ORGANIC FISH FARMING

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WHAT IS ORGANIC FARMING?

Organic farming is a farming practice and process which is environment friendly and healthy, in harmony with nature and which does not use harmful synthetic chemicals. The importance of organic farming is being recognised in the developed countries all over the world. Organic farming is generally growing food crops by using natural products without use of synthetic chemicals. Fruits, vegetables and other products so grown are perceived as more healthy and more valuable. Thus the organic farm produce realizes higher prices in the export market

UNITED STATES DEPARTMENT OF AGRICULTURE DEFINED ORGANIC AGRICULTURE AS Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives.To the maximum extent feasible, organic farming system rely on crop rotations, crop residues,animal manures, legumes, green manures, off -farm organic wastes, mechanical cultivation, mineral -bearing rocks, and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients and to control insects, weeds and other pests.

ORGANIC FARMING IN INDIA

The all India Federation of Organic Farming (AIFOF) accepts the standards document of the International Federation of organic Agriculture Movement (IFOAM, 1981) which gives the following description.

- To work as much as possible within a closed system, and to draw upon local resources.
- To maintain the long-term fertility of soils.
- To avoid all forms of pollution that may result from agricultural techniques.
- To produce the use of foodstuff of high nutritional quality and sufficient quantity.
- To reduce the use of fossil energy in agricultural practice to a minimum.
- To give livestock conditions of life that conforms to their physiological needs and to humitarian principles.
- To make it possible for agricultural producers to earn a living through their work and develop their potentialities as human beings.

ORGANIC AQUACULTURE

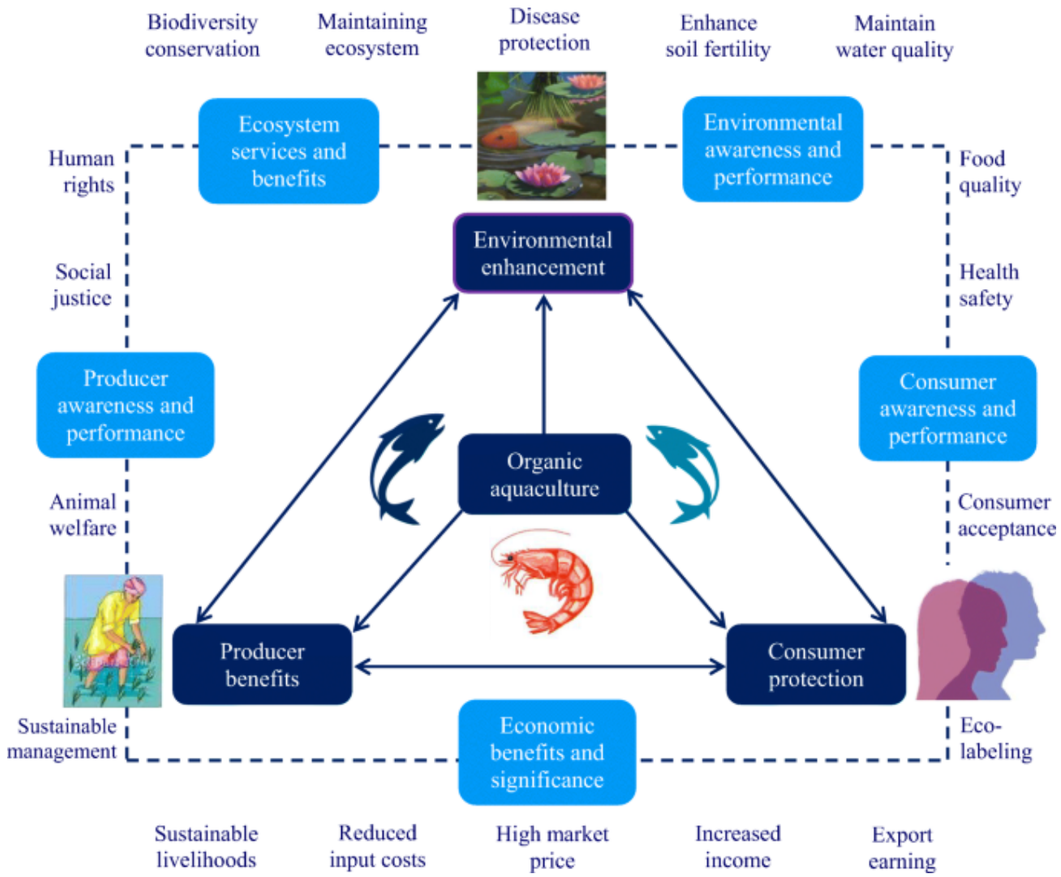
Organic aquaculture is the farming of aquatic animals like shrimp, fishes, bivalves etc and aquatic plants without using antibiotics, chemicals, and fertilizers by preserving the ecosystemand biodiversity. Organic aquaculture practices would help in raising aquatic products in a human manner i.e. sustainable and pollution free. Organic feed optimizes the health of the animal and to reduce in reliance on drugs, including antibiotics. Traditional organic farming systems "rely on ecologically based practices, such as cultural and biological pest management, and virtually exclude the use of synthetic chemicals in crop production and prohibit the use of antibiotics and hormones in livestock production." Sustainability, environmental stewardship, and holistic, integrated approaches to production are hallmarks of organic systems. Standards for organic cropping and terrestrial livestock husbandry practices have existed for decades. Interpreting practices and standards developed for terrestrial species into practices and standards relevant to aquatic species, both animal and plant, remains a major challenge for organic aquaculture. How can aquatic operations comply with the requirements for an organic system plan, for obtaining acceptable stock, for implementing health care monitoring and management, for maintaining prescribed "living conditions," for development and acceptance of allowed and prohibited substances lists, for organic feed requirements,

for controlled post-harvest processing, for nutrient management, and for required animal identification and record-keeping. Within the aquaculture there are also huge differences between the species themselves. For instances rearing of mussels is vastly different from rearing fish and crustaceans. Further, sea weeds and algal cultivation methods are totally different. Hence there are more specific standards under each norm that organic farmers must follow to raise the yield. The standards are group or species specific, so, it will be possible to meet the diverse requirement of different aquaculture species within these standards as many claim that modern aquaculture practices (best management practices) are already organic in principle, but do not meet the strict legal interpretation of the standards.

The main principle of organic aquaculture standards include:

Absence of GMOs (genetically modified organisms) in stocks and feed prime material :focusing on vegetable feed ingredients (e.g. soy beans) and feed additives derived frombio-technology, as well as on transgenic, triploid and all-female stock

Limitation of stocking density: considering ecological capacity of site and species-specific behavior of animals e.g. shrimps: 15 PL/ m3, resp. maximum 800kg/ha perproduction.

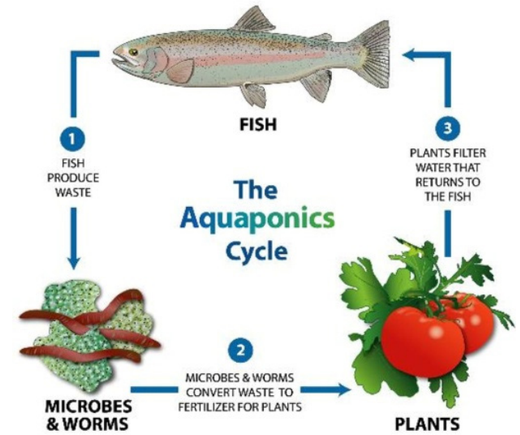


ADVANCES IN FISH RESEARCH

- Origin of vegetal feed and fertilizer from certified organic agriculture, no artificial feed ingredients and networking of organic operations.
- Criteria for fishmeal sources; in general, decreased protein and fishmeal content of diet: permitted are trimmings of fish processed for human consumption or by-catches;no dedicated fishmeal harvesting operations e.g. shrimps: maximum 20% fishmeal/ -oil and maximum 25% total protein.
- No use of inorganic fertilizer: recycling of nutrients instead of intensive inputs.
- No use of synthetic pesticides and herbicides: maintaining natural diversity on the farm area
- Restriction on energy consumption (e.g. regarding aeration) as a general trend; de intensification of operations, lowering of input.
- Preference for natural medicines, no prophylactic use of antibiotics and chemotherapeutics, no use of such substances in invertebrate aquaculture or live feedculture or live feed culture.
- Intensive monitoring of environmental impact, protection of surrounding eco systemsand integration of natural plant communities in farm management, focusing on the effluents of farms and the design of pond farms.
- Processing according to organic principle basic requirement for a final product to be certified as organic.

CONVERSION TO ORGANIC AQUACULTURE

Conversion to organic aquaculture is a process of developing farming practices that encourage and maintain a viable and sustainable aquatic ecosystem. The time betweenthe start of organic management and certification of the production is known as theconversion period. Aquaculture production methods can vary widely according to biologyof the organisms, technology used, geographical conditions, ownership structure, timespan, etc. These aspects should be considered when the length of conversion is specified.



The minimum conversion period set for the aquaculture production system is two years.

ORGANIC AQUACULTURE: WAY TO SUSTAINABLE PRODUCTION

The FAO's food standards body, the "Codex Alimentarius Commission" has finalized organic crop, live stock, processing, labelling, inspection and certifications guidelines. The International Federation of Organic Agricultural movement (IFOAM) is a global umbrella body for organic food and farming. IFOAM's goals are the worldwide adoption of ecologically, socially and economically sound systems that are based on the Principles of Organic Agriculture. IFOAM's

Organic Guarantee System (OGS) is designed to facilitate the development of organic standards and third-party certification. IFOAM Certification bodies are accredited by the International Organic Accredation Service Inc. (IOAS) on the contract base.

GLOBAL ORGANIC AQUACULTURE PRODUCTION AND MARKETS

The numbers of certified organic aquaculture operations (including the production of micro algae) amount to 240 in 29 different countries in 2009. Most of the operations are located in Europe. However, it has to be considered that these are often small scale carp or trout farms with less than one hectare pond surface, typically run on a part time basis. In China, 72 operations have received organic certification under the national Chinese regulation. In Europe, the lead product in organic aquaculture is Atlantic Salmon, followed by the Mediterranean species Seabass and Seabream, freshwater salmonids (Rainbow and Brown Trout, and charr species), and carp. In Latin America, there is a strong dominance of organic western white shrimp operations in Ecuador, Peru and Brazil. Most common in China is carp production in polyculture, i.e. in combination with crabs, shrimps or other local species; but there are also certified operations producing turtles or sea cucumbers. In other Asian countries, there is an increasing organic production of Black Tiger Shrimp (e.g. Bangladesh, India, Thailand, and Vietnam), Pangasius catfish (e.g. Vietnam) and micro-algae (e.g. India). Figure: Global organic aquaculture production 2009.