

# AquaGAP Standard For Good Aquaculture Practices

Version 4, 16.01.2018



The programme and further information about 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 [aqua@imo.ch](mailto:aqua@imo.ch)

Standard holding body

© Copyright: IMOsuisse AG, Weststrasse 51, 8570 Weinfelden, Switzerland, Tel: +41 (0) 71 626 0 626, Fax: +41 (0) 71 626 0 623, [www.imo.ch](http://www.imo.ch). Contact [aqua@imo.ch](mailto:aqua@imo.ch)

**CONTENTS**

**0 HISTORY AND INTRODUCTION ..... 6**

0.1 SCOPE OF ACTIVITY.....6

0.2 OPERATOR PROFILE.....6

0.3 CHANGES TO FARM OPERATIONS AND/OR PROCESSING PROCEDURES .....7

**1 QUALITY ASSURANCE ..... 7**

1.1 COMPLIANCE WITH LEGISLATION AND STANDARDS .....7

1.2 ACCESS TO INFORMATION AND KEEPING OF RECORDS.....7

1.3 RECEPTION AND DISPATCH OF GOODS.....7

1.4 OTHER STANDARDS OR PROGRAMS IMPLEMENTED .....8

1.5 STAKEHOLDERS.....8

1.6 DEALING WITH COMPLAINTS .....8

1.7 SELF EVALUATION .....8

1.8 ICS (INTERNAL CONTROL SYSTEM) .....9

**2 SITES AND FACILITIES – MANAGEMENT AND MAINTENANCE..... 9**

2.1 SITE SELECTION.....9

2.2 SITE ACCESS.....9

2.3 SITE MAINTENANCE .....10

**3 AQUACULTURE LIVESTOCK – MANAGEMENT AND HUSBANDRY..... 11**

3.1 SOURCE AND QUALITY OF JUVENILE AQUACULTURE STOCK .....11

3.2 HEALTH AND WELFARE .....12

**4 FEED..... 13**

4.1 FEED SOURCE AND QUALITY .....13

4.2 MONITORING GROWTH AND PERFORMANCE .....14

**5 drugs and chemicals..... 15**

5.1	USE OF DRUGS AND CHEMICALS.....	15
5.2	HANDLING OF DRUGS AND CHEMICALS .....	16
<b>6</b>	<b>Environment- management and conservation .....</b>	<b>17</b>
6.1	ASSESSMENT AND MONITORING OF ENVIRONMENTAL RISKS.....	17
6.2	WATER MANAGEMENT .....	17
6.3	WATER AND ENERGY EFFICIENCY .....	19
6.4	WILDLIFE AND CONSERVATION.....	20
<b>7</b>	<b>Staff .....</b>	<b>22</b>
7.1	OCCUPATIONAL HEALTH AND SAFETY POLICY .....	22
7.2	STAFF TRAINING.....	23
7.3	SOCIAL RESPONSIBILITY .....	23
<b>8</b>	<b>Harvest, slaughter and transportation.....</b>	<b>24</b>
8.1	HARVEST .....	24
8.2	SLAUGHTERING.....	24
8.3	TRANSPORTATION .....	25
<b>9</b>	<b>POST HARVEST HANDLING and PROCESSING .....</b>	<b>25</b>
9.1	POST HARVEST HANDLING .....	25
9.2	PROCESSING.....	25
9.3	PRODUCT SPECIFICATION.....	25
9.4	CLEANING .....	25
9.5	SEPARATION .....	26
9.6	FOOD SAFETY .....	26
<b>10</b>	<b>Traceability &amp; Marketing .....</b>	<b>30</b>
10.1	PRODUCT FLOW .....	30
10.2	TRACEABILITY .....	30
10.3	LOGO USE.....	31



## AquaGAP - Good Aquaculture Practices

### A. Introduction & Principles

The aim of this standard is to improve aquaculture by providing a platform that recognizes and rewards sustainable aquaculture practices. 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 activity due to species specific parameters (e.g. higher levels of fish protein required in feed) and therefore attempts to keep this standard generic. A lack of existing knowledge of specific species or culture methods shall not impede the development of sustainable aquaculture practices.

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. This standard procedure is a living document and will be reviewed on an ongoing basis.

### B. Application of this standard

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 required in exceptional cases, species-specific guidelines will be 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).

### C. Auditing and certification

To obtain AquaGAP certification, annual audits are to be carried out by IMOSwiss. Audits shall be announced in order to ensure that the farm manager is present, all units are accessible, the processing unit is running and that harvesting/live transport/slaughtering can be verified. When desired, the certification body reserves the right to perform unannounced assessments. First audits following a suspension shall always be unannounced. Auditors are obliged to use the checklists provided by the standard owner. Audits shall be carried out together with the responsible farm managers/staff and not, for example, solely with sales managers. Auditors must comply with the minimum experience and education requirements (in aquaculture sciences and auditing techniques) defined by the standard.

### D. Non-compliances

Non-compliances raised during the audit and evaluation process are classified as either Minor, Major or Critical. They are recorded in a formal report by the auditor/evaluator.

- **Minor:** The client does not comply with the AquaGAP Standard, but the issues raised do not jeopardize the integrity of the standard.
- **Major:** The client does not comply with the AquaGAP Standard and no evidence is provided to prove that the integrity of the standard is safeguarded.
- **Critical:** Evidence suggest that the integrity of the standard is jeopardized. The non-conformity is currently harming the integrity of the product.

- **Suspension:** Selling non-conforming products as certified, not addressing any major or critical non-conformities within the given time frame, and uncooperative behavior are a cause for suspension.

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

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

- AquaGAP checklists and operator profile
- Stakeholder information leaflet
- Template for the calculation of Fish Feed Equivalence Ratio (FFER)

#### F. Terminology

Where the term “fish” is used in this standard, it applies to all farmed seafood (including e.g. mussels, shrimps and crabs). The term “shall” signifies a requirement. Where the requirement may be fulfilled after certification, the term shall is used together with an explanatory note. The term “should” signifies a recommendation, which, depending on the nature of the hatchery/farm/processing procedures, may turn into a requirement.

## AquaGAP Standard

### **0 HISTORY AND INTRODUCTION**

---

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

The scope of activity shall be defined prior to the audit. The AquaGAP standard determines that at least 75 % of the seafood production chain from hatching to harvest and subsequently all processing steps shall be audited according to AquaGAP standard or a recognized certification.

#### **0.2 OPERATOR PROFILE**

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 and shall therefore at all times be complete, up to date, and include the whole operation, all equipment and all activities. When attached, a reference to the internal quality manual is a good alternative. The scope of the certification shall be very clear from the operator profile. The operator profile shall be prepared by the operator at least one month prior to the audit and made available for the auditor.

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

The operator profile shall be updated and resubmitted whenever certification relevant changes are to occur. This includes changes in:

- legal ownership
- land ownership or leasing agreement
- address
- contact person
- management
- supplier/subcontractor
- activities
- farm inputs (e.g. chemicals, drugs, feed, fish stock)

## **1 QUALITY ASSURANCE**

---

### **1.1 COMPLIANCE WITH LEGISLATION AND STANDARDS**

The full adherence of the operator to all local, national and regional regulations is a prerequisite for certification. All required licenses shall be in place and valid and 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 carried out by the operator applying for certification or through a subcontracted company (e.g. a company specialised in environmental impact studies).

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

### **1.2 ACCESS TO INFORMATION AND KEEPING OF RECORDS**

It is in the operator's responsibility to present evidence for compliance with this standard to IMOSwiss. Therefore, the operator shall provide the auditor full access to all premises and records required to verify compliance with AquaGAP standard. All documents shall be up to date, accurate and properly authorized. All documentation (e.g. original bookkeeping, farm diaries and veterinary reports) shall be kept for 3 years.

### **1.3 RECEPTION AND DISPATCH OF GOODS**

During the reception and dispatch of goods (e.g. feed, aquatic stock, medication), the quality and approval status (company internal decision) of the goods shall be verified and recorded

(usually in the form of a checklist). This includes the verification of accompanying documentation.

#### **1.4 OTHER STANDARDS OR PROGRAMS IMPLEMENTED**

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

#### **1.5 STAKEHOLDERS**

Communication with stakeholders shall be undertaken in order to recognize and resolve any conflicts of interest. Typical stakeholders can be, among others:

- users of the same resources
- neighboring farms and villages
- NGOs
- government agencies

All operators are obliged to demonstrate awareness of stakeholders. All stakeholders shall be identified and if relevant, informed by the operator of the assessment/certification procedure (e.g. by local advertisement or oral communication). This shall occur at least 30 days prior to the official audit. Contact details of IMOs<sup>swiss</sup> carrying out shall be given to the stakeholders.

#### **1.6 DEALING WITH COMPLAINTS**

As a measure for internal quality control, it is important that all complaints are considered as an opportunity to correct any shortcomings in production/farming (complaints can also apply to e.g. social responsibility). All complaints shall be recorded and a responsible staff member shall be 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.

If any internal or external complaints occur during the assessment procedure, IMOs<sup>swiss</sup> will respond to these complaints. Any non-conformities shall be recorded and communicated with the operator.

#### **1.7 SELF EVALUATION**

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

## 1.8 ICS (INTERNAL CONTROL SYSTEM)

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.

## 2 SITES AND FACILITIES – MANAGEMENT AND MAINTENANCE

---

### 2.1 SITE SELECTION

As a prerequisite to certification, the operator shall be located in an area of suitable environmental characteristics, taking into account all possible risks and impacts (e.g. transfer of disease). It is not the aim of this standard to compensate for poor site selection by, for example, regular treatment of prevailing disease or a constant use of chemical treatments to compensate for bad water quality. In this sense, an environmental impact assessment (see *6.1 assessment and monitoring of environmental risks*) should define the feasibility of farming practices and the assimilative capacity (potential loading) of the local environment.

Prior to or during the audit, 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 of the map's establishment
- description of units shown on map (e.g. stores, tanks, treatment ponds, canals, access)
- exact location and number/name of cages/tanks/ponds
- all potential sources of contamination
- environmental characteristics (e.g. adjoining water bodies and ecosystems, currents, depth, flushing)

All land-based units shall be located above the high tide watermark.

### 2.2 SITE ACCESS

Depending on the local situation and the operator's risk assessment (see *6.1 assessment and monitoring of environmental risks*), physical barriers should restrict access to the aquaculture holding area. If this is deemed necessary, it shall be ensured that the farm area can be easily circumnavigated. Alternatively, a designated passage shall be made available to the public to guarantee access to local natural resources.

All visitors to the facility 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 (see *3.2 health and welfare*).

## 2.3 SITE MAINTENANCE

### Visual Impact

The visual impact of the farm shall be reduced and efforts made to blend into 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, including, among others, all canals/sedimentation pond banks, woodland and land storage sites for offshore cages. Litter, for example used pet or glass bottles, polystyrene boxes, old nets and feedbags shall be cleared by the operator. The use of designated waste receptacles is recommended. These should be maintained by the operator and, where feasible (technology available), encourage recycling and waste separation.

### Waste Disposal

It shall be ensured that any waste is actively disposed of according to label instructions and any appropriate national regulations. Sludge, any solid waste (farm/human/animal), chemicals and drugs shall not be discharged into receiving waterbodies or ecosystems.

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

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

### Facility pest control

The operator shall evaluate the risk of pest infestation. Potential pests shall be identified and evaluated and precautionary measures shall be taken. These precautionary measures may include but are not limited to the following (for predators see *6.4 wildlife and conservation*):

- no littering of site
- no open or broken feed bags
- no feed left on the floor of the storage areas, around the tanks, on the feeding platforms, etc.
- feed bags kept off floor
- closed and sealed stores (no gaps under doors)
- no ozonisation of warehouses

- fish carcasses removed daily and put in designated area (e.g. composting, removed by external company)
- domestic sewage treatment

If precautionary measures prove insufficient, measures to control pests shall be taken. 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 cultured stock, the environment or staff working on the farm. All chemicals used for pest control must be handled according to *5.2 handling of drugs and chemicals*.

#### Equipment and machinery

All equipment and machinery used shall be maintained regularly and in such a manner to reduce their 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 kept clean. Where equipment is shared between sites/farms, staff and equipment/vehicles shall be disinfected prior to use/arrival on site to reduce the transfer of disease. Where nets are cleaned mechanically while installed, the operator shall ensure that organic matter does not accumulate on the seabed.

### **3 AQUACULTURE LIVESTOCK – MANAGEMENT AND HUSBANDRY**

---

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

Sourced juvenile stock (smolts/fry/PL) shall be of equal or better health than own stocks. Suppliers shall provide a quality- and health certificate stating the following:

- implemented disease prevention control
- good management practices in hatchery (emphasis on strong juveniles rather than high numbers)
- stock raised for grow-out conditions (no transfer into totally different environments)
- clear separation of different quality stocks in case of parallel production
- nurseries used where applicable
- controlled transport

The following is prohibited:

- genetically modified species

- wild caught brood stock with the following exceptions:
  - black tiger shrimp
  - for the start-up of new species
  - a low percentage allowed to maintain genetic diversity
- wild caught smolts/fry/post-larvae
- non-native species with no history of safe production in the area
- drugs and chemicals mentioned in *5.1 use of drugs and chemicals*

Where there is an existing industry with a non-native species, there shall be strict escape prevention measures in place (see *6.4 wildlife and conservation*) and there shall be no evidence of any impact on the local ecosystem.

The quality and health status of stock received shall be verified and recorded at goods reception (see *1.3 reception and dispatch of goods*).

### 3.2 HEALTH AND WELFARE

#### Hygiene

To areas where food safety or fish health may be at risk, access shall be limited to a minimum. Furthermore, shoe disinfection/change as well as hand wash and disinfection points shall be installed and utilised (not applicable for extensive farming).

Staff shall have access to sanitary and eating facilities and potable water. A cleaning protocol including specification of cleaning agents and cleaning activities shall be implemented and documented for the whole farm area.

No human waste or untreated animal manure shall enter the aquaculture system. Disposal of waste (including carcasses) shall be conducted adequately (see *5.2 handling of drugs and chemicals / 2.3 site maintenance*).

Dead fish shall be removed promptly from the rearing enclosure. Inspection for mortalities shall be done daily, where feasible. The operator shall define timeframes in which dead fish are to be removed. Carcasses shall not have a deterrent effect on the rearing conditions.

#### Fish health and welfare

In order to maintain fish in good health and to promote welfare, stress shall be reduced where possible. Aquaculture stock shall at all times be treated and handled in such a way as to protect them from pain, stress, injury and disease.

Staff shall be well trained in adequate treatment and handling procedures. They shall continuously observe the swimming and feeding behaviour (number of unusually 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 *4.2 monitoring growth and performance*) in order to be aware of any signs of stress (during grow-out as well as transport). Detected signs of stress shall be recorded in the farm diary. In order to reduce stress, the following measures shall be taken:

- maintain stocking densities at levels where no signs of stress are evident
- maintain good water quality (see *6.2 water management*)

- 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)
- use 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 automated systems, the systems shall be equipped with alarms and secondary power systems in case of failure
- limit duration of pre-harvest crowding and pre-harvest fasting to a minimum
- carry out any live transport under conditions suitable for the cultured species (e.g. max 10 hours, water quality maintained, limited stocking densities)
- limit any time out of water to a minimum

Operators themselves shall set and document limits for stocking densities that are to be closely adapted to the cultured species, the production system and on site management conditions. Within these limits, fish shall show no signs of stress, disease or mortalities. Water parameters, e.g. oxygen levels, as well as fish behavior and growth performance shall serve as indicators and shall therefore be monitored and documented regularly.

Individual fish suffering from ill health or injury shall receive immediate treatment or shall be removed and humanely euthanized. All aquaculture enterprises shall have a named veterinary surgeon. Veterinary visits shall be scheduled at least on a cycle basis and whenever required.

Operators shall set own target values for mortality rates per production cycle. These values shall be recorded along with the number of actual mortalities. Recordings shall verify a trend towards declining mortalities and improved management practices. The operator shall be able to assign and classify all cases of mortalities and disease. All cases of disease and mortalities shall be recorded (e.g. date, numbers, cause, agent, actions taken, veterinary measures) and documented.

### Biosecurity

Each operator shall implement, maintain and document a biosecurity procedure. This procedure shall contain all actions taken by the operator in order to prevent any introduction of pathogens from an external source to aquaculture stocks.

## **4 FEED**

---

### **4.1 FEED SOURCE AND QUALITY**

Feed shall preferably be sourced from suppliers/manufacturers who are verifiably processing sustainable and high-quality feed ingredients. Feed suppliers/manufacturers shall comply with local and national labour laws to ensure the safety and adequate compensation of workers.

Sourced feed shall meet the following requirements:

- nutritionally balanced for cultured species
- no in-feed medication (e.g. antibiotics, hormones)
- use of by-products from fish processing to reduce the use of wild fish
- reduced use of fish meal and fish oil
- use of fish oil refining
- clearly separated production lines for different feed qualities
- implemented measures to prevent any contamination
- use of, for example, pro-biotics, compost and algae is recommended.
- routine analysis for mycotoxins
- no synthetic pigments added
- no homemade feed

In order to obtain a high quality product, a continuous dialogue with feed suppliers is required to improve the quality of feed in the long term. In this way, feed suppliers and farm operators should work together towards the use of more sustainable and higher quality feed resources.

Feed shall be handled and stored in a safe, clean and dry manner, clearly separated from any sources of potential contamination and pests such as insects and rodents (see 2.3 *site maintenance*).

#### 4.2 MONITORING GROWTH AND PERFORMANCE

Prior to each production cycle the operator shall set own target values regarding Fish Conversion Ratio (FCR) and Fish Feed Equivalency Ratio (FFER), and perform a harvest estimation. After each production cycle, the actual FCR as well as the FFER shall be calculated from collected data and recorded along with the set target values. Results and deviations shall be interpreted and used to improve management practices. Long-term recordings shall verify a trend towards 1, for both FCR and FFER.

**FCR** = (feed used) / (fish biomass increase)

**FFER** = Fish Feed Equivalency Ratio, Fish in: fish out ratio

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

- Determine weight of fishmeal in feed per year
- Convert fishmeal to pelagic equivalent (fishmeal/0.225)
- Determine weight of fish oil in feed per year
- Convert fish oil to pelagic equivalent (fish oil//0.05)
- Calculate 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 provided by the certification body.

A complete and up to date farm diary shall include data such as:

- origin and initial numbers of stock
- type and quantity of feed used
- occurrence of disease
- any treatments applied
- reason for and number of mortalities
- final numbers harvested
- calculations of FCR, FFER and stocking densities.

## 5 DRUGS AND CHEMICALS

---

### 5.1 USE OF DRUGS AND CHEMICALS

Every application of a drug or chemical shall be recorded (date, agent, dose, reason for use, vet recommendation, residence time). Medical treatments shall only be applied after identification of a health problem and prescription by a veterinarian. 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's specific risk assessment and shall include, but not be limited to, the following:

- selection of healthy post larvae/fry/smolts for stocking (see 3.1 *source and quality of juvenile aquaculture stock*)
- limitation of handling of fish
- avoidance of stress during grow-out (see 3.2. *health and welfare*)
- avoidance of disease transfer from other stock/farms (see 3.2. *health and welfare*)
- regular removal of carcasses
- restricted access to farms
- use of hand wash and disinfectant points (where required)
- limitation/treatment of water inflow into ponds/tanks (where required)
- monitoring of fish for the occurrence of disease
- preference of alternatives to synthetic chemical treatments

Besides the disease prevention measures described above, all companies shall hold a list of treatments used at the farm and a list of nationally approved treatments (usually provided by governmental fisheries agencies).

The following drugs and chemicals are prohibited:

- malachite green, crystal violet, tributyltin compounds
- hormones used on grow-out fish as growth promoters or for sex reversal
- antibiotics and other medication for preventative treatment (except vaccines)
- antibiotics used as growth promoters
- antibiotics to which there is plausible suspicion or evidence of buildup of resistance
- drugs and chemicals banned for use in food production such as chloramphenicol and nitrofurantoin antibiotics
- drugs and chemicals banned in the country of import
- toxic antifouling agents (e.g. copper-based), parallel use of treated and untreated equipment, formerly treated equipment

Every batch treated with prohibited substances shall be excluded from certification.

## 5.2 HANDLING OF DRUGS AND CHEMICALS

Drugs and chemicals include, among others: 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 environment or to the aquaculture stock.

All chemicals and drugs shall be handled (use, mixing, storage) according to label instructions and national regulation and in a way that reduces the risk of health and environmental impacts. Chemicals and drugs should only be ordered for a specific reason and in a precise quantity, (there should be no excess / unused quantity of e.g. medicated feed).

### Storage

All chemicals shall be stored in a designated area, with access limited to responsible staff. The store shall only contain agents that comply with this standard. All containers shall be stored conform to label instructions (e.g. chilled, darkened, only glass) and be labeled correctly at all times, even if refilled from larger containers. For toxic liquids, operators shall ensure that secondary measures (e.g. collector) can contain 110% of the chemical in the event of a leak. For powders, operators shall ensure they are stored in sealed and well-ventilated areas protected from flooding.

### Prevention of impacts from chemical use

Emergency procedures shall be available for all possible emergencies as defined in the operator's risk assessment. Emergency procedures shall describe how to react 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 internal emergency procedures (see 7.2 *staff training*). Where applicable, clear warning signs shall be placed to inform staff and visitors of areas where special precautions are required (e.g. flammable store, slippery surfaces).

## 6 ENVIRONMENT- MANAGEMENT AND CONSERVATION

---

### 6.1 ASSESSMENT AND MONITORING OF ENVIRONMENTAL RISKS

One of the main aims of this standard is to enable certified companies to assess any risks that their farming/processing practices pose to the environment and thereby identify any risks of non-compliance with this standard.

For this reason, an environmental impact assessment shall be carried out by all companies prior to first stocking. When applying for certification, the environmental impact assessment shall not predate more than three years.

During the assessment, data regarding all identified risks (e.g. nutrient loading and/or salinity of natural water bodies, species abundance, sediment quality) shall be collected and recorded. These data shall serve as reference values to be compared with future values collected during peak of production. The calculated values shall be used to monitor trends and improvement over time during certification.

Additional assessment and monitoring during production cycles shall be implemented according to production methods and identified risks. For details, see *6.2 water management*.

Results of all assessments shall comply with governmental regulation or values recommended by the relevant authority. Where this is not possible (e.g. no competent authority or company), a procedure and indicator values shall be set up by the operator and agreed upon by the IMOs<sup>swiss</sup> prior to certification.

### 6.2 WATER MANAGEMENT

Good water quality shall be maintained throughout the cycle and shall conform to the requirements of the cultured species (e.g. temperature, salinity, pH, DO). Optimal parameters shall be established by the operator and communicated. If feed, fertilizer or any other inputs other than aquaculture stock are added to the water, 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).

#### Influents of land-based systems

Water holding or pre-treatment is recommended if incoming water may have received untreated human waste or manure. The farm shall define metric parameters as a guideline for the incoming water quality. 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. Every operator shall be able to demonstrate compliance with the defined water quality parameters.

#### Effluents of land-based systems

Where tanks are used, recirculation is recommended, otherwise effluent treatment is required. Where ponds are used, as a minimum, a decantation/settling pond is required.

Besides the actual chemical composition of the water, suspended solids can have an impact on the environment and should therefore 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 retain sludge. The pH and redox potentials of pond sludge should be monitored.

Farm operations shall have no negative impact on surrounding waterbodies /aquatic ecosystems leading, for example, to eutrophication or salinization. The farm shall define metric parameters as a guideline for the effluents. 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. Every operator shall be able to demonstrate compliance with the discharge consent conditions.

The measured water quality parameter values of the effluent shall not be decreased by more than 10% in comparison to the incoming water. 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 of entering the receiving water.

#### Monitoring and sampling procedure

In order to monitor potential impacts of the farming activity on the environment, the chemical composition of the influents and 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 verified during the 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)

#### Nutrient loading of net cages

Net cage systems can lead to accumulation of organic matter on the seabed. Therefore, regular seabed monitoring (for e.g. biodiversity, sediment quality) shall be carried out below the cages during peak biomass of each production cycle and after every fallowing period.

Samples shall be taken with the current along a transect (up to 500m). Pictures and sediment sample analysis should be used to support the monitoring, as applicable.

Monitoring shall determine redox potential levels below the cages. This should be done prior to stocking, within 30 m of cages. The redox potential levels shall be higher than -100 mV nhe or sulfide levels below 1300  $\mu$ M prior to stocking fish. Beyond 30m, analysis of invertebrate communities shall show no major change in species composition or abundance related to the availability of organic matter.

Depending on the results gained by seabed monitoring, fallowing periods shall be included into production cycles to allow the aquatic environment to rest and regenerate. Frequency and duration of fallowing periods shall comply with national law and regulations. Where this is not possible (e.g. no competent authority or company), a procedure and indicator values shall be set up by the operator and agreed upon by IMOSwiss prior to certification.

### **6.3 WATER AND ENERGY EFFICIENCY**

#### Water efficiency

Water resources shall be used efficiently. Water shall not be exchanged excessively to reduce efforts in water management or to improve effluent values.

Where accessible, mains/tap water, seawater or rainwater shall be used. Well water may only be used where mains/tap water is not accessible. If well water is used for hatcheries or grow-out farms, abstraction volumes and ground water levels shall be monitored and compared to reference values. If groundwater levels decline or there is evidence of ground subsidence, well water shall no longer be used. Well water shall not be used for the salinity control in grow-out ponds.

For farms not using fertilizers or feed and no form of medication/drugs, the use of seawater (or 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 monitored, recorded and reduced where possible. Rainwater 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 rainwater. 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.

#### Energy Efficiency

In addition to an overall reduction in energy use, the use of non-renewable energy resources shall be continuously reduced. If technology in the country of operation allows, 50% of the energy used at the farm level should be sourced from renewable resources or compensated for through a recognized CO<sub>2</sub> compensation program.

Water and energy use of processing plants shall be recorded and, if feasible, reduced and sourced from sustainable/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 of an activity is a measure of the impact it has on the environment and, in particular on climate change. It relates to the amount of greenhouse gases produced during day-to-day business through, e.g. 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 of fossil fuels) and the secondary footprint (a measure of the indirect CO<sub>2</sub> emissions from the whole lifecycle of products used by an individual or company). Until more metric values can be assessed, this standard only regulates issues regarding the primary footprint, over which companies have direct control.

In order to reduce the operator's carbon footprint, the following measures 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 possible ii) ship the product instead of sending it by air.
- reducing packaging
- reducing the use of one-way packaging
- planting trees/vegetation on the farm
- efficient use of resources

## **6.4 WILDLIFE AND CONSERVATION**

### Escapes

Efforts shall be made to prevent escapes at all stages of production, both at the hatcheries and at the grow-out farms. A fish containment plan shall be implemented, stating all identified risks, all preventative measures taken, as well as the procedure to be followed in case of escapes. The containment plan shall be part of regular staff training (see 7.2 *staff training*).

Preventative measures shall include the following:

- a well-designed, maintained and managed farm
- use of high quality material and equipment, maintained in good condition and adapted to local conditions
- safe and well-planned handling of fish and material (e.g. installation of second net prior to removal of first net)
- side walls high enough to prevent fish from jumping out of the cage/tank
- nets checked at least once per week
- screens fixed at all inlets and outlets, selecting a mesh size small enough to catch the smallest living stages in culture (eggs/larvae/juveniles). When selecting the screens, possible reproduction in the pond/tank/cage shall be taken into account.
- additional dry-bed gravel/sand filters or secondary screens at all effluents
- prevention of overtopping (e.g. during thunderstorms or rainy season)

Exact stocking numbers, mortality rates and harvest numbers shall be recorded to verify the elimination of escapes. Any evidence of escapes shall be reported to the competent authority

and recorded on site. Any evidence of escapes of >50 fish shall be reported to IMOsuisse within four calendar days.

### Predators

As part of the risk assessment, all endangered species in the surrounding area shall be identified, listed and precautionary measures shall be taken to minimize any risk to harm these species. In addition, all predators shall be identified and measures to deter them from harming themselves or the aquaculture stock shall be defined. Staff shall be trained to recognize and distinguish endangered species and predators. Typical deterrent measures may include the following:

- top nets to deter birds (the mesh shall be of an adequate size and the nets shall be tensioned sufficiently and be free of holes to avoid entanglement)
- scarecrows and fake shots to deter birds
- fences around the premises
- low fences around ponds to impede crabs entering the ponds
- multiple screens at the water intake to reduce the inflow of predator species into the ponds
- secondary predator nets to deter marine mammals (predator nets shall be tensioned adequately)

All equipment and material used shall be of high quality and properly maintained. Predator prevention shall be carried out in such a way as not to harm the predator or any 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 scaring and killing)
- any device causing the predator to suffer

Members of staff shall be trained to be able to carry out lethal control methods/proper slaughter methods in order to act appropriately if euthanasia of a predator is inevitable.

### Erosion

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

- plants should cover at least 50% of total dyke surface. .
- where planting vegetation on dykes and banks is difficult, gravel/stone shall be used. If neither planting nor the use of gravel is feasible, plastic lining may be used.
- broken dykes shall be repaired prior to next stocking

### Sediments

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

### Salinization

Ground water and soil shall be prevented from salinization. The growth of vegetation in the surrounding area (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 or salt-laden soils shall not be discharged into freshwater rivers/canals, and chloride levels shall be monitored in nearby freshwater wells. Freshwater resources shall not be depleted (see also 6.2 *water management*).

### Biodiversity

There should be concerted effort made to enhance the environment and biodiversity on the farm. Consideration should be given to the conversion of unproductive sites to conservation areas to encourage the growth /return of natural flora and fauna.

### Wetlands

Farms and hatcheries shall not be situated in ecosystems of high sensitivity (e.g. mangroves/wetland/primary forests), farm activities shall not lead to their depletion. Therefore 100% of the area destroyed due to any farm activities shall be reforested, either by the operator or through a respective donation to a reforestation project. Areas that have been converted prior to 1980 are not affected by this regulation.

## **7 STAFF**

---

### **7.1 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 ensured that staff is not exposed to dust, noise, harmful gases or other hazardous substances.

Depending on the nature of the work, appropriate protective equipment shall be provided by the operator and staff shall be trained in its correct use. 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 staff handling liming materials)
- life jackets (e.g. for staff working at offshore cage sites)

Similarly, first aid and emergency equipment (e.g. fire extinguishers) and important contact numbers shall be displayed in a prominent place available to all staff. The operator shall ensure that any emergency and warning postings are written in a language understood by all staff.

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. However, the auditor might verify whether the diver is trained and qualified for the kind of activities.

## 7.2 STAFF TRAINING

All staff shall be trained on first appointment and annually thereafter. Training shall include information on:

- on site operations
- first aid
- work safety and the use of safety equipment
- biosecurity
- hygiene and food safety
- procedures to prevent and respond to possible emergencies (e.g. escapes, predators, accidents)
- handling of fish
- workers' social rights and duties
- any particular task relevant to the responsible staff (e.g. diving operations)

For special topics (e.g. first aid, diving safety), it is recommended to use external training by a competent authority/company.

Training and any outcome of assessments shall be documented (as a minimum the date, topic and signed list of participants).

All staff working in the processing plant shall be trained in 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).

## 7.3 SOCIAL RESPONSIBILITY

The operator shall comply with national labor laws and have a copy on site. The operator shall take responsibility to set up additional requirements to ensure the workers' safety and minimum social rights and duties.

### Forced/child labor

The operator shall ensure that there is no form of forced labor, bonded labor or corporal punishment. The operator shall guarantee that no work that includes heavy lifting or risky operations is carried out by staff younger than 15 years. Any work carried out by staff younger than 15 shall not obstruct the child from attending 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 know 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 clearly understood by both parties. With casual workers it must be clear for both sides what the working conditions, responsibilities and terms of reference are.

Wages shall be paid regularly. Salaries shall be above the minimum level set by national labor laws and suitable for the type of work carried out. Monetary punishment shall not be applied in cases of failing to comply with the work agreement.

The operator shall actively ensure that staff is treated with dignity and respect and are not exposed to any sort of discrimination due to gender, race, religion etc. The working agreement shall further clearly outline rights and duties of both sides and shall be dated and signed by both parties. Rights and duties shall include issues such as weekly working hours, overtime and payment thereof, basic coverage for retirement, maternity and sick leave, medical and unemployment insurance, freedom to terminate employment. 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, they shall be safe for habitation, clean and provide basic services such as running water and sanitary facilities. They shall comply with national / local standard.

## **8 HARVEST, SLAUGHTER AND TRANSPORTATION**

---

The harvest, transportation and slaughter of fish shall be carried out with consideration given to 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 covered in the respective chapters (see *chapters 3, 6, 9*).

### **8.1 HARVEST**

Harvesting shall be carried out as quickly and orderly as possible in order to limit the fishes' stress, e.g. time out of the water, to a minimum.

### **8.2 SLAUGHTERING**

Fish which are not stunned/slaughtered shall be placed on ice (e.g. shrimp). The ice shall be made from potable water sources. Smaller warm water fish shall be placed into ice slurry for immediate stunning or killing. The ice slurry shall be mixed and temperatures monitored. For every unit of fish there shall be one unit of ice/ice-water. Fish shall not be left to suffocate or left partially stunned in warmed water.

For larger and cold water fish, animals shall be stunned by mechanical or electrical stunning. Staff shall be trained in stunning and the effectiveness of stunning shall be monitored. Directly after stunning, fish shall be bled. Waste blood shall be collected and treated prior to disposal. Slaughtering shall always be monitored and carried out using appropriate methods. Immediately after slaughtering, fish shall be put on ice/in ice-slurry to cool as quickly as possible to a temperature of < 5°C.

### **8.3 TRANSPORTATION**

Transportation shall always be carried out in cleaned and disinfected bins/trucks. The temperature of already slaughtered fish shall be monitored and kept < 5°C. In the case of live transport, the temperature and oxygen level of the water shall be monitored and duration of transport as well as of mortalities and physical condition of the fish upon arrival shall be documented. Live transport of harvest size fish should be reduced as far as possible.

## **9 POST HARVEST HANDLING AND PROCESSING**

---

### **9.1 POST HARVEST HANDLING**

If harvesting, transport and slaughtering fall under the processor's responsibility, it shall be ensured that these steps comply with this standard (see *chapter 8: harvest, slaughter and transportation*).

Temperature shall be maintained below 5 °C throughout chilled processing. Temperatures shall be monitored and recorded according to the internal HACCP plan. Incoming goods and enclosed documents shall be verified for their quality and compliance with this standard according to internal checklists.

### **9.2 PROCESSING**

For each product, the approximate processing ratio (yield) 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 recipe shall indicate percentage and quality of each ingredient.

### **9.3 PRODUCT SPECIFICATION**

For each product and client there shall be a detailed product specification. Processing additives and processing aids (e.g. phosphates, metabisulfite) shall only be used according to client product specifications and shall comply with regulations in the country of production as well as in the country of import.

### **9.4 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 approved protocols to be

completed on site during cleaning. All cleaning agents shall be approved for food quality processing. The same shall apply to facility pest management. No pest control shall be used where direct contact with the food product may occur. A pest management plan shall be included in the quality manual.

## 9.5 SEPARATION

Separation of processing shall be ensured for products with different risk levels (e.g. the varying risk of pathogenic microorganisms in primary processing vs. ready to eat products). Temporal or spatial separation of processing 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. All machines used shall be maintained in good working condition (see also 2.3 *site maintenance*).

## 9.6 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 9.3 *product specification*.
- II. A product flow diagram shall be established and verified.
- III. The flow of each product, product category or process through the operation shall be documented, including all steps from raw material selection through processing, storage and distribution.
- IV. Hazard analysis shall be conducted and all potential hazards associated with each processing step shall be listed and evaluated as follows:
  - (1) Identify hazards that 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 on the severity of the potential hazard and its likelihood to occur. Depending on the outcome of this evaluation, potential hazards shall be addressed in the HACCP plan.
- V. 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.

VI. Limits for each CCP shall be established

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

VII. A 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 monitoring documentation provides evidence of verification.

VIII. A corrective action plan shall be established in advance.

This shall include corrective action to be taken when critical limits are exceeded. The hazard requiring corrective action shall be defined, corrective actions shall be documented and it shall be ensured that non-compliant products are not sold as AquaGAP products.

IX. Verification of procedures shall be established

Methods to verify the functioning of the HACCP 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 to ensure that it is scientifically and technically sound.

X. 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.

### Facility requirements

Walls, floors and ceiling shall be designed, constructed, finished and maintained to prevent the accumulation of dirt, minimize condensation and mold 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 identified and removed or controlled.

Prior to marketing products shall be analysed for biological, sensory, physical and chemical contamination. Chemical and biological 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.

The sampling shall be carried out by trained personnel. The hazards that shall be analysed regularly and their limit values are listed below. The results of the regular residues analysis shall be documented.

<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</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: 0.05 ppm)	Compulsory
Mercury	0.05 ppm	Compulsory
Cadmium	0.1 ppm	Compulsory
Other heavy metals	According to the risk assessment	Conditional*
Saraloxacine, ciprofloxacin and endrofloxacin	Presence of parameters (typical detection limit, 1.25 ppb)	Conditional*
Flumequine	Presence of parameters (typical detection limit, 2.5 ppb)	Conditional*
Malachite Green, leucomalachite Green (for finfish)	Presence of parameters (typical detection limit, 2.0 ppb)	Conditional*
Nitrofurans	Presence of parameters (typical detection limit, 1.0 ppb)	Conditional*
Oxilinic acid	Presence of parameters (typical detection limit, 2.5 ppb)	Conditional*

\*Analysis should be carried out for raw and cooked material according to the company's own risk assessment. The risk assessment and analysis plan shall be approved by IMOSwiss.

The company shall evaluate the freshness of seafood with sensory evaluation methods. This evaluation should be done by trained staff in accordance with the table below. The product must also be checked for other physical hazards, such as metals.

**Sensoric evaluation of seafood**

<b>Presentation</b>	<b>Feature</b>	<b>Desired</b>	<b>Undesired</b>	
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
		Colour	Normal	Discoloured
	Texture:	Skin	Smooth, gritty	Firm, soft
	Appearance of gills:	Colour	Bright red or pink	Bleached, discoloured
		Mucus	Clear	Discoloured
		Odour of gills:	Fresh, characteristic	Slightly stale and sour, spoiled
Cooked filets	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 parts/passing the product through metal detection or separation equipment	Conditional*

\* Analysis should be carried out for raw and cooked material according to the company`s own risk assessment. The risk assessment and analysis plan shall be approved by IMOSwiss.

Waste such as processing trimmings shall be brought to adequate re-use (e.g. feed). All wastewater shall be treated prior to discharge. Chemicals and cleaning agents shall be handled according to 5.2 *handling of drugs and chemicals*.

## 10 TRACEABILITY & MARKETING

---

### 10.1 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, number of mortalities and quantity harvested in a specific production cycle

### 10.2 TRACEABILITY

At farm level, fish shall be traceable to the respective cage/pond/raceway/tank as well as back to the hatchery and brood stock of origin. A record system providing a permanent documentation of each generation/cycle shall be in place. The data recorded shall include origin and initial quantity of stock, type and quantity of feed used, occurrence of disease, any treatments applied, reason for and number of mortalities and final quantities harvested and sold. With each harvest, a traceability sheet shall be provided, indicating the quality and history of the fish.

Feed delivery documents, invoices, any certifications and farm diary information on feeding and feedstocks shall be kept (see *chapter 4: Feed*). Procedures for the recall of feed products shall be able to be implemented immediately. Traceability of every finished product shall be ensured in order to control any potential contamination.

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 certification status. 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 with direct reference to traceability documentation. Traceability documentation shall allow reference to information on the history of the products (feed, treatment, farm, brood stock of origin etc.) and the certified quality.

The final processed product shall always be traceable back to the farm. 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 origin, identification number, date and number of harvest, any treatment and withdrawal period. A documented mock recall test shall be carried out annually. It shall be possible to follow batches of product received through processing to final sales data.



### **10.3 LOGO USE**

All products shall be clearly labelled as AquaGAP. The AquaGAP logo is a product label and will be sent to all certified companies. No membership fee or royalty fee is charged. Please note that any labeling or publications referring to AquaGAP must first be approved by the certification body prior to use.

--- End ---