



DRAFT TANZANIA STANDARD

Fresh annonas — Specification

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TANZANIA BUREAU OF STANDARD

0. Foreword

Annona (*Annona* spp) are tropical and sub-tropical fruits belonging to the family Annonaceae. The fruits are round, heart shaped, ovate or conical, greenish-yellow when ripe. The fruit pulp is white with sour to sweet taste. The fruits are rich in vitamin B, minerals (Calcium, magnesium, potassium, phosphorus, zinc) and antioxidants including vitamins C and E.

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

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

UNECE STANDARD FFV-47:2019, *Marketing and commercial quality control of annonas*

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 the following fruits classified as "Annonas" to be supplied fresh to the consumer, annonas for industrial processing being excluded.

- a) Cherimoya of varieties (cultivars) grown from the species *Annona cherimola* Mill.
- b) Sugar apple of varieties (cultivars) grown from the species *Annona squamosa* L.
- c) Atemoya hybrid from the species *Annona cherimola* Mill. and *Annona squamosa* L.
- d) Soursop of varieties (cultivars) grown from the species *Annona muricata* 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°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°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 1002, *Fresh fruits and vegetables - Sampling*
- j) TZS 1003, *Guide to the prepacking of fruits and vegetables*
- k) TZS 1743, *National standard for good agricultural practices (GAP) and good handling practices for fresh fruits and vegetables*
- l) *Codex pesticide residues in food online data base*
- m) *Codex stan 193 General Standard for Contaminants and Toxins in Food and Feed*

3. Terms and definitions

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

3.1 cracked

split open, exposing the flesh

3.2 damage

any specific defect which materially detracts from the appearance or edible or marketing quality

3.3 intact

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

3.4 sound

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

3.5 clean

practically free of any visible foreign matters

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 annonas shall be:

- intact;
- sound;
- clean,
- practically free from pests and damages caused by them
- free of damage caused by low temperatures;
- free of sunburn;
- free of abnormal external moisture; and
- free of any foreign smell and/or taste
- The peduncle shall be cut near the fruit.

4.1.2 The development and degree of maturity of the annonas shall be such as to enable them:

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

4.2 Specific requirements

4.2.1 To ensure a suitable degree of commercial maturity, the annonas shall present the following characteristics:

- a) Cherimoya: the skin at harvest time shall begin to turn to a pale green colour, the carpellary walls shall have lost their concave appearance and the ribs of the carpellary joints shall not be pronounced.
- b) Sugar/sweet Apple: the carpellary segments are pronounced. The groove-like area between the carpellary segments at the time of harvest shall turn pale green to yellow.
- c) Atemoya: the area separating the carpellary segments at the time of harvest shall turn pale green to yellow.
- a) Soursop: the colour of the skin shall turn from dark green to pale green at the time of harvest, the spines shall be slightly fleshy and the distance between them shall be about 15 mm.

4.2.2 Classification

Annonas are classified in three classes as defined below:

4.2.2.1 "Extra" Class

Annonas in this class shall be of superior quality. They shall be characteristic of the species and the variety.

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

The spines of the fruit from Soursop may have slight cracks.

4.2.2.2 Class I

Annonas in this class shall be of good quality. They shall be characteristic of the species and the variety.

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:

- a) slight defect in shape
- b) slight defect in development
- c) slight defect in colorings
- d) slight alterations of the skin and in the case of Soursop, of the spines, due to rubbing and/or other causes, not exceeding 5 per cent of the surface area of the fruit.

4.2.2.3 Class II

This class includes annonas which do not qualify for inclusion in the higher classes but satisfy the general requirements specified above.

The following defects may be allowed provided the annonas retain their essential characteristics as regards the quality, the keeping quality and presentation:

- a) defect in shape;
- b) defect in development;
- c) defect in colouring; and
- d) alterations of the skin and in the case of Soursop, of the spines, due to rubbing and/or other causes, not exceeding 15 percent of the surface area of the fruit.

4.2.3 Sizing

Size is determined by the weight of individual fruit.

The minimum size shall be:

- a) 100 g for Cherimoya, Sugar Apple and Atemoya; and
- a) 200 g for Soursop

To ensure uniformity in size, the range in size between produce in the same package shall not exceed:

<i>Cherimoyas, Sugar Apples and Atemoyas</i>		<i>Soursops</i>	
Size group in grams	Max. range in the package in grams	Size group in grams	Size code
100 – 225	75	981-1200	4
225 – 425	100	801-980	5
425 – 825	200	651-800	6
>825	300	541-650	7
		441-540	9
		351-440	11
		271-350	14
		200-270	20

Note: size codes/ranges other than those indicated are allowed provided that the code/range used is labelled accordingly

4.2.4 Tolerances

Tolerances in respect of quality and size shall be allowed in each lot 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 fruit 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 fruit not satisfying the requirements of the class, but meeting those of Class II is allowed. Within this tolerance not more than 1 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 fruit satisfying neither the requirements of the class nor the general requirements are allowed. Within this tolerance not more than 2 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 fruit not satisfying the requirements as regards sizing is allowed.

4.2.5 Presentation

4.2.5.1 Uniformity

The contents of each package shall be uniform and contain only fruit of the same origin, variety, quality and size.

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 Annonas shall also comply with the microbiological requirements specified in Table 1.

Table 1 - Microbiological requirements for annonas

Characteristic	Requirement	Test method
Coliforms cfu/g, max	10 ²	Tzs 729
<i>Escherichia coli</i> , cfu/g	Absent	Tzs 730-2
<i>Salmonella</i> spp/25 g	Absent	Tzs 122
Yeast and moulds, max	10 ²	Tzs 131
<i>Listeria monocytogenes</i> /25g	Absent	Tzs 852-1

7 Contaminants

7.1 Heavy metals

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

7.2 Pesticide residues

Annonas 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

Annonas 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.

Stickers individually affixed to the produce shall be such that, when removed, they neither leave visible traces of glue nor lead to skin defects. Information lasered on single fruit should not lead to flesh or skin defects.

Packages shall be free of all foreign matter.

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:

- a) Nature of the produce "Cherimoyas", "Sugar Apples", "Atemoyas" or "Soursops",

- b) Name of the variety (optional);
- c) Name and address of exporter/importer, packer and/or dispatcher;
- d) Country of origin;
- e) Class;
- f) Size expressed as minimum and maximum weights;
- g) Identification code and/or batch number;
- h) Storage instructions;
- i) Pack date;
- j) Net weight (similar to number of fruit);
- k) Code number of the size scale, where appropriate; and
- l) number of fruit (optional).

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

NOTE: The use of TBS certification mark is governed by provisions of the Standards Act, 2009. Details of the conditions under which a license for the use of TBS certification mark may be granted to manufacturers or producers, may be obtained from TBS.