SUSTAINABLE ORGANIC FINFISH HATCHERY STANDARDS 2004

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1 Scope

- This standard covers the production of specific species of aquatic organisms, at all stages of growth in finfish hatchery systems. It is a dynamic system to facilitate knowledge and therefore continuously evolve and be revised in light of ecological achievements.
- The Sustainable Organic Finfish Hatchery Standards must be implemented in conjunction within stipulated organic aquaculture standards of the certifying body.

2 Hatchery Principles

- A sustainable organic aquaculture productive system can be described as being in perpetual integration with the natural environment, where there is no defined 'beginning' or 'end' of a process.
- Sustainability characterises a culture of continuous improvement and beyond the boundaries of organic certification, planning exercises that should identify a sustainability impact analysis and matrix, evaluating design, construction, materials and operations.
- Prior to either the construction or conversion of an existing finfish hatchery, a detailed ecological survey should be undertaken to map flora and fauna within a predetermined border zone by surveying the production site.
- The length of conversion period from a conventional to an organic process must reflect the time to assess the original state of the surrounding ecosystem. This should be a minimum period of twelve months
- An organic management plan, environmental monitoring system, recording and data analysis programme should all be fed into a model to continuously evaluate total input values against total output values and achieve equilibrium or a zero emission.

- Converters to an organic system will develop an action plan for modifications to their hatchery production systems.
- Essentially, there are no genetically modified organisms, non-natural products, harmful chemicals or non-sustainable material or feed inputs transmitted into the system.

3 Social Objectives

- There should be planned corporate engagement in the efficient use of local resources and services.
- The creation of a safe, healthy and sustainable working environment for employees.
- Developing social interaction, acceptance and support of the neighbouring communities.
- Prioritising production for local consumption.

4 Site Location

- The location of production units will consider the maintenance of the aquatic environment and surrounding aquatic and terrestrial ecosystem.
- Production units should be at an appropriate distance from any
- contamination sources and conventional aquaculture.
- Negative environmental impact from aquaculture production should be minimized.

5 Quality of the Environment

- Water is the medium of aquatic life and its inhabitants represent the spirituality of their ecosystem.
- The primary objective is to emulate natural water conditions in a productive environment.
- To analyse optimum conditions - a monitoring scheme should reflect the following:
  - Water quality measurements (Temperature, salinity, suspended solids, ammonia)
  - Dissolved oxygen - minimum of 6 mg/l
  - Biological oxygen demand - maximum of 4 mg/l
  - Climatic and air quality measurements (Air pressure, wind direction, dust levels, air pollution)
  - Energy generation input (Carbon input and outputs, conventional vs. renewable energy generation)

- Nutrient and calorific inputs, in contrast to feed input and fish output.

6 Species

- Species selection, production planning and marketing of finfish species should be evaluated in relation to benefits for the local community.
- Only native finfish species will be cultured within their geographical range and other ecological confinements.
- Handling of dead stock and treatment methods will be recorded on a daily mortality sheet.

7 Live Feeds

- Only naturally occurring live feeds will be produced.
- Organically derived manures and fertilizers will only be permitted.

8 Broodstock & Spawning Procedures

- Broodstock should be treated as 'distinguished guests' in a facility, their captive environmental tailored to meet their biological needs.
- Breeding goals should interfere as little as possible with the natural behaviour of the fish.
- New Broodstock will be screened for disease and malformities and where practically possible, procured from organically certified operations.
- Ecological manipulation of the environment should stimulate a managed programme addressing salinity deviations, temperature or photo-period manipulation.
- Anesthesia will only be administered by natural products (e.g. clove oil).
- Only naturally sourced hormone inducement will be permitted.
- A broodstock management plan should also consider fundamental genetic pooling techniques based on aquatic ecology data.

9 Eggs

- Organically produced eggs are deemed as sourced from 'organically managed broodstock and spawning procedures'.
- If the stripping of roe from fish is conducted, this should be practiced as gently as possible, and only performed post- anesthesia.
- The water quality for eggs development will be matched as near as possible to their aquatic environment.
- Salinity adjustment, water heating and surface disinfection are the only permitted methods for egg handling.

- Maximum stocking density will be 200 eggs per liter

10 Larvae

- Larvae is deemed as sourced from ‘organically managed eggs’ from ‘organically managed broodstock’
- Both natural flow-through and recirculation systems are permitted using suitable quality pollution-free water.
- Larvae will only be fed locally occurring species of live foods with no artificial additives other than natural products.
- Larvae rearing conditions will be consistent with the natural environment of the species and measures should indicate minimum stress in rearing operations.
- Any diseased fish will be killed in a humane manner. Dead fish must be disposed of in an appropriate manner (preferably composted).
- The maximum stocking density for larvae is 30 hatched larvae per liter.

11 Fingerlings

- Fish shall be raised under organic principles from larvae stage, and shall be traceable from harvesting and processing.
- Maximum stocking density to a size of 100g or fingerling stage will be 15 kg / m3. Fish over 100g to be stocked at 10 kg / m3.

12 Stocking

- Design and judgment of husbandry conditions are based on natural behavior and the basic needs of the fish.
- The stocking density will be adjusted according to species aggression, cannibalism, natural stocking density and water quality parameters.
- Intermittent pond rearing will encourage natural cycles that occur in the water and will not hinder other processes transpiring along the food chain.

13 Nutrition

- An assessment of the required nutrition; manufactured for the target species assembles a formula for that species including protein, acids, minerals, vitamins and energy requirements that fluctuate according to the culture cycle.
- Feed should mimic as much as feasibly possible the natural diet of the organisms being certified.

- Preference will be made to farm-made AquaFeeds manufactured on site. This method sources fish protein from processing by-products or locally produced native trash fish in parallel with target species operations, either in an inland aquaculture or mariculture environment.
- Natural feed ingredients will be sourced from organically certified or sustainable sources wherever practically possible.
- If a centralised feed manufacture plant is to be developed, then a sustainablility impact analysis and logistics exercise will conduct an assessment of location and transportation of feed.
- A feed input and traceability management system will record ingredients and their sources at the hatchery. Regular tests will be conducted for any contamination.
- Feed pellet binders are indigestible matter used to adjust consistency and flotation of pellet. No additives or preservatives are permitted to the binders other than naturally occurring colourants.

14 Fish flesh contamination

- Water sources shall be verified to have no risks from contaminants such as heavy metals, pesticides, biocontaminants and hormone disrupting chemicals and any impact on the local marine and terrestrial food chains.
- Carnivores high in the food chain can concentrate toxins and accumulate in the fatty tissues of prey species. The main source of such toxins is fish feed that contains fish oil sourced from wild fish stocks. Tests for contamination should be conducted regularly.

15 Diseases

- The term ‘disease’ refers to a naturally occurring organism reacting to an environmental imbalance. Preventative methods of ‘disease’ control should emphasise primary water quality care.
- Only treatments from organic substances and sources will be permitted.
- A daily chart will record any abnormal behavior of finfish and deviations in water quality.

16 Fish Welfare

- A hygiene management plan will implemented using biodegradable cleaners to achieve best practice husbandry techniques for aquatic species production and their environment.
- The prophylactic promotion of health and welfare of the organisms will be managed by minimising stress, reducing the incidence of disease, and

nurturing the vitality of the organisms through meeting their physiological and behavioural needs.

17 Transport

- The transportation medium should be appropriate to the species in regards to water quality, including salinity, temperature, oxygen, etc. Transportation distance, duration and frequency should be minimised as practically possible.

18 Materials

- Construction materials of buildings, machinery, tanks, dams or cages shall not pose contamination risks to water or stock. Evaluation should be taken in the procurement of sustainable materials and renewable energy alternatives.

19 Waste treatment

- Waste should be considered a resource and integrate aquacultural and agricultural practices to raise opportunities for waste utilisation and the production of aquatic added-value products.
- Water leaving the operation shall be treated or managed in such a way as to prevent excessive nutrient build up either on or off site to the operation. This can take the form of a tertiary ecological waste treatment utilizing native plants known for the microbial or nutrient absorption properties.
- All solid waste to be recycled and human waste separately treated.

20 Influence

- Operators should encourage nearby resource users to be responsible in their handling and discharge of sewage and other waste, as well as follow general practices of recycling, reducing, reusing, and recovering waste.
- Regulatory government leases should consider license conditions that adhere to all nearby aquaculture conditions.

21 Training

- A detailed set of work plans will illustrate the procedures to be adopted in each element of the aquaculture process for basic staff training needs.
- Further training courses will be developed, to attain a level of competency in each discipline of the aquaculture production process.

22 Record Keeping

- A responsible person will keep a record of all operations and present a documented systematic overview of the cultivation activity. The record shall be available at any time.
- Monthly reports will detail the following:
  - Production of cultured organisms (microalgae, zooplankton, and fish) and species, origin with time scales.
  - Volume per production unit.
  - Stocking density relative to the type of culture.
  - Removed quantity of dead/dying stock, as appropriate to the type of culture.
  - Production data with information concerning quality/quantity, specified as the number of stock, volume, general condition and disease free condition (countersigned by the client at farm gate).
  - Usage of electrical supply, cleaning agents, consumables and fuel use.

21 Inspection

- Organic certifier/s can enter the premises at any time to inspect elements of the organic process.
- Two inspections are required; one at the start of a growing cycle and one near the completion of a growing cycle, before an enterprise may be deemed approval for organic certification.