PHILIPPINE NATIONAL STANDARD

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Fresh fruits – Mangosteen – Grading and classification

DEPARTMENT OF TRADE & INDUSTRY PHILIPPINES

BUREAU OF PRODUCT STANDARDS

Foreword

The fomulation of this Philippine National Standard for Fresh Fruits – Mangosteen – Grading and classification, PNS/BAFPS 31:2005 was initially undertaken in July 2001 under the Bureau of Agriculture and Fisheries Product Standards (BAFPS)' Technical Assistance on Safety and Quality Standards Covering Products of High Value Commercial Crops, in view of the increasing demand of the commodity for domestic and export markets.

The Bureau of Agriculture and Fisheries Product Standards (BAFPS) conducted series of technical reviews and public consultations nationwide on the revised draft standards for fresh mangosteen prior to its approval.

The Technical Committees of BAFPS organized through Special Order No. 29, series of 2005 set the classification of fresh fruit mangosteen based on their physical characteristics and current practices existing in the market.

Fresh fruits – Mangosteen– Grading and classification

1 Scope

This standard establishes a system of grading and classifying commercial types of mangosteen fruits grown from *Garcinia mangostana* L. of the Guttiferae family produced in the Philippines to be supplied fresh to the consumer. Mangosteen fruits for industrial purposes are excluded.

2 References

The titles of the standards publications and other references of this standard are listed on the inside back cover.

3 Definitions

For the purpose of this standard, the following definitions shall apply:

3.1
clean
the fruit is free from dirt, visible pesticide residues and other foreign matters

3.2
fresh
absence of hardening, shriveling and signs of deterioration that progresses with time

3.3
mangosteen
dark violet or deep brownish to purple almost spherical fruit, 4 cm – 8 cm in diameter usually with 4 neat sepals around the fruit and a cm thick pericarp encloses the edible part or aril which consists of 5 to 7 savory white segments. Two to three segments in a big fruit may contain seeds: a small fruit may contain one or none at all

3.4
mature
the fruit has reached the stage of development which will ensure proper completion of the ripening process

3.5
overripe
the peel of the fruit has hardened and the aril deteriorates becoming unsuitable for consumption

3.6
damage
any defect or injury which affects, to varying degrees, the appearance, eating and transport quality of the fruit

3.7
gamboge
a physiological disorder evident by the oozing of the latex unto the fruit surface and aril rendering the fruit unsuitable for eating

3.8
gummosis
yellow latex sticking on the white pulp resulting to a bitter taste

3.9
translucent disorder
aril appears water-soaked and collapsed

4 Minimum requirements

In all classes subject to the special provisions for each class and tolerances allowed, mangosteen fruits shall meet the following requirements:

4.1 Mature, fresh, firm but not hardened, and semi-hard press.

4.2 The peel is either greenish red or reddish brown to brown purple.

4.3 Clean, free from any visible foreign matters and damages caused by insect pests and diseases.

5 Classification

Mangosteen fruits are classified into two classes as defined below:

5.1 **Class I** – Mangosteen in this class must be of superior quality, has the characteristic of the commercial type, well-formed, free from defects such as gummosis, latex stain, sunscald, wind scar, gamboges, insect sting, bruises and internal defect such as translucent disorder.

5.2 **Class II** – Mangosteen in this class must be of good quality, has the characteristic of the commercial type, fairly well-formed, free from defects such as gummosis, gamboges, and internal defect such as translucent disorder. Defects such as insect sting, wind scar and bruises are allowed provided these defects do not affect the general appearance and eating quality of the fruit.

6 Size classification

Size is determined by the weight of the fruit as follows:

Size category	Weight (g)
Small	51 - 75
Medium	76 - 100
Large	>100

7 Tolerance

7.1 Quality tolerance

7.1.1 Class I – Five percent by number or weight of mangosteens not satisfying the requirements of the class but meet the requirements of Class II.

7.1.2 Class II – Ten percent by weight or number of mangosteens satisfying the minimum requirements.

7.2 Size tolerance

For the two classes, ten percent by number or weight of mangosteens not satisfying the requirements as regards to sizing.

8 Sampling

Sampling method to be used for ascertaining conformance to the requirements of this specification shall be in accordance with PNS ISO 874.

9 Packaging

Mangosteens must be packed in a suitable container to protect them from mechanical damage. The containers shall meet the quality, hygiene, ventilation and resistance characteristics to insure suitable handling and shippping of the fruits.

10 Marking or labeling

The outside of each container shall have a label or legible characters grouped on the same side, stamped in indelible ink to provide the following:

10.1 Name of product and the commercial type;

10.2 Grade and size;

10.3 Net weight in kilograms;

10.4 Name of producer or exporter; and

10.5 The words "Product of the Philippines".

11 Contaminants

11.1 Heavy metals

Mangosteens shall comply with those maximum residue levels for heavy metals established by the Codex Alimentarius Commission for the commodity.

11.2 Pesticide residues

Mangosteens shall comply with those maximum residue levels established by the Codex Alimentarius Commission for the commodity.

12 Hygiene

12.1 It is recommended that the produce covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1 – 1969, Rev. 2 – 1985), and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

12.2 The produce should comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21 – 1997).

Annex A

Maturity indices of mangosteen as a guide to harvesting the fruits.

Maturity index	Peel color	Description
1	Reddish green with purple streaks	Immature fruit Very heavy latex on the skin
2	Greenish purple	Maturing fruit suitable for harvest
3	Gray purple with green streaks	Almost ripe fruit Firm peduncle
4	Gray or reddish purple	Fully ripe fruit
5	Deep purple	Over ripe fruit Hardened pericarp

Source: Anabesa, M. 1992. Maturity indices of mangosteen. Philippine Journal of Crop Science 17(3):115 - 118

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 references document (including any amendments) applies.

Anabesa, M. 1992. Maturity indices of mangosteen. Philippine Journal of Crop Science.17(3):115 – 118.

Codex Standard for Mangosteens. 1997 Codex Standard 204.

PNS/ISO 874:1980 (E) - Fresh Fruits and Vegetables - Sampling

Tongdee, S. C. and A. Sawanagul. 1989. Postharvest mechanical damage in mangosteens. ASEAN Food Journal. 4(4):151 – 155.

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