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## DRAFT ZANZIBAR STANDARD

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### Code of Good Aquaculture Practices (GAqP) for Seaweed

DRAFT FOR STAKEHOLDERS COMMENT

ZANZIBAR BUREAU OF STANDARDS

## Foreword

This draft Zanzibar National Standard has been developed Fish and fisheries, meat, poultry and their products Standard Technical committee (TCFA6). In accordance with ZBS general procedures, this draft standard is presented to the public in order to receive any technical and editorial comment concerns.

The Zanzibar Bureau of Standard (ZBS) was established under Standard Act No. 1 of 2011.

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## Code of Good Aquaculture Practices (GAqP) for Seaweed

### 1 Scope

This Code of good aquaculture practices specifies the general guidelines for practices and hygienic requirements of seaweed production and handling.

### 2 Normative references

The following referenced documents are indispensable for the application of this Zanzibar National Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies;

### 3 Terms and definitions

For the purposes of this Standard, the following (terms and) definitions shall apply.

#### 3.1

##### **Aquaculture**

The farming, during part or the whole of their life cycle, of any aquatic animals and plants in confined water, intended for human consumption

#### 3.2

##### **seaweed**

cluster of macroscopic, multicellular, benthic marine algae; includes some members of the red, brown and green algae

#### 3.3

##### **contaminants**

any biological or chemical agent, foreign matter, or other substances not intentionally added to seaweed which may compromise food safety and suitability

#### 3.4

##### **impurities/debris**

other type of seaweed, plastic, wood, shells, dirt and other foreign matters other than sand and salt.

#### 3.5

##### **adulteration**

addition of any other substances to seaweed in order to increase the quantity, in raw form or prepared form, which results in the loss of actual quality of seaweed

#### 3.6

##### **food grade material**

material which shall safeguard the hygienic, safety, nutritional, technological, and organoleptic qualities of the product

#### 3.7

##### **seaweed farm**

refers to an aquaculture production unit (either land- or water-based such as but not limited to brackish and marine waters; usually consisting of culture systems (on/off bottom, floating, long-line, raft ), holding facilities (tanks, pens, ponds, raceways, cages), structures (on-site farm shelter, nursery, sorting, drying buildings, storage,), service equipment and propagules/cultivars

**3.8****competent authority**

refers to a bureau or agency mandated by law, with responsibility for the implementation of sanitary and phytosanitary (SPS) measures

**3.9****production area**

refers to off or on shore sites/locations where seaweeds are cultured or propagated

**3.10****Good aquaculture practices**

Those practices of the aquaculture sector necessary to produce quality and safe seaweed products conforming to food laws and regulations;

**4 Facilities and sanitation****4.1 Facilities**

4.1.1 Solid and/or non-biodegradable wastes should be kept in confined area and its disposal should be compliant with existing regulations.

4.1.2 Water contaminants such as but not limited to fuel, oil and lubricants should be kept at onshore structures and stored separately and in safe condition.

4.1.3 Regular repairs and maintenance should be undertaken to preserve the good physical condition of the facility.

**4.2 Sanitation**

Production area, culture facilities and its surroundings should be maintained in a clean and hygienic condition.

Containers, equipment and farm facilities should be maintained at all times in good condition for ease cleaning and sanitizing.

**4.3 Wastes removal**

4.3.1 Wastes should be identified as to source whether onshore or offshore, segregated as biodegradable and recyclable.

4.3.2 Wastes should be removed and disposed regularly in accordance with applicable sanitation regulations.

4.3.3 Waste containers and the waste storage premises should be cleaned and sanitized on shore after each use.

4.3.4 Wastes prior to disposal should be properly stored such that it is not a source of contamination.

4.3.5 Disposal of natural off shore waste like epiphytes, discarded or worn out planting implements, flotsam and disease infected seaweeds should be properly disposed.

## 5 Seaweed production

### 5.1 Equipment

Equipment used in the planting and process seaweed should be

- a) of adequate numbers and appropriately installed to facilitate operation and cleaning.
- b) made of materials with no toxic, non-corrosive and chemically non-reactive with seaweed.
- c) durable and allow easy maintenance, cleaning, disinfection and monitoring

### 5.2 Seaweed farm

#### 5.2.1 Location and layout

5.2.1.1 Seaweed farms should be located in areas where the risk of contamination by chemical, physical or microbiological hazards is minimal and where sources of pollution can be controlled.

5.2.1.2 Seaweed farm design and layout shall prevent cross contamination from seaweed natural diseases, emergence of environmental hazards and damage to existing marine habitats.

5.2.1.3 Production area should be designed with proper space allocation for its structures to ensure ease of navigation, unimpeded current flow and species segregation.

5.2.1.4 Seaweed farm shall be designed and constructed with materials causing minimal negative environmental impact and physical damage to seaweed during grow-out and harvesting.

5.2.1.5 spacing between line and line and between seedlings/cuttings should be properly fixed to allow good growth

### 5.3 Water quality

5.3.1.1 water quality parameters (e.g. pH, turbidity, salinity, temperature) of the seaweed farm should be regularly monitored to determine its suitability for seaweed culture or adjustment in farming procedures to ensure seaweed survival

5.3.1.2 Sea-water temperature should be ideal for farmed species throughout the year, to allow good seaweed growth

5.3.1.3 Water in production area should be clean and far from sources of pollution, throughout the year.

5.3.1.4 Current flow should be suited for seaweed farming and no obstruction should impede the movement of the water.

### 5.4 Seaweed seedlings

5.4.1 Seaweed seedlings should be sourced from seaweed nursery

5.4.2 Farming Propagation practices in the seaweed farm should minimize risk for cross-contamination and conform to the existing applicable standards.

5.4.3 Planting materials/seaweed seedlings should be sourced from varieties proven to be endemic or adaptable in the area, good yielding species, healthy and resistant to disease.

## 6 Post-harvest handling and Transport

**6.1** Seaweeds should be harvested after having reached maturity level (at least three tides 45days) and timing of harvest should coincide with the period of favorable weather pattern and tidal conditions.

**6.2** post-harvesting structures, equipment and paraphernalia should be easy to clean and kept in sanitary and good operating condition.

**6.3** Operations such as sorting, weighing, washing, draining, drying and packing should be carried out properly and hygienically to maintain the good quality of the seaweed.

**6.4** For seaweed intended for drying, proper procedure of drying should be followed to meet existing product standard.

**6.5** Transport container and other implements should be properly cleaned and stored in appropriate facilities.

**6.6** Seaweed should be transported under physical conditions which do not adversely affect their marketability and consumer acceptability.

## 7 Diseases control

**7.1** Production area should follow existing protocol on seaweed disease prevention and management.

**7.2** Incidence of disease infestation in the production area and nearby localities/sites should be monitored and reported to competent authority, when necessary, for proper remedial measures. Early manifestations of diseases on seaweed should be controlled and eliminated.

**7.3** In the event of imminent massive disease outbreak, the competent authority should be immediately notified for appropriate disposition.

**7.4** Contaminated or disease infected seaweed should be removed, disposed properly and should not be sold.

## 8 Storage facilities/Warehouse

### 8.1 Air Quality and Ventilation

Adequate means of natural or mechanical ventilation should be provided, in particular to:

- a) minimize air-borne contamination of product, for example, from aerosols and condensation droplets;
- b) control ambient temperatures;
- c) control odours which might affect the suitability of product; and
- d) control humidity, where necessary, to ensure the safety and suitability of product.

Ventilation systems should be designed and constructed so that air does not flow from contaminated areas to clean areas and, where necessary, they can be adequately maintained and cleaned.

### 8.2 Lighting

Adequate natural or artificial lighting should be provided to enable the undertaking to operate in a hygienic manner. Where necessary, lighting should not be such that the resulting colour is misleading. The intensity should be adequate to the nature of the operation. Lighting fixtures should, where appropriate, be protected to ensure that product is not contaminated by breakages.

### **8.3 Pest Control**

#### **8.3.1 General**

A pest poses a major threat to the safety and quality of products. Pest infestations can occur where there are breeding sites and a supply of product. Good hygiene practices should be employed to avoid creating an environment conducive to pests. Good sanitation, inspection of incoming materials and good monitoring can minimize the likelihood of infestation and thereby limit the need for pesticides.

#### **8.3.2 Preventing Access**

Buildings should be kept in good repair and condition to prevent pest access and to eliminate potential breeding sites. Holes, drains and other places where pests are likely to gain access should be kept sealed. Wire mesh screens, for example on open windows, doors and ventilators, will reduce the problem of pest entry. Animals should, wherever possible, be excluded from the grounds of store/warehouses

#### **8.3.3 Harborage and infestation**

The availability of food and water encourages pest harborage and infestation. Potential product sources should be stored in pest-proof containers and/or stacked above the ground and away from walls. Areas both inside and outside product premises should be kept clean. Where appropriate, refuse should be stored in covered, pest-proof containers.

#### **8.3.4 Monitoring and Detection**

Establishments and surrounding areas should be regularly examined for evidence of infestation.

#### **8.3.5 Eradication**

Pest infestations should be dealt with immediately and without adversely affecting product safety or suitability. Treatment with chemical, physical or biological agents should be carried out without posing a threat to the safety or quality of product.

Where appropriate, product storage facilities should be designed and constructed to:

- a) permit adequate maintenance and cleaning;
- b) avoid pest access and harborage;
- c) enable product to be effectively protected from contamination during storage; and
- d) where necessary, provide an environment which minimizes the deterioration of product (e.g. by temperature and humidity control).

## **9 Personnel health and hygiene**

**9.1** All workers should be fit to work.

**9.2** Workers should be trained on farm level hygienic practices to ensure they are aware of their roles and responsibilities for protecting aquaculture products from contamination and deterioration throughout the production cycle.

**9.3** Personnel who could contaminate products should not be allowed to work and handle the seaweed products.

**9.4** Workers should wear suitable and appropriate working clothes and protective gears.

**9.5** Workers should observe hygienic practices during postharvest work.

## 10 Traceability and record keeping

**10.1** Adequate records for the origin and species, planting and harvest dates, total weight of propagules used, number of culture/planting lines, size of ponds or pens and actual wet weight harvested should be kept.

**10.2** Records on harvest and movement of seaweed should be maintained and reported for traceability

**10.3** Adequate records on the buyers of final products should be kept (one-step-forward traceability).

**10.4** All relevant records should be updated, kept, maintained and made accessible during culture and for at least 24 months after harvesting.

**10.5** Record should be made available to the competent authority when required.

## 11 Training

Training on safety and quality procedures should be conducted for the workers.