

Review Article

Under-Water Organic Farming: Global and Indian Status

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Abstract

Consuming fish that has been raised using intense aquaculture techniques or taken from naturally occurring bodies of water contaminated by anthropogenic activity has emerged as a severe issue. To combat this worldwide, the International Federation of Organic Agriculture Movements (IFOAM) created "organic fish farming" standards in 2000, which encourage the sustainable use of natural resources by including both conventional and modern methods of fish rearing. The study considered protecting consumers, benefiting producers, and preserving natural resources. Global organic aquaculture norms are discussed in this context, specifically focusing on vast untapped Indian water resources.

Introduction

Farming aquatic organisms, including prawns, fish, bivalves, and aquatic plants, without using any manufactured antibiotic or chemical fertiliser is called organic aquaculture. It preserves the ecology and biodiversity of the region. One can raise aquatic animals and plants in a humane, sustainable, and pollution-free way with the use of organic aquaculture techniques. Organic feed improves animal health and lessens reliance on medications, such as antibiotics. Conventional organic farming methods" depend on environmentally based practises, such as historical and naturally occurring pest management, and practically eliminate the use of artificial substances in crop cultivation, as well as restrict the use of hormonal and antibiotic treatments in livestock production. Organic systems are characterised by sustainability, environmental care, and thorough, holistic approaches to production. From time to time, guidelines for organic agricultural production have been issued in the last three decades. For organic aquaculture, interpreting practises and standards created for terrestrial plants and animals into actions and standards appropriate for aquatic species, both animal and plant, is still a significant difficulty. How can aquatic operations adhere to the regulations for an organic system plan for acquiring suitable stock, carrying out health-related supervision and administration, ensuring adequate "living conditions", establishing and embracing lists of allowed and forbidden substances, for organic feed specifications, for regulated post-harvest storage and processing, for regulating nutrient levels, and for necessary recognition of animals? There are also significant variations among the species within aquaculture. For example, raising mussels differs significantly from raising fish and crustaceans. Additionally, the methods used to cultivate seaweeds and algae are very different. As a result, each norm has its own set of rules

and regulations that the farmers must adhere to meet the requirements and increase the productivity of the cultured fish species.

"Codex Alimentarius Commission", the FAO's body responsible for setting food standards, has established guidelines for organic aquaculture, live prawn or fish stock, processing, sorting, packaging, assessment, and licencing. The International Federation of Organic Agricultural Movement (IFOAM) is a global umbrella organisation for organic farming and food. The objectives of IFOAM are to promote the adoption of environmentally, socially, and economically sustainable systems based on the Principles of Organic Agriculture on a global scale. Its Organic Guarantee System (OGS) aims to make it simpler for third-party certification and organic standards to evolve. The International Organic Accreditation Service (IOAS) has granted contract-based accreditation to IFOAM certification organisations [2].

Principles of Organic Aquaculture

1. There should not be any presence of Genetically Modified Organisms (GMOs) or the substances produced through such processes in fish feed and stocks.
2. As per the ecological carrying capacity and behaviour of the aquatic animals like fish, prawn etc., there should be a limitation in the stocking density as per the standards issued for the country.
3. The source of organic feed and fertilizer should be certified as authentic organic as per the norms, and no artificial feed additives should be added.
4. The farm's natural diversity should be maintained by not using any scientific pesticides, herbicides, or inorganic fertilizers.
5. Prefer natural remedies for any stress or disease in fish, prawn or invertebrate aquaculture or live feed culture.
6. There should be restrictions on energy consumption related to aeration by reductions in input and intensification operations.
7. Proper environmental impact monitoring by the culture operations should be done to ensure the protection of neighbouring ecosystems and incorporate natural plant communities into farm management.

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8. A final product must be processed following organic principles to be certified organic.

Conversion Period

The time between adopting organic aquaculture and certification is known as the conversion period. It takes at least two years to convert a conventional farm to an organic one to ensure a viable and sustainable environment.

In modern aquaculture, we consider three main aspects: environmental protection, producer's benefit and consumer protection, as shown in the Figure 1.

Global Status

The main fish species grown organically in Europe is Atlantic Salmon, followed by the European seabass (*Dicentrarchus labrax*) and sea bream (*Sparus aurata*), freshwater salmonids like rainbow trout (*Oncorhynchus mykiss*), Brown Trout (*Salmo trutta*), Arctic charr (*Salvelinus alpinus*), and carps. Organic white prawn (*Penaeus vannamei*) culture in Latin American countries like Peru, Brazil and Ecuador is done on a large scale. Besides turtles and sea cucumbers, China uses polyculture techniques for organic carp production along with crabs, shrimps and other native species. Black tiger shrimp (*Penaeus monodon*) is organically produced in other Asian countries like India, Bangladesh, Vietnam and Thailand [3]. India and Vietnam also produce microalgae and pangasius catfish (*Pangasius pangasius*), respectively.

India is bestowed with vast untapped water resources suitable for organic aquacultural practices. The crystal-clear glacial water from the Himalayas to the northern and northeastern states of the country could act as a source for organic rainbow trout (*Oncorhynchus mykiss*) culture. The enterprise has the potential to generate new employment opportunities and enhance the country's social welfare.

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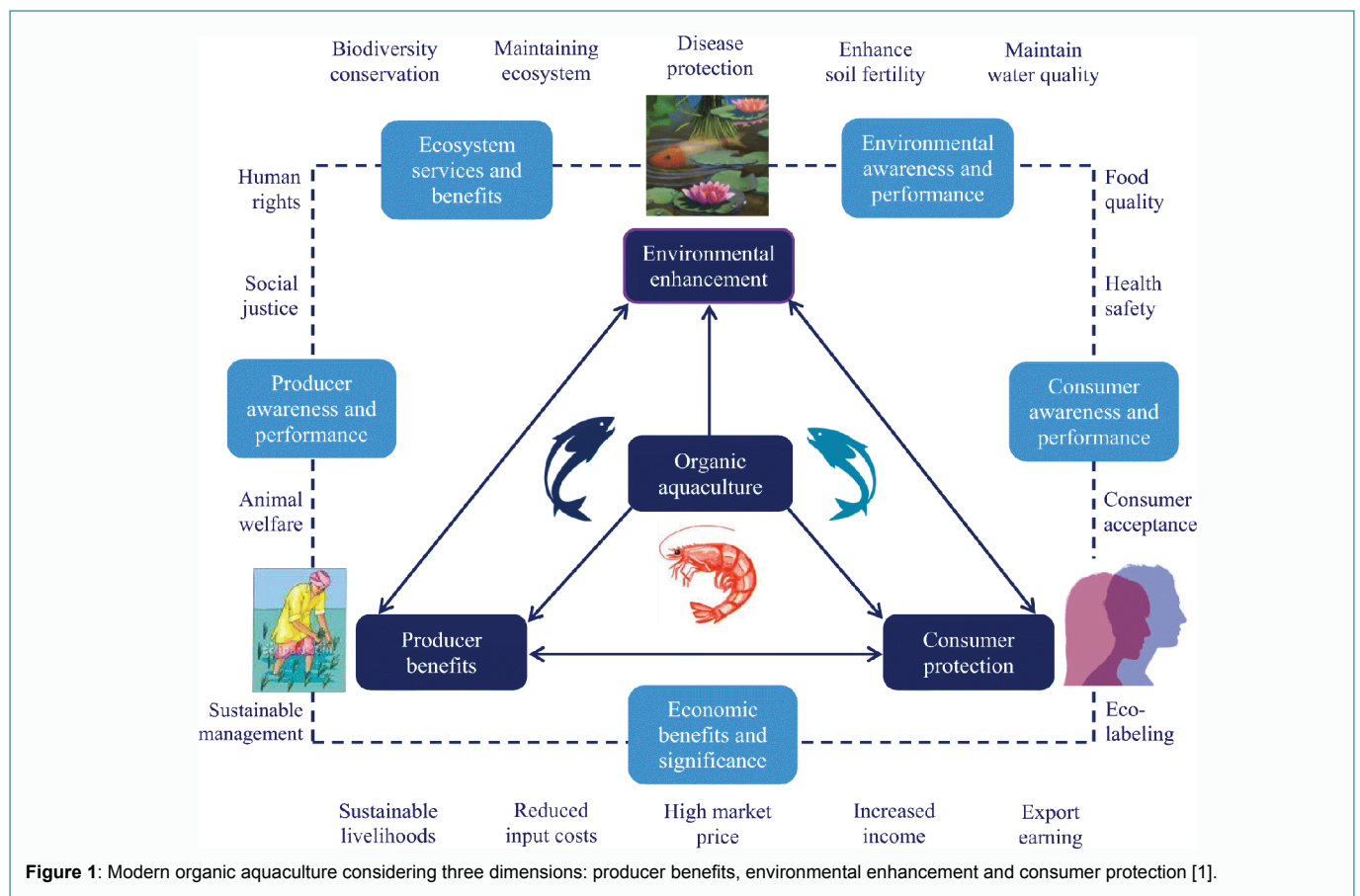


Figure 1: Modern organic aquaculture considering three dimensions: producer benefits, environmental enhancement and consumer protection [1].