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BIO Stiftung Schweiz Weststrasse 51 CH-8570 Weinfelden

# AquaGAP Standard For Good Aquaculture Practices

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The programme and further information on the AquaGAP Standard are published on [www.aquagap.net](http://www.aquagap.net).

Comments and suggestions about the contents of this document can be sent by email to [info@aquagap.net](mailto:info@aquagap.net).

#### Standard holding body

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## AquaGAP - Good Aquaculture Practices

### A. Application of this standard - Species

This standard has been designed to be applied in a generic way. In other words, it applies to all farming/processing methods and species worldwide. If exceptionally required, species specific guidelines are added. Any guidelines given in a species specific section override the equivalent section in the generic part of this standard. This standard only applies to seafood from culture (not capture fisheries). Where the term fish is used in this standard, it applies to all seafood (including e.g. mussels, shrimps and crabs).

### B. Standing of this document

The term “shall” (category A or B in the checklists) signifies a requirement. Where the requirement only needs to be met within the first three years after first certification, the term shall is used together with an explanatory note. The term should (category C in the checklist) signifies a recommendation, which, depending on the nature of the hatchery/farm/processing procedures, may turn into a requirement.

### C. Auditing and certification

Audits are to be carried out annually by a certification body approved by the standard owner. Initial audits shall be announced in order to ensure presence of the farm manager, ensure that all units are accessible and can be visited, the processing unit is running and harvesting/live transport/slaughtering can be verified. Where feasible, the annual update assessments thereafter shall be done unannounced. Auditors are obliged to use the checklists provided by the standard owner.

### D. Guiding documents for the implementation of this standard

The following documents can be received from the standard holder in preparation for the audit:

- AquaGAP Training manual
- AquaGAP checklists and operator profile
- Training manual on ICS (internal control systems)
- Stakeholder information leaflet
- Template for the calculation of FFER

### E. Principles

Some criteria and performance metrics are verified by process and are therefore only of a descriptive nature. Where possible, however, measurable metric-based indicators are used. Article: This standard procedure is a living document and will be reviewed on an ongoing basis. Since it is believed that certain species are more suited for sustainable farming than others, AquaGAP tries not to allow for lower sustainability of the overall farming due to species specific parameters (e.g. higher levels of fish protein required in feed) and therefore attempt to keep this standard generic. The aim of this standard is to improve aquaculture practices and bring more sustainable seafood products to the market. Existing lack of knowledge for specific species/culture methods shall not impede the development of such sustainable products.

## AquaGAP Standard

### **0 HISTORY AND INTRODUCTION**

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#### **0.1 SCOPE OF ACTIVITY**

The scope of activity needs to be defined prior to the audit. All units involved in the production of seafood (e.g. hatchery, grow-out farm, feed mill, processing plant/export, importing company) need to be audited according to these standards or hold a certification which has been benchmarked with these standards.

Compliance with these standards shall be audited by an auditing body approved by the standard holder. First year audits shall be carried out announced, from then onwards, where feasible but at a minimum once every three years, shall be carried out unannounced. Audits shall be carried out together with the responsible farm managers/staff and not for example solely with sales managers. The same auditor shall not audit the same operator for more than 3 consecutive years. Auditors must comply with the minimum experience and education requirements (in aquaculture sciences and auditing techniques) defined by the standard holder

#### **0.2 CHANGES TO FARM OPERATIONS AND/OR PROCESSING PROCEDURES**

The certified operator or operator under assessment shall submit a description of all operations/procedures. This shall be done in the form of the operator profile provided by the certification body. All information in the operator profile must reflect the current situation. Therefore, the operator profile shall be updated and resubmitted whenever certification relevant changes are to occur. Such changes typically include

- Changes in land ownership or leasing agreement
- Changes in suppliers
- Changes of farm inputs (e.g. chemicals, drugs, feed, fish stock)
- Changes in assortment/recipes
- Changes in activities (e.g. stunning procedures, filleting)
- Changes in the management

The operator profile shall at all times be complete, up to date, include the whole operation, all equipment and all activities (reference to the internal quality manual is a good alternative). From the operator profile the scope of the certification shall be very clear.

#### **0.3 ACCESS TO INFORMATION**

All information required to verify compliance with these standards shall be prepared by the operator prior to the audit and made available for the auditor. Therefore, all documentation (e.g. original book keeping, farm diaries and veterinary reports) must be kept for 3 years. Open information, documentation and unrestricted access for the auditor to all premises must be guaranteed by the operator.

## **1 QUALITY ASSURANCE**

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### **1.1 OTHER STANDARDS OR PROGRAMS IMPLEMENTED**

#### Operator certification

Existing certifications shall be acknowledged where they meet the requirements of this standard (e.g. ISO 22000, IFS, BRC), in order to reduce further auditing requirements.

#### Supplier certification

According to section *2.4 reception and dispatch of goods*, all incoming products shall comply with the AquaGAP standard and accompanying documentation that verify this status shall be kept on site. A system shall be in place to assure all suppliers and their products are certified according to the delivery documents.

### **1.2 STAKEHOLDER**

Communication with stakeholders shall be used in order to recognize and resolve any conflicts of interest. Typical stakeholders can be users of the same resources, neighboring farms and villages, NGOs, government agencies etc.

All operators are obliged to demonstrate awareness of stakeholders. All stakeholders shall be identified and if relevant informed by the operator on the assessment/certification procedure (e.g. by local advert or oral communication). This shall occur at the latest 30 days prior to the official audit. Contact details of the control body carrying out the assessment shall be given to the stakeholders. An information leaflet can be provided by the certification body. If any internal or external complaints occur during the assessment procedure, the certification body shall respond to these complaints. If necessary, corrective measures shall be logged by the operator.

### **1.3 MANAGING COMPLIANCE WITH STANDARDS AND LEGISLATION**

A prerequisite for certification is the full adherence of the operator to all local, national and regional regulations, with all required licenses being in place and valid, with no pending issues to be resolved with respective authorities. A full list of required licenses shall be supplied to the certification body upon request.

The operator shall have evidence that land rights are clear and the operator owns or leases the production area.

Where government bodies do not provide the know-how, regulation or monitoring to comply with this standard (e.g. waste treatment, ground water use, assimilative capacity of farm site), the required assessment/monitoring shall be provided for by the operator applying for certification or through a subcontracted company (e.g. company specialised in environmental impact studies).

All operators shall identify a qualified staff responsible for the implementation and maintenance of compliance with these standards. The operator should have an appropriate quality manual defining internal procedures and responsibilities in order to maintain compliance with all relevant regulation.

## **1.4 SELF EVALUATION**

It is recommended that the companies should carry out a full internal self evaluation at least once a production cycle, in order to assess the structure, functioning and coverage of the existing quality assurance, as well as compliance with this standard. A practical guide to such assessments can be the AquaGAP checklists. The outcome of such assessments and any shortcomings should be documented and necessary corrective measures implemented accordingly. In this sense, the operator should continuously strive to improve management practices.

## **1.5 DEALING WITH COMPLAINTS**

As a measure for internal quality control, it is important that all complaints are used to correct any shortcomings in production/farming (complaints can also apply to e.g. social responsibility). All complaints shall be recorded and a responsible shall assigned to follow the complaint through. Any outcome (e.g. recall, money returned) shall be recorded together with the date, staff in charge and any further corrective action taken.

## **2 SITES AND FACILITIES – MANAGEMENT AND MAINTENANCE**

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### **2.1 SITE SELECTION**

As a prerequisite to certification, the operator shall be located in a well suited area. For example, it is not the aim of this standard to compensate for bad site selection by regular treatment of prevailing disease or constant chemical treatment to compensate for bad water quality. In this sense, an environmental impact assessment should define the feasibility of farming practices and assimilative capacity (potential loading) of the local environment. All farms shall be located above the high tick water mark.

### **2.2 IDENTIFICATION OF AQUACULTURE AREA**

Each operator undergoing assessment shall provide the certification body with an up to date map of all production sites including all relevant details such as;

- date
- description of units shown on map (e.g. stores, tanks, treatment ponds, canals)
- exact location and number/name of cages/tanks/ponds
- all sources of potential contamination
- natural currents affecting the aquaculture system and water flow within the unit

### **2.3 SITE ENTRY**

Depending on the local situation and the operator's risk assessment *4.1 assessment of environmental risks*, physical barriers should restrict access to the aquaculture holding areas. If this is deemed necessary, it shall be assured that the farm area can easily be circumnavigated, alternatively, a designated passage shall be made available to the public. Access to local natural resources shall be guaranteed to maintain local traditions. It is further recommended but not required, that local habitants are allowed access to collect natural resources (e.g. fruit, herbs and algae around the banks or from sedimentation ponds).

All visitors of the actual farming area (not authorized local habitants) shall be recorded in a visitor's book stating at a minimum the following:

- Date and time of entry
- Name, signature and company
- Reason for visit
- Recent contact with other aquaculture hatcheries/farms (last 48 hours)
- Health status of visitor (processing only)

General health and hygiene practices shall be adhered to by all visitors *3.2 hygiene and health*.

The visual impact of the farm shall be reduced and efforts made to blend in to the natural surroundings. This can be achieved by planting ecologically valuable or appealing plants (e.g. lemon grass, fruit trees). The farm itself as well as the surroundings shall be kept tidy. This includes for example all banks to canals/sedimentation ponds, woodland, land storage sites for offshore cages. The littering with for example used pet or glass bottles, polystyrene boxes, old nets and feed bags shall be cleared by the operator and a tidy site maintained. It is recommended to use designated litter boxes, which are maintained by the operator and can facilitate the situation, as well as induce separation of different wastes and recycling.

## **2.4 RECEPTION AND DISPATCH OF GOODS**

During reception and dispatch of goods (e.g. feed, aquatic stock, medication), the quality and their approval status (company internal decision) shall be verified and recorded (usually in the form of a checklist). This includes the verification of accompanying documentation.

### Waste Disposal

Waste shall actively be disposed of in an appropriate manner.

Depending on the nature of the waste, appropriate disposal may include the following:

- Composting and reuse as fertilizers (e.g. sludge)
- Burial, landfill
- Incineration (e.g. biological waste)
- Disposal by subcontracted competent authority/company (e.g. chemicals, empty containers with residues of hazardous substances)
- Disposal by competent authority (e.g. general household litter)

It shall be ensured that any waste is disposed of according to label instruction and any national regulation, where appropriate.

Where feasible (technology available) litter should be separated and recycled. Chemicals and drugs should only be ordered for a specific reason and precise quantity (there should be no left over of e.g. medicated feed)

## **2.5 HANDLING OF DRUGS AND CHEMICALS**

This includes detergents, disinfectants, fuels, lubricants, fertilizers, liming materials, paints, insecticides, herbicides, parasiticides, algacides, anesthetics, medication/treatments, vaccinations etc., and any other agent that may be hazardous (e.g. flammable, toxic, irritant) to staff, the immediate environment or to aquaculture stock. All chemicals and drugs shall be handled (use, mixing, storage) in a way that reduces the risk of unwanted or health impact and according to label instructions and national regulation.



## Storage

All chemicals shall be stored in a designated area, with access limited to responsible staff. The store shall only contain agents in compliance with these standards. All containers shall be according to label instruction (e.g. chilled, darkened, only glass) and are labeled correctly at all times, even if refilled from larger containers.

For toxic liquids, operators shall assure that secondary measures can contain 110% of the chemical in the event of a leak. For powders, operators shall assure that they are stored in sealed and well ventilated stores for the event of flooding.

## Prevention of impacts from chemical use

Emergency procedures shall be available for all applicable emergencies defined in the risk assessment *4.1 assessment of environmental risks*. Emergency procedures shall describe what to do and who to contact in the case of an emergency (e.g. fire, oil leak).

All staff shall be trained on first appointment and continuously thereafter in order to be knowledgeable on internal emergency procedures. Where applicable, warning signs shall be placed for information of visitors indicate to staff and visitors where special precaution is required (e.g. flammable store, slippery surfaces).

## **2.6 FACILITY PEST CONTROL**

The operator shall evaluate the risk of pest infestation. The type of potential pests must be defined and evaluated together with precautionary measures to be taken. These Precautionary measures may include but are not limited to the following (for predators see *4.4 wildlife and conservation*):

- No littering of site
- No open or broken feed bags
- No feed remaining on the floor of the storage, around the tanks, on the feeding platforms, etc.
- Feed bags kept off floor
- Closed and sealed stores (no gaps under doors)
- Fish carcasses removed daily and put in designated area (e.g. composting, removed by external company)
- Domestic sewage treatment

If precautionary measures prove not to be sufficient, measures to control pest occurrence shall be installed. Pest control may include but is not limited to the following:

- Mechanical traps for rodents
- Light traps for insects

No toxins shall be used for pest control that are banned in the country of production or may cause a hazard to feed, the culture stock, the environment or staff working on the farm. All chemicals used for pest control must be handled according to *2.5 handling of drugs and chemicals*.

## **2.7 WATER MANAGEMENT**

Water quality shall be maintained in good condition throughout the cycle and shall conform to the requirements of the species in question (e.g. temperature, salinity, pH, DO). Ideal parameters shall be given in the operator profile. Water quality shall be monitored at least once a month on intake and outlet (e.g. temperature/pH/salinity and at least one of the

following: DO/BOD, ammonium and nitrate concentrations), if feed, fertilizers and any other inputs other than aquaculture stock are added to the water.

### Effluents

Where tanks are used, closed recirculation is recommended, otherwise effluent treatment is required. Where ponds are used, as a minimum, a decantation pond is required. The hatchery/farm shall decline metric parameters as a guideline for the receiving waters. These guidelines should be provided by the competent authority (site or water discharge licence) or by a subcontracted environmental impact assessment evaluating the environmental assimilative capacity. If applicable, every operator shall be able to demonstrate compliance with the consent conditions to discharge.

### Affluents

Water holding or pre-treatment is recommended if incoming water may have received untreated human waste or manure.

The hatchery/farm shall decline metric parameters as a guideline for the incoming waters. These guidelines should be provided by the competent authority (site or water discharge licence) or by a subcontracted environmental impact assessment evaluating the health and status of the stock. If applicable, every operator shall be able to demonstrate compliance with the recommended water quality of incoming waters.

### Nutrient loading from open water cage system

For net cages, a benthic impact assessment shall be carried out during peak biomass of each cycle. This should be carried out by the competent authority or a subcontracted competent company. Where this is not possible (e.g. no competent authority company) a procedure and indicator values shall be set up by the operator and agreed upon by the standard.

### Water loading/contamination

This refers to effluents from land based systems. Besides the actual chemical composition of the water suspended solids can also impact on the environment and should therefore also be monitored. In order to reduce sediment loading, dykes shall be kept in good condition and ponds shall be drained carefully and slowly (visual indicators such as water color and suspended solids shall be used as a guide). It is recommended that sedimentation ponds or partial barriers at outlet points are retain sludge.

The pH and redox potentials of pond sludge should be monitored. In order to monitor potential impacts of the farming activity on the environment, the chemical composition of the effluents for land based systems shall be monitored and nutrient loading calculated.

Monitoring of water quality shall include the following parameters:

- Temperature
- Measure of acidity (pH)
- Dissolved Oxygen (DO)
- Total ammonia nitrogen
- Soluble phosphorus
- Biochemical Oxygen Demand BOD<sub>5</sub>
- Total Suspended Solids (TSS)

A sampling plan and sampling procedures shall be documented and shall be verified during external audit. Alternatively, sampling can be carried out by a certified laboratory. The sampling plan/procedure shall include information on the following:

- Location of sample taking (e.g. exit point of farm, 1m below surface)
- Time of day (e.g. morning ~6am, second sampling at midday)
- Frequency (e.g. weekly or monthly)
- Number of samples per farm/outlet (e.g. all outlets)
- Status of farm during sampling (e.g. harvesting, fallowing, prior to feeding)
- Handling of sample (e.g. sealed bottle, no air, placed on ice, light exposure prevented)

Calculation of nutrient loading from land based systems:

Load of variable (kg/yr) = farm discharge (m<sup>3</sup>/year) x annual concentration of variable (10<sup>-3</sup>mg/L and g/m<sup>3</sup>)

Load index (kg variable/ton) = annual load of variable (kg/yr) / annual production (ton/yr)

Limits

In general, water quality shall not be decreased by more than 10% and not to less than the values given in table 1. If the quality of incoming water exceeds these values, effluent values shall be at least equal or better than the incoming values.

Suspended solids in the effluents shall diffuse within minutes when entering the receiving water.

The calculated values for nutrient loading/index shall currently be used to monitor trends and improvement over the years during certification. Further metric or indicator values will be set when more scientific data is available.

Table 1. Requirement for effluent water quality

Variable	Limit (units) Prior to certification	Limit (units) Within first three years of certification	Frequency of sampling
Temperature	No signs of temperature stress	Natural range of species	monthly
pH	6-9.5 (depending on species)	6-9 (depending on species)	monthly
DO	≥ 4 mg/L	≥ 5 mg/L	monthly
Total ammonia nitrogen	< 5 (mg/L)	< 3 (mg/L)	monthly
Soluble phosphorus	< 0.5 (mg/L)	< 0.3 (mg/L)	monthly
BOD <sub>5</sub>	< 50 (mg/L)	< 30 (mg/L)	quarterly
TSS	< 100 (mg/L)	< 50 (mg/L)	quarterly

**2.8 EQUIPMENT AND MACHINERY**

All equipment and machinery used shall be maintained regularly and in such a manner, so as to reduce the impact on the environment. For example, fuel and oil leaks shall be prevented.

The operator shall ensure that equipment and machinery containing fuels/oils are kept well above the high water mark. Similarly, toxic paints/preservatives and other toxic chemical compounds shall not come into contact with aquaculture stock/water.

All boats and containers used to transport fish or aquaculture feed shall be maintained clean. Where equipment is shared between sites/farms, staff and equipment/vehicles shall be disinfected prior to use/bringing on site to reduce the transfer of disease.

Where nets are cleaned mechanically while installed, the operator shall assure that organic matter does not accumulate on the seabed. Farms situated in high energy environments shall only use robust gear designed for local conditions.

The use of copper-based antifoulants is prohibited.

### **3 AQUACULTURE LIVE STOCK – MANAGEMENT AND HUSBANDRY**

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#### **3.1 SOURCE AND QUALITY OF JUVENILE AQUACULTURE STOCK**

Juvenile stock (smolts/fry/PL) shall be of good quality. A plan shall be available how to source certified stock within three years of first certification of the grow-out farm. Good juvenile stock shall adhere to the following:

- Disease preventing control
- Good management practices in hatchery (emphasis on strong juveniles rather than high numbers)
- Stock raised for the grow-out conditions (no transfer into totally different environments)
- Nurseries used where applicable
- Controlled transport

The following is prohibited:

- Use of genetically modified species
- Use of wild caught brood stock with the following exceptions: black tiger shrimp, -for the start –up of new hatchery/species, small percentage to maintain genetic diversity
- Use of wild caught smolts/fry/PL
- Use of non-native species with no history of safe production in the area

Where there is an existing industry of a non-native species, there shall be strict escape prevention and there shall be no evidence of any impact on the local ecosystem.

For all stock received, the respective quality shall be indicated on the accompanying documentation.

#### **3.2 HYGIENE AND HEALTH**

##### Hygiene

In order to minimise the transfer of disease, shoe disinfection/change, hand wash and disinfection points should be installed and utilised on entry to areas where food safety or fish health may be at risk (not applicable for extensive farming).

Dead fish are removed daily.

For large farms, staff shall have access to toilets, eating facilities and potable water. A cleaning protocol including cleaning agents shall be implemented and cleaning activities recorded.

No human waste or untreated animal manure shall enter the aquaculture system. Disposal of waste (including mortalities) shall be conducted adequately *2.5 handling of drugs and chemicals / 2.6 facility pest control*.

### Fish health and welfare

In order to maintain fish in good health and increase the welfare of the animals, stress shall be reduced where possible.

In order to reduce stress, the following measures shall be taken:

- maintain stocking densities at levels, where no sign of stress are evident
- maintain good water quality
- avoid abrupt changes (e.g. salinity, temperature)
- avoid disturbance (e.g. handling/grading, visitors, light)
- use suitable feeding methods (e.g. slow feeding over larger surface area)
- appropriate net mesh size for the size of fish (e.g. gilling of small fish/preventing injuries of fish and allowing through flow of water).
- where animal welfare is dependent upon automatic systems, the systems shall be equipped with alarms and secondary power systems in case of failure
- reduce duration of pre-harvest and crowding (1/2 day)
- perform any live transport under suitable conditions (e.g. max 10 hours, water quality maintained, limited stocking densities)
- limit any time out of water (less than 1 min.)
- anaesthetize animals prior to slaughtering

Aquaculture stock shall at all times be treated and handled in such a way as to protect them from pain, stress, injury and disease. For adequate treatment and handling, staff shall be well trained. In this sense, staff shall continuously observe the swimming and feeding behaviour (number of unusual behaved fish shall not be more than 10%), the quality/damage of fins/antennae (number of damaged fish shall not be more than 10%) as well as the general growth performance (please refer to the chapter 3.5 *Monitoring growth and performance*) in order to be aware of any signs of stress (during grow-out as well as transport). Any signs of stress shall be recorded in the farm diary. Individual fish suffering ill health or injury shall receive immediate treatment or shall be removed and humanely anaesthetized. All aquaculture enterprises shall have a named veterinary surgeon. Veterinary visits should be scheduled at a minimum annually and whenever required.

### **3.3 SOURCE AND QUALITY OF FEED**

Only compound feed shall be used from an ISO 9001 certified feed mill, where feed specifications are available. Feed shall not contain fats or protein of species the feed is destined for. The use of for example pro-biotics, compost and algae is recommended. Synthetic fertilizers and home made feed are prohibited.

In order to maintain a high quality product, high quality feed shall be used. Continuous dialogue with feed companies is required, in order to improve the quality of feed used. In this sense, companies are obliged to work towards sustainable and quality feed sources.

Within 3 years of first certification, feed for the grow-out stage at the farm level must be sourced from a certified supplier, besides any points mentioned above, shall additionally comply with the following points:

- Species specific feed
- Routine analysis for mycotoxins carried out by feed/company or farm
- The 70 % of animal meal and oil shall be origin from certified sustainable fisheries, from certified aquaculture, (e.g. organic, AquaGAP) from processing waste (e.g. trimmings) from alternative sustainable sources (e.g. marine worms), or from countries with acknowledged sustainable fishing practices (e.g. Iceland)
- All vegetable ingredients are from confirmed sources applying good management practices (e.g. not from recent monocultures grown on previous rainforest lands)
- No synthetic pigments added

These standards should also apply to feed used in the hatcheries.

Feed shall be handled and stored in a safe, clean and dry manner and away from any sources of potential contamination and pests such as insects and rodents *2.6 facility pest control*.

#### Feed traceability

Feed delivery documents, invoices, any certifications and farm diary information on feeding and feed stocks shall be kept *3.4 monitoring growth and performance*.

### **3.4 MONITORING GROWTH AND PERFORMANCE**

A record system shall be in place providing a permanent documentation of each generation/cycle. The data recorded shall include origin and initial numbers stocked, type and quantity of feed used, occurrence of disease, any treatments applied, reason and number of mortalities and final numbers harvested. The data shall allow the calculation of FCR, stocking densities and stock movement.

With each harvest a traceability sheet shall be provided, indicating the quality/history of the fish.

Prior to every stocking, a harvest estimation for the following cycle shall be made.

#### FCR

The feed conversion ratio shall be calculated for every generation cycle and the results shall be interpreted and used to improve management practices.

Feed conversion ratio (FCR) = (feed used) / (fish harvested)

Within the first three years of certification, the FCR shall be reduced to below 2 after the first three years of certification, an FCR of 1 should be reached.

#### Fish in: fish out ratio

The FFER (fish feed equivalency ratio) shall be calculated. Only fishmeal and fish oil directly received from wild capture or aquaculture shall be included in the calculation (e.g. no processing trimmings). Calculations shall follow the following procedure:

- Determine tons fishmeal in feed per year
- Convert fishmeal to pelagic equivalent (fishmeal/0.225)

- Determine tons of fish oil in feed per year
- Convert fish oil to pelagic equivalent (fish oil//0.05)
- Sum up total pelagic equivalent (fishmeal + fish oil, if fish oil not derived from fishmeal)

All information required to calculate the FFER shall be available during the initial audit and can be calculated together with the auditor. The calculation of FFER shall be carried out by the operator prior to all follow-up audits, using the specific AquaGAP template by the certification body.

#### FFER limits

The calculated values for FFER are currently used to monitor improvement over the years during certification. Metric values will be set when more scientific data is available. For the moment, all operators shall achieve an FFER below 1 within three years of certification.

#### Stocking densities

Stocking densities shall be at a level so as not to impact on water quality or fish health/welfare. Under standard conditions, stocking densities in ponds/cages/tanks shall not exceed 15kg/m<sup>3</sup>, in recirculation tanks shall not exceed 30kg/ m<sup>3</sup>. Where health reports and physical examination show no signs of stress due to stocking densities, levels can be increased up to a maximum of 20 kg/m<sup>3</sup> and 40 kg/m<sup>3</sup>, respectively. For flatfish, this can be further increased if not all of the surface area of the bottom/trays is used by the fish.

### **3.5 HARVEST, TRANSPORT & SLAUGHTERING**

Harvesting, transport and slaughtering shall be carried out in consideration of the environment (e.g. sediment release, escapes), fish welfare (e.g. stress, physical damage, suffocation) and product quality (e.g. clean harvest bins, blood spotting/gaping, immediate cooling after slaughtering). Environment, fish welfare and product quality requirements are additionally covered in the respective chapters.

#### Harvest

Harvesting shall be carried out as quickly as possible with a maximum of ½ day pre-harvest crowding. During harvest, fish shall not be out of water for more than several seconds (less than one minute).

#### Transport

Transport shall always be carried out in cleaned and disinfected bins/trucks. If fish have already been killed, they shall immediately be placed on ice to reduce flesh temperature to < 5°C, until reaching the processing plant.

In the case of live transport, temperatures and oxygen level of the water, duration of transport as well as mortalities and physical condition upon arrival shall be documented. As far as possible, live transport of harvest size fish should be restricted.

#### Slaughtering

Fish which are not stunned/slaughtered shall be placed on ice (e.g. shrimp). The ice shall be made from potable water sources. For small warm water fish, animals shall be placed into ice



slurry for immediate stunning or killing. The ice slurry shall be mixed and temperatures monitored. Fish shall not be left to suffocate or left partially stunned in warmed water. For every unit of fish there shall be one unit of ice/ice-water. For larger and cold water fish, animals shall be stunned by, mechanical or electrical stunning. Staff shall be trained for stunning and the effectiveness of stunning shall be monitored for its effectiveness. Directly after stunning, fish shall be bled. Immersion of Eugenol shall be applied in the pre-slaughter basin and all waste blood water shall be collected and treated prior to disposal.

### **3.6 TREATMENTS**

All treatments (e.g. chemicals, medications, baths, and vaccinations) shall be recorded (e.g. date, agent, dose, reason for use, vet recommendation, residue time). Medical treatments shall only be applied after a prescription by a veterinarian and only for cases where there is an identified health problem. Records of veterinary prescriptions shall be kept.

All certified companies shall demonstrate clear efforts to minimize the occurrence of disease and application of treatments. Such efforts shall be based on the operator specific risk assessment and shall include, but not be limited to, the following:

- select healthy PL/fry/smolts for stocking 3.1 source and quality of juvenile aquaculture stock
- reduce the handling of fish
- avoid stress during grow-out 3.2. hygiene and health
- avoid disease transfer from other stock/farms 3.2. hygiene and health
- regularly remove mortalities
- restrict access to farms by visitors
- if required use hand wash and disinfectant points
- if required limit/treat water inflow into ponds/tanks
- monitor fish for the occurrence of disease

Besides the disease prevention measures described above, all companies shall hold a list of list of treatments used at the farm

list of nationally approved treatments (usually provided by governmental fisheries agencies)

The following treatments are prohibited:

- drugs and chemicals banned for use in food production such as chloramphenicol and nitrofurantoin antibiotics)
- drugs and chemicals banned in the country of import
- malachite green, crystal violet, tributyltin compounds
- hormones used on grow-out fish as growth promoters or for sex reversal
- antibiotics used as growth promoters or for preventative treatment
- antibiotics, to which there is plausible suspicion or evidence of build up of resistance

## **4 ENVIRONMENT – MANAGEMENT AND CONSERVATION**

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### **4.1 ASSESSMENT OF ENVIRONMENTAL RISKS**

One of the main aims of this standard is for certified companies to assess any risk farming/processing practices pose to the environment and identify any risks of non-compliance with this standard. In this sense, a risk assessment shall be carried out by all



companies applying for certification prior to the audit. An example risk assessment, typical risks and template documentation is given in the AquaGAP training manual. According to the identified risks, monitoring shall be planned and implemented.

## **4.2 MONITORING OF ENVIRONMENTAL IMPACTS**

For all risks, regular monitoring shall take place. For example, if feeding is used in open water net cages, there is a risk of accumulation of organic matter on the seabed. Therefore, regular seabed monitoring (biodiversity, sediment quality) shall be carried out below the cages and along a transect (up to 500m), with pictures and sediment sample analysis backing the monitoring, as applicable. Results shall be coincided with governmental regulation or recommended values by the relevant authority. If no regulation/recommendation exists, monitoring shall show redox potential levels below the cages and take place during periods of maximum biomass and shall within 30 m of cages greater than 100mV<sub>u</sub>he or sulfide levels below 1300 macromodes prior to stocking fish. Beyond 30m, analysis of invertebrates shall show no major change in species or numbers related to availability of organic matter.

## **4.3 ENERGY AND WATER EFFICIENCY**

### Energy Efficiency

Besides the overall reduction in energy use, the use of non-renewable energy resources shall be continuously reduced. If the technology is available in the country, 50% of the energy used at the hatchery and farm level shall be sourced from renewable resources or compensated for within 3 years of first certification.

### Water efficiency

The use of water resources shall be carried out in an efficient way. Water shall not be exchanged excessively to reduce efforts in water management or to improve effluent values. Besides refilling due to evaporation loss, shall be exchanged. For farms not using fertilizers or feed and no form of medication/drugs, the use of seawater (nor brackish river water) is not restricted. For farms not using fertilizers or food and no form of medication/drugs, the exchange of river water shall be recorded and reduced where possible (allowance for rain retention shall be provided for). Rain water shall be retained and used during the dry season, where applicable. Refilling due to evaporation loss is only permitted where dyke height allows for refilling by rain water. Volumes of water pumped shall be recorded.

In order to conserve the use of water, where feasible (when harvesting is carried out by fishing rather than through draining ponds, where water and sediment quality is good and no disease has occurred), ponds should not be emptied after every cycle. Where feasible, recirculation shall be used.

For processing plants and feed mills, the operator shall record water/energy use and evaluate the potential to reduce the use of energy and water or switch to renewable resources.

All equipment shall be serviced and maintained in good working condition to further reduce the waste of energy and water (e.g. leaking pipes).

### Carbon Footprint

The Carbon footprint is a measure of the impact, activities have on the environment and in particular on climate change. It relates to the amount of greenhouse gases produced during day to day business through burning fossil fuels for electricity, heating, transportation etc. A carbon footprint is made up of the primary footprint (a measure of our direct emissions of CO<sub>2</sub> from the burning fossil) and the secondary footprint (a measure of the indirect CO<sub>2</sub> emissions from the whole lifecycle). Until more metric values can be assessed, this standard only regulates issues on the primary footprint, of which companies have direct control.

In order to reduce the carbon footprint, the following efforts shall be evaluated and should be implemented where feasible:

- recycling of waste materials and use of recycled products
- use of renewable energy (e.g. solar, wind and water energy)
- new technology (replace old technology)
- good maintenance of equipment and machines
- reducing transportation, i) use onsite slaughtering, processing and packing where ii) ship the product instead of flying the product
- reducing the packaging
- reducing the use of one-way packaging
- greening of farm
- efficient usage of resources

#### **4.4 WILDLIFE AND CONSERVATION**

##### Escapes

Escapes shall be prevented. Efforts shall be made at all stages during production both at the hatcheries as well as at the grow-out farms. Preventative measures shall include the following:

- Nets shall be changed safely (e.g. second net installed prior to removing first net)
- Side walls shall be high enough to prevent fish from jumping out of cage/tank
- Nets shall be checked at least once per week
- In high energy environments, special robust equipment shall be used
- Screens shall be fixed at all inlets and outlets
- The mesh of screens shall be small enough to catch the smallest living stage (eggs/ larval forms/ juveniles) in culture (if there is reproduction in the pond/tank/cage, this shall be taken into account when setting the screens)
- Besides primary screens, a dry-bed gravel/sand filter or secondary screens shall be installed for all effluents

Besides prevention, exact stocking numbers, morts and harvest numbers shall be recorded to verify potential loss of escapes. Any evidence of escapes shall be reported to the competent authority and recorded on site.

##### Predators

As part of the risk assessment, any endangered species in the surrounding area shall be listed and precautionary measures shall be defined to minimize any risk to such species. In addition, any predators shall be recorded and measures defined how to deter them from harming themselves or the aquaculture stock. Typical deterrent measures may include the following:

- Top nets can reduce the impact of birds (the mesh shall be of an adequate size and the nets shall be tensioned sufficiently without holes to avoid entanglement)
- Scare crows and fake shots can reduce the impact of birds
- Fences around the premises
- Low fences around ponds can impede crabs entering the ponds
- Multiple screens at water intake can reduce the inflow of predator fish into the ponds
- Secondary predator nets can reduce the impact of seals (predator nets shall be tensioned adequately)

Predator prevention shall be carried out in a way so as not to harm the predator or other species. Therefore, the following deterrents are prohibited:

- the use of acoustic deterrent devices (e.g. for seals)
- the use of lead shot (both for searing and killing)
- any device causing the predator to suffer

### Erosion

Erosion and sediment accumulation in ponds and canals shall be reduced as far as possible. Methods used shall include the following:

At least 50% of total dyke surface shall be covered by plants at the latest within three years of first certification

Where greening of dykes and banks is difficult, gravel/stone shall be used

If both planting and the use of gravel are not feasible, plastic lining may be used

Broken cycles shall be repaired to next stocking

### Sediments

Constant dredging of canals shall be reduced as far as possible. If sediments are removed from brackish water ponds, salt- and nutrient-laden sediments shall not be dumped unplanned. Sediments shall be used to repair dykes or spread thinly and used, for example, for vegetable gardens.

### Groundwater

Where accessible, mains/tap water and seawater/rain water shall be used. Only where mains/tap water is not accessible, well water may be used. If well water is used for hatchery or grow-out farms, abstraction volumes and ground water levels shall be monitored and compared with reference values. If groundwater levels are declining or there is evidence of ground subsidence, well water shall no longer be used. It is recommended to have a rainwater store. For the salinity control in grow-out ponds, well water shall not be used.

### Salinization

The growth of vegetation in the surrounding (e.g. rice fields) shall be monitored for indication of salinization of the soil due to seepage of brackish water from the ponds. In order to minimize salinization of surrounding soils and water, saline effluents shall not be discharged into freshwater rivers/canals, and chloride levels shall be monitored in close-by freshwater wells.

## Biodiversity

There should be a key aim to enhance the environment and biodiversity on the farm. Consideration should be given to the conversion of unproductive sites to conservation areas for the encouragement of natural flora and fauna.

## Wetlands

Farms and hatcheries shall not be situated in former ecosystems of high sensitivity (e.g. mangroves/wetland/primary forests) converted to farmland past 1980. Where individual trees have been cut for visibility (roads an equivalent of 50% of the surface area cut shall be reforested within the first 3 years of certification.

## **5 RECORDING SYSTEM**

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### **5.1 CHECK ON PLAUSIBILITY OF PRODUCT FLOW**

During each annual audit, a sample calculation shall be carried out to verify the feasibility of

- feed consumption in a specific time period in relation to growth and performance data
- feed bought in and consumed in a specific time period
- number of animals stocked and, number of mortalities and quantity harvested in a specific production cycle

### **5.2 TRACEABILITY**

The final processed product shall always be traceable back to the farm. At the farm level the fish should be traceable to the respective cage/pond/raceway/tank as well as back to the hatchery and broodstock of origin. All processing steps shall be documented and yields recorded. The history of each batch shall be recorded on a traceability sheet (alternatively in a software system), showing for example origin, identification number, date and number of harvest, any treatment and withdrawal period. A documented mock recall test shall be carried out annually. Quantities (kg) of product received shall be possible to calculate through processing to final sales data.

## **6 STAFF**

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### **6.1 OCCUPATIONAL HEALTH AND SAFETY POLICY**

It is recommended to appoint a senior staff representative responsible for the health and safety of all personnel. It shall be assured that staff is not exposed to dust, noise, harmful gasses and other hazardous substances.

Depending on the nature of the work, appropriate protective equipment shall be provided by the operator and staff shall be trained to use these correctly. Protective equipment may include but is not limited to the following:

- Respiratory and eye protection devices (e.g. for staff working with chemical agents)
- Ear protection devices (e.g. for staff working in machine rooms)
- Gloves (e.g. for liming materials)
- Life jackets (e.g. for offshore cage sites)

Similarly, first aid and emergency equipment (e.g. fire extinguishers) and respective contact numbers shall be posted at a prominent place available to all staff. The operator shall assure that any emergency and warning postings are written in a language understandable to all staff.

## **6.2 STAFF TRAINING**

All staff shall be trained on first appointment and continuously thereafter. Training shall include information on all operations on site, first aid, the use of safety equipment, their social rights and duties, as well as any particular task relevant to the responsible staff (e.g. diving operations shall comply with health and safety regulations at all times). Diving is a potentially dangerous activity that may affect worker safety and health; this certification does not include regulations, limits or documentation required for any diving activities undertaken to support the aquaculture operation.

Training and any outcome of assessments shall be documented (as a minimum the date, topic and list of participants). For certain topics (e.g. first aid, diving safety) it is recommended to use external training by a competent authority/company.

All staff working in the processing plant shall be trained on food safety and comply with the hygiene requirements laid down in the quality manual (e.g. hand wash and disinfection, gloves, clothes, black and white zones).

## **6.3 SOCIAL RESPONSABILITY**

The operator shall comply with national labor laws and have a copy of these on site. Besides, additional requirements are set to ensure worker's safety and minimum social rights and duties.

### Forced/child labor

The operator shall assure that there is no forced labor or form of corporal punishment. The operator shall guarantee that there is no work carried out by staff younger than 15 years old where includes heavy weights or risky operations. Any work carried out by staff younger than 15 shall not be carried out for several hours daily obstructing the child to attend school, sports or playing activities. The operator shall actively pursue any indication of forced or child labor in order to resolve the situation. The operator shall be knowledgeable on the age of all staff.

### Employment conditions

All permanent staff must hold a written contract. In exceptional circumstances (e.g. in countries where there is no tradition of written contracts and where, from a legal point of view, these have no benefit to the owner), oral agreements shall be sufficient. However, agreements shall be agreed upon and clear to both parties. With casual workers it must be clear for both sides what the working conditions, responsibilities, terms of reference and wages are. Payments shall be carried out regularly. Salaries shall be above the minimum level set by national labor laws and suitable for the type of work carried out. If there is any form of monetary punishment due to failed compliance with the work agreement, this must be clearly set out in the contract/agreement in advance.

The operator shall actively ensure that staff are not exposed to any sort of discrimination by gender, race, religion etc.

The working agreement shall further outline rights and duties of both sides, shall be dated and signed by both parties. Rights and duties shall further regulate issues such as weekly working hours, overtime and payment thereof, basic coverage for retirement, maternity and

sick leave, medical and unemployment insurance. All issues must be compliant with local legislation.

The employer shall allow and encourage associative activities and collective bargaining. Further, the operator shall encourage regular meetings with all staff.

### Living quarters

All staff shall have the choice to live in their own private accommodation or in accommodation provided by the operator, if available. If living quarters are provided on site by the operator, they shall be habitable and have the basic services and facilities.

## **7 POST HARVEST HANDLING, PROCESSING AND MARKETING**

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### **7.1 POST HARVEST HANDLING**

For harvesting, transport and slaughtering, see *3.5 harvesting, transport and slaughtering*. The processing plant shall assure that these steps are in compliance with this standard, if they fall under their responsibility.

From the moment fish are harvested (if not stunned/slaughtered, e.g. shrimp) or from the moment fish are slaughtered, all seafood shall be put on ice/in ice-slurry to cool as quickly as possible and maintained below 5°C throughout chilled processing

Temperatures shall be monitored and recorded according to the internal HACCP plan and recorded.

Incoming goods and accompanying documents shall be verified for their quality and compliance with this standard according to internal checklists.

A lot number system shall be used allowing traceability from the incoming batch through each processing step to the final outgoing sales product. During each stage of product receipt, processing and storage, the product shall be identifiable by lot and certified quality. If products are stored for more than several hours or if there is a separate freezing unit, a stock record shall be maintained. All stored products (apart from temporary day storage) shall be labeled appropriately, stating the certified quality and with direct reference to traceability documentation. Traceability documentation shall allow reference to information on the history of the products (feed, treatment, farm, broodstock of origin etc).

### **7.2 PROCESSING**

For each product the approximate processing ratio shall be known and for every product with several ingredients and / or processing aids, the recipe shall be documented. For all ingredients and processing aids not originating from aquaculture, the specifications of the manufacturer shall be available. The use of following is prohibited:

- Ingredients/processing aids that are genetically modified (GM)
- Processing aids or certified ingredients which have been radiated
  - I. Ionization of products
  - II. Ozonization of warehouses.

### **7.3 PRODUCT SPECIFICATION**

For each product there shall be a detailed product specification. For any multi-ingredient product there shall be a recipe, indicating percentage and quality of each ingredient. Multi ingredient products shall only contain aquaculture product certified according to this

standard, wild fish certified according to the MSC Fishery or the Naturland Wildfish standard or agricultural products of sustainable sources (benchmarked certification). No processing additives or processing aids (e.g. phosphates) shall be used for AquaGAP products. All synthetic inputs used shall be applied for and listed in the input list 20-8.1 of the operator profile

Manufacturing instructions shall comply with the recipes of specifications

#### **7.4 CLEANING**

The quality manual shall contain a section on cleaning including a cleaning plan, a list of approved cleaning agents and methods of use, as well as cleaning protocols to be completed on site during cleaning. All approved cleaning agents shall be for food quality processing. The same shall apply for facility pest management. No pest control shall be used where direct contact to the feed product may occur. A plan and procedure to deter pest shall be included in the quality manual.

#### **7.5 SEPARATION**

Separation of processing shall be ensured for different risk levels (risk of pathogenic microorganisms, primary processing vs. ready to eat). Separation of processing in space or time shall be ensured for different qualities (AquaGAP certified and non-certified). If products of different qualities are processed on the same line separated in time, the production line shall be cleaned between processing the two lots of different quality (see chapter 7.5). All machines used shall be maintained in good working quality (see also chapter 2.8 equipment and machinery)

#### **7.6 FOOD SAFETY**

##### HACCP Plan

The plant shall have a quality manual including a HACCP plan. The following steps should be included in the HACCP:

I. All relevant information for product safety shall be included in the product specifications (e.g. ingredients, treatment, packaging, storage life, storage-and transport conditions). Please see also 7.3 Product specification

II. The flow diagram shall be established and verified

The flow of each product, product category or process shall be documented, which covers all steps from raw material selection through processing, storage and distribution.

III. Hazard analysis shall be conducted and all potential hazards associated with each processing step shall be listed and

(1) Identify hazards which need to be prevented, eliminated or reduced to acceptable limits. This includes hazards present in raw materials and those introduced during the process. The preceding and following steps in the process chain shall also be taken into account. Potential hazards can be biological (e.g. microbes), chemical (e.g. pesticide) or physical (e.g. glass fragments)



- (2) All identified potential hazards shall be evaluated and used on the severity of the potential hazard and it's likely to occur. Depending on the outcome of this evaluation, potential hazards shall be addressed in the HACCP plan.

IV. Critical control points (CCP) shall be identified

CCP are specific points, procedures or steps in production from raw state through processing and shipping to consumption where a potential hazard can be identified and reduced, eliminated or prevented through control.

V. Limits for each CCP shall be established

Critical limits shall be defined in order to identify whether food safety is at risk control

VI. Monitoring system for each CCP shall be established

The monitoring system shall track compliance and indicate, when there is a risk of loss of control. The documentation of the monitoring provides evidence of verification.

VII. A corrective action plan shall be established in advanced

This shall include which corrective action has to be taken when critical limits are exceeded. The responsible for the corrective action shall be defined, corrected actions shall be documented and the disposition of non-compliance products shall be ensured.

VIII. A verification of procedures shall be established

Methods to verify the HACCP functioning shall be in place (internal audits, analyses, review of records to look for exceeded limits). In addition, the use of the HACCP plan shall be reviewed regularly that it is scientifically and technically sound.

IX. HACCP documentation and record keeping

Records of hazards and their control methods shall be kept and the monitoring of safety requirements as well as the corrective measures shall be documented.

The HACCP plan shall be implemented by a HACCP food safety team. The HACCP team shall have a designated and qualified team leader who is trained in HACCP.

#### Record keeping &documentation control

All documents shall be up to date, in correct version and properly authorized. Requirements for record retention (see also chapter 7.3) shall be met. Handling of complaints shall be managed as mentioned in chapter 1.5. The traceability (chapter 5.2) during individual processing steps as well as when the product leaves the company shall be given and products shall be clearly marked with AquaGAP.

#### Facility requirements

Walls, floors and ceiling shall be designed, constructed, finished and maintained to prevent the accumulation of dirt, minimize condensation and mould growth, allow drainage and facilitate cleaning. Appropriate precautions shall be taken to minimize the risk of



contamination by metal or glass (see also HACCP plan). Metal and glass shall only be used where not avoidable and glass shall be protected against breakage.

### Food grade quality

Ice shall be manufactured from potable water. Similarly, any transport of ice (e.g. to farms) shall be carried out in clean food quality containers. Water quality reports (e.g. analysis of bacteria, heavy metals) shall be available. All other food additives (e.g. salt) shall be of food grade quality. During processing, staff responsible for the quality of the product shall carry out and record regular quality checks according to the internal HACCP plan.

### Contamination

Procedures shall be in place to minimize the risk of contamination of raw materials intermediate/semi-processed products, packaging and finished product. Any physical (e.g. glass), chemical (e.g. soaps) and biological sources of potential contamination (e.g. standing water) shall be removed/controlled.

Waste such as processing trimmings shall be brought to adequate reuse (e.g. fish feed). Where quantities of processing waste are sufficient, feed for animals in the fur industry is not considered as an adequate reuse. All wastewater shall be treated prior to discharge. Chemicals and cleaning agents shall be handled according to *2.5 handling of drugs and chemicals*

## **8      MARKETING**

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From receiving the raw material until prior to marketing depending on applicability products shall be analysed according to biological, sensoric, physical and chemical contamination regularly. Analysis shall be carried out by an ISO 17025 certified laboratory or equivalent (NELAP) or, if laboratories are involved in a testing ring (where methodologies and accuracy is regularly compared), own laboratories can be used.

Prior to certification, samples shall represent five lots/batches for every raw, cooked and ready product form from the last six months. Once the company is certified, the frequency shall be monthly with each type of product three lots/batches of samples. The sampling shall be held by trained personnel. The hazards which shall be analyzed regularly and their limit values are listed below.

<b>Biological hazards</b>	<b>Limits</b>	<b>Level of obligation</b>
<i>Listeria monocytogenes</i>	Presence of organisms	Compulsory
<i>Escheria coli</i>	5CFU/g	Compulsory
<i>Salmonella sp.</i>	Presence of organisms	Compulsory
<i>Vibrio cholerae, Listeria monocytogenes*</i>	Presence of organisms	Conditional*
<b>Chemical hazards and antibiotic residues</b>	<b>Limits</b>	<b>Level of obligation</b>
Agro-chemicals (e.g. pesticides and herbicides)	Presence of parameters (typical detection limit: 0.1 ppm)	Conditional*

Lead	Presence of parameters (typical detection limit: 0.5 ppm)	Compulsory
Mercury	0.5 ppm	Compulsory
Cadmium	0.1 ppm	Compulsory
Other heavy metals	According to the risk assessment	Conditional*
Saraloxacine, ciprofloxacin and endrofloxacin	Detectable limit, 1.25 ppb	Conditional*
Flumequine	Detectable limit, 2.5 ppb	Conditional*
Malachite Green, leucomalachite Green (for finfish)	Detectable limit, 2.0 ppb	Conditional*
Nitrofurans	Detectable limit, 1.0 ppb	Conditional*
Oxilinic acid	Detectable limit, 2.5 ppb	Conditional*

\*Analysis should be carried out for raw and cooked material according to the company own risk assessment. Risk assessment and hence analysis plan shall be approved by the certification body.

The companies shall evaluate the freshness of seafood by the sensoric evaluation methods. This evaluation should be done by a trained staff in accordance to the table below. Also the product has to be checked for other physical hazards, such as metals.

#### Sensoric evaluation of seafood

Presentation	Feature	Desired	Undesired	
Raw, whole, gutted or Ungutted	Outer surface:	Colour	Bright	Dull, bleached
		Slime	Colourless	discoloured
	Skin:	Damage	None	Punctures, abrasions
	Eyes:	Shape	Convex	Flat, concave
		Brightness	Clear	Cloudy
	Texture:	Colour	Normal	Discoloured
		Skin	Smooth, gritty	Firm, soft
	Appearance of gills:	Colour	Bright red or pink	Bleached, discoloured
		Mucus	Clear	Discoloured
	Cooked filets	Odour of gills:	Fresh, characteristic	Slightly stale and sour, spoilage
Appearance:		Translucent, glossy, natural colour	Dull, blood stained, discoloured	
Texture:		Firm, elastic	Soft, plastic, dry	
Odour:		Marine, fresh, neutral	Sour, stale, spoiled	
Flavour:		Marine, fresh	Fermented rancid, bitter, chemical	

<b>Physical hazards</b>	<b>Limits</b>	<b>Level of obligation</b>
for metal inclusion	checking all equipment for damage or missing parts/passing the product through metal detection or separation equipment	Conditional*
for non-metallic objects	checking all equipment for damage or missing	Conditional*

\* Analysis should be carried out for raw and cooked material according to the company own risk assessment. Risk assessment and hence analysis plan shall be approved by the certification body.

The results of the regular residues analysis shall be documented.

### **8.1 LOGO USE**

The AquaGAP logo which can be used for the products will be send to the certified companies. No membership fee or royalty fee is charged. Please note that any labeling or publications referring to AquaGAP shall be approved by the control body first.

### **8.2 EXPORT**

In order to export the AquaGAP products, transaction certificates are necessary. These have to be requested from the control body of the exporter. For all export consignments the exporter shall apply to the control body for issue of a transaction certificate. After the transaction certificate is issued it will be sent directly to the importer. Detailed records (including invoices, transport documents, delivery notes, etc.) must be kept of all sales of the certified product.

## **9 ICS (INTERNAL CONTROL SYSTEM)**

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Operators consisting of a number of small farms are encouraged to group together and set up an ICS (internal control system). This increases the quality assurance of the project and transfers a significant amount of external auditing requirements from the control body to the operator. There are a number of guiding manuals on how to set up an ICS. For further information contact the standard holder.

--- End ---