and of sustained economic development, this example of extensification of dominating animal farming systems is quite convincingly illustrating the ambiguity of an answer to growth by unilateral policies supporting the intensification of agricultural production systems.