



DRAF TANZANIA STANDARD

Fresh jackfruit — Specification

DRAFT FOR STAKEHOLDERS' COMMENTS

0 Foreword

Jackfruit (*Artocarpus heterophyllus* Lamarck (syns. *A. integrifolius* Auct) in Kiswahili known as Fenesi is used as a fruit, pickled, canned, eaten fresh or made into chutney, jam, jelly and paste, or preserved as candies. The fruit pulp is also used to flavour ice cream and beverages. The fruit is very rich in minerals, fibers and vitamins.

This Tanzania Standard was prepared in order to provide guidance to producers and traders of jackfruit as well as regulators, and to act as a means for ensuring safety and quality of the product.

This third edition cancels and replaces the second edition TZS 1787: 2016.

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 Tanzania Standard specifies requirement, method of sampling and test for varieties of jackfruit grown from *Artocarpus heterophyllus* Lamarck, of the family *Moraceae*, to be supplied fresh to the consumer and for industrial processing.

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.

TZS 4, *Rounding off numerical values*

TZS 109, *Code of hygiene for food processing unit - General*

CODEX STAN 193, *General standard for contaminants and toxins in food and feed*

TZS 538, *Packaging and labeling of foods*

TZS 1002, *Fresh fruits and vegetables - Sampling*

TZS 1003, *Guide to the pre-packaging of fresh fruits and vegetables*

TZS 1743, *National standard for Good Agricultural Practices and Good Handling Practices for fresh fruits and vegetables*

3 Terms and definitions

For the purpose of this Tanzania Standard, the following terms and definitions shall apply:

3.1 jackfruit

compound fruit of *Artocarpus heterophyllus* Lamarck

3.2 similar varietal characteristics

fruits in any lot of similar appearance and characteristics

3.3 mature

fruit has reached a stage of development which will ensure proper completion of the ripening process with the spines being well-developed and spread out.

3.4 ripe

developed to a point of readiness for harvesting and eating

3.5 overripe

rind is soft and the flesh is marshy

3.6 clean

free from adhering soil, dirt, latex, pest and foreign matter

3.7 well-trimmed

stem is firmly attached and cut off fairly smooth at approximately right angles to the longitudinal axis of the stem at a point not more than 5 cm beyond the shoulder of this fruit

3.8 fairly well formed

this fruit has the typical shape of the variety and is not excessively constricted or excessively stubby

3.9 damage

any defect or combination of defects of physical or physiological causes which detracts from the edible or marketing quality such as scars or bruises

3.10 badly misshapen

jackfruit is badly constricted or very stubby or otherwise so malformed

3.11 serious damage

any defect or combination of defect of physiological or physical (external or internal causes such as cuts punctures and internal dehydration which could lead to the abnormally quick deterioration of the fruit and cause rejection

3.12 major defects

- | | |
|----------------------------------|--|
| — Insects | — With evidence of live insects or insect infestation. |
| — Diseases | — With evidence of fungal, viral or bacterial rots. |
| — Physical / pest damage | — With unhealed cuts, holes or splits from physical or pest damage. |
| — | — With large areas of brown discolouration (latex leakage). |
| — Physiological disorders | — With evidence of dry hard flesh or flesh lifting from shell (dehydration). |
| | — With angular skin segments and glossy green skin colour (excessive immaturity) |
| | — With strong odour (excessive maturity). |
| — Temperature injury | — With skin browning/blackening and areas of softened flesh (chilling injury). |

3.13 minor defects

- Physical/pest damage — With superficial bruises greater than 2 cm².
- Skin marks / blemishes — With healed scars greater than 2cm².

4 Requirements

4.1 General requirements

4.1.1 The jackfruits shall be produced as per TZS 1743 (see clause 2) and shall be carefully picked and have reached an appropriate degree of development and ripeness account being taken of the characteristics of the variety, the time of picking and the area in which they are grown.

4.1.2 In all classes, subject to the special provisions for each class and the tolerances allowed, the jackfruit shall be:

- a) intact; firm and of similar varietal characteristics;
- b) sound; produce shall not be affected by rotting or deterioration such as to make it unfit for consumption;
- c) clean; practically free of any visible foreign matter;
- d) practically free of pests and damage caused by pests
- e) free of abnormal external moisture, excluding condensation following removal from cold storage;
- f) free of any foreign smell and/or taste;
- g) free of damage caused by low and/or high temperatures;
- h) free of signs of internal shriveling; and
- i) practically free of bruises and/or extensive healed-over cuts.

4.1.3 The development and condition of the jackfruits shall be such as to enable them to:

- a) withstand transport and handling pressure; and

b) arrive in satisfactory condition at the place of destination.

4.1.4 The maturity criteria of jackfruits is defined by the following parameters:

- Colouring — from green to pale green skin with light brown markings, yellow flesh
- Shape — Generally oval to oblong, slightly irregular shape
- Pressing —succumbs to pressure
- Spines —yields to moderate pressure
- Latex —reduced latex production when pricked
- Sound —hollow sound is produced when the fruit is tapped by fingers
- General appearance — Rough skin composed of small spiny segments; skin often with brownish latex stains; short stem present with clean cut
- Sensory — Starchy brown seeds surrounded by sweet aromatic flesh which divides easily into segments; flesh texture may be soft and mucilaginous or firm depending on variety; when fully ripe the fruit emits a strong aroma.

4.2 Specific requirement

4.2.1 Classification

Jackfruits shall be classified into three classes; Extra class, class I and II according to its general appearance, quality and condition as described below;

4.2.1.1 Extra class

The fruit is of similar varietal characteristics,

- similar maturity,
- not overripe,
- clean,
- well-trimmed,
- well formed,
- free from superficial bruises, decay, worm holes, growth cracks, cuts or other skin breaks,; and
- damage caused by discoloration or scars, disease, insects, mechanical or other means.

4.2.1.2 Class I

The fruit is of similar varietal characteristics,;

- similar maturity,;
- well-shaped,;
- not overripe,;
- fairly well trimmed,;
- fairly clean; and
- reasonably free from superficial bruises, cuts and other skin damages, free from decay, worm holes ;and growth cracks.

4.2.1.3 Class II

The fruit is of similar varietal characteristics but not fit for inclusion in the extra class and class I

4.2.2 Size requirements

The fruit shall be classified according to size as in Table 1.

Table 1: Classification according to size

Size	Weight (g)
Large	> 8000
Medium	4000-8000
Small	< 4000

5 Tolerances

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

5.1 Extra class

Incident to proper grading and handling, a tolerance of 10 % by count for defects and 5 % by count for off size is allowable but shall conform to the requirements of the next lower class.

5.2 Class I

Incident to proper grading and handling, a tolerance of 10 % by count for defects and 10 % by count for off size is allowable.

5.3 Class II

Not more than 10 % by number or weight of jackfruit shall fail to meet the minimum quality and class requirements.

6 Contaminants

6.1 Heavy metals

Jackfruit shall comply with those maximum levels for heavy metals established by the Codex Stan 193

6.2 Pesticide residues

Jackfruits shall comply with those maximum residue limits established by the Codex Alimentarius Commission for this commodity.

7 Hygiene

It is recommended that the produce covered by the provisions of this Tanzania Standard shall be prepared and handled in accordance with the TZS 109 and TZS 1743 (see clause 2).

8 Sampling and test

Representative samples of the jackfruits shall be drawn as prescribed in TZS 1002 (see clause 2) and be tested in accordance with the methods described in this Tanzania Standard.

9 Packing, marking and labelling

9.1 Packing

9.1.1 Jackfruits shall be properly packed in such a way as to protect the produce. 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.

9.1.2 Jackfruit shall also be packed in containers in accordance with TZS 1003 and TZS 538 (see clause 2).

9.2 Description of containers

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

9.3 Marking and labelling

In addition to the requirements of the general Tanzania Standard TZS 538 (see clause 2); the following specific provisions apply for each package; legibly and indelibly marked.

- a) name, physical and postal address of the packer or dispatcher;
- b) name of the produce (jackfruit); including variety or commercial type if available;
- c) origin of the produce – name of the producing country, region and district or region where grown;
- d) commercial specification i.e. Class and variety, Number of fruit per container (count);
- e) net weight (kg);
- f) brand or trade name, if any;
- g) identification code/batch number;
- h) storage condition; and
- i) date of harvest and packing.

9.4 Standards Mark of Quality

Each container may also be marked with TBS Standards Mark of Quality.

NOTE — The TBS Standards Mark of Quality may be used by the manufacturers only under licence from TBS. Particulars of conditions under which the licences are granted may be obtained from TBS.

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