

CODE OF PRACTICE FOR THE SAFETY AND QUALITY ASSURANCE OF FRESH FISH IN THE ARTISANAL FISHERIES SUB SECTOR



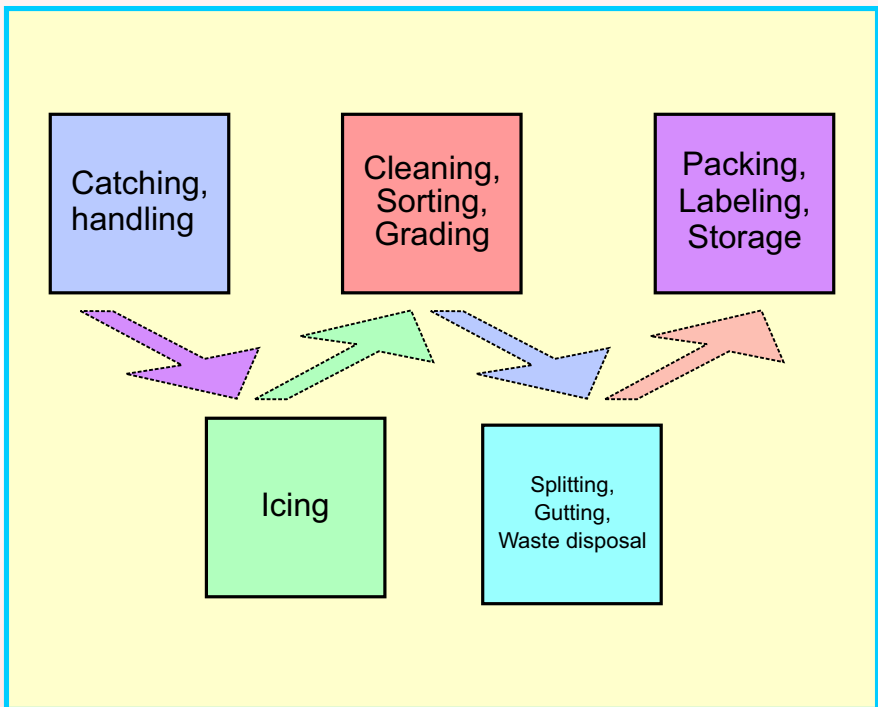
Ministry of Agriculture,
Animal Industry & Fisheries
Directorate of Fisheries Resources



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1.1 VALUE CHAIN FOR FRESH FISH



1.1.1 FISHING

1.1.1.1 Bad Practices

- a) Bruises from fishing methods
- b) Length of fishing trips (long distance/and or time)
- c) Lack of cooling facilities
- d) Poor hygiene of boat staff
- e) Poor sanitation and hygiene of boats
- f) Poor storage and handling practices on board (oils, packaging materials, diesel)
- g) Unavailability of clean water (potable fresh water)
- h) Poor fish handling and processing practices on board



1.1.1.2 Good Practices

- a) Keep the fishing gear (nets or line) in water for short periods of time
- b) Individual fish should be handled with care on the boat
- c) Keep the fishing trips short (less than 4 hours, especially if on-board preservation is lacking)
- d) Use ice for preservation in case of delays
- e) Do not fish when it is very hot
- f) Catch enough fish that the labour on the boat can handle
- g) Fish at night when it is cooler
- h) Ensure that any fuel containers on board are properly corked and secured away from the gear and fish



1.1.2 HANDLING ON BOAT

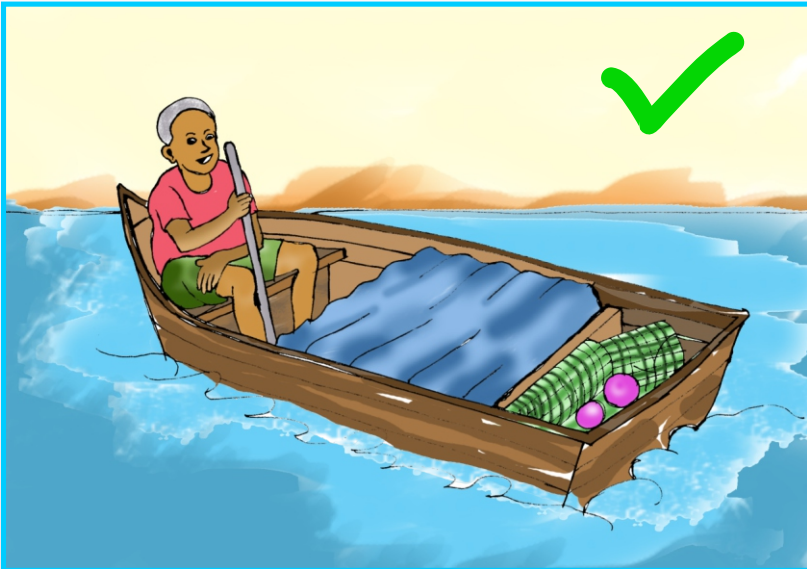
1.1.2.1 Bad Practices

- a) Distant fishing grounds
- b) Unhygienic or uncleanable boat surfaces
- c) Poor hygiene of collection containers
- d) Potential contamination of fish with oils and fuel on board
- e) Poor hygiene of the fishers



1.1.2.2 Good Practices

- a) Keep the fish in clean covered boxes where they will not be trampled on
- b) Use enough people on the boat to allow handling of the fish carefully and quickly
- c) Fishers should ensure the product is not damaged or contaminated through good handling techniques like the use of containers (fish boxes) with ice on board the fishing boats and trucks to distribution points.
- d) Rejected fish at landing sites should not be thrown around as this deteriorates its condition.



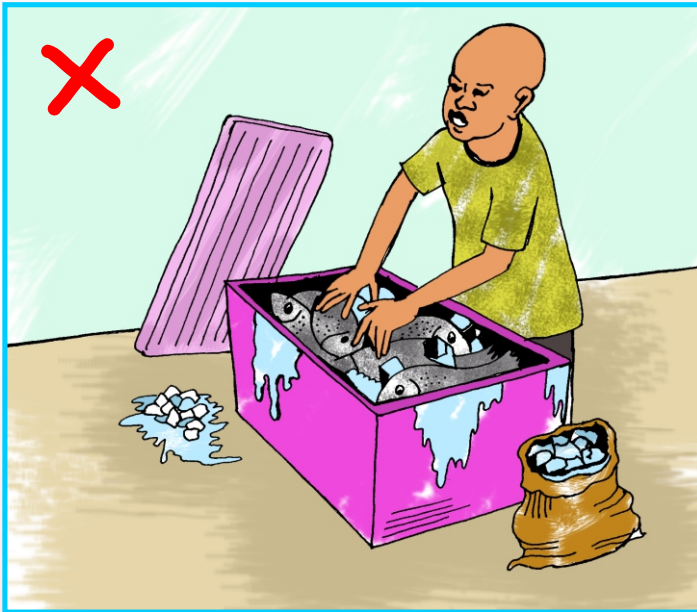
- e) Fish should not be exposed to air and direct sunlight or placed on metal surfaces which easily get hot and transfer heat to the fish products, leading to spoilage.
- f) Fish being transported should not be covered with canvas which traps heat and causes spoilage

- g) Any part of the boat which comes into contact with the fish should be thoroughly washed after each catch and/or at the end of the fishing trip.
- h) Any boxes used for the quick unloading of fish into shaded/chilled storage to avoid long periods in direct sunlight, should be cleaned every time they are used
- i) Chlorinated water should be used whenever possible for every washing operation
- j) Do not put fish on the ground; however, simple concrete/wooden benches if frequently cleaned will reduce contamination.

1.1.3 ICE FOR PRESERVATION

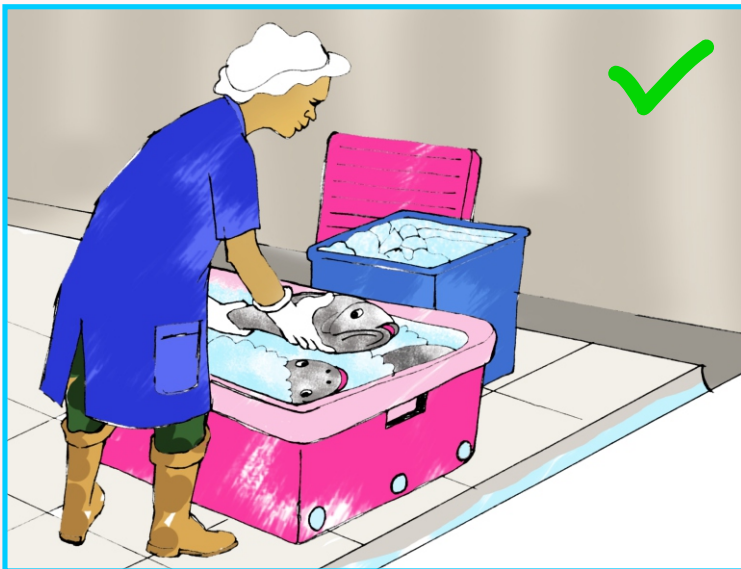
1.1.3.1 Bad Practices

- a) Use of contaminated ice
- b) Use of insufficient ice
- c) Use of improper icing procedures
- d) Use of incorrect or inappropriate size of ice particles



1.1.3.2 Good Practices

- a) Cooling fish slows down the rate of spoilage. Cool the fish as quickly as possible and soon after catching.
- b) Ensure the fish is kept cool by using ice, chilled vehicles and during storage. Cool all the surface of the fish
- c) Store fish immediately after capture in an insulated box which stops ice from melting quickly.
- d) Use 1 kg of ice for each kg of fish for effective cooling provided you are using an insulated box.



- e) Boxes for storage should be strong and robust, able to be stacked so that the weight of the top box is taken by the boxes below and not by the fish, easy to clean, should allow ice melt water to flow away outside the box below, rather than through it and on the fish in the lower box.
- f) Plastic or aluminum boxes are preferred to wooden boxes which are difficult to clean and do not last long

- g) Fish boxes should be used in the following way. A layer of ice 5cm thick should be placed in the bottom of the box, followed by a layer of fish. A thin layer of fish is added, interlacing the fish and ice, until the box is almost full. Ice should be placed around the sides of the box as well as between the fish, and the top layer of fish should be covered with at least 5cm of ice. The box must not be over filled; this prevents the fish from being crushed, when the boxes are stacked. The fish and ice should be mixed so that there is ice at the top, bottom and middle of the box
- h) The box must not be overloaded, or boxes stacked on top may crush the fish underneath
- i) The ice (if it is crushed block-ice) must be in small pieces so that it cannot damage the fish
- j) The box must have drainage holes to prevent ice melt-water from collecting in the bottom and becoming a fish protein and bacteria “soup” which accelerates spoilage.
- k) Boxes used for iced fish should either be insulated or held in insulated or refrigerated containers for storage.
- l) If boxes are to be stacked on top of one another, the boxes underneath must support the boxes on top; the top boxes must not rest on the fish underneath
- m) The insulated boxes should be large enough for the fish to fit without being bent or hanging over the side, small enough to easily be lifted when full, easy to clean and must have a drainage hole for melt water.
- n) When icing the fish, the ice should be well mixed. Small pieces of ice are the best; if large lumps are used usually the ice is not mixed well with the fish
- o) Large pieces of ice will leave larger air gaps between the fish and the ice, and these gaps will act as insulation, keeping the fish warm.
- p) Keep apart fish which have been caught at different times and are at different stage.
- q) Keep small fish which tend to spoil more rapidly separate from larger fish

- r) In cases where fish on landing is to be salted or dried and the fishing trip is short, there is no need to use ice because of the cost implications. Spoilage can be reduced by adding 10% salt i.e. 1 kg salt to 10kg fish in clean boxes and store in a shade; this reduces spoilage for 10-15 hours.
- s) When there is no ice cool, shade, salt and/or gut the fish to maintain quality. Store fish in the shade or cover with clean damp sacks (evaporation of water will help cool the fish).
- t) In the case of gutted fish, wash out the body cavity and remove all traces of the gut
- u) Ice should not be reused - especially if it has been stained with rotted fish

1.1.4 CLEANING

1.1.4.1 Bad Practices

- a) Poor sanitation and hygiene of cleaning surface and equipment
- b) Dirty water used in cleaning



1.1.4.2 Good Practices

- a) Use clean potable water (clean drinking quality water)
- b) Do not use dirty water or re-use the same water a number of times as bacteria will be left on the fish
- c) Keep the washed fish in a clean box
- d) Cleaning should be by dripping not dipping to avoid re-use of water



1.1.5 SORTING AND GRADING

1.1.5.1 Bad Practices

- a) Poor workers' hygiene
- b) Poor hygiene of equipment used



1.1.5.2 Good Practices

- a) Fish needs to be sorted out in sizes and types to ease selling
- b) Fish need to be graded in accordance to quality and processed accordingly i.e.
 - good quality fish sold fresh,
 - average quality salted, dried or smoked; and
 - low quality, trashed or chicken feed
- c) Use ice or keep the fish cool all the time and separate in the shade



- d) Work as quickly as possible
- e) Use clean baskets or boxes to carry fish
- f) Re-pack sorted/graded fish with fresh ice
- g) Do not throw or stand on the fish

1.1.6 PRIMARY PROCESSING - SPLITTING, GUTTING

1.1.6.1 Bad Practices

- a) Poor hygiene of work surfaces and equipment
- b) Poor hygiene of workers
- c) Poor sanitation of working environment



1.1.6.2 Good Practices

- a) Use sharp knives and a firm cutting surface.
- b) Knives for filleting fish are thin and flexible, while those for splitting fish are short with heavy blades.
- c) Cutting boards used should not be wooden because they are difficult to clean nor stainless steel that allow the fish to slip easily; but plastic which is both easy to clean and does not allow fish to slip.
- d) Equipment used must be smooth and easy to clean e.g. tables with stainless steel tops or plastic working surface are recommended. Wood is not so good because it holds bacteria and dirt.
- e) The boxes for storage should either be plastic, stainless steel, aluminum or non-porous cement.
- f) The processing area and equipment used must be cleaned at regular intervals with food grade detergent



1.1.7 WASTE DISPOSAL

1.1.7.1 Bad Practices

- a) Poor methods of waste disposal
- b) Failure to quickly dispose of the waste as it is generated leading to insect infestation



1.1.7.2 Good Practices

Waste should be disposed of and rubbish must never be left on the ground or near the handling area as it encourages rats, flies and other vermin in the area



I.1.8 PACKAGING

I.1.8.1 Bad Practices

- a) Use of inappropriate packaging material
- b) Poor hygiene conditions of packing environment and packers
- c) Poor hygiene of packaging materials



1.1.8.2 Good Practices

To maintain the fish quality after processing or preservation, packaging of bulk, wholesale and retail packaging should be done carefully using:

- a) Insulated boxes with ice or plastic ones (best for fresh fish)
- b) Polythene used for lining of the boxes in the packing of dried fish should not have water to cause mould growth.
- c) Sacks or baskets which are cheaper must be used when fish is to be sold quickly
- d) Avoid condensation of water on the surface of the smoked product; leading to a dilution of the preservatives deposited by the smoking process.
- e) Packaging material should be clean, durable, and sufficient for its intended use and of food grade material.



- f) In traditional packaging, clean containers such as round baskets made from natural plant fibres, wooden boxes and metal bowls can be used for fresh fish, but for dried, fish cardboard boxes can be used

1.1.9 LABELLING

1.1.9.1 Bad Practices

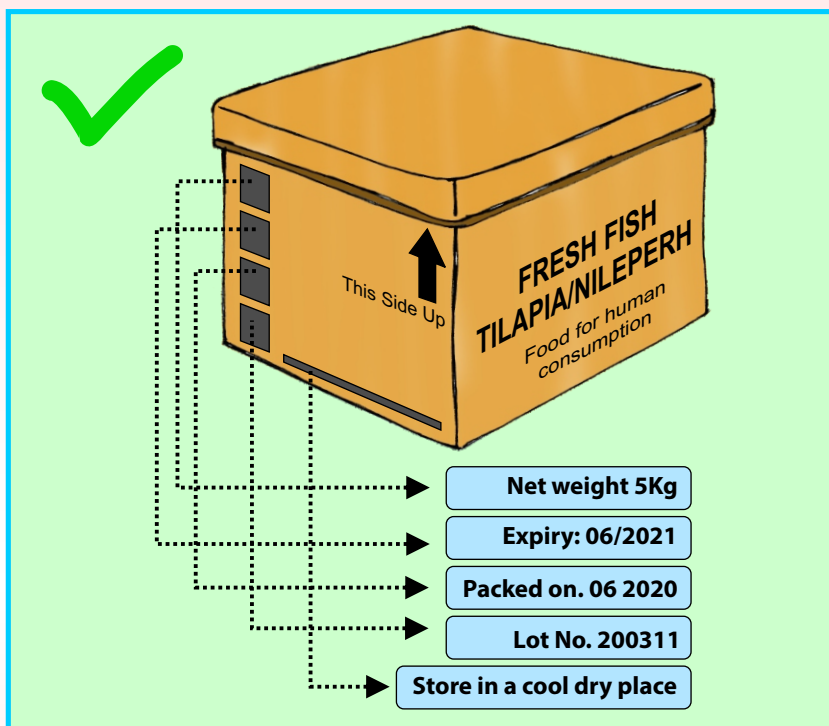
- a) Unlabelled product confuses the buyer and may cause mistaken identity.



1.1.9.2 Good Practices

Labelling for export should include the following

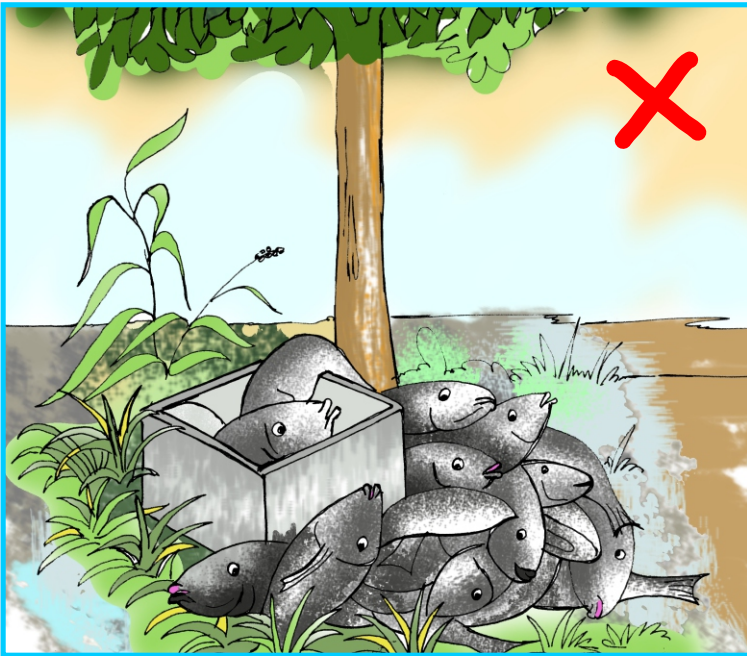
- a) The name of the product: This should be accompanied by particulars of the physical condition of the foodstuff or the treatment it has undergone e.g frozen, dried or smoked
- b) Ingredients list. An ingredient is defined as a substance including additives used in the manufacture of a foodstuff and still present in the finished product even in an altered form. Ingredients must be listed by the weight recorded at the time of their use in descending order.
- c) Net quantity; Expressed in grams or kilograms
- d) Minimum durability date: This is the date up to which the product retains its specific properties when properly stored. The date should be preceded by 'Best before.....' or Best before end.....'. For highly perishable products e.g. chilled fresh fish which after a short time are likely to constitute an immediate danger to health, the date of minimum durability should be replaced by the 'Use by.....'date.
- e) Name and address of the manufacturer or packer should be displayed
- f) Place of origin: Particulars of the place of origin should also be given
- g) Instructions for use: These should be displayed where appropriate



I.1.10 STORAGE

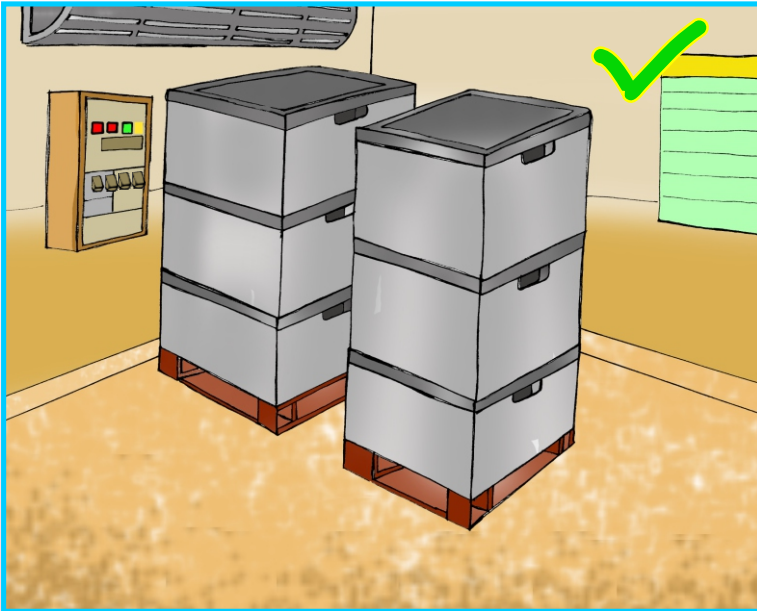
I.1.10.1 Bad Practices

- (a) Poor storage structures and storage management practices



1.1.10.2 Good Practices

- a) Stores for fresh fish should be shaded, aerated and easily cleaned
- b) A store for processed fish should have:
 - Freezing facility
 - Good ventilation
 - Brick walls
 - Corrugated iron sheets or tiles
 - Lockable doors
 - No access to animals.
 - Wooden platforms inside to store fish off the floor
- c) There should be records of the processing date and type of fish
- d) Sell the fish processed earliest first and do not keep it at the back of the store (stock rotation)
- e) Monitor storage conditions
- f) Keep store clean and tidy





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Prepared with assistance from the
Commonwealth Standards Network, a programme sponsored by the
UK's Foreign, Commonwealth and Development Office (FCDO).