STANDARDS

FOR THE CERTIFICATION OF FISH FROM DEMETER/BIODYNAMIC® FRESH WATER AQUACULTURE

June 2014

- to be implemented by each member country by the 1st July 2015

Demeter-International e.V.

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1. Preamble

Since 2009 (EC 710/2009) organic fish production has been fully legalized in Europe. The Demeter standard accepts these regulations as a basis and gives specific notes and supplementary provisions where there is need from the perspective of Biodynamic production. Regulations cover the production of fish in freshwater, especially of salmonids in the trout pond management system and production of various species including predatory species in the carp pond farming system. It is the responsibility of the operating team to gain competence in fish culture in general before considering Demeter certification. The aim is to create a unified Biodynamic system of aquaculture and agriculture.

2. Scope

Demeter aquaculture standards cover production of a wide variety of species, especially cyprinidae (carp family) and salmonidae (salmon and trout species) as well as predators feeding on live natural feed such as catfish, pike, pikeperch, perch etc. Freshwater crayfish, mussels and plants (providing fodder in the ponds) are included.

3. Management

The applicant to use the Demeter trademark shall present a management plan. This will cover key aspects of the enterprise including staff training and indicate a strategy for meeting the requirements of these standards.

An important element of management will be regular monitoring; it is important that all staff are fully aware of their responsibilities and that they conduct procedures and operate equipment in a consistent and reliable manner.

- **Sourcing new stock and breeding**

Native species and those adapted to the regional natural ecosystem have to be used to stock the ponds. Other species require approval of the respective organisation. Fish of all age classes shall come from Biodynamic aquaculture itself. Only if documented as unavailable may brood stock from certified organic hatcheries be brought in.

The brood stock must spawn naturally, without the use of hormones or regulated photoperiods. Genetically modified stock, mono sex populations, triploid or sterile populations and cloned animals, eggs or brood stock are not permitted.

Stock from conventional sources are excluded.

5. Conversion requirements

A written conversion plan detailing the history of the unit and any changes needed in the course of the conversion period, including extra environmental loading must be supplied. Each of the sections of this standard needs to be addressed in the plan.

The conversion period for the operational area is 12 months. Conversion of brought in fish of organic origin requires farming to these standards for at least one third of their life span to reach table market size e.g. 12 months for salmonid fish (e.g. trout) and 24 months for cyprinid fish (e.g. carp).

Once a production site has become established it is expected that indigenous broodstock will be bred on-site or in cooperation with a neighbouring certified farm and that importation will only be necessary under exceptional circumstances.

6. Environment

The pond system is to be integrated into and enhance adjacent terrestrial and wetland environments and support their wildlife status. Area management agreements are to be pursued with neighbouring farmers and landowners whenever possible. Operators must show awareness of any connected water bodies as well as local designated conservation areas.

The layout of the pond system must not interfere with the flow of natural streams. Ponds must be constructed in natural earth and constructed in a way, that water flow can be regulated and that risk of fish escape to adjacent natural bodies of water is minimised.

Concrete or plastic ponds, or those lined using butyl rubber are not permitted for long-term use – they may only be used for rearing and acclimatisation to feed to a maximum of six months or for other short-term handling or transit purposes. Concrete may only be used in the areas surrounding a water inflow or outflow, for spillways and to improve bank stability where access is regularly required. It is also permitted as part of the installation of Flow form circulation systems.

Site security must be addressed, as failure to do so will leave the operation more liable to environmental risks such as contamination or even vandalism. Safety and welfare of fish stocks is a prime consideration.

Fishponds are to be integrated into the landscape as far as possible, offering existing plant and animal species an enhanced habitat. Special respect shall be given to conservation of the water-land border. Significant parts of the shoreline are to be designated as zones of low activity. For instance, wetland and marshy areas may constitute pond margins while any surrounding grass or shrubby areas must remain uncut for most of the year.

7. Water quality

An adequate supply of good quality water from surface flow or local springs must be delivered to the operation at all times. Flow or circulation within a pond system must be gravity driven. Flowforms may be installed to maintain water movement, to enliven the water and provide slow rates of oxygenation. Pumping water for oxygenation or other artificial oxygenation methods is not permitted. The input or inflow water and the water leaving the system must be tested and fall within permitted water quality levels as determined by the local authorities.

A Water monitoring plan must include parameters of prime importance for well being of freshwater fish and environmental accountability.

An initial assessment of environmental loading arising from the operation’s effluent is always to be made (input-Output calculation). Drained water shall not negatively influence existing water quality of natural water bodies.

National law gives guidelines for critical parameters of draining water but more than that the management of Biodynamic ponds has to maintain the naturally occurring grade of water quality.

8. Integration of the pond system

The fish production area must be enclosed as far as possible within a Biodynamic certified enterprise. As part of normal Biodynamic practice, the preparations will be consistently applied to the surrounding area at the most appropriate times of the year.

Demeter aquaculture, which is not integrated in Demeter agriculture has to take special care on creating a Biodynamic environment using the Biodynamic preparations.

9. Health and welfare

Management appropriate to the fish species and its life stage, ensuring good welfare and environmental conditions, supervision of the stock and hygiene are the baseline for a healthy and fit stock. This involves accurate routine observation of the stock. Ponds regularly cleaned out greatly contribute to disease avoidance.

Care must be taken to identify the first symptoms of ill health before the condition spreads to larger numbers of fish. If necessary an aquaculture expert or a fish vet is to be consulted. As salmonids are sensitive to stress which can lead to fungal infections, regular spraying of the water surface with horn silica (501) must be carried out as a preventative measure.

Natural herbal treatments and homeopathic remedies must be fully explored in accordance with national laws. Allowable treatment agents include lime and salt. Use of calcium chloride and potassium permanganate is not permitted. If allopathic remedies are required they require vet supervision and the stated withdrawal periods from sale are to be doubled.

Washing with potable water must follow the use of any agents for cleaning and disinfection.

10. Processing

Processing in this context refers to killing, cleaning and presentation of the fish for market. It may also involve a 'process' such as smoking or making other fish products.

To slaughter fish they must be stunned by striking on the head and then must be killed by heart- or gill-cut before being gutted. Use of electrical devices or carbon dioxide is not permitted

Refrigeration is a priority for the period between slaughter and marketing.

All fish processors require inspection and Demeter certification.

11. Salmonid pond farming

11.1 Breeding

In case of salmonids the brood stock-fish may be stripped by hand and the eggs hatched and fed up to fingerling stage – to a maximum to 1/3 of their lifespan - in a controlled environment.

The raising of fry need not require the heating of water.

11.2 Water quality

Parameters of prime importance for freshwater salmonid systems include the following: For trout in particular, dissolved oxygen must be at least 6mg/l or 70%, BOD must exceed 4mg/l, NH4-N must exceed 0.6mg/l and dissolved phosphate must exceed 100 micrograms per litre. Of prime importance in relation to the above is that all waste water and slurry from pond-cleaning operations must be pumped out into a bounded soak-away area.

11.3 Feed

Salmonids may be given feed which as closely as possible resembles its natural feed, i.e. the protein to energy ratio in the diet. Feed must be suitable for the fish type and its developmental stage.

Commercial feeds must be produced from cutoffs from either certified organic fish or from wild fish from marine resources certified as sustainable by a body such as the Marine Stewardship Council.

Any feed ingredients from agricultural production including supplements must be Demeter certified or if unavailable of certified organic origin. Shrimp shell may be used providing it is a by-product of wild caught shrimp or organic shellfish processing. Yeast is prohibited as a supplement. Vitamin and mineral supplements can be used providing they are of natural origin. Natural binders and Tocopherol-rich extract (antioxidant) may be used. Supplements intended to provide colouring are prohibited.

11.4 Health and welfare

Sudden changes in environmental conditions or careless handling causes stress which quickly reflects in a weakening of the fish's defence system. Protection must be afforded from predators e.g. birds such as herons, while similar-sized stock must be kept together to minimise aggression and injury. The whole body of the fish must be supported when handling and special care needs to be taken when stripping eggs from broodstock. Dead fish must be promptly removed to avoid contamination, while any diseased but curable stock must be kept in an isolation pond.

Shade or turbidity may be required according to species, especially for youngstock. Special attention should be paid to this if tanks or ponds are to be located in dry land situations away from natural cover.

Stocking density for salmonid species must not exceed 15 kg standing stock of fish per cubic metre of water. Records of stocking density and given amount of feed shall be documented for all ponds and the records made available at the annual inspection.

11.5 Harvesting

Salmonids must be starved before slaughter but this period must not exceed 7 days, including the time taken to transport them to a Demeter certified processing plant and the holding time at those premises. The amount of stress which fish experience throughout this period must be kept to the minimum. Crowding to enable harvest must not exceed 2 hours.

For the transit of live fish, and prior to slaughter, the temperature must be reduced to slow down metabolism and quieten the fish. The rate at which temperature is reduced should not exceed 4 degrees C per hour. Good oxygenation is essential.

12. Carp pond farming

12.1 Cultivation

The Biodynamic pond system is carried out in natural earth ponds. To support fertility and sanitation of the pond, the mud has to be treated by draining (aeration) and the occasional spreading of quick lime for disinfection and demineralisation.

12.2 Water quality

Water quality has to support healthy fish stock and therefore it must be checked regularly. Addition of slaked lime ($Ca(OH)_2$) or limestone is permitted.

12.3 Pond structure

Ponds have to be integrated into the landscape and must provide an ecosystem for fauna and flora especially those dependant on the water-land border. Conservation / natural zones and reed areas are valuable for endangered fauna and flora. For this reason maintenance in the majority of these areas is carried out not before the autumn season so as to protect these species. If urgent repair/management work is necessary this must not be carried out on more than 1/3 of the border zones at any one time.

12.4 Biodynamic preparations

Biodynamic preparations must be applied not only on water bodies but also on neighbouring areas at least once per year. Organic manure, brought in to fertilize the pond water, has to be prepared with the Biodynamic compost preparations.

12.5 Manuring

Manuring helps control and enrich the development of the natural feed chain (mainly benthic & plankton-biomass) and thus supports the natural feed production of the pond. Acceptable substances are Biodynamic manure, hay, straw, matured or composted dung, offals from organic seed cleaning and other organic matter from certified organic agriculture.

12.6 Stocking

The population of a pond should mimic natural ecosystem conditions and thus a minimum of two omnivore and one carnivore species must be stocked. Intensive stocking and additional feeding of protein is not permitted.

Stocking number of all species is limited to the natural productivity of the pond as the basis. The natural yield is given by pond born feed production, oxygen supply, water temperature during the year and water supply. To give a basis for calculation for a pond system managed with supplemental feeding the stocking number of fish per hectare water surface is limited to a maximum of 3500 one year old carp (max 100 g) and 800 two year old carp (max 750 g) and 500 for each following year-class. As polyculture stocking is desired, the stocked numbers of further species may only replace not extend the fish numbers/weight of fish listed above.

If fish cannot reproduce themselves naturally in the climate of the production unit, they cannot be sold under the Demeter trademark.

12.7 Feeding

The feeding of carp and other cyprinid species shall be the natural feed supply of the pond biota, mainly plankton.

Only if additional supplementary feed is unavailable in Demeter quality are certified organic fodder types such as legume seed, oil seed cake and similar materials permitted. The maximum amount that may be fed is limited to two kilograms of supplement for each kilogram of harvested fish. 70% shall be grain.

Animal proteins or animal fats are not permitted as fodder.

12.8 Reproduction

Reproduction is based on natural spawning. For this reason a spawning substrate must be provided. Reproduction and breeding conditions may be controlled in an artificial environment that mimics natural conditions and which is managed according to species needs and welfare requirements. Initial feeding in controlled conditions with live feed is permitted only up to eight weeks.

12.9 Transport of live fish

Fish are killed and processed preferably on the farm. If transportation of live fish is necessary the water must be cool and fresh and the containers isolated. Oxygen levels should be maintained according to the individual needs of the species. Feeding must have been stopped prior to transport.

Suggested additions or changes should be sent to:
The Co-ordinator
Demeter International Standards Committee
Attention: Ian Henderson
ian.henderson@demeter.net