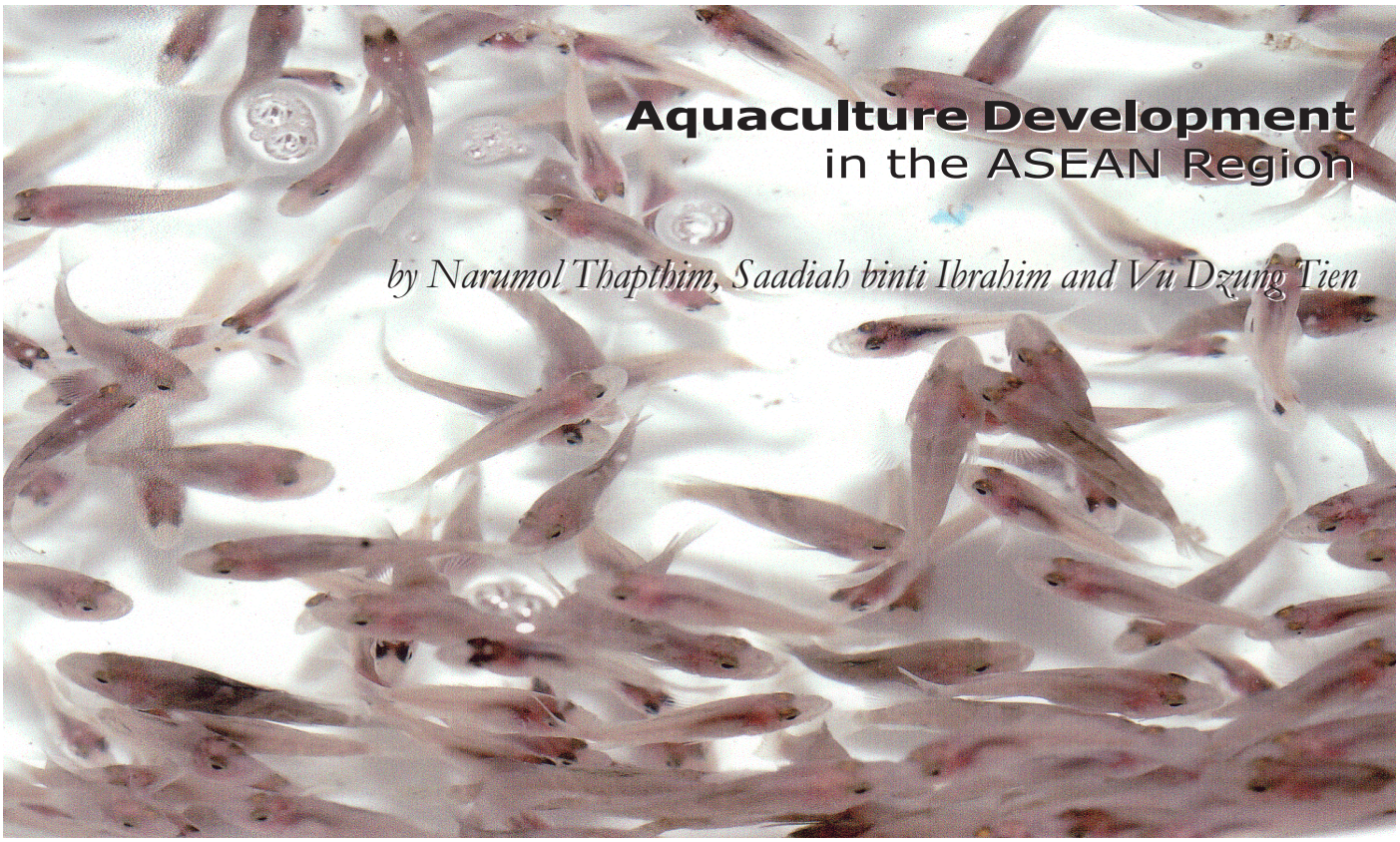

Aquaculture Development in the ASEAN Region

by Narumol Thapthim, Saadiah binti Ibrahim and Vu Dzung Tien

There are different types of aquaculture. *Mariculture* and *brackish water aquaculture* tend to be more capital intensive. These operations may not be owned by members of rural communities, which often lack capital and the technological and marketing skills and capacities required. A broad range of marine and brackish water enterprises exist, from intensive shrimp farms to traditional seaweed culture. *Freshwater aquaculture* can be understood as a part of an integrated approach to land, water and farm management, and includes farming systems ranging from industrial production to household level rice fish culture.

Globally, salmon and shrimp have received most publicity, but these products represent less than 10% of the global aquaculture production by weight. By comparison, carp and tilapia account for about 50% of global aquaculture production, most of which goes into domestic food supplies in developing countries. The contribution of aquaculture to rural development in Southeast Asia can substantially increase these figures.

Aquaculture in ASEAN

In recent decades, aquaculture has contributed to national development for countries in the ASEAN region in three ways. First, it is an important producer of affordable high quality animal protein for domestic consumption. Second, by producing high-value commodities for export, it earns valuable foreign exchange. Third, it provides livelihoods and generates employment.

ASEAN Countries have great potential for aquaculture. Several factors contribute to this potential, including the variety of species cultured, ecosystems,

Small scale coastal aquaculture frequently involves mollusks, which require less investement and therefore present less risks.

climate and availability of technical manpower. However, improvements are needed in several areas, including supply of good quality seed, breeding technology and marketing strategy. Inadequate supplies of feed, fertilizers and hormones, weak fisheries extension systems, and outbreaks of disease have also been identified as problems for the development of the aquaculture sector in this region. Most critically, funds for the rural poor to invest in aquaculture, and so diversify and improve their livelihoods, are frequently unavailable.

Despite a long tradition of aquaculture in Asia, there is now increasing competition among resource users for declining fisheries resources. As aquaculture responds to the pressures to supply more aquatic products, this situation will be further exacerbated. It is therefore critical to ensure the sustainability of aquaculture by reducing its negative impacts on the environment.

Rural aquaculture

Rural aquaculture implies low-cost production with extensive and semi-intensive technologies appropriate to the limited resource base of small-scale households. Rural aquaculture makes an essential contribution to local livelihoods; small fish cages and pens in lakes, reservoirs and coastal lagoons are common in many countries. Small-scale operators, including many women and children, dominate seaweed farming and oyster and mussel culture. Production is frequently a low-value enterprise, but rural aquaculture is not necessarily limited to producing food fish for local distribution: culture of freshwater ornamental fish is also a common small-scale industry.

The effectiveness of aquaculture technologies used in rural areas depends on local social, economic, and environmental factors. Rural aquaculture therefore needs to be considered in a holistic and integrated way, built into a strategic planning process for rural aquaculture development. In addition, the promotion of aquaculture in rural areas should consider the potential of indigenous species and available water sources. Many non-governmental and international organizations support the development of small-scale aquaculture systems that can be easily integrated into existing farming systems.

Potential and constraints on rural aquaculture in the region

Southeast Asia has great potential for further rural aquaculture development, with large areas of inland waters that are presently only partially utilized. For example, Indonesia uses less than 20% of its potential pond area for fish culture. Because rural aquaculture is labour intensive, it also contributes to employment generation.

However, rural aquaculture faces several critical issues. These include identifying means to promote small-scale aquaculture, defining the role of commercial aquaculture in rural areas, and finding ways to integrate commercial and small-scale aquaculture into rural societies.

Culture of red snappers in small floating cages

Development of fish breeding technologies and techniques are an essential step for a widespread aquaculture development.

ASEAN policy and SEAFDEC's plan of action for promoting rural aquaculture

As most aquaculture activities in rural areas are important aspects of rural development, ASEAN Member Countries need to take necessary actions and formulate appropriate policies to ensure the successful and sustainable development of aquaculture.

The Millennium Conference's Resolution and Plan of Action highlighted that aquaculture production in the region might be increased by ensuring a stable supply of good quality seeds and feeds, by effectively controlling disease, by promoting good farm management, and by transferring appropriate technology to local fish farmers. Because aquaculture is compatible with the rational use of land and water resources, its application for rural development should be promoted and made to contribute positively to national food security and the improvement of rural people's livelihoods.

Future aquaculture development must ensure that the sector is effectively integrated into rural economies and societies. Special attention should be given to the integration of aquaculture within other farming systems under sustainable farming management. Since the natural supply of fry and fingerlings is no longer sufficient to sustain aquaculture development in many rural areas, promoting artificial seed production technology will also become increasingly necessary.

In this regard, SEAFDEC's Aquaculture Department (AQD) has developed an Integrated Regional Aquaculture Program (IRAP) as its flagship aquaculture program component under the ASEAN-SEAFDEC Special Five-year Program. The program is intended to promote environment-friendly aquaculture development for rural people in the ASEAN region, and to assure a sustainable supply of quality seed stocks that can support sustainable aquaculture development.

The implementation of IRAP will be affected by various factors, two of which were given priority in 2002: first, the supply of good quality seeds, and second, aquaculture for rural development. These two issues are components of the ASEAN-SEAFDEC Special Five-year Program, to be implemented by AQD with the cooperation of the ASEAN Member Countries.

AQD organized a workshop on IRAP in Bangkok from 17-19 September 2002. The workshop was organized under the Aquaculture Component of the ASEAN-SEAFDEC Special Five-year Program on the Contribution of Sustainable Fisheries to Food Security in the ASEAN region. Participants included three representatives from each ASEAN Member Country, including the National Coordinator, together with projects technical officers and officers from AQD. The workshop emphasized the Aquaculture for Rural Development and Supply of Good Quality Seeds projects.

In the workshop, participants made presentations on the current situations in their countries, problems and constraints, as well as plans for aquaculture development in each country. Problems related to supply of good quality seeds were reported to be common among the member countries, and can be considered as major problems among other countries. Countries' priorities for species selected for the Good Quality Seed project vary. Some countries focus on freshwater fish and others on marine fish. Common issues identified were a lack of expertise in seed production, ineffective seed distribution networks and management, broodstock quality, hatchery management, nutrition, and outbreaks of disease.

Meeting on Integrated Regional Aquaculture Program (IRAP) held in Bangkok in September 2002

Participants discussed these issues in the workshop, and offered proposals for overcoming identified problems and constraints. Collaboration with AQD and with other countries may solve some problems, such as the lack of expertise and management skills in seed production. Countries with experience and knowledge of particular species may offer support to other interested countries.

Programs of collaboration

AQD aims to provide assistance and expert consultation to Member Countries in need. Representatives from certain countries have already proposed to initiate collaborative studies with AQD. Since certain Member Countries have technical expertise in specific seeds production technologies that may be lacking in other countries, international collaboration could be arranged for the development of an adequate supply of good quality seed in the region. Modalities for collaboration among members will of course depend largely on the needs and expertise of interested countries.

In some instances, Member Countries can collaborate on plans for producing good quality seed for the same species. For example, Indonesia and Philippines have both selected giant freshwater prawn, and can hence work together, through the mechanism of SEAFDEC, to develop technologies for producing good quality seeds for that species.

The SEAFDEC Project on Aquaculture for Rural Development aims to test and disseminate appropriate aquaculture technologies for both freshwater and marine systems, suitable for use in rural contexts. The project will ties to be implemented under this project include on-site training on priority technologies needed by respective ASEAN Countries; and national activities through testing of technologies and pilot demonstration. This was confirmed and prioritized during the IRAP workshop.

The workshop therefore opened opportunities for Member Countries to work more closely together in developing aquaculture technologies. Since the proposed plans are for national-level activities, each country is responsible for the budget to run their own projects. SEAFDEC funds contributed by the Japanese Government are mostly to support national initiatives through the mechanism of SEAFDEC. SEAFDEC AQD will directly monitor the progress of activities and national plans discussed in the Seminar-Workshop.

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