
**Fresh spinach – mustard and turnip greens
Specification and grading**

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical committee for fruit and vegetable (TC-13) and published by Ethiopian Standard Agency (ESA).

In preparation of this Ethiopian Standard, references have been made to the following:

CD/K/075:2010, Fresh mustard and turnip greens — Specification and grading.

Codex Stan 193, Codex general standard for contaminants and toxins in food.

Acknowledgement is made for the use information from the above publications.

Fresh mustard and turnip greens - Specification and grading

1. Scope

This Ethiopian standard is applicable to either mustard greens or turnip greens of the varieties grown from *Brassica rapa* consisting of either plants (crown or root attached), or cut leaves but this Standard is not applicable to mixtures of plants and cut leaves or mixtures of mustard greens and turnip greens in the same container.

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.

CES 73, *General standard for pre-packaged foods labeling*.

ES 577, *Recommended code of practice. General principles of Food hygiene*.

ES 929, *Code of practice -food hygiene management*.

ES 1246, *Code of practice for packaging and transport of fruits and vegetable*.

ES ISO 4833, *Microbiology of food and animal feeding stuffs-Horizontal method for the enumeration of Microorganisms -Colony-count technique at 30 °C*.

3. Terms and definitions

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

3.1

similar varietal characteristics

the mustard or turnip greens shall be of one type (such as, crinkly leaf type or smooth leaf type in the case of mustard greens). No mixture of types shall be permitted which materially affects the appearance of the lot.

3.2

fresh

the mustard or turnip leaves are not more than slightly wilted

3.3

fairly tender

the mustard or turnip greens are not old, tough, or excessively fibrous

3.4

fairly clean

the appearance of the mustard or turnip greens is not materially affected by the presence of mud, dirt, or other foreign material

3.5

damage

any defect which materially affects the appearance, or the edible or shipping quality of the individual plant (with or without roots), the individual cut leaf, or the lot as a whole. Any one of the following defects, or any combination of defects, the seriousness of which exceeds the maximum allowed for any one defect, shall be considered as damage:

- a) Seedstems when more than one-fourth the length of the longest leaf;
- b) Discoloration when the appearance of the individual unit is materially affected by yellowing or any other type of discoloration; and,

- c) Mechanical damage when the individual unit is badly crushed, torn, or broken.

3.6

firm

the root is not soft, flabby, or shriveled

3.7

diameter

the greatest dimension measured at right angles to a line from the centre of the crown to the base of the root

3.8

serious damage

any defect which seriously affects the appearance, or the edible or shipping quality of the individual plant (with or without roots), the individual cut leaf, or the lot as a whole. Any one of the following defects, or any combination of defects, the seriousness of which exceeds the maximum allowed for any one defect, shall be considered as serious damage:

- a) Insects when the unit is noticeably infested or when seriously damaged by them;
- b) Discoloration when the unit is badly discoloured; and,
- c) Decay.

4. Provisions concerning quality

4.1 General requirements

The purpose of the standard is to define the quality requirements of mustard greens or turnip greens 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 mustard greens or turnip greens must be:

- a) intact
- b) sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
- c) clean and trimmed, i.e. practically free from all earth or other growing medium and practically free of any visible foreign matter
- d) fresh in appearance
- e) practically free from pests
- f) practically free from damage caused by pests
- g) turgescient
- h) not running to seed
- i) free of abnormal external moisture
- j) free of any foreign smell and/or taste.

4.2.2 The produce must be of normal development. The development and condition of the produce must be such as to enable it:

- a) to withstand transportation and handling
- b) to arrive in a satisfactory condition at the place of destination.

4.3 Classification

The produce is classified as defined below:

4.3.1 Class I

Class I consists of mustard greens or turnip greens of similar varietal characteristics which are fresh, fairly tender, fairly clean, and which are free from decay and free from damage caused by seedstems, discoloration, freezing, foreign material, disease, insects or mechanical or other means. In the case of turnip

greens with roots attached, the roots shall be firm and free from damage by any cause.

4.3.2 Unclassified

Unclassified consists of mustard greens or turnip greens which have not been classified in accordance with the foregoing grade. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no definite grade has been applied to the lot.

5. Provisions concerning sizing

In the case of turnip greens with roots attached, unless otherwise specified, the maximum diameter of the root shall be 38 mm.

6. Provisions concerning tolerances

6.1 Quality tolerances

6.1.1 Tolerance for defects

In order to allow for variations incident to proper grading and handling, other than for size of roots and mixtures of plants and leaves, not more than a total of 10 percent, by weight, of the units in any lot, may fail to meet the requirements of the grade provided that not more than one-half of this amount, or 5 percent, shall be allowed for serious damage by any cause and including therein not more than 2 percent of decay.

6.1.2 Tolerance for mixtures of whole plants and leaves

Not more than 5 percent, by weight, of the mustard or turnip greens may consist of cut leaves in a lot consisting of plants, or of plants in a lot consisting of cut leaves.

6.2 Tolerance for size

Turnip greens with roots attached shall have not more than 10 percent, by weight, of roots which are larger than the specified maximum size.

6.3 Application of tolerances

The contents of individual containers in the lot, based on sample inspection, are subject to the following limitation provided that the averages for the entire lot are within the tolerances specified.

6.3.1 When a tolerance is 10 percent or more, individual containers in any lot shall have not more than one and one-half times the tolerance specified.

6.3.2 When a tolerance is less than 10 percent, individual containers in any lot shall have not more than double the tolerance specified.

6.4 Basis for calculating percentages

Percentages shall be calculated on the basis of weight or an equivalent basis. When mustard greens or turnip greens are packed as plants, each plant shall be considered as a unit. When packed as cut leaves, the individual leaf shall be considered as a unit.

7. Provisions concerning presentation

7.1 Uniformity

The contents of each package must be uniform and contain only beet greens of the same origin, quality, colour and size (if sized). The visible part of the contents of the package must be representative of the entire contents.

7.2 Packaging

Mustard greens or turnip greens must be packed in such a way as to protect the produce properly. The materials used inside the package must be new¹, 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. Mustard greens or turnip greens shall be packed in each container in compliance with ES 1246.

7.2.1 Description of containers

¹For the purposes of this Standard, this includes recycled material of food-grade quality.

The containers shall meet the quality, hygiene, ventilation and resistance characteristics to ensure suitable handling, shipping and preserving of mustard greens or turnip greens. Packages must be free of all foreign matter and smell.

7.3 Presentation

The mustard greens or turnip greens may be presented as bunches.

8. Marking and labeling

8.1 Consumer packages

In addition to the requirements of CES 73, the following specific provisions apply:

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 and may be labelled as to name of the variety and/or commercial type.

8.2 Non-retail containers

Each package² 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 authority³.

8.2.2 Nature of produce

- "Bunched mustard greens" or "Bunched turnip greens"

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
- Nature expressed by "Bunched mustard greens" or "Bunched turnip greens"
- Number of bunches.

8.2.5 Official control mark (optional)

9. Contaminants

Mustard and turnip greens shall comply with those maximum levels for heavy metals and pesticide residue established by the Codex Alimentarius Commission (CODEX STAN 193) for this commodity respectively.

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 ES 577, ES 929, 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 ES ISO 4833.

²Package units of produce prepacked for direct sale to the consumer shall not be subject to these marking provisions but shall conform to the national requirements. However, the markings referred to shall in any event be shown on the transport packaging containing such package units.

³The 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 ES ISO 3166 (alpha) country/area code of the recognizing country, if not the country of origin.

Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1998.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes. Orders for all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed from our website.

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International Involvement

ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the International Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM). It is a founding member of the African Regional Organization for standardization (ARSO).

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