

Aquatic Food Production Systems in Bangkok

Around 10 million people now reside in densely populated communities in Bangkok. As a result, the demand for food has increased dramatically. Of the many varieties of fresh produce available, city consumers favour aquatic products such as water spinach, water mimosa and freshwater fish. These products are grown primarily in periurban areas around Bangkok.

Aquatic production systems, including farming of edible aquatic vegetables and fish, play an important role in the livelihoods of many urban dwellers employed as farmers and vendors. Production from inland aquaculture increased to around 280,000 metric tons in 2002, accounting for nearly 10% of total annual fish production in Thailand (Department of Fisheries, 2004). This generated an estimated income of nearly 10,000 million Baht (US\$ 250 million) a year. Around 30% of this aquatic production is concentrated and produced intensively around Bangkok periurban areas. For example, in the northern part of Bangkok in particular, hybrid catfish (Figure 1) farms produce more than 70% of the country's total production of catfish (around 80,000 tons) and extensive water mimosa farming in public canals can be found in Pathumthani province. In Nontaburi province about 40 kilometres west of Bangkok, there are vast areas of intensive water spinach – commonly known as morning glory - farms (Figure 2). About 20 kilometres south of Bangkok, mixed tilapia and carp polyculture in large ponds and intensive water mimosa farming can be found. However, recent changes in water and land uses in periurban areas, made to accommodate rapid expansion of housing projects, industrial factories and construction of a



Ruangvit Yoonpundh

Morning Glory farming on the outskirts of Bangkok

new airport, have seriously impacted on some aquatic production communities. This development is leading to changes in their traditional way of life from agricultural communities into urban and industrialised districts and suburbs of the city.

Deterioration of the aquatic environment resulting from this development is an important factor directly affecting aquatic production systems. Although the 9th (2002-2006) National Economic and Social Development Plan (NESD) has put a priority on decentralisation, aiming to increase authority at community level in order to utilise local resources more effectively and sustainably. There are limitations in the readiness and capacity of these communities to implement these plans. Capacity building should include all stakeholders, e.g., farmers, extension officers, vendors and policy makers.

A recent State of the System (SOS) workshop held with a variety of stakeholders involved in urban aquatic production systems in and around Bangkok revealed the main problems faced by farmers. These included lack of land, high cost of investment and pollution from waste water effluents from communities, factories and village estates. These environmental problems were especially severe during the dry season due to lack of dilution and

drainage within the culture areas, as well as low personal responsibility towards the public environment. These problems may be an important motivation for farmers to increase the intensity of their farming activities and systems in order to increase yields. Intensive farming, particularly in aquatic vegetable cultivation, uses large amounts of chemical fertilisers and pesticides. However many of those who cultivate water spinach and water mimosa still lack sufficient knowledge and understanding of chemical uses due to their low educational backgrounds. Also the government extension service lacks the capacity to work directly with farmers and is continually being constrained by the relatively low level research base involved in aquatic vegetable production. In addition these problems are compounded by the lack of effective mechanisms for the dissemination of information on chemical toxicity and ineffective statutory regulations and monitoring of chemical uses in the field environment.

In terms of fish culture, periurban fish farms produce mostly common commercial species such as hybrid catfish, tilapia and carps, which are sold mostly fresh except for hybrid catfish, which are sold live to markets in Bangkok. Keen competition amongst producers keeps fish prices low resulting in fish farmers attempting to source low

Ruangvit Yoonpundh
Varunthath Dulyapark
Chumpol Srithong

Kasetsart University, Chatuchak, Bangkok
✉ ffrisrvy@ku.ac.th

cost inputs such as canteen and slaughterhouse wastes. The intensity of production together with these least cost feeding strategies undoubtedly result in water quality deterioration and after discharge from ponds can significantly degrade the water quality of local public irrigation canals.

Most aquatic vegetables and fish produced in periurban areas are transported to retail markets in Bangkok and elsewhere (Figure 3) for trading. Various middlemen are important actors in this marketing network. They can initially collect aquatic products from farmers, transport and then sell them to wholesale markets in both suburban and periurban areas. Other middlemen buy these aquatic products from the wholesale markets and sell them through to retail markets. However increasingly aquatic vegetable farmers transport their own produce directly to wholesale and retail markets, this being made possible by the increasing ownership of motorised vehicles, particularly pick up trucks, which gives the farmers more flexibility in when and to whom they can sell their produce, whilst also allowing them to cut out the middleman.. This arrangement is uncommon for freshwater fish producers in and around Bangkok with more specialised middleman transporting the fish to markets.

Expansion of the “modern trade” type market or “supermarket” in suburban



Morning glory is sold in retail markets

and periurban areas of Bangkok in the past five years, which has co-incided with the Thai government’s policy of “food safety” awareness, has resulted in rising consumer demand for cleaner and better-quality products. Vegetables free from pesticides that are subject to food safety standards including packaging and displaying a certified quality standard are

now available. In the near future, it is likely that food safety concerns and requests for certification will become increasingly common among consumers and buyers, and these demands will influence the production of aquatic vegetables such as water spinach and freshwater fish such as cultured red tilapia.

The market system can promote all types of these “food safety” labelled foods by demanding better quality standards and charging higher prices (due to higher production costs incurred in persuading farmers to produce just what the buyer or customer wants). However, aquatic products that meet this standard currently account for only a small portion of total products sold in the market. Therefore, in order to achieve sustained growth for aquatic products in these changing markets, it will be necessary to place higher priority in the near future on food safety for all aquatic foods, which includes a safe and clean production process which the urban consumer can have confidence in.

In the light of this dynamic market situation the government needs to consider how to sustain aquatic production systems in Bangkok periurban areas as they are an important source of aquatic foods and employment for the local economy. Increased co-ordination between relevant stakeholders is also important. In addition to these requirements, studies must be undertaken to develop new technologies for wastewater treatment, improved marketing mechanisms and Good Aquaculture Practice (GAP) leading on to green (or blue?) certified aquaculture products. These proposed changes will require considerable, but not insurmountable, organisation and policy analysis within not just government but also involving other related stakeholders in order to set up a platform for dialogue and promote a multidisciplinary approach to ensure the future of aquatic production systems in and around the city .

References

Department of Fisheries. 2004. Freshwater fish farm production in 2002. Fishery Information Technology Center. Department of Fisheries, Ministry of Agriculture and Cooperatives. 65 pages. State-of-the-System Report: Thailand. Report Series No.1/2003. Production in Aquatic Periurban Systems in Southeast Asia.

POLICY BRIEF BANGKOK PAPUSSA

This text has been taken from a Policy Brief that is currently being prepared. This draft was formulated and produced as part of a 3 weeks interactive learning exercise in producing Policy Briefs by students from Stirlings’ MSc Aquaculture and MSc Sustainable development courses in collaboration and communicating on a daily basis with PAPUSSA staff in Bangkok over an internet linkage. The PAPUSSA project will be producing finalized drafts of Policy Briefs including recommendations for each city later in the year. The scheme (Figure 1) is also from this pamphlet. The Policy Briefs for each of the four PAPUSSA study cities will be available from the website.

RECOMMENDATIONS

1. Understanding the importance of aquatic vegetables

Aquatic vegetables are an important part of the diet of both producers and consumers. They can also be used as a feed for fish or other livestock. This value should be recognised in order to support the farmers that produce these vegetables, and legitimise their livelihood to ensure that they are not constantly forced to move due to urban development.

2. Ensure aquatic environmental quality

Wastewater which is used in periurban aquaculture is increasingly polluted. Strengthening environmental legislation would help to alleviate this problem. Discharge into public water bodies must be better monitored and regulated. Health risk minimisation strategies (also point 3) should be developed and disseminated.

3. Improve public health and food safety

Improved information and education to farmers on cleaner and more sustainable production techniques (e.g. less use of chemicals) would help them to match and satisfy consumer preferences, while maintaining environmental and health standards.

4. Increased market access

Packaging and labelling are becoming more important to consumers, as they provide some measure of food safety standards. Educating farmers on (hygienic) processing, along with a labelling system (or certification) would help to gain better prices.

Farmers’ Associations, of which there are a few in the BMA, can also help to negotiate fair prices for producers and possibly to negotiate contracts directly with wholesalers and retailers.

5. Community participation

An inclusive approach is required in order to build capacity within these communities and to ensure that the decentralisation advocated by the 9th NESD is more effective in the future. The periurban landscape is changing on an almost daily basis, and the land available to farming communities is diminishing due to the residential and commercial developments. Involving these communities, who have been under-represented in decision making in the past, assists them in developing their own capacity and enable them to establish more secure livelihoods.

6. Improved farming techniques

Aquatic production is becoming more intensive in periurban areas, while access to resources becomes more limited. Research and the development of adequate technologies may improve sustainable production.