

## **Unit 4: Principles of organic aquaculture**

### **1. Organic aquaculture**

- The global fishery industries is in a stage of fishery resources depletion due to unsustainable fishing practices, large scale aquatic pollution, commercial exploitation of aquatic environment and destruction of primary breeding environment such as mangrove forests & coral reefs. Due to intensification of aquaculture practice all over the world, has in turn resulted in accumulation of high levels of antibiotics, PCBs, residues of pesticides and heavy metals causing a great damage to environment. Organic Aquaculture is the only solution to increase fish production in sustainable and environment friendly manner.
- "Organic aquaculture is production of high quality foods in a stable aquatic ecosystem by managing the natural resources and environment without any negative effects and to secure the genetic diversity and richness of species in a native system."
- Current problem with the industrial aquaculture practice of fish harvested from wild as feed for the production of cultured fish, 3 tons of wild fish is used to produce feed for the production of 1 ton of farmed fish, so this depletes the natural stock available in wild. To increase production, fast growing exotic fish varieties are farmed this result in weakening of the native species and transfer of disease from farmed aquatic animals to wild fish is also major problem in the current aquaculture systems.
- Organic aquaculture is a method to reduce the abovementioned adverse effects of the industrial aquaculture practice. Organic aquaculture is most important in the sustainable and environmental friendly aquaculture production. This method of culture also farms the aquatic organisms in conditions similar to that of the natural environment. As in case with the other forms of food production industries there is some consumer interest in organic aquaculture. However fish farmers have been slow to adopt the organic standard as many claim that modern aquaculture practices are already " organic " in principal but do not meet the strict legal standards.

### **2. Principles of organic aquaculture**

The main principles of organic aquaculture are as follows:

- Monitoring of environmental impact
- Natural breeding procedures without use of hormones and antibiotics
- No use of inorganic fertilizers

- Integration of natural plant communities in farm management
- No synthetic pesticides and herbicides
- Feed and fertilizer from certified organic agriculture and fisheries
- Organic criteria of sustainability for fishmeal sources
- Absence of GMOs (Genetically Modified Organisms) in stocks and feed
- Stocking density limits
- Restriction of energy consumption (e.g. regarding oxygenation)
- Preference for natural medicines
- Processing in approved organic facilities

#### ❖ **History of Organic aquaculture**

Organic aquaculture is based on the organic agriculture farming technology, and these root causes continue to shape the organic aquaculture sector in many ways. Organic farmers in Austria and Germany first started to develop extensive “organic” carp production system in the early nineties. At that time, although the organic food market was still a niche market in terms of volume, it already offered most types of food in organic quality – with the exception of fish. The successful launch of organic salmon, first in Germany and later in the United Kingdom and France, accelerated the development process of organic aquaculture initiatives throughout the world. A further milestone in the history of organic aquaculture was the development of standards for the production of organic shrimp. After the launch of the organic shrimp concept, which drew attention internationally, a number of European development agencies became interested in spreading the initiative to more southern countries. Organic farming of additional finfish species started in Europe, Asia, and Latin America. In continental Europe, organic trout production took off, a big organic Pangasius catfish project was started in Vietnam by the Germany-based seafood company, organic tilapia farming started in Israel and Ecuador and in the Mediterranean, seabass and seabream farms were converted to organic management.

INDOCERT (Indian organic certification) is an Indian certification body accredited as per National Programme for Organic Production (NPOP), Govt. of India to carry out inspections and issue certificates for organic production systems. INDOCERT is offering certification for the domestic market based on the National Standards for Organic Production and certification for export markets based on USDA (United States Department of Agriculture).

#### ❖ **General standards for Organic aquaculture production**

Some of the general standards which are to be followed in an organic farming aquaculture system are listed unit wise

##### **a) Production unit setup**

**Standards:** The production unit should manage the surrounding environment from any impacts like escapement of cultured organism, spreading of disease, avoiding the use of

synthetic and chemical fertilizers and paints. Consideration for the surrounding environment is crucial for positioning and management of the organic unit.

#### **b) Environment / Water Quality**

**Standards:** The water system must be loaded to the minimum possible extent with feed wastage and faeces that can cause over-fertilization or other disturbances to natural environment. Aqua farmers should not deplete nor excessively exploit the available water resources, and must preserve the natural water quality.

#### **c) Breeds and Breeding**

**Standards:** Breeds that are adjusted to local conditions should be used. Breeding must be done on a large number of breeding pairs to prevent inbreeding, genetic damage and loss of genetic variation. Triploid, genetically modified and sex reversed organisms should not be used.

#### **d) Feed and feeding**

**Standards:** The feed should consist of organic raw materials originating from wild aquatic stocks. For management of fishery resource, aquatic raw materials from stocks that are not used for human consumption and from by-products must be used for feed preparation. Feeding must be performed in a way that allows natural feed available in pond system also gets consumed with minimal wastage of the supplemented feed.

#### **e) Additives**

**Standards:** Additives such as growth promoters, hormones and appetizers should never be used and the usable additives like vitamins, minerals, antioxidants and colouring agents should be of natural in origin or it should be close to natural form as possible. Synthetic and unnatural additives must not be used in organic farming system.

#### **f) Treatments and animal health welfare**

**Standards:** Considering the health management in aquatic organisms "Prevention is better than cure" concept should be followed so that there will not be any need for medication. If there is still sign of disease, suitable measures shall be adopted immediately. Drugs with the minimum environmentally harmful effect and with the minimum risk to human and animal health should be used for treatment.

#### **g) Record keeping**

**Standards:** It is a very important protocol to be followed in feed management and in disease management of the aquatic organism. For disease management record must have all the details related to disease and its treatment procedures followed. The farm manager should maintain a monthly record of the feed type, feed producer, and quantity fed used till the end of the crop.

A universally accepted standard for organic aquaculture practices does not currently exist . To risk investment in this sector, producers require formally recognized standards in order to communicate the advantages of the organic aquaculture products to consumers. The key to the continued growth and development of organic aquaculture lies in resolving a number of issues that currently stand in the way of instituting internationally accepted certification standards .