



Organic aquaculture - sustainable production without antibiotic growth-promoters

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The current situation of the world food supply calls for supreme efforts to ensure the increasing requirements of the growing world population for staple diets and high-quality food, as well as to bridge the widening gap in food demand and food supply especially in the developing world. Setbacks in any food production sector will place greater pressure on other sectors for supplying the increasing urban and rural populations, particularly in the less developed countries.

Around one billion people are dependent on fish as their main protein resource, and their number is likely to increase further (Becker and Focken, 1998), since world population is increasing with an estimated annual population growth rate of 2.0%. Aquaculture now provides more than 22% of consumable aquatic products (Guillaume et al., 2001). Most of the aquaculture production occurs in developing countries, mainly in Asia. Between 1987 and 1996, aquaculture production of food fish increased by 148% (Tomasso and New, 1999), while livestock meat and fisheries have grown yearly only by 3% and 1.6% respectively. Aquaculture is at present the only growing sector within the fishing industry and is also reputed as the fastest growing food production sector in the world.

Yearly growth rates of around 10% since the early 1980s were reported for the aquaculture sector, but it has increased much more rapidly in the developing world, due to the development in Asia, than in the developed countries. Because of this situation, global production of farmed fish and shellfish has more than doubled in volume and value in the past 15 years (Naylor et al., 2000). If products from aquaculture which are not directly used for human consumption are included (e.g. seaweed), the world aquaculture production has more than tripled by weight and value between 1984 and 1996 (Dagoon, 2000). The share of aquaculture to total fish production, which is directly consumed by humans, is currently more than 25%.

Aquaculture has to be recognized as a part of the natural environment and the different farming systems operate inside larger ecosystems. Here, aquaculture uses the available natural resources (e.g. water supply, natural food, oxygen supply) and releases the harvested animals, but also degraded resources (Bagarinao, 1999). Folke and Kautsky (1992) described aquaculture as an economic subsystem of the overall ecosystem in which the existing ecosystem is used as a source for energy and farm inputs and additionally as a sink for the waste outputs.

Aquaculture production differs greatly between countries and human preferences, climatic zones and local conditions as well as types of farmed animals. Therefore the production practices and the resulting impact on the ecosystem vary widely.

Williams et al. (2000) pointed out main goals for the aquaculture industry if sustainability is to be achieved and this includes especially the promotion of environmentally sound practices in all fields of fish and shrimp production.

There is recently growing awareness of both consumers and producers for a responsible and sustainable aquaculture, also in the field of the much debated shrimp production in South East Asia (Feedinfo, 2005). Public opinion and regulation authorities in most of the export countries focusing now on the misuse of antibiotics in aquaculture and public attention have shifted towards production methods.

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Those products containing single-strain fermented bacteria strains and cell wall fragments for immune support were field tested under South East Asian aquaculture conditions and are currently used to support an antibiotic free production of *P. monodon* in the region.

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