

# Improving aquaculture practices in smallholder shrimp farming.

**A Training Manual.**  
sippo.ch



## Introduction.

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## Preface.

Osec's main business activities are in investment, import and export promotion. It is financed by the State Secretariat for Economic Affairs (SECO). The Swiss Import Promotion Programme (SIPPO) is one of the mandates under Osec whose objectives are to support small and medium sized private enterprises from emerging markets to export their products to Europe. Among the various projects run by SIPPO, the fishery and aquaculture sector is very important. The aquaculture sector in particular contributes to a great extent in the production of animal protein worldwide. In the course of production, various factors are taken into consideration to ensure that the output is in no way harmful to any of the parties or partners involved. Some of these partners including producer associations, owners of fish ponds, feed mill operators and all those involved in the fields of aquaculture have to ensure that their activities are realized while taking into consideration the respect of the people, animals and the environment as a whole.

This Manual of Good Aquaculture Practices in Shrimp Farming is a tool to enable people working in the fields, as well as in the offices but in particular, shrimp farmers develop more efficiently their production cycles. The manual contains a step by step approach on how to implement an Internal Control System, necessary to achieve high quality production of fish and seafood products, whilst enhancing ecological awareness and environmental protection. In addition to this, the manual will ensure that all the people involved in the economic activities regarding the various aquaculture projects do so under the framework of social responsibility. Readers and users of this manual are encouraged to implement its contents in the area of aquaculture production systems so as to ensure that this food production sector achieves a lasting success.

SIPPO, Swiss Import Promotion Programme  
Constantin Kostyal

Aquaculture is the world's fastest growing food production system these days and this trend is estimated to continue. This rapid growth has sparked concern in importing countries about negative environmental and social impacts associated with this development and many of the largest consumer markets have now decided to source from improved and better secured production systems.

In addition, the demand for sustainable seafood has greatly increased in Europe, the US as well as in Japan. In order to satisfy this demand, seafood production must considerably improve its performance in terms of ecological impact and social accountability.

This SIPPO GAP Manual is a basic tool to train good aquaculture practices (GAP) and to help the user to identify the fields in which further efforts and potential support is required in order to reach an acceptable level of production quality. GAP is a solid base for every recognized standard in the field of food quality and sustainability (e.g. AquaGAP, Naturland organic, GlobalGAP, etc.).

This manual can be used by individual operators, but it mainly addresses groups of smallholder farmers joining forces to improve the quality of their marketable products. For this reason, the manual is divided into two parts. Part I focuses on improved production systems to reach GAP, Part II describes a suitable structure of group operation. Both Part I and Part II are designed to guide the user through a step-by-step implementation of GAP under an internal control system (ICS).

Within each chapter, the principles required to reach the objective are described. Following this is a set of monitoring points and a checklist by which the user recognizes, over time, if the principles have been successfully implemented or in which areas further training/consulting is required. These checklists can also be used by farms which have already a quality management to evaluate where they stand in terms of GAP. Each chapter is rounded off by a list of common shortcomings in implementation of the principles.

It is hoped that this SIPPO GAP Manual can provide training and guidance for the development of new projects and for raising of quality performance in existing aquaculture operations.

IMO, Institute for Marketecology  
Rainer Bächli, Director

## Contents.

Glossary	9		
<b>I Setting up Good Aquaculture Practices</b>	<b>10</b>		
1. <b>GAP Step I – Site Selection</b>	<b>10</b>		
1.1. Objective	10		
1.2. Principles of site selection and what to implement	10		
1.3. Monitoring implementation	11		
1.4. Verification of implementation – compliance checklist	11		
1.5. Common shortcomings	11		
2. <b>GAP Step II – Farm Input Management</b>	<b>12</b>		
2.1. Objective	12		
2.2. Principles of farm input management and what to implement	12		
2.3. Monitoring implementation	13		
2.4. Verification of implementation – compliance checklist	13		
2.5. Common shortcomings	13		
3. <b>GAP Step III – Farm Management I</b>	<b>14</b>		
3.1. Objective	14		
3.2. Principles of good farm management and what to implement	14		
3.3. Monitoring implementation	15		
3.4. Verification of implementation – compliance checklist	16		
3.5. Common shortcomings	17		
4. <b>GAP Step IV – Farm Management II</b>	<b>18</b>		
4.1. Objective	18		
4.2. Principles of good farm management and what to implement	18		
4.3. Monitoring implementation	19		
4.4. Verification of implementation – compliance checklist	20		
4.5. Common shortcomings	20		
5. <b>GAP Step V – Farm Management III</b>	<b>22</b>		
5.1. Objective	22		
5.2. Principles of good farm management and what to implement	22		
5.3. Monitoring implementation	24		
5.4. Verification of implementation – compliance checklist	25		
		5.5. Common shortcomings	26
		<b>6. GAP Step VI – Harvesting and Post-harvest Handling</b>	<b>28</b>
		6.1. Objective	28
		6.2. Principles of harvesting, post-harvest handling and what to implement	28
		6.3. Monitoring implementation	29
		6.4. Verification of implementation – compliance checklist	30
		6.5. Common shortcomings	30
		<b>7. GAP Step VII – Traceability</b>	<b>32</b>
		7.1. Objective	32
		7.2. Principles of traceability and what to implement	32
		7.3. Monitoring implementation	32
		7.4. Verification of implementation – compliance checklist	33
		7.5. Common shortcomings	<b>33</b>
		<b>8. GAP Step VIII – Workers’ Safety and Welfare</b>	<b>34</b>
		8.1. Objective	34
		8.2. Principles of workers’ welfare and what to implement	34
		8.3. Monitoring implementation	35
		8.4. Verification of implementation – compliance checklist	36
		8.5. Common shortcomings	36
		<b>II ICS in aquaculture farming</b>	<b>38</b>
		<b>9. ICS Step I – Starting up an ICS: Basic Conditions</b>	<b>38</b>
		9.1. Objective	38
		9.2. Principles of starting up an ICS and what to evaluate	38
		9.3. Verification of feasibility – evaluation checklist	39
		9.4. Common shortcomings	40
		<b>10. ICS Step II – Defining Internal Quality Expectation and Setting Standards</b>	<b>42</b>
		10.1. Objective	42
		10.2. Principles of internal standards and what to implement	42
		10.3. Monitoring implementation	43
		10.4. Verification of implementation – compliance checklist	43
		10.5. Common shortcomings	43
		<b>11. ICS Step III – Selecting and Managing ICS Staff</b>	<b>44</b>

11.1. Objective	44
11.2. Principles of selecting and managing ICS staff and what to implement	44
11.3. Monitoring implementation	45
11.4. Verification of implementation – compliance checklist	45
11.5. Common shortcomings	45
<b>12. ICS Step IV – Developing and Managing ICS Documentation</b>	<b>46</b>
12.1. Objective	46
12.2. Principles of ICS documentation and what to implement	46
12.3. Monitoring implementation	47
12.4. Verification of implementation – compliance checklist	48
12.5. Common shortcomings	48
<b>13. ICS Step V – Assessing the Risks</b>	<b>50</b>
13.1. Objective	50
13.2. Principles of risk assessment and what to implement	50
13.3. Monitoring implementation	50
13.4. Verification of implementation – compliance checklist	51
13.5. Common shortcomings	51
<b>14. ICS Step VI – Setting up Internal Inspections</b>	<b>52</b>
14.1. Objective	52
14.2. Principles of internal inspections and what to implement	52
14.3. Monitoring implementation	53
14.4. Verification of implementation – compliance checklist	53
14.5. Common shortcomings	53
<b>15. ICS Step VII – Setting up a Registration and Approval System</b>	<b>54</b>
15.1. Objective	54
15.2. Principles of farmer registration and approval and what to implement	54
15.3. Monitoring implementation	55
15.4. Verification of implementation – compliance checklist	55
15.5. Common shortcomings	56
<b>16. ICS Step VIII – Preparing for External Inspections</b>	<b>58</b>
16.1. Objective	58
16.2. Principles of external inspections and what to implement	58
16.3. Common shortcomings	58

## Glossary.

<b>AFL</b>	Approved Farmers List
<b>GAP</b>	Good Aquaculture Practices
<b>Group</b>	All units controlled by the ICS
<b>Group member</b>	Approved member of the ICS group, part of the cooperative
<b>ICS</b>	Internal Control System
<b>ICS body</b>	The central unit implementing the ICS
<b>PL</b>	Post larvae
<b>Unit of certification</b>	The scope, the sum of all units involved in certification
<b>Units</b>	Hatcheries, group members, ICS body, processors, traders etc.

# I Setting up Good Aquaculture Practices.

## 1. GAP Step I – Site Selection.



Know the farming area



Monitor the environment



Evaluate water quality

### 1.1. Objective

Aquaculture farms should be set up in an appropriate environment. On the one hand, an appropriate environment has the carrying capacity to absorb any impacts from the farm. On the other hand, the environment should offer appropriate conditions for shrimp farming. Appropriate conditions support a sustainable and efficient running of the farm.

### 1.2. Principles of site selection and what to implement

Appropriate carrying capacity of environment

- Carry out an environmental impact assessment to verify the carrying capacity of the environment (e.g. nutrient loading, water abstraction/discharge and loss of wetland to the natural ecosystem).
- Identify the best location for the farm.
- Set up a monitoring system in order to track any changes in environmental indicators over time.
- Set up a list of alert values. When monitoring indicates that alert levels have been reached, corrective measures in farm management must be made.

### Appropriate environmental conditions for farming

- Verify adequate water quality/exchange and the correct species specific chemical composition of the water (e.g. salinity, pH)
- Verify adequate chemical composition of the sediments (e.g. pH).
- Verify the absence of chronic disease or contamination from neighbouring industry/farm/agglomeration.

- Verify that there is no high predator prevalence (especially cormorants).



Evaluate predator problems

### 1.3. Monitoring implementation

- Continually record environmental indicators for any signs of deterioration.
- Continually record chemical composition of water and sediments in the farm.
- Continually record the use of inputs.
- Continually monitor the health of the shrimp.

### 1.4. Verification of implementation – compliance checklist

	please tick	
Medication is used during the same period every year	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Environmental conditions are deteriorating (e.g. salinization, eutrophication).	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Reduced survival rate due to water or sediment quality. (e.g. oxygen depletion, low pH)	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Shrimp analyses show high levels of e.g. heavy metals, fertilizers.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with “yes”, further training is required.

### 1.5. Common shortcomings

- Farms sited in bad locations require chronic compensation for inadequate environmental conditions, such as the use of medication, artificial oxygenation and water treatment.

## 2. GAP Step II – Farm Input Management.

### 2.1. Objective

There is a mechanism in place assuring adherence to the company decision, what quality and what type of inputs are to be used.



Make a list of approved inputs



Assure correct use of inputs



Keep original labels



Use sustainable inputs

### 2.2. Principles of farm input management and what to implement

- Create a list of inputs which have been approved for use on the farm. For each input, ensure the legal status in country of use, as well as the legal status in the country of sales (e.g. antibiotics). Inputs include everything that is brought in from the outside and is used on the farm, such as larvae, feed, fertilizers, medicines, disinfectants, machinery/equipment, containers etc.
- Define a responsible staff for the approval and management of inputs.
- The quality of inputs must be known. Where no trustworthy confirmation or certification is available, visit the production of the input (e.g. hatchery) and verify the quality and production procedures before buying.
- When receiving goods, record the quality/condition of the input. Keep a stock record.
- Keep sample labels.
- Assure correct use of the input, according to label instruction or according to vet prescription.
- Keep a record of all goods coming in and going out (buying and sales data).
- Continually check for the availability of improved or new products on the market (more sustainable products of better quality). When new products are used, update the approved input list accordingly.

### 2.3. Monitoring implementation

- Record all goods entering the farm.
- For each input, record the reason, date, and quantity used.
- Arrange for spot checks in all stores and in buying records and compare with approved input lists and stock records.

### 2.4. Verification of implementation – compliance checklist

	please tick	
Inputs stored on site are different from the inputs listed in the stock record.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Inputs listed in the stock record are different from the inputs listed in the company's approved list.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
For some inputs used, a sample label or specification of the input is missing.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The last update of the approved input list is more than 2 years old.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
There have been occasions where the sales of shrimp have been blocked based on the outcome of analysis reports.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with "yes", further training is required.

### 2.5. Common shortcomings

- In emergency situations or when the responsible staff is absent, non-approved inputs are used. This can have an effect on sales opportunities (e.g. antibiotics) or product quality (e.g. low protein feed). The use of non-approved lower quality but cheaper inputs (e.g. PL) can have a major impact on shrimp development, farm efficiency and product quality (resistance to disease, low survival rate, slow growth etc).

## 3. GAP Step III – Farm Management I.

### 3.1. Objective

The implementation of good site management, water management and conservation of the environment will improve farm efficiency, reduce the impact on the environment and increase the sustainability of the system.

### 3.2. Principles of good farm management and what to implement

#### General site management



Reduce risk of contamination

- Where there is a risk, put up a gate at the entrance and fences around your farm to reduce potential contamination or damage.
- Any fencing must not conflict with other stakeholders. Identify all stakeholders and evaluate any potential points of conflict.
- Ask visitors to register in the visitors' book and ask about any visits to other farms over the past 48 hours.

#### Water management



Take water samples

- Only use as much groundwater as will not lead to the lowering of ground water levels. Where possible, make a rainwater store.
- Don't discharge saline water into fresh water systems. Assure saline pond water can not infiltrate into soil/groundwater.
- Always keep effluent volume and loading below the assimilative capacity of the environment (see part II, ICS Step I – site selection).
- Regularly take water samples and compare with limit values given in the internal standard (see part II, ICS Step II – Defining Internal Quality Expectation and Setting Standards).
- Allow for natural cleaners e.g. birds to pick dead shrimp off surface.
- If feed is used, build a sedimentation pond and allow the water to remain there for several hours/days.



Allow for natural "cleaners"

#### Wildlife and conservation

- Set up screens of filters to prevent escapes.
- Prevent the entrance of predators rather than harming/killing them.
- Don't use any equipment (e.g. nets) or procedures (e.g. use of lead shot) that may affect protected species in the area.
- Green and repair dykes to keep erosion low.
- Use salt- or nutrient-laden sediments to repair dykes or use in vegetable gardens, but don't dump in the environment.
- Where possible, convert unproductive sites to conservation areas to encourage the biodiversity of natural flora and fauna.
- Prevent the attraction of pests by sticking to the good management practices described under "general site management", "waste management", "wildlife and conservation", "health and hygiene", "feeding" and "stores & warehouses".
- Implement measures to prevent the attraction and establishment of pest populations:
  - No littering of site
  - No open or broken feed bags
  - Feed kept off floor
  - Closed and sealed stores
  - Remove carcasses
  - Treat domestic sewage
- Eradicate any pests immediately by using e.g. baited traps and insect controls.



Protect endangered species



Protect sensitive ecosystems



Reduce pond bank erosion



Don't use lead shot

### 3.3. Monitoring implementation

- Monitor the number and frequency of non-approved visitors to the farm.
- Regularly check the visitors' book and verify if visitors have come from a farm exposed to disease.
- Monitor ground water levels regularly.
- Monitor for salinization of soils/water by evaluating changes in surrounding vegetation/farming.
- Monitor reports of average effluent loading and any fluctuations thereof.



## 4. GAP Step IV – Farm Management II.

### 4.1. Objective

The implementation of good storage procedures, waste management and equipment maintenance will improve farm efficiency, reduce the impact on the environment and increase the sustainability of the system.



Keep feed stored separately



Keep stores tidy and clean



Contain liquid toxic chemicals



Keep your farm clean

### 4.2. Principles of good farm management and what to implement

#### Stores & warehouses (if applicable)

- Only products approved for use according to the internal standard are stored (see part II, ICS Step II).
- Store feed, chemicals and equipment/machines separately.
- Keep all stores clean and tidy.
- Restrict access to chemical store. Choose a secure location and keep chemical store locked (the key is kept by a qualified worker).
- Organise the chemical store to contain/be
  - well-ventilated, doors sealed
  - bounded to contain liquid spillage
  - liquids stored below powders etc.
- Always store and apply chemicals according to label instruction.

#### Waste management

- Actively dispose of waste, don't leave it lying around the farm site.
- Where possible, recycle your waste. Compost, dispose of or incinerate biological waste if reuse is not possible.
- Any waste with a potential toxicity, have disposed of by the competent authority or a subcontracted specialist.

- Dispose of all waste according to label instruction. Also dispose of empty containers containing toxic residues according to label instruction.
- Order precise quantities of chemicals and drugs and only for a specific reason (there should be no leftovers e.g. medicated feed).



Keep your farm tidy

#### Equipment and machinery

- Place warning signs, emergency contacts and procedures wherever there is a risk (e.g. machinery, chemical store)
- Keep machinery (including e.g. screens and filters, predator nets) in good working order. Carry out regular maintenance.
- Keep any machinery (e.g. pumps) containing oils/fuels above high water mark.
- Keep all equipment used for harvesting/shrimp transport clean.



Show emergency procedures



Keep equipment functional

### 4.3. Monitoring implementation

- Spot check: stores are tidy, clean, no smell, and all inputs are approved.
- Spot check: no litter lying around farm.
- Spot check: all equipment seems in good working order.
- Spot check: ask staff to explain risks and what to do in the case of an emergency.



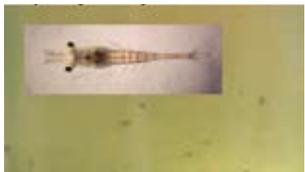
## 5. GAP Step V – Farm Management III.

### 5.1. Objective

The implementation of good farming practices will improve farm efficiency, reduce the impact on the environment and increase the sustainability of the system.



Repair your dykes



Use high quality PL



Dry your pond well



Maintain good water quality

### 5.2. Principles of good farm management and what to implement

#### Pond preparation and shrimp stocking

- If there is a lot of organic matter (feeding), if medication has been used in the previous cycle or if there has been any disease, remove the sludge sediments.
- Allow your pond to fully dry and to disinfect at least once a year.
- Depending on the soils, use stone meals to control pH.
- Depending on the internal standard, apply probiotics.
- Repair any broken dykes and restore any greening/ planting of the dykes.
- Allow for the water chemistry and any algal blooms to stabilise before stocking PL (post larvae).
- If possible, use a nursery or precondition the PL prior to stocking.
- Do not overstock but use quality PL.

#### Growth and performance

- In order to have good growth and performance maintain good water quality.
- Regularly measure at least 4 of the following parameters if feed is used, if the colour of the water changes or if shrimp are showing signs of stress: temperature, pH, oxygen, BOD, nitrogen, total suspended solids.
- If water quality seems bad, reduce feeding, use mechanical oxygenation, exchange water or use approved inputs according to the internal standard (e.g. probiotics, lime).

- Regularly monitor birds or water surface for signs of dead shrimp.
- Regularly inspect individual shrimp for size and any signs of stress.

#### Feeding (if applicable)

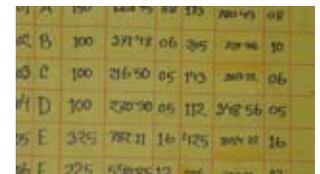
- Use quality feed. Know the ingredients and compare with the internal standard for quality expectations (see ICS Step II).
- Apply the feed over time, spread out as far over the pond as possible and begin early in the morning.
- Always feed according to feed plan, monitor any excess feed and revise feeding plan accordingly.
- Store your feed in such a way that high quality is maintained: store your feed in sealed bags/containers, dry, clean, away from pests (off floor on pallets) and use within “use-by date”.
- Keep records of feed bought and feed used.

#### Health and hygiene

- Remove dead animals. Also remove diseased animals unlikely to recover.
- Keep your facilities, machines and equipment clean.
- If there is a risk for, or in the case of disease
  - restrict entry to farm
  - do not move shrimp from one pond to the other
  - use hand wash and shoe disinfection
- Avoid stress to shrimp:
  - maintain good water quality
  - maintain stocking densities low
  - avoid abrupt changes in e.g. salinity, temperature
- Only use treatments according to the internal standard.



Inspect your shrimp regularly



Use a feeding plan



Monitor excess feed



Remove carcasses



Take precautions not to transfer disease



Organise your documentation according to the ICS rules

#### Documentation

- Organise your documentation according to the ICS requirements.
- In general, keep records of all inputs used (see GAP Step II) and all sales data. These records consist of original delivery sheets, invoices, receipts and, for example, handwritten feeding plans.
- Refer to the respective chapter in this manual for further documentation requirements.

#### 5.3. Monitoring implementation

- Spot check: verify that all dykes have been repaired prior to the stocking of ponds.
- Review documented water parameters and compare them with the internal standard. Compare parameters with any negative incident such as disease or low survival rates.
- Review documented inputs and harvests, and estimate and compare survival rates after initial stocking and throughout grow-out.
- Spot check: review state of feed store and verify approval of all feed.
- Spot assessment: review feed records and cross check with receipts, feeding plan, estimated biomass increase and final sales.

#### 5.4. Verification of implementation – compliance checklist

	please tick	
Sludge is sometimes left in ponds (e.g. insufficient manpower).	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Since the season is short, ponds remain wet until restocking.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Water parameters are outside of the limits set in the internal standard.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Since the season is short, PL are stocked directly into the ponds without a nursery stage and without waiting for the water/algae to stabilise.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
High mortality rates directly after stocking and/or throughout growth cycle.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
A feed plan exists but as this was not designed for the company, other methods are followed.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The feed used is cheap and species unspecific.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Disease problems chronically reoccur.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Carcasses are left to decay.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Health status of shrimp during grow-out are unknown to the farmer.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
PL and/or feed are bought without receipts being issued.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with “yes”, further training is required.



## 6. GAP Step VI – Harvesting and Post-harvest Handling.

### 6.1. Objective

Having good harvesting and post-harvest handling procedures is crucial in terms of product quality. Well managed harvesting and transport will maintain the high quality of the product up to the arrival at the processing unit, where further quality measures are required.



Harvest early in the morning



Check your harvest



Make shrimp to ice ratio 1:1

### 6.2. Principles of harvesting, post-harvest handling and what to implement

#### Harvesting

- Sufficient people are on site for the estimated harvest quantity. Transport containers, icing and transport have been arranged in advance.
- Primary and secondary netting and/or water channel containment should be arranged in a way to minimize the number of lost shrimp.
- Weigh your shrimp after harvest if necessary. Check the size and quality of your shrimp during harvest. Note quantities in your farm diary.

#### Icing

- Sufficient ice must be on site prior to harvesting and shrimp are iced immediately after harvest.
- Water used for the ice making is of drinking water quality. This is analyzed regularly.
- Shrimp to ice ratio is 1:1. In order to maintain low temperatures, shrimp must be mixed in with the ice and any excess water allowed to drain.

### Transport and processing

- During transport, temperatures must remain low. This must be measured and recorded.
- Harvest bins should be lidded, have some insulating capacity and be of food grade quality. They must always be clean (no re-use of plastic containers which may contain chemicals, oils or other residues).
- Products must be processed according to the client specific product specification, according to local regulation in the country of production as well as according to local regulation in the country of import.
- For further guidance on seafood processing hygiene, consult Huss, H., Dillon, M. and Derrick, S. (2005). A Guide to Seafood Hygiene management, Accessing the European and American Market. SIPPO/Eurofish, Switzerland/Denmark. <http://www.sippo.ch/internet/osec/en/home/import/publications/food.html>



Keep temperatures low



For each client, make a product specification

### 6.3. Monitoring implementation

- Periodically review the documentation of incoming shrimp at the processing unit:
  - temperatures
  - colour, smell, taste, damage
  - icing ratio
  - any deviation from the quality standard set for transport containers.



## 7. GAP Step VII – Traceability.

### 7.1. Objective

For the unlikely case that shrimp have to be withdrawn from the market for health reasons, every company product must be traceable from the market back through processing to the farm of origin.



Keep your shrimp traceable from the farm to the final consumer



Health scare: trace your shrimp

### 7.2. Principles of traceability and what to implement

Implement traceability

- Organise farms into groups according to the ICS buying procedure.
- Every harvest from every farm group receives a lot number.
- If several lots are pooled during packaging/processing, a new lot number is given, which can be linked to the lot number of harvest.
- If quantities are large, make separate lot numbers from the harvest lot number for each production line (e.g. head-on, butterfly).
- Every shrimp must be identifiable at all times
  - directly by batch/lot number through labelling (at the farm level: pond number marked on map) as well as
  - indirectly in the product documentation (e.g. harvest sheets, processing and sales documentation)

### 7.3. Monitoring implementation

- Regularly carry out a mock recall test.

### 7.4. Verification of implementation – compliance checklist

please tick

The harvests of several farm groups receive the same lot number on the same day.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
At processing a different lot system is used, which is not linked to the farm group lot number system.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The lot number is only used internally (not marked on labels or product accompanying documentation).	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The mock recall test takes several days to complete.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with "yes", further training is required.

### 7.5. Common shortcomings

- Several batches are pooled during packaging or processing and no new lot number is assigned and/or no link available to the originally pooled batches.
- Not all documentation can be linked by a third party without internal knowledge to the actual products.
- The mock recall test is not carried out in both directions: The test product can be traced backwards to the farm; however, the rest of the batch this test product originated from can not be traced forwards to the end client/consumer.

Notes

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## 8. GAP Step VIII – Workers’ Safety and Welfare.

### 8.1. Objective

To ensure the farm fulfils its social responsibility and can keep good staff.



Provide protective clothing



Control child labour



Allow unions



Pay salaries on time

### 8.2. Principles of workers’ welfare and what to implement

#### Health and safety

- Protective clothing: Workers are provided with adequate protective clothing for hazardous operations.
- Safety equipment: Dangerous places should be indicated by a warning sign.
- First aid kit should be available in case of sickness or injury.

#### Social responsibility

- Workers’ rights: Workers and the farm have signed a contract, describing rights and duties of both sides.
- Forced labour and corporal punishment is not allowed. Child labour is restricted to short times, simple and non-hazardous work and does not conflict with school and play required for the particular age.
- Workers can form a union and negotiate collectively. Regular meetings take place between the management and the workers to discuss employment conditions and training.
- No discrimination: Workers are not discriminated against based on gender, race, religion etc.
- Payment: Workers receive above minimum wage according to local regulation. Payment is carried out regularly and without conditions.
- Paid sick leave is granted. Medical insurance, maternity leave, retirement etc. are covered.

### Training

- Workers should be trained in safety and basic first aid procedures. Certificates should be given after training to prove completion.
- Workers should be trained regularly in the respective field of operation. Certificates should be given after training to prove completion.



Train your workers

### Facilities

- Living quarters on the farm are habitable and have basic facilities. Workers are free to choose their own accommodation.
- There are toilets, eating places and potable water on the farm.



living quarters with basic facilities

### 8.3. Monitoring implementation

- Monitor the number and type of incidences (injuries and other health problems) and evaluate whether the necessary precautions and treatment had been made.
- Periodically assess the motivation of all staff/workers.
- Periodically have a staff representative collect feedback from all staff/workers and assess the level of trust towards the management.
- Evaluate the frequency and reasons for staff leaving the company.



## II ICS in aquaculture farming.

### 9. ICS Step I – Starting up an ICS: Basic Conditions.

#### 9.1. Objective

An internal control system (ICS) is a documented quality assurance system which allows the external certification body to delegate the annual inspection of individual group members to an identified body/unit within the project. The ICS manages compliance with any standards and internal quality expectations by taking over some of the farmer's quality management responsibilities. Prior to starting up an ICS it must be evaluated whether the basic conditions are given to support the structure and functioning of an ICS.



Processors can set up ICS



Assure enough training funds



ICS manager is respected

#### 9.2. Principles of starting up an ICS and what to evaluate

Basic conditions for the structure of an ICS

- The group of farmers is capable of setting up an internal control system and organizing joint buying and marketing of its produce.
- A central body (e.g processor) is capable of contracting small farms and has the potential to organize all internal control procedures.
- There is potential to recruit staff with knowledge of the local language, customs and farming practices, who are computer literate, have organizational skills and have experience in project management.
- Funding is available to cover the training of farmers, ICS staff, to develop documentation as well as to organize logistics/transport.

Basic conditions for the functioning of an ICS

- A central body potentially responsible for ensuring the group's internal quality assurance is respected by all members.

- There is a basic trust amongst local people/farmers on which an ICS can be based.
- Farmers see a direct benefit in working as a group.
- The local area benefits from stable political, religious and social conditions.



Basic social trust in the group

#### 9.3. Verification of feasibility – evaluation checklist

please tick

There are regular disagreements amongst farmers (e.g. use of land, marketing)	<input type="checkbox"/> no	<input type="checkbox"/> yes*
There is a dependency of farmers to external organisations (e.g. farmers are indebted to PL/fertilizer suppliers or part of the harvest is the property of suppliers).	<input type="checkbox"/> no	<input type="checkbox"/> yes*
There are large differences in farm size/capacity/harvests amongst farmers.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
There is a tradition of strong hierarchy amongst group member farmers.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Group members are widely scattered amongst non-group members.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
For some members there is a disadvantage to be bound into a group structure and hence these members are de-motivated.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
For all coordination and management of the group only external staff can be employed.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Funding of ICS staff, setting up of documentation and a logistics system is not budgeted for.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
There is a history of bad relationship/cheating between farmers and buyers/processors.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with "yes", further training is required.



## 10. ICS Step II – Defining Internal Quality Expectation and Setting Standards.

### 10.1. Objective

The project manager shall evaluate the local situation as well as the market the shrimp are destined for, in order to find the most feasible and sensible quality standards. These quality expectations of the final product must be defined and converted back into internal regulation that all members can understand and adhere to.



Analyse the seafood market



Choose your standard



Know your rules

### 10.2. Principles of internal standards and what to implement

#### Defining quality expectations

- Analyse the local situation: traditional production methods and product outcome (e.g. typical size, colour, total quantity, harvest period).
- Analyse the target market: client product specification, quality expectations (certifications), export conditions, market demand etc.
- Select the standard based on the local situation and the situation found in the target market.

#### Developing the internal standard

- Interpret the chosen standard for the local situation: select requirements that are not already adhered to and summarise these in an internal standard.
- Present the internal standard in an adequate form: use a local language and style that all members can work with. Use illustrations where illiterate members are involved.

#### The contents of the internal standard

- Define the unit of certification (e.g. which ponds/species covered).

- Define production rules (see part I of this manual).
- Define post-harvest procedures (see part I of this manual).
- Train ICS staff and farmers on contents of internal standard.

### 10.3. Monitoring implementation

- Verify if farmers can identify with and implement correctly any changes in farming methods.
- Periodically test farmers and ICS staff for the understanding of the concept and contents of the internal standard.
- Compare product selection on the target market with own assortment.

### 10.4. Verification of implementation – compliance checklist

	please tick	
Traditional farming practices regularly lead to non-conformities with the internal standard.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Despite training, ICS staff and farmers fail tests on the contents of the internal standard.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Since it is quite complex, only ICS staff work with the standard.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The target market is asking for compliance with a different standard.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with “yes”, the internal standard needs revision or ICS staff and/or group member need further training.

### 10.5. Common shortcomings

- The internal standard is a complete copy of the external standard and not interpreted for local conditions.
- The internal standard is too complex, too extensive, or written in the wrong language/style in order for it to be practicable for the farmers.
- The internal standard is not updated according to the external standard.
- Farmers are not familiar with the contents of the internal standard.
- Updated versions of the external standards for the target market are not transferred to the internal standard and not implemented into traditional production methods.
- The project does not adjust product assortment according to the market demand.

## 11. ICS Step III – Selecting and Managing ICS Staff.

### 11.1. Objective

The project has to ensure that there are sufficient qualified personnel to implement and manage the ICS procedures. For each task, a responsible member of staff with the required education and experience needs to be assigned.



Define the responsibilities for all staff



An inspector can not inspect his close friends or family



Know your staff

### 11.2. Principles of selecting and managing ICS staff and what to implement

#### Selecting the right ICS staff

- ICS manager: coordination, supervision, external communication.
- Internal inspectors: setting conditions and judging correct implementation of standard and/or corrective measures, reporting, to approval personnel
- Approval personnel: approving/sanctioning/excluding farmers.
- Field advisors: training, consulting and supporting farmers in sustainable farming and record keeping.
- Buying personnel: verifying approved farmers, product quality, yield estimations and maintaining buying records.
- Evaluate and assure that there is no conflict of interest between the responsibilities of the staff and the staff's private interests. The biggest risks are with inspectors and buying personnel.

#### Managing ICS staff appropriately

- Develop and maintain an up-to-date organisational chart as well as a job description of the main function.
- Train your staff on first appointment and continually thereafter.

### 11.3. Monitoring implementation

- Verify that an update training of all staff has been carried out annually: qualified trainer, training programme, training attendance sheets, test/approval.
- For every new member of staff and new group of farmers, compare organisational chart with job descriptions. If there have been no changes, compare at least once a year.
- Collect feedback from farmers on ICS staff and evaluate any complaints, preferential treatment.

### 11.4. Verification of implementation – compliance checklist

	please tick	
Some farmers have not been visited by inspectors, field advisors.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The same staff advise as well as inspect farms.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Only some of the internal inspectors have had training.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Farmers have complained about unjust weighing or sales calculation.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with “yes”, the wrong staff has been selected or training has not been sufficient.

### 11.5. Common shortcomings

- Internal inspectors are not sufficiently trained for their task and advise the farmers instead of carrying out an objective verification of compliance.
- Insufficient internal inspectors appointed to cover 100% of the farmers prior to external inspection.
- Confusion of responsibilities (e.g. approval personnel and inspectors when deciding on corrective measures).
- Many tasks are assigned to one individual and conflicts of interest develop.
- Internal inspectors or buying personnel become open to corruption.

## 12. ICS Step IV – Developing and Managing ICS Documentation.

### 12.1. Objective

The ICS is a documented internal quality assurance system, which allows the external certification body to delegate the annual inspection of individual group members to an identified body within the project. In order to allow external verification of the internal control system, all procedures and policies must be documented.



Describe farming and control procedures in the ICS manual



Maintain an approved farmer's list

### 12.2. Principles of ICS documentation and what to implement

#### The ICS manual

- Make an overview of the project site including number of farms, typical size and production methods, buying and handling procedures etc.
- Review the manual on a regular basis to assure that it always reflects the actual situation of the project.
- Assure that the manual is always up-to-date and that (updated) parts are distributed to the respective parties (e.g. staff, farmers).

#### The AFL

- Organise the basic farmer data in the form of an AFL (approved farmers list). The AFL must contain as a minimum:
  - Farmer name, farmer identification code, farmer approval status
  - Sanction information (corrective measures, sanction time, reason)
  - Farm size, pond size, harvest previous year, harvest estimation current year
  - Inspection information (inspector, date etc)
  - Date of entry, date of last use of prohibited substances

### Other ICS documentation

- Create the following documents:
  - Contract
  - Field records
  - Farm entrance form
  - Farm inspection checklist, violation report
  - Maps
  - Risk assessment



If no official maps available, draw farm maps by hand



Keep documents controlled

### Managing ICS documentation

- Have good templates created for all ICS documentation.
- Evaluate the situation and decide which of the documents are kept by the farmers themselves and which are stored centrally at the ICS body.
- Keep all documentation for 3 years.
- Keep your documents under control: tidy, complete, up-to-date, valid, distribute correct version to responsible persons, verify that documents are signed if necessary.

### 12.3. Monitoring implementation

- Verify with the responsible staff if the contents of the ICS manual (theory) correspond with the actual situation on site (practice). This should be done every few months and special attention should be paid to new changes in the system.
- Systematically crosscheck and verify numbers of farmers (active, suspended), total pond area, total estimated harvest etc. in the AFL in order to find mistakes in the database. It is recommended for this to be carried out every few weeks.
- Include a point in the inspection checklist to verify records kept by farmers.
- Maintain a distribution list for all ICS documentation. When a new version is issued, ask for all responsible staff on the distribution list to sign for the receipt of the new version. Routinely crosscheck which versions are in circulation and in use.





## 14. ICS Step VI – Setting up Internal Inspections.

### 14.1. Objective

Internal inspections verify the implementation of the internal standard at the farm level.

### 14.2. Principles of internal inspections and what to implement



Train the inspectors



Interview farm manager and visit all ponds



Centrally control farm data

#### Preparation of inspections

- Organise sufficient inspectors to inspect 100% of all farms annually.
- Train the inspectors to be familiar with the standard, the farm documentation, the inspection checklist and prepare them for the particular farms to be inspected.
- Review reports from previous year's inspection and any sanctions of the farms to be inspected.

#### The role of the inspectors

- Interview the farmer about his knowledge of the standard and production procedures.
- Visit the fields and verify the implementation of information given in the documentation and received during the interview.
- Verify completeness and correctness of farm documentation.
- Complete inspection reports.

#### The role of the ICS manager

- Review reports for completeness, duration of inspection, validity of inspector (not consultant), identified non-conformities etc.
- Decide on any sanctions and inform farmer and ICS staff.

### 14.3. Monitoring implementation

- Spot assessment: review inspection reports for completeness, errors, logic etc.
- Spot assessment: review inspection reports for any peculiarities in an individual inspector. This can be for example for an inspector to have a tendency to be more severe than others, or for an inspector to have a tendency to give a certain non-conformity more frequently than others etc.
- Accompany inspections or have inspectors accompany each other.

### 14.4. Verification of implementation – compliance checklist

	please tick	
Some Inspectors continually report the same non-conformities.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
There are large differences in inspection time between different farms.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The farmer disagrees with the outcome of the inspection.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Since fields are scattered, the inspector only visits the farm house and some fields.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Inspection notes are difficult to read.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with "yes", further training is required.

### 14.5. Common shortcomings

- Inspectors are not sufficiently familiar with inspection reports.
- Inspections are carried without sufficient preparation and previous non-conformities/sanctions are missed.
- Different inspectors interpret non-conformities in different ways as there is no continual discussion/training on the outcome of inspections.
- ICS manager does not have time to review the inspection reports.

## 15. ICS Step VII – Setting up a Registration and Approval System.

### 15.1. Objective

A clear registration and approval system for new and existing farmers and keeping this information well recorded in the AFL will provide a good control tool for the project. With a clear picture on which products are approved for sale, the quality of the project and its products can be controlled.

### 15.2. Principles of farmer registration and approval and what to implement



Record basic farm data



Sign contracts with farmers



Keep files on all farms

#### Initial farm registration

- Visit all selected farmers
- Visit all fields of selected farmers
- Complete farm entrance form and obtain/draw map

#### Initial farm approval

- ICS manager screens farm entrance forms
- ICS manager assigns registration code to each farm
- ICS manager decides on approval status
- Enter approval status into AFL

#### Ongoing farm approval

- ICS manager reviews recommendation by internal inspector
- ICS manager reviews violation report submitted
- ICS manager decides on approval status
- Enter approval status into AFL and inform farmer

### Product approval

- Implement procedures outlined in the ICS manual guaranteeing that only products according to the AFL (origin and quantity) can be sold.
- Assure approved products can always be identified and always remain separate from unapproved products.



Assure your are handling only approved shrimp

### 15.3. Monitoring implementation

- Spot assessment: for all farms listed in the AFL, the ICS body holds all required documentation (e.g. farm entrance form, map), which is up-to-date, valid and complete.
- Spot assessment: the AFL is complete and corresponds with the information in the inspection reports (e.g. basic farm data, approval/conditions/sanctions).
- Spot assessment: for each internal inspection, there is an additional documented approval decision by the ICS manager.
- After every harvest, calculate the total product flow within the project and compare with harvest estimations and feasibility of production capacity.

### 15.4. Verification of implementation – compliance checklist

	please tick	
Registration visit and internal inspection have been carried out as one.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Farmers are approved in AFL although ICS body does not have all farm documentation.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Inspectors decide on farm approval/conditions/sanctions.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
Farmers are unaware of their approval status, why and for how long they are sanctioned.	<input type="checkbox"/> no	<input type="checkbox"/> yes*
The quantity of total harvests for the current year is above the sum of harvest estimations in the AFL or above the harvests from the previous year.	<input type="checkbox"/> no	<input type="checkbox"/> yes*

\* where checkpoints have been ticked with “yes”, further training is required.



## 16. ICS Step VIII – Preparing for External Inspections.

### 16.1. Objective

The external inspection verifies that the project's own internal control system is sufficient, implemented and functioning as described in the manual. For this, spot checks at the farm level as well as a detailed study of the ICS and its implementation and documentation is carried out. If the ICS can guarantee the quality required by the external standard, the project will be certified and can export the product with the respective label/claim.

### 16.2. Principles of external inspections and what to implement

Know your non-conformities



Explain your project



Maintain your certification

#### Preparing for external inspections

- Evaluate effectiveness and results of monitoring of implementation.
- Complete compliance checklists and verify implementation.
- Compare common shortcomings with implemented system.

#### During external inspections

- Have all responsible staff available on site.
- Assure access to all farms and documentation.
- Explain your internal standard, ICS and documentation.
- Explain any difficulties or non-conformities monitored.

#### After external inspections

- Implement corrective measures.
- Maintain monitoring of correct implementation throughout the year.
- Notify external inspection body of any changes or problems.

### 16.3. Common shortcomings

- Monitoring not carried out throughout the year.
- The project tries to hide monitored non-conformities rather than showing that monitoring is effective and corrective measures have been defined.
- Corrective measures not implemented throughout the year.

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