



CD/K/054:2010
ICS 67.080.20

EAST AFRICAN STANDARD

Fresh fennel — Specification and grading



EAST AFRICAN COMMUNITY

HS 0705.29.0000

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

© East African Community 2010 — All rights reserved*

East African Community

P O Box 1096

Arusha

Tanzania

Tel: 255 27 2504253/8

Fax: 255-27-2504481/2504255

E-Mail: eac@eachq.org

Web: www.each.int

* © 2010 EAC — All rights of exploitation in any form and by any means reserved worldwide for EAC Partner States' NSBs.

Introduction

In the preparation of this East African Standard, the following sources were consulted extensively:

UNECE STANDARD FFV-16:2000, *Marketing and commercial quality control of fennel*

United States Standards for Grades of Sweet Anise, Effective March 15, 1973 (Reprinted — January 1997)

CODEX STAN 193:1995 (Rev.5:2009), *General Standard for Contaminants and Toxins in Foods*

CODEX STAN 228:2001 (Rev.1:2004), *General methods of analysis for contaminants*

Codex Alimentarius website: http://www.codexalimentarius.net/mrls/pestdes/jsp/pest_q-e.jsp

USDA Foreign Agricultural Service website: <http://www.mrldatabase.com>

USDA Agricultural Marketing Service website: <http://www.ams.usda.gov/AMSV1.0/Standards>

USDA Plant Inspectorate Service website: http://www.aphis.usda.gov/import_export/plants

European Union: http://ec.europa.eu/sanco_pesticides/public

Assistance derived from these sources and others inadvertently not mentioned is hereby acknowledged.

This standard has been developed to take into account:

- the needs of the market for the product;
- the need to facilitate fair domestic, regional and international trade and prevent technical barriers to trade by establishing a common trading language for buyers and sellers.
- the structure of the CODEX, UNECE, USA, ISO and other internationally significant standards;
- the needs of the producers in gaining knowledge of market standards, conformity assessment, commercial cultivars and crop production process;
- the need to transport the product in a manner that ensures keeping of quality until it reaches the consumer;
- the need for the plant protection authority to certify, through a simplified form, that the product is fit for crossborder and international trade without carrying plant disease vectors;
- the need to promote good agricultural practices that will enhance wider market access, involvement of small-scale traders and hence making fruit and vegetable production a viable means of wealth creation; and
- the need to keep unsatisfactory produce from the market by allowing the removal of unsatisfactory produce from the markets and to discourage unfair trade practices e.g. trying to sell immature produce at the beginning of the season when high profits can be made. Immature produce leads to dissatisfaction of customers and influences their choices negatively, which disadvantages those traders who have waited until the produce is mature.

Contents

| | | |
|-----|---|----|
| 1 | Scope | 1 |
| 2 | Normative references..... | 1 |
| 3 | Definitions | 1 |
| 4 | Provisions concerning quality | 2 |
| 4.1 | General | 2 |
| 4.2 | Minimum requirements | 2 |
| 4.3 | Classification | 3 |
| 5 | Provisions concerning sizing | 3 |
| 6 | Provisions concerning tolerances | 4 |
| 6.1 | Quality tolerances | 4 |
| 6.2 | Size tolerances | 4 |
| 7 | Provisions concerning presentation..... | 4 |
| 7.1 | Uniformity..... | 4 |
| 7.2 | Packaging | 4 |
| 8 | Marking and labelling..... | 4 |
| 8.1 | Consumer packages..... | 4 |
| 8.2 | Non-retail containers..... | 5 |
| 9 | Contaminants..... | 5 |
| 9.1 | Pesticide residues..... | 5 |
| 9.2 | Heavy metals | 5 |
| 10 | Hygiene..... | 6 |
| | Annex C (informative) Model certificate of conformity with standards for fresh fruits and vegetables .. | 8 |
| | Annex D (informative) Fennel — Fact sheet..... | 9 |
| | Annex E (informative) Fennel — Codex, EU and USA pesticide residue limits | 10 |

Fresh fennel — Specification and grading

1 Scope

This standard applies to sweet fennel (anise) of varieties (cultivars) grown from *Foeniculum vulgare Mill.* to be supplied fresh to the consumer, fennel for processing being excluded.

2 Normative references

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

CAC/GL 21, *Principles for the Establishment and Application of Microbiological Criteria for Foods*

CAC/RCP 1, *Recommended International Code of Practice — General Principles of Food Hygiene*

CAC/RCP 44, *Recommended International Code of Practice for the Packaging and Transport of Tropical Fresh Fruit and Vegetables*

CAC/RCP 53, *Code of Hygienic Practice for Fresh Fruits and Vegetables*

EAS 38, *Labelling of prepackaged foods — Specification*

CD/K/378:2010, *Horticultural industry — Code of practice*

3 Definitions

For the purpose of this standard the following definition shall apply:

3.1

stalk

an individual plant

3.2

firm

the bulbs are not soft or wilted

3.3

tender

the bulbs are crisp and succulent

3.4

well trimmed

not more than one coarse outer branch is left on each side of the bulb to protect the tender inside portion, and the portion of the root remaining is not more than one-half inch in length. Tops may be either full length or cut back to not less than 250 mm except that not more than five of the outer branches may be cut back to less than 250 mm if necessary to facilitate proper packing, but not more than three of these may be on the same side of the bulb.

3.5

fairly well blanched

the bulbs are of a light greenish to white colour

3.6

damage

any specific defect described in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or marketing quality of the stalk

The following specific defects shall be considered as damage:

- (a) Growth cracks, when more than three branches show one or more growth cracks.
- (b) Pithy branches, when more than three branches show distinctly open texture with air spaces in the central portion of that part which goes to make up the base or bulbous portion of the stalk.
- (c) Wilting, when the stalk is limp and flabby.
- (d) Freezing, when the epidermis of the branches is badly blistered, or when the tops are brown or yellow to such an extent as to materially damage the appearance of the stalk, or when a combination of these causes material damage to the appearance and shipping quality of the stalk.
- (e) Seedstems, which have reached the stage where the flower buds are plainly visible. Stalks from which the seedstems have been removed shall be considered as damaged.
- (f) Dirt, when caked on the bulbous portion of the stalk, or when present to such an extent on the tops and branches as to cause material damage to the appearance of the stalk.
- (g) Discoloration, when the bulbous portion shows extensive brown to dark brown areas characteristic of injury caused by rough handling, or when the tops are yellow or brown to such an extent as to cause material damage to the appearance of the stalk.

3.7

diameter

the smallest diameter measured through the centre of the bulb at right angles to the longitudinal axis of the stalk

4 Provisions concerning quality

4.1 General

The purpose of the standard is to define the quality requirements of fennel at the export control stage, after preparation and packaging.

4.2 Minimum requirements

4.2.1 In all classes, subject to the special provisions for each class and the tolerances allowed, the fennel must be:

- intact, except for the roots and leaves, which must be trimmed
- sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
- clean, practically free of any visible foreign matter
- fresh in appearance
- practically free from pests
- practically free from damage caused by pests
- at a sufficient stage of development
- firm

- not running to seed; with visible shoots removed
- not affected by frost
- free of abnormal external moisture, i.e. adequately dried if washed
- free of any foreign smell and/or taste.

The roots must be severed close to the base of the bulbous part.

The length of the leafy ribs of the heart must not exceed 7 cm.

4.2.2 The development and condition of the fennel must be such as to enable them:

- to withstand transport and handling, and
- to arrive in satisfactory condition at the place of destination.

4.3 Classification

Fennel is classified in two classes defined below:

4.3.1 Class I

Fennel in this class must be of good quality. They must be characteristic of the variety. They must be of regular shape specific to the variety or type and the outer ribs must be compact, fleshy, tender and white.

The following slight defects, however, may be allowed provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package:

- slight bruising
- slight healed cracks.

4.3.2 Class II

This class includes fennel which do not qualify for inclusion in Class I but satisfy the minimum requirements specified above.

The following defects, restricted to the outer ribs, may be allowed provided the fennel retain their essential characteristics as regards the quality, the keeping quality and presentation:

- healed injuries not exceeding 3 cm in length
- green patches on the outside of the bulb, covering not more than one-third of its surface.

5 Provisions concerning sizing

Size is determined by the maximum diameter of the equatorial section.

The minimum diameter is fixed at 60 mm.

The difference in diameter between the smallest and largest fennel in the same package must not exceed 20 mm.

The size requirements shall not apply to miniature produce.¹

6 Provisions concerning tolerances

Tolerances in respect of quality and size shall be allowed in each package for produce not satisfying the requirements of the class indicated.

6.1 Quality tolerances

6.1.1 Class I

10 per cent by number or weight of fennel not satisfying the requirements of the class but meeting those of Class II or, exceptionally, coming within the tolerances of that class.

6.1.2 Class II

10 per cent by number of fennel satisfying neither the requirements of the class nor the minimum requirements, with the exception of produce affected by rotting or any other deterioration rendering it unfit for consumption.

6.2 Size tolerances

For all classes: 10 per cent by number or weight of fennel conforming to the size immediately above and/or below that identified. In any case the tolerance may not be extended to include fennel with a diameter below 55 mm.

7 Provisions concerning presentation

7.1 Uniformity

The contents of each package must be uniform and contain only fennel of the same origin, variety or type, quality, and size and of appreciably the same shape.

The visible part of the contents of the package must be representative of the entire contents.

Miniature fennel must be reasonably uniform in size. They may be mixed with other miniature products of a different type and origin.

7.2 Packaging

Fennel must be packed in such a way as to protect the produce properly.

The materials used inside the package must be new, clean and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials, particularly of paper or stamps, bearing trade specifications is allowed provided the printing or labelling has been done with non-toxic ink or glue.

Packages must be free of all foreign matter.

8 Marking and labelling

8.1 Consumer packages

In addition to the requirements of EAS 38, the following specific provisions apply:

¹ Miniature product means a variety or cultivar of vegetable, obtained by plant breeding and/or special cultivation techniques, excluding specimens of non-miniature varieties which have not fully developed or are of inadequate size. All other requirements of the standard must be met.

8.1.1 Nature of produce

If the produce is not visible from the outside, each package shall be labelled as to the name of the produce "Fennel" or "Sweet Anise" and may be labelled as to name of the variety and/or commercial type.

8.2 Non-retail containers

Each package must bear the following particulars in letters grouped on the same side, legibly and indelibly marked, and visible from the outside:

8.2.1 Identification

The exporter, packer and/or dispatcher shall be identified by name and physical address (e.g. street/city/region/postal code and, if different from the country of origin, the country) or a code mark officially recognized by the national authority.²

8.2.2 Nature of produce

"Fennel", when the contents are not visible from the outside.

8.2.3 Origin of produce

Country of origin and, optionally, district where grown, or national, regional or local place name.

8.2.4 Commercial specifications

- Class
- Size expressed by the minimum and maximum diameters
- Net weight or number of units.
- Mini fennel, baby fennel, or other appropriate term for miniature produce. Where several types of miniature produce are mixed in the same package, all products and their respective origins must be mentioned.

8.2.5 Official control mark (optional)

9 Contaminants

9.1 Pesticide residues

Fennels shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity. Annex E provides current MRLs for the USA, EU and Codex markets.

9.2 Heavy metals

Fennel shall comply with those maximum levels for heavy metals established by the Codex Alimentarius Commission for this commodity. The current limits are as indicated below:

| Metal | Unit of measurement | Maximum limit | Test method |
|--------------|---------------------|---------------|----------------------|
| Lead (Pb) | mg/kg wet weight | 0.10 | ISO 6633 (AAS) |
| Cadmium (Cd) | mg/kg wet weight | 0.050 | ISO 6561-1 or 6561-2 |

² The national legislation of a number of countries requires the explicit declaration of the name and address. However, in the case where a code mark is used, the reference "packer and/or dispatcher (or equivalent abbreviations)" has to be indicated in close connection with the code mark, and the code mark should be preceded by the ISO 3166 (alpha) country/area code of the recognizing country, if not the country of origin.

10 Hygiene

10.1 It is recommended that the produce covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of CAC/RCP 1, CAC/RCP 53, and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

10.2 The produce should comply with any microbiological criteria established in accordance with CAC/GL 21.



Fresh fennel



Baby Fennel



Fennel flowers for extraction of essential oil of fennel



Sweet anise (fennel) in garden



Bulb of sweet fennel (anise)



Bulbs of sweet fennel (anise)



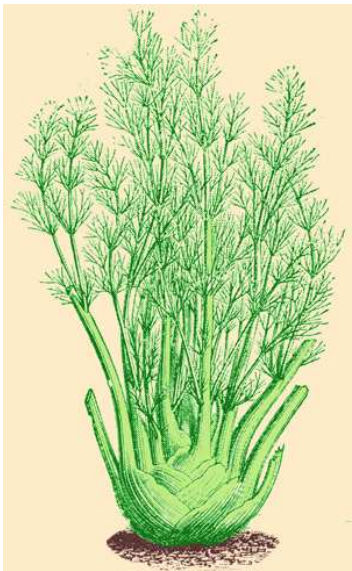
Trimmed fennel



Fennel fruit, *foeniculi fructus*




Fennel *Foeniculum vulgare*



Concept plant

Annex C
(informative)

Model certificate of conformity with standards for fresh fruits and vegetables

| | | | |
|--|--|-------------------------------------|---|
| 1. Trader: | Certificate of conformity with the Community marketing standards applicable to fresh fruits and vegetables No. (This certificate is exclusively for the use of inspection bodies) | |  |
| 2. Packer identified on packaging (if other than trader) | 3. Inspection body | | |
| | 4. Place of inspection/country of origin ⁽¹⁾ | 5. Region or country of destination | |
| 6. Identifier of means of transport | 7. <input type="checkbox"/> Internal <input type="checkbox"/> Import <input type="checkbox"/> Export | | |
| 8. Packages (number and type) | 9. Type of product (variety if the standards specifies) | 10. Quality Class | 11. Total net weight in kg |
| 12. The consignment referred to above conforms, at the time of issue, with the Community standards in force, vide: <u>CD/K/054:2010, Fresh fennel — Specification and grading</u> <hr/> Customs office foreseen Place and date of issue Valid until (date): Signatory (name in block letters): <div style="display: flex; justify-content: space-around;"> Signature Seal of competent authority </div> | | | |
| 13. Observations: | | | |
| <small>(¹) Where the goods are being re-exported, indicate the origin in box 9.</small> | | | |

Annex D
(informative)

Fennel — Fact sheet

Foeniculum vulgare



| | |
|---------------------|---|
| Authority | Mill. |
| Family | Magnoliopsida:Rosidae:Apiales:Umbelliferae |
| Synonyms | <i>Anethum foeniculum</i> L., <i>Foeniculum officinale</i> All., <i>Foeniculum capillaceum</i> Gilib., <i>Meum foeniculum</i> Spreng. |
| Common names | Fennel, sweet fennel, fennel seed, fenouil sucre, fenouil, Fenchel, vinkel, saunf, badian, raz, hinojo, faenkål, shamar, venkel, finocchio, Aetheroleum foeniculi, Aqua foeniculi, Foeniculi fructus, funcho, fyenkhel', uikyo, hui-hsiang, ensilal, kamuni (Galinya), insilali (Galinya) |
| Editor | |
| Ecocrop code | 1107 |

Description

A tall, erect herb reaching 1.5-2 m in height. The stem is abundantly branched, rounded and ash-white, the inflorescence is a doubly compound flat umbel and the flowers small and yellow.

Uses

The seeds are used for flavouring vegetables, salads, fish, sauces, tea, cakes and liqueurs and they also have medicinal properties. The leaves are used as garnish or potherbs. Leaf stalks are eaten in salads or blanched as cooked vegetables.

Growing period

Perennial, biennial or annual. The seeds germinate within 14-20 days from sowing, first harvest of leaves may be taken 30-40 days from transplanting, first harvest of seeds after 55-70 days and first harvest of the swollen stem bases after 90-110 days. 1st year yield is low, the life expectancy is 4-5 years.

Common names

Fennel, Fenouil, Hinojo, Fenchel, Venkel, Florence fennel, Finocchio. (var. *vulgare* : Bitter or Wild fennel, var. *dulce* : Sweet or Roman fennel).

Further information

Scientific synonyms: *F. dulce*, *F. officinale*, *F. capillaceum*, *F. foeniculum*, *Anethum foeniculum*, *A. rupestre*, *Ligusticum foeniculum*, *Meum foeniculum*, *Ozodia foeniculum*, *Selinum foeniculum*. In the tropics, dry season cultivation of fennel at altitudes over 500 m is most successful. In India, it is grown up to 2000 m and in Ethiopia between 1500-2500 m. The species is indigenous to the Mediterranean region and southern Europe. The crop develops a vegetative mass of 40-60 t/ha. Expected seed yields are 0.4 t/ha in the first year, 1.0-2.0 t/ha in the second year and 0.6-1.5 t/ha in the third year. Mentioned as a useful agroforestry species.

Annex E (informative)

Fennel — Codex, EU and USA pesticide residue limits

Users are advised that international regulations and permissible Maximum Residue Levels (MRL) frequently change. Although this International MRL Database is updated frequently, the information in it may not be completely up-to-date or error free. Additionally, commodity nomenclature and residue definitions vary between countries, and country policies regarding deferral to international standards are not always transparent. This database is intended to be an initial reference source only, and users must verify any information obtained from it with knowledgeable parties in the market of interest prior to the sale or shipment of any products. The developers of this database are not liable for any damages, in whole or in part, caused by or arising in any way from user's use of the database.

Results Key

MRL values in *{italics}* are more restrictive than US

--- indicates no MRL value is established.

Cod, EU, etc. indicates the source of the MRL and EXP means the market defers to the exporting market.

All numeric values listed are in parts per million (ppm), unless otherwise noted

| | US 1 | Cod | EU 2 |
|----------------------------|---|-----|---------------|
| Azoxystrobin | 38 | --- | <i>{0.1}</i> |
| | 1. United States does not maintain a specific MRL for the Azoxystrobin/Fennel combination, but does maintain an MRL of 38 PPM for its "Spice subgroup 19B" group. | | |
| | 2. European Union does not maintain a specific MRL for the Azoxystrobin/Fennel combination, but does maintain an MRL of 0.1 PPM for its "Spices" group. | | |
| | US 3 | Cod | EU 4 |
| Carfentrazone-ethyl | 2 | --- | <i>{0.02}</i> |
| | 3. United States does not maintain a specific MRL for the Carfentrazone-ethyl/Fennel combination, but does maintain an MRL of 2 PPM for its "Herb and Spice, group 19" group. | | |
| | 4. European Union does not maintain a specific MRL for the Carfentrazone-ethyl/Fennel combination, but does maintain an MRL of 0.02 PPM for its "Spices" group. | | |
| | US 5 | Cod | EU 6 |
| EPTC | 0.1 | --- | <i>{0.05}</i> |
| | 5. United States does not maintain a specific MRL for the EPTC/Fennel combination, but does maintain an MRL of 0.1 PPM for its "Leafy Vegetables" group. | | |
| | 6. European Union does not maintain a specific MRL for the EPTC/Fennel combination, but does maintain an MRL of 0.05 PPM for its "Spices" group. | | |
| | US 7 | Cod | EU 8 |
| Fludioxonil | 0.02 | --- | 0.05 |
| | 7. United States does not maintain a specific MRL for the Fludioxonil/Fennel combination, but does maintain an MRL of 0.02 PPM for its "Herb and Spice, group 19" group. | | |
| | 8. European Union does not maintain a specific MRL for the Fludioxonil/Fennel combination, but does maintain an MRL of 0.05 PPM for its "Spices" group. | | |
| | US 9 | Cod | EU 10 |
| Fluoride | 70 | --- | <i>{5}</i> |
| | 9. United States does not maintain a specific MRL for the Fluoride/Fennel combination, but does maintain an MRL of 70 PPM for its "Herb and Spice, group 19" group. | | |
| | 10. European Union does not maintain a specific MRL for the Fluoride/Fennel combination, but does maintain an MRL of 5 PPM for its "Spices" group. | | |
| | US 11 | Cod | EU 12 |
| Glyphosate | 7 | --- | <i>{0.1}</i> |
| | 11. United States does not maintain a specific MRL for the Glyphosate/Fennel combination, but does maintain an MRL of 7 PPM for its "Spice subgroup 19B" group. | | |
| | 12. European Union does not maintain a specific MRL for the Glyphosate/Fennel combination, but does maintain an MRL of 0.1 PPM for its "Seeds" group. | | |
| | US | Cod | EU 13 |
| Mancozeb | 10 | --- | <i>{0.1}</i> |
| | 13. European Union does not maintain a specific MRL for the Mancozeb/Fennel combination, but does maintain an MRL of 0.1 PPM for its "Seeds" group. | | |

| | US 14 | Cod | EU 15 |
|--------------------------|---|------------|--------------|
| Methomyl | 0.2 | --- | {0.1} |
| | 14. United States does not maintain a specific MRL for the Methomyl/Fennel combination, but does maintain an MRL of 0.2 PPM for its "Leafy Vegetables" group. | | |
| | 15. Methomyl and Thiodicarb (sum of methomyl and thiodicarb expressed as methomyl) European Union does not maintain a specific MRL for the Methomyl/Fennel combination, but does maintain an MRL of 0.1 PPM for its "Spices" group. | | |
| | US 16 | Cod | EU |
| Propylene oxide | 300 | --- | --- |
| | 16. United States does not maintain a specific MRL for the Propylene oxide/Fennel combination, but does maintain an MRL of 300 PPM for its "Herb and Spice, group 19" group. | | |
| | US 17 | Cod | EU 18 |
| Spinosad | 1.7 | --- | {0.02} |
| | 17. United States does not maintain a specific MRL for the Spinosad/Fennel combination, but does maintain an MRL of 1.7 PPM for its "Spice subgroup 19B" group. | | |
| | 18. European Union does not maintain a specific MRL for the Spinosad/Fennel combination, but does maintain an MRL of 0.02 PPM for its "Seeds" group. | | |
| | US 19 | Cod | EU 20 |
| Sulfuryl fluoride | 0.5 | --- | {0.02} |
| | 19. United States does not maintain a specific MRL for the Sulfuryl fluoride/Fennel combination, but does maintain an MRL of 0.5 PPM for its "Herb and Spice, group 19" group. | | |
| | 20. European Union does not maintain a specific MRL for the Sulfuryl fluoride/Fennel combination, but does maintain an MRL of 0.02 PPM for its "Spices" group. | | |

Draft for comments only — Not to be cited as East African Standard

Draft for comments only — Not to be cited as East African Standard