

STUDIES ON SUSTAINABLE PRODUCTION SYSTEMS OF AQUATIC ANIMALS IN BRACKISH MANGROVE AREAS

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BACKGROUND

The Southeast Asian Fisheries Development Center (SEAFDEC) and the Japan International Research Center for Agricultural Sciences (JIRCAS) signed a Memorandum of Understanding (MOU) in 2001 for the promotion of fisheries and aquaculture research and development in Southeast Asia. Under the said MOU, five collaborative research studies have been implemented at AQD in Iloilo, Philippines. These studies are:

1. Egg and larval quality of the mangrove red snapper fed improved broodstock diet (2002-2005)
2. Pathogenesis and control of sub-clinical infection of viral nervous necrosis (VNN) in broodstock of grouper (2003-2005)
3. Valuation of mangrove resources and services: implications for the adoption of mangrove-friendly aquaculture in Western Visayas (2003-2006)
4. Property regimes in mangrove ecosystems: implications for the adoption of mangrove-friendly aquaculture in the Philippines (2002-2004)
5. Property rights, governance and adoption of mangrove-friendly aquaculture technologies: the case of natural and reforested mangroves in the Philippines (2002-2005)

In addition, JIRCAS also implements projects relevant to sustainable production systems of aquatic animals in brackish mangrove areas. These projects have been grouped into two and under each project are sub-projects:

1. Development of technology for sustainable aquaculture by utilizing the production function of brackish mangrove areas
 - 1.1 Clarification of the life cycle of important species of marine fish in brackish mangrove areas and development of sustainable fishery production methods (Fisheries Research Institute, Malaysia)
 - 1.2 Studies on low-input farming technology using natural circulating supply system of brackish mangrove areas (Kasetsart University, Thailand)
 - 1.3 Development of technology for the cultivation of indigenous and new species of high economic animals (SEAFDEC/AQD)

This sub-project includes two collaborative studies, which are now ongoing at AQD.

2. Analysis of farm management and economic benefits of new sustainable fish production systems in brackish mangrove areas (SEAFDEC)

This project includes three collaborative research studies now ongoing at AQD.

RESEARCH PLANS (2003-2005)

JIRCAS intends to develop technology for sustainable shrimp culture, using Model Experiment and Applied Experiment, considering that water is freely circulated between the culture ponds and the mangrove areas. Given this situation, there should be low loading, low feed and low medicine application in the shrimp culture ponds.

In the Model Experiment, shrimps are cultured in tanks, and water is exchanged between the shrimp tank and mangrove tanks. In the Applied Experiment, water is circulated between shrimp culture ponds and mangrove planted areas. The set-up is shown in the following photos:

Water circulation between culture ponds and mangrove areas



Low loading, low feeding and low application of chemicals

AQUACULTURE EXPERIMENT



Model experiment set-up (above left), shrimps are stocked in tanks while mangroves are planted in tanks.

Applied experiment set-up: *Rhizophora* spp. planted in the mangrove pond (above right) and PL 20 of *P. monodon* stocked in shrimp pond (below right); water is exchanged everyday between the mangrove pond and the shrimp pond in a circulating system

