

Health Issues in Mariculture in the Asia-Pacific Region: an Industry Perspective

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Asian aquaculture contributes more than 90% to total world production. Nevertheless, the industry is paying a price for this achievement in view of the deterioration in environmental and health conditions in fish farming areas. Coupled to this, the intensification of aquaculture in the region has led to disease problems and heavy economic losses. Health problems have two fiscal consequences on the industry: loss of productivity due to animal mortality and morbidity, and loss of trade due to food safety issues.

From an industry perspective, we are facing the following health issues:

- 1) *Lack of capacity in disease diagnosis and epidemiology data.* Most Asian farms operate on a small scale and technical support, including disease diagnosis and training, is lacking at farm level. Asian aquaculture is characterized by an enormous diversity of species, with several dozen marine species being farmed. Consequently, either more resources are needed to understand the basic epidemiology of diseases in the various species or we have to focus our limited resources on less species. And once more data are available, better networking and data sharing between scientists in the region will be required.
- 2) *Poor health management practices.* In Asia, most individual fish farms produce several species of fish. Poor husbandry methods are often practiced, e.g., the use of trash fish as feed. Fry are often sourced from the wild or derived from wild-caught broodstock. These practices are a simple way for pathogens to gain entry to the farm. Furthermore, legislation for and implementation of farming licenses and zoning policies are not in place in most Asian countries. Coupled with a 'gold rush' mentality, this often results in too many fish and too many farms in a concentrated area, which in turn facilitates disease transmission.
- 3) *Irresponsible movement of live aquatic animals and low awareness of biosecurity.* Increased trade of live aquatic animals and the introduction of new species for farming, without proper quarantine and risk analysis in place, have resulted in the spread of diseases within and between countries.
- 4) *Improper use of antibiotics and chemicals.* Irresponsible use of antibiotics or chemicals in aquaculture can lead to residue problems, an increasing consumer concern, and the development of drug resistance among the bacterial pathogens.
- 5) *Unavailability of fish vaccines.* In Asia, with the exception of Japan, few vaccines for marine fish are yet available on a commercial scale. The major advantages of vaccination over therapeutic treatments are that vaccines provide long-lasting protection and leave no problematic residues in the product or environment.

The combination of all the above-mentioned factors, together with the diversity of aquatic animals in tropical waters, has led to a truly challenging disease situation in Asian aquaculture. Under the threats of disease epidemics and consumer pressure on food safety, the industry must undergo change and pay more attention to health management. Collectively, this includes the use of healthy fry, quarantine measures, optimized feeding, good husbandry techniques, disease monitoring (surveillance and reporting), sanitation, vaccination and proper control and biosecurity measures when diseases do occur. Overall, the emphasis must be on prevention rather than treatment.