PHILIPPINE NATIONAL STANDARD

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Fresh fruits – Papaya – Grading and classification

DEPARTMENT OF TRADE & INDUSTRY PHILIPPINES

BUREAU OF PRODUCT STANDARDS

Foreword

The fomulation of this Philippine National Standard for Fresh Fruits – Papaya – Grading and classification, PNS/BAFPS 33:2005 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 draft standards for fresh papaya fruits prior to its approval.

The Technical Committee and Sub-Committee of BAFPS organized through Special Order No. 411, series of 2001 set the classification of fresh fruit papaya based on their physical characteristics and current practices existing in the sectors concerned.

Fresh fruits – Papaya – Grading and classification

1 Scope

This standard establishes a system of grading and classifying commercial varieties of papaya fruits grown from *Carica papaya* L. of the Caricaeae family produced in the Philippines to be supplied fresh to the consumer. Papaya fruits for industrial processing 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, pesticide residues, latex stains and other foreign matter

3.2
firm
the fruit does not yield to slight pressure

3.3
fresh
absence of shriveling and signs of normal deterioration that progresses with time

3.4
female fruit
fruit developed from female flowers which in 'Solo' cultivars is almost round and 'Cavite' Papaya is large and elongated

3.5
hermaphrodite fruit
fruit from plants bearing flowers with both sexes which, in 'Solo' cultivars is pear-shaped

3.6
mature
the fruit has reached a stage of development which will ensure proper completion of the ripening process

3.7
overripe
fruit is too soft and has passed its eating desirability

3.8
papaya
edible fruit of tropical plant belonging to the genus Carica of the family Caricaeae. Unripe fruit has smooth, green skin which changes to yellow when ripe. The flesh is yellow to orange in color. A number of small, dark brown seeds, each with translucent, mucilaginous sarcotesta are attached to the walls inside the fruits

3.9
similar varietal characteristics
the papayas in any lot which are similar in shape, structure and color of the skin and flesh

3.10
well-formed
the fruit shows good shoulder development and is not lopsided or distinctly pointed and that the sides are not noticeably flattened. The fruit has the typical shape of the variety

3.11
well-trimmed
the stem is neatly cut off at a point not more than 1 cm beyond the base of the fruit

3.12
damage
any defect or injury which affects to varying degrees the appearance, eating and shipping qualities of the papaya fruit. Those fruits with critical damage show any of the following in excessive degrees

3.12.1
catface
structural deformities of the fruit characterized by a scar, usually sunken, which extends downward from the stem on one side of the fruit and causes slight to serious malformation of the fruit

3.12.2
diseases
spots, lesions or soft areas on the peel caused by diseases such as anthracnose, stem end rot , scabs, sooty molds and ring spots caused by papaya ringspot virus (PRSV)

3.12.3
discoloration
any deviation from the normal peel color at any stage of ripeness including the presence of light green to whitish areas in the peel due to shading effects and brown spots due to solar or temperature damage

3.12.4
latex burn
latex stains characterized by brownish black streaks on the peel which may be sunken

3.12.5
lumpiness
defect characterized by an uneven fruit surface due to boron deficiency

3.12.6
scab
patches with fissured corky tissue on the fruit

3.12.7
sooty mold
black powdery growth appearing as irregular spots at the surface usually at the pedicel end

3.12.8
scar
slightly elevated, brownish streaks which are due to abrasions on the peel

4 Varieties

4.1 Cavite special – The fruit is large, elongated, weighs about 1.5 kg – 6 kg, has thick, yellow to orange flesh with large, round to star-shaped cavity. The fruit has a good storage life, stays hard and attractive for several days.

4.2 Solo – The fruit is small and weighs about 250 g – 750 g. The hermaphrodite fruit is typically pyriform in shape with a distinct constriction ('neck') near the stalk. The female fruit is often round globose. The skin is smooth and when ripe has greenish yellow. When the skin turns completely yellow, the texture is too soft for consumption. Several lines have been selected from the original 'Solo', namely, Line 5, Line 8, Line 10, Kapoho Solo, Sunrise Solo, Waimanalo, Sunset and more recently Higgins and Wilder.

5 Minimum requirements

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

5.1 Mature, fresh, firm and free from any visible foreign matters (see Annex A: Maturity index for papaya).

5.2 Free from mechanical damages and damages caused by insect pests and diseases.

6 Classification

Papayas are classified into three classes as defined below.

6.1 Extra class

Papaya fruits in this class must be of superior quality and consist of hermaphrodite fruits of characteristics of the variety. Fruits must be mature, not overripe, well-trimmed, well-formed, smooth and free from diseases, discoloration, external damage such as bruises, cuts, punctures, catface, scars, discoloration and internal defects such as uneven color and texture of the pulp.

6.2 Class I

Papaya fruits in this class must be of good quality and consist of hermaphrodite papaya fruits of characteristics of the variety, mature, not overripe, clean, well-trimmed, fairly well-formed, fairly smooth, free from diseases, external damage such as bruises, cuts, punctures, catface, discoloration, scars and internal defects such as uneven color and texture of the pulp. Ten percent of the fruits are allowed for slight discolorations.

6.3 Class II

Papaya fruits which do not qualify for inclusion in the higher classes but must meet the minimum requirements specified in Clause 5.

7 Size classification

Size is determined by the weight of the fruit as presented in the table.

	Fruit weight (g) /Variety	
Size	**'Solo'**	**'Cavite Special'**
XL	**>751**	**>3I00**
L	**601 - 750**	**2600 - 3000**
M	**451 - 600**	**2100 - 2500**
S	**300 - 450**	**1000 - 2000**
SS	**250 - 299**	

8 Tolerance

8.1 Extra class – Five percent by number or weight of the papayas in any lot may fail to meet the requirements of the grade but shall conform to the requirements of the next lower grade.

8.2 Class I and class II – Ten percent by number or weight of papayas shall meet the requirements of the class or the minimum requirements.

9 Sampling

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

10 Packaging

Papayas shall be packed in suitable containers to protect them from mechanical damage. The containers shall meet the quality, hygiene, ventilation and resistance characteristics to insure suitable handling and transporting of papaya fruits.

11 Marking and labeling

Each container shall have a label or legible characters grouped on the same side, stamped in inedible ink to provide the following:

11.1 Name of product, variety or commercial type;

11.2 Grade and size;

11.3 Net weight (in kilograms);

11.4 Name of producer and exporter; and

11.5 The words "Product of the Philippines".

12 Contaminants

12.1 Heavy metals

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

12.2 Pesticide residues

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

13 Hygiene

13.1 It is recommended that the produce covered by the provisions of this standard be prepared and handled in accordance with 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.

13.2 The produce shall comply with microbial criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21 –1997).

Annex A

Stages of ripeness of papaya fruit

Mature fruits undergo the following stages of ripeness based on their peel and flesh color.

Stage of ripeness	Peel color	Flesh color
Green	Completely green	White
Breaker	Distinct yellow at apex	Middle areas yellow
1/3 Ripe	More green than yellow	All areas yellow/orange
Half ripe	More yellow than green	All areas yellow/orange
Ripe	Tinge of green	All areas yellow/orange
Table ripe	Yellow/yellow orange	All yellow/orange

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.

Philippine Recommends for Papayas. PCARRD, Los Baños, Laguna.

US Grades and Standards for Fresh Fruits and Vegetables. Code of Federal Regulations. Hawaii Administrative Rules, Title IV. Hawaii State Department of Agriculture.

Worldwide Codex Standard for Papaya. 1993. Codex Stan 183.

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