PHILIPPINE NATIONAL STANDARD

PNS/BAFPS 64:2008
ICS 67.080

Fresh fruits – Banana

BUREAU OF PRODUCT STANDARDS

Member to the International Organization for Standardization (ISO)
Standards and Conformance Portal: www.bps.dti.gov.ph

Foreword

The Philippine National Standard for Banana, PNS/BAFPS 64:2008 was undertaken by the Bureau of Agriculture and Fisheries Product Standards (BAFPS) in order to reflect the recent technology developments in the industry, and the need for its harmonization with ASEAN standards and Codex requirements in Heavy Metals, Pesticide Residues and Hygiene.

This standard cancels and replaces PNS 81:1987 – Specification for Bananas.

A Technical Committee (TC) and Sub-Committee (SC) were organized by BAFPS through Special Orders No. 411, series of 2001, and No.169, series of 2007 to update and revise the PNS for Banana. Modifications were made concerning its scope, definition of terms, varieties of banana, minimum requirements, classification, sizing, tolerances, sampling, packaging, marking and labeling, contaminants and hygiene. BAFPS, in collaboration with the TC, conducted technical reviews and public consultations in the three major islands of the country prior to the finalization of the standard.

PNS/BAFPS 64:2008 aims to provide a common understanding on the grading and classifying Banana grown from different varieties and produced in the Philippines to be supplied fresh to the consumers.

Fresh fruits – Banana

1 Scope

This standard establishes a system of classifying and grading banana (generally considered table banana) grown from *Musa spp.*, of the *Musaceae* family, in the mature stage, to be supplied fresh to the consumer, after preparation and packaging. Banana intended for cooking only (plantains) or for industrial processing are excluded.

2 References

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

3 Definitions

3.1
banana
edible fruit of tropical plant belonging to the genus *Musa* of the family Musaceae. Some varieties of bananas in the Philippines are Bungulan, Cavendish, Lakatan, Latundan, Pisangmas, Tindoc, Señorita and Morado

3.2
blemish
any defect on the peel

3.3
bruises
any mechanical injury on the peel of the fruit that makes it unsightly

3.4
bunch
group of hands arranged alternately around a peduncle

3.5
calibration
term used by the banana export industry to indicate the diameter of banana finger expressed in calibration units with thirty two calibration units equal to 25.4 mm

3.6
clean
the fruit is generally free from dirts, latex stains and other foreign materials

3.7
clean, reasonably
the fruit exhibits unavoidable dirt, latex stains and other foreign matters incidental to proper harvesting

3.8
cluster
a separate section of a hand consisting of two or more fingers

3.9
crown
the crescentic cushion where several finger stalks meet to form a hand

3.10
decay
any disorder caused by biological decomposition

3.11
diameter
the dimension measured from side to side at the center of the middle finger of the second basal hand of the stem or bunch

3.12
finger
the individual banana fruit

3.13
hand
a complete group of fingers attached to the crown

3.14
latex burn/latex stain
characterized by brownish black streaks on the peel which may be sunken

3.15
loose fingers
fingers not properly aligned with other fingers

3.16
length
the dimension of the fruit measured at its dorsal side from the base of the fruit pulp to its tip

3.17
mature
a stage of development that will ensure acceptability of the quality of the hand upon ripening

3.18
overripe
the stage when the fruit is excessively soft, discolored and has passed its maximum eating desirability

3.19
pest
include insects, disease-causing microorganisms and other biological entities causing damage to the plant parts

3.20
ripe
stage of development when the banana fruit is in its most desirable condition for eating

3.21
split fingers
individual bananas with broken peel

3.22
well-formed
regular, fairly compact and reasonably uniform size of the fingers of banana hand

3.23
well-formed, fairly
less regular, less compact and reasonably uniform size of the fingers of banana hand

3.24
well-trimmed
the crown is cut smoothly with fingers kept intact

4 The varieties of banana and its characteristics (Annex A).

5 Minimum requirements

In all classes, subject to the special provisions for each class and the tolerances allowed, the banana must be:

- mature;
- whole (finger as the reference);
- firm; sound (fit for consumption);
- clean; practically free of any visible foreign matter;
- preferably free of bruises and blemishes;
- preferably free of pests;
- preferably free of damage caused by pests;
- free of abnormal external moisture, excluding condensation following removal from cold storage;
- free of any foreign smell and/or taste; and
- with flower remnants removed.

In addition, hands and clusters must include a sufficient portion of the crown with or without peduncle fragments, sound and free of fungal contamination.

The banana must have been carefully picked and have reached an appropriate degree of development and maturity in accordance with criteria proper to the variety and to the area in which they are grown.

The development and condition of the banana must enable it:
- to withstand transport and handling; and
- to arrive in satisfactory condition at the place of destination.

6 Classification

Bananas are classified in three classes as defined below:

6.1 Extra class – Banana in this class must be of superior quality. It must have all the typical characteristics and color of the variety and/or commercial type. It must be mature, clean, well-formed, well-trimmed and free of decay, split fingers, loose fingers, bruises, blemishes and discoloration caused by diseases, insects, molds, latex burn, and mechanical damage. Very slight superficial defects are allowed, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package.

6.2 Class I – Banana in this class must be of good quality. It must have all the typical characteristics and color of the variety and/or commercial type. It must be mature, clean, well-formed, well-trimmed and free of decay, split fingers, loose fingers, bruises, blemishes and discoloration caused by diseases, insects, molds, latex burn, and mechanical damage. Slight defects of the fingers, 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:

- slight defects in shape and color
- slight defects on the skin due to rubbing and other defects such sunburns and blemishes not exceeding 5 % of the total surface area.

The defects must not, in any case, affect the flesh of the fruit.

6.3 Class II – This class includes banana which do not qualify for inclusion in higher classes but satisfy the minimum requirements specified in Section 5. The following defects, however, may be allowed, provided the banana retain their essential characteristics as regards the quality, the keeping quality and presentation in the package:

- defects in shape and color;
- defects on the skin due to rubbing and other defects such as sunbur and blemishes not exceeding 10 % of the total surface area.

The defects must not, in any case, affect the flesh of the fruit.

7 Size classification

Size is determined either by length or diameter. The length is measured based on the middle finger in the outer row from the blossom end to the base of the pedicel where the edible flesh ends and maximum diameter of the equatorial section of the fruit, in accordance with the following table.

The reference fruit for measurement of the length and grade is:

- for hands, the median finger on the outer row of the hand;
- for clusters, the finger next to the cut section of the hand, on the outer row of the cluster.

7.1 Large-sized fruits

Size code	Length of finger (mm)	Diameter (mm)
L 1	> 200	> 40
L 2	181- 200	36 - 40
L 3	161- 180	33 - 35
L 4	141- 160	29 - 32
L 5	120 -140	25 - 28

7.2 Medium-sized fruits

Size code	Length of finger (mm)	Diameter (mm)
M 1	> 130	> 36
M 2	121 - 130	34 - 36
M 3	111 - 120	31 - 33
M 4	101 - 110	28 - 30
M 5	90 - 100	25 - 27

7.3 Small-sized fruits

Size code	Length of finger (mm)	Diameter (mm)
S 1	> 110	> 30
S 2	91 - 110	28 - 30
S 3	71 - 90	25 - 27
S 4	50 - 70	22 - 24

8 Tolerances

8.1 Quality tolerance

8.1.1 Extra class – Five (5) percent by number or weight of banana not satisfying the requirements of the class, but meeting those of Class I or exceptionally, coming within the tolerances of that class.

8.1.2 Class I – Ten (10) percent by number or weight of banana not satisfying the requirements of the class, but meeting those of Class II or, exceptionally, coming within the tolerances of that class.

8.1.3 Class II – Ten (10) percent by number or weight of banana satisfying neither the requirements of the class nor the minimum requirements, with the exception of produce affected by rotting or any other deterioration rendering it unfit for consumption.

8.2 Size tolerance

For all classes, ten (10) percent by number or weight of banana corresponding to the size immediately above or below that indicated on the package.

9 Sampling

Sampling method to be used for ascertaining conformance shall be in accordance with PNS/ISO 874.

10 Packaging

Banana must be packed in cartons or other similar containers that will protect from any external and internal damage to the produce. Each container shall be in compliance with the Recommended International Code of Practice for Packaging and Transport of Fresh Fruits and Vegetables (CAC/RCP 44 – 1995, Amd. 1 – 2004). The containers shall meet the quality, hygiene, ventilation and resistance characteristics to ensure suitable handling and transport of banana.

11 Marking and labeling

Each container shall be properly labeled with the following information:

11.1 Name of product, variety and/or commercial type;

11.2 Class and size code;

11.3 Net content, weight (kg)/pieces/pack;

11.4 Name and address of grower, trader and/or exporter;

11.5 Province where grown;

11.6 Date of harvest;

11.7 Shelf-life of the produce (optional); and

11.8 Product of the Philippines.

12 Contaminants

12.1 Heavy metals

Banana shall comply with the maximum levels for heavy metals established by the Codex Alimentarius Commission and/or authority for this commodity.

12.2 Pesticide residues

Banana shall comply with the maximum residue limits established by the Codex Alimentarius Commission and/or authority for this 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. 4 – 2003), Code of Hygienic Practice for Fresh Fruits and Vegetables (CAC/RCP 53-2003), and other relevant Codex texts such as Code of Hygienic Practice and Code of Practice.

13.2 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).

14 Other consideration

Implement Good Agricultural Practices for the production and harvesting of banana.

Annex A

The varieties of banana and its characteristics

A.1 Bungulan – The fruit is long, slightly curved and slightly angular. The peel is yellow-green when ripened at ambient temperature of 28 °C. The flesh is sweet, melting, aromatic with a creamy color when ripe.

A.2 Cavendish – The fruit is long, slightly curved and slightly angular. The peel is yellow-green when ripened normally and has bright yellow color at ambient temperature of 28 °C. The flesh is sweet, melting, strongly aromatic and with a creamy color when ripe.

A.3 Lakatan – The fruit is long, slightly angular, with thick peel which turns orange-yellow when ripe. The flesh is sweet, aromatic, firm and is light orange-yellow when ripe.

A.4 Latundan – The fruit is short and round. The peel is thin and yellow when ripe. The flesh is white, soft and slightly sub-acid.

A.5 Morado – The fruit is medium size and slightly angular to round. The peel is thick and purplish-red when ripe. The flesh is smooth, melting, sweet, slightly aromatic and has cream-colored pulp.

A.6 Señorita – The fruit is small, short and round with blunt tips. The peel is thin and yellow when ripe. The flesh is very sweet, smooth, aromatic, melting and has creamy yellow pulp.

Annex B

Table 1 – The size of banana is classified according to their diameter and length, mm

Variety	Large		Medium		Small	
	Length	Diameter	Length	Diameter	Length	Diameter
Bungulan	200 and above	35	160 - 190	30	130 - 150	30
Cavendish	180 and above	35	160 - 170	35	140 - 150	35
Lakatan	180 and above	40	150 - 160	30	110 - 140	30
Latundan	150 and above	40	130 - 140	30	100 - 120	30
Morado	180 and above	35	160 - 170	35	130 - 150	35
Señiorita	110 and above	30	90 - 100	28	70 - 80	25

Annex C

Codex maximum limits for pesticide residues for bananas

	Pesticides	Maximum residue limit (mg/kg or ppm)
008	Carbaryl	5 (in flesh)
038	Fensulfothion	0.02 (level at or about the limit of determination)
046	Quiniozene	1 (in the whole product) 0.01 (in flesh)
065	Thiabendazole	3 (in the whole product) 0.4 (in flesh)
066	Trichlorfon	0.2 (in flesh)
070	Bromopropylate	5 (in the whole product) 0.2 (in flesh)
077	Thiophanate-Methyl	1 (in the whole product)
085	Fenamiphos (sum of fenamiphos, its sulphoxide and sulphone, expressed as fenamiphos)	0.1 (level at or about the limit of determination)

Definition recommended by the 1982 CCPR ALINORM 83/24A, Appendix III

096	Carbofuran	0.1 (level at or about the limit of determination)
110	Imazalil	2 (in the whole product) 0.2 (in flesh)

NOTE: Unless otherwise indicated, maximum residue limit applies to whole fruit.

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.

Codex Maximum Limits for Pesticide Residues. Codex Alimentarius Commission Vol. XIII.

Codex Standard for Bananas. Codex Stan 205: 1997, Amd. 1: 2005. pp.1-5.

PNS 81: 1987. Specification for Bananas. Bureau of Product Standards. Department of Trade and Industry.

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

Quisumbing, E. E. 1919. Studies of Philippine Bananas. Philippine Agriculture. Rev. 12 (B): 2-90.

Teodoro, N. B. 1915. A preliminary study of Philippine Bananas. Philippine Journal of Science. 387 – 421.

Department of Agriculture
Bureau of Agriculture and Fisheries Product Standards
Technical Sub-Committee on Crops

Chair

1 Dr. Elda B. Esguerra
Postharvest Horticulture Training and Research Center, UP Los Baños

Members

2 Dr. Leonila M. Varca
National Crop Protection Center
UP Los Baños

3 Dr. Dario S. Sabularse
Fertilizer and Pesticide Authority

4 Dr. Edralina P. Serrano
Postharvest Horticulture Training and Research Center
UP Los Baños

5 Dr. Rene Rafael C. Espino
National Program Director
GMA-HVCC Programs
Department of Agriculture

6 Ms. Josephine Garcia
Bureau of Plant Industry
San Andres, Malate, Manila

Expert Involved

7 Dr. Rodel G. Maghirang
Crop Science Cluster
Institute of Plant Breeding
UP Los Baños

Secretariat on Crops

Chairman

1 Director Gilberto F. Layese
Bureau of Agriculture and Fisheries Product Standards

Members

2 Ms. Angelina A. Bondad
Chief Science Research Specialist
Bureau of Agriculture and Fisheries Product Standards

3 Mr. Clarence F. Agustin
Senior Science Research Specialist
Bureau of Agriculture and Fisheries Product Standards