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DRAFT TANZANIA STANDARD

Fresh berry fruits — Specification

TANZANIA BUREAU OF STANDARD

0. Foreword

Berries are fleshy fruits without a stone (pit) produced from a single flower containing one ovary primarily grown in cooler, high-altitude regions. The fruits are juicy, rounded, brightly coloured, sweet, sour or tart. Berry fruits are rich in vitamins, dietary fiber and antioxidants. They are consumed either fresh or processed into food products such as jam, juice, pies, dairy products.

This Tanzania Standard was prepared to provide guidance to producers, traders of fresh berries and regulators to act as a means for ensuring the safety and quality of the produces.

In the preparation of this Tanzania Standard considerable assistance was derived from:

UNECE STANDARD FFV-57:2019, *Marketing and commercial quality control of berry fruits,*and *Codex Stan 349 :2022, standard for berry fruits*

In reporting the results of a test or analysis made in accordance with this Tanzania Standard, if the final value observed or calculated is to be rounded off, it shall be done in accordance with TZS 4 (see clause 2).

1 Scope

This standard specifies the requirements, methods of sampling and test of berry fruits of species and varieties (cultivars) grown from the following species to be supplied fresh to the consumer, berry fruits for industrial processing being excluded:

Common names	Family
1. Umbu (*Spondias tuberosa* Arruda ex Koster)	Anacardiaceae
2. Andean blackberry (*Rubus glaucus* Benth) 3. Blackberries (*Rubus* spp.) 4. Cloudberries (*Rubus chamaemorus* L.) 5. Cut-leaf blackberry, evergreen blackberry (*Rubus laciniatus* Willd) 6. Loganberries (*Rubus loganobaccus* L. H. Bailey) and hybrids of these species 7. Raspberries (*Rubus idaeus* L.) 8. Saskatoon berry (*Amelanchier Alnifolia* (Nutt.) Nutt. ex M.Roem.)	Rosaceae

9. Andean blueberry (*Vaccinium meridionale* Swartz) 10. Bilberries (*Vaccinium myrtillus* L.) 11. Blueberries (*Vaccinium corymbosum* L., *Vaccinium formosum* Andrews, *Vaccinium angustifolium* Ait., *Vaccinium virgatum* Ait.) 12. Cowberries, Lingonberry (*Vaccinium* vitis idaea L.) 13. Cranberries (*Vaccinium macrocarpon* Ait.) 14. Pushgay, Mortiño or Colombian blueberry (*Vaccinum floribundum* Kunth) 15. Wild cranberries (*Vaccinium oxycoccos* L.)	Ericaceae
16. Gooseberries (*Ribes uva-crispa* L.) 17. White, red, and black currants (*Ribes rubrum* L., *Ribes nigrum* L.)	Grossulariaceae
18. Acerola or West Indian Cherry (*Malpighia emarginata* DC). 19. Craboo or Nance (*Byrsonima crassifólia* (L.) Kunth).	Malpighiaceae
20. Camu, CAMU-CAMU (*Myrciaria dubia* Mc Vaugh) 21. Jabuticaba (*Myrciaria cauliflora* (Mart.) O. Berg) 22. Strawberry-Guava (*Psidium* cattleyanum Sabine) 23. Surinam cherry (*Eugenia uniflora* L.) 24. Brazil cherry (*Eugenia brasiliensis* Lam.)	Myrtaceae
25. Goji berris *(Lycium barbarum* L.)	Solanaceae
26. Elderberry (*Sambucus nigra* L.)	Viburnaceae/Adoxaceae
27. White mulberry (*Morus alba* L.) 28. Black mulberry (*Morus nigra* L.)	Moraceae
29. Common barberry (*Barberries vulgaris* L.)	Berberidaceae
30. hybrids of these species such as boysenberries (Rubus ursinus Cham. et Schltdl. X Rubus idaeus L.), tayberries (Rubus sect. Rubus x Rubus idaeus L.), jostaberries (Ribes nigrum L. x Ribes uva-crispa L.).	

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

a. TZS 4, *Rounding off numerical values*
b. TZS 109, *General principles of food hygiene -Code of practice*
c. TZS 122 *Microbiology of food and feeding stuffs - Horizontal method for detection of Salmonella spp.*

d. TZS 131 *Microbiology of food and animal feeding stuff - General guidance for enumeration of yeasts and moulds - Colony count technique at 25^{o}C*
e. TZS 538, *Pre -packaged food labeling - general requirements*
f. *TZS 729 Microbiology of food and animal feeding stuffs -Horizontal method for the enumeration of coliforms - Colony count technique*

g. *TZS 730-2 Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of -b-glucuronidase-positive Escheria coli - Part 2 - Colony-count technique at 44^{0}C using 5-bromo-4-chloro-3-indolyl-b-D-glucuronide*

h. TZS 852-1 *Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of Listeria monocytogenes - Part 1 - Detection method*
i. TZS 1003 *Guide to the prepacking of fruits and vegetables*
j. TZS 1743 *National standard for good agricultural practices (GAP) and good handling practices for fresh fruits and vegetables*
k. *Codex stan 193 General Standard for Contaminants and Toxins in Food and Feed*
l. *Codex pesticide residues in food online data base*

3. Terms and definitions

For the purpose of this standard the following terms and definitions apply.

3.1 clean

the individual berry is practically free from dirt, frass, or other foreign material

3.2 overripe

the individual berry is excessive ripe, the flesh is soft and mushy, and past commercial utility

3.3 damage

any defects which materially detracts from the appearance, or the edible or marketing quality of the fruits.

3.4 intact

No part (s) removed and have not suffered any damage

3.5 sound

produce not affected by rotting or deterioration such as to make it unfit for

consumption

3.6 abnormal external moisture
excess water on the surface of fruits caused by a natural agent (for example rain) or due to an artificial treatment (for example washing).

4 Requirements

4.1 General requirements

4.1.1 In all classes, subject to the special provisions for each class and the tolerances allowed, the berry fruits shall be:

- intact;
- sound;
- clean;
- fresh in appearance;
- practically free from pests and damage caused by them;
- free of hard (undeveloped) berries;
- free of abnormal external moisture;
- free of any foreign smell and/or taste;

4.1.2 The development and condition of the berry fruits shall be such as to enable them:

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

4.2 Specific requirements

4.2.1 Minimum maturity requirements

The berries shall have reached an appropriate degree of development and/or maturity per the criteria to the species, variety, commercial type and to the area in which they are grown, allowing the proper development of its organoleptic characteristics. The berries shall not be overripe. Some berry fruits such as gooseberries may be presented as firm ripe.

4.2.2 Classification

Berry fruits are classified in three classes as defined below:

4.2.2.1 "Extra" Class

Berry fruits in this class shall be of superior quality. They shall be characteristic of the variety or in the case of wild berries characteristic of the species concerned.
Bilberries and blueberries shall be practically free of agglomerated berries and shall be practically covered with bloom, according to the varietal characteristics.

Red and white currant panicles shall be completely filled. Black currant panicles may not be completely filled and single berries are allowed.

Berry fruits shall be free from defects, with the exception of very slight superficial defects, provided these do not affect the general appearance of the produce, the quality, the keeping quality, and presentation in the package.

4.2.2.2 Class I

Berry fruits in this class shall be of good quality. They shall be characteristic of the variety or in the case of wild berries characteristic of the species concerned.

Bilberries and blueberries shall be practically free of agglomerated berries. Blueberries shall be practically covered with bloom, according to the varietal characteristics.

Red and white currant panicles shall be nearly filled. Black currant panicles may not be completely filled and single berries are allowed.

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:

-very slight leakage of juice
-very slight bruising

4.2.2.3 Class II

This class includes berries that do not qualify for inclusion in the higher classes (class I and extra class) but satisfy the general requirements. Currant (red, white, and black) panicles may be less evenly spaced.
The following defects may be allowed, provided the berry fruits retain their essential characteristics as regards the quality, the keeping quality and presentation in the package:

- slight leakage of juice, depending on the species and variety;
- slight defects in shape;
- defects in skin and colouring, depending on the species and variety; and
- slight bruising

This class includes berry fruits that do not qualify for inclusion in the higher classes but satisfy the general requirements specified above.

Currant (red, white and black) panicles may be less evenly spaced.

The following defects may be allowed, provided the berry fruits retain their essential characteristics as regards the quality, the keeping quality and

presentation:

-slight leakage of juice, depending on the species and variety;
- slight defects in shape;
- defects in skin and colouring, depending on the species and variety; and
- slight bruising
-slight early signs of mildew in the case of gooseberries

4.2.3 Sizing

Sizing of berry fruits is optional. However, berries may be sized in accordance with existing trade practices. When sized in accordance with existing trade practices, the package may be labelled with the size and method used.

4.2.4 Tolerances

Tolerances in respect of quality and size shall be allowed in each package, or each bunch for leeks presented without package, for produce not satisfying the requirements of the class indicated.

4.2.4.1 Quality tolerances

4.2.4.1.1 "Extra" Class

A total tolerance of 5 percent, by number or weight, of berry fruits not satisfying the requirements of the class but meeting those of Class I is allowed. Within this tolerance not more than 0.5 percent in total may consist of produce satisfying the requirements of Class II quality.

4.2.4.1.2 Class I

A total tolerance of 10 percent, by number or weight, of berry fruits not satisfying the requirements of the class but meeting those of Class II is allowed. Within this tolerance not more than 2 percent in total may consist of produce satisfying neither the requirements of Class II quality nor the general requirements, or of produce affected by decay**.**

4.2.4.1.3 Class II

A total tolerance of 10 percent, by number or weight, of berry fruits satisfying neither the requirements of the class nor the general requirements are allowed. Within this tolerance, not more than 4 percent in total may consist of produce affected by decay.

4.2.4.2 Size tolerances

For all classes: a total tolerance of 10 percent, by number or weight, of fresh berries not satisfying the requirements as regards the minimum size is allowed.

4.2.5 Presentation

4.2.5.1 Uniformity

The contents of each package shall be uniform and contain only berry fruits of the same origin, variety or, in the case of wild berry fruits, species, and quality.

Berry fruits in Classes "Extra" and I shall be practically uniform in ripeness.

However, a mixture of berry fruit of distinctly different species and/or different colours of the same species may be packed together in a sales package, provided they are uniform in quality and, for each species and/or colour concerned, in origin.

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

6 Hygiene

6.1 It is recommended that the produce covered by the provisions of TZS 109 and TZS 1743 (see clause 2).

6.2 Fresh berries shall also comply with the microbiological requirements specified in Table 1.

Table 1 - Microbiological requirements for fresh berries

Characteristic	**Requirement**	**Test method**
Coliforms cfu/g, max	10^2	TZS 729
Escherichia coli, cfu/g .	Absent	TZS 730-2
Salmonella spp/25 g	Absent	TZS 122
Yeast and moulds, cfu/g, max	10^2	TZS 131
Listeria monocytogenes/25g	Absent	TZS 852-1

7 Contaminants

7.1 Heavy metals

Berry fruits shall comply with the maximum levels of metal contaminants established by the Codex Stan 193.

7. 2 Pesticide residues

Berry fruits shall comply with those maximum residue limits established in the Codex pesticide residues in food online data base.

8 Sampling and tests

8.1 Sampling

Representative samples of the produce shall be drawn as prescribed in TZS 1002 (see clause 2).

8.2 Tests

Tests shall be done in accordance with the methods referred in this standard.

9. Packing, marking and labelling

The produce shall also be packed in accordance with TZS 1003 (See clause 2).

9.1 Packing

Berry fruits shall be packed in such a way as to protect the produce properly.

The materials used inside the package shall be 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 shall be free of all foreign matter, except for incidental leaves and twigs for wild berries

9.1.1 The containers shall meet the quality, hygiene, ventilation and resistance characteristics that shall ensure suitable handling, shipping and preserving the produce. Packages (or lot for produce presented in bulk) shall be free of foreign matter and objectionable smell.

9.1.2 The use of any substance tending to modify the natural characteristics of the produce, especially form, texture and taste shall be prohibited.

9.2 Marking and labelling

9.2.1 In addition to the requirements of the TZS 538; each package shall legibly and indelibly bear the following information in Swahili and / or English on the same side:

a) Nature of produce:

i. ‘Raspberries", "black berries", "loganberries", "currants", "gooseberries", "bilberries", "blueberries", "cowberries", "cranberries", “cloudberries”,"boysenberries", "tayberries", "jostaberries" ;

ii. “Mixture of berry fruit “, or equivalent denomination, in the case of a mixture of distinctly different species and/or colours of berry fruit of the same species. If the produce is not visible from the outside, the species and/or colours and the quantity of each in the package shall be indicated.

b. Name and address of exporter/importer, packer and/or dispatcher;
c. Country of origin;
d. Class;
e. Identification code and/or batch number;
f. Storage instructions;
g. Pack date;
h. Name of the variety (optional);
i. Net weight (optional) and
j. Size (if sized) expressed in minimum and maximum diameters of the heads

Certification mark – Each container may also be marked with TBS certification mark.

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