



THAI AGRICULTURAL STANDARD

TAS 14-2007

MANDARINS OR TANGERINES

**National Bureau of Agricultural Commodity and Food Standards
Ministry of Agriculture and Cooperatives**

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National Bureau of Agricultural Commodity and Food Standards

Ministry of Agriculture and Cooperatives

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Mandarins or tangerines, the loose-skin citrus are citrus fruits that Thailand has been producing in large quantity, and they have the potential for more exportation. The establishment of a standard for these fruits is significant to assist the development of quality in the production. Promotion of the fruit quality and the standard will have the outcome that the fruit will be better accepted by both the domestic and international trade. Meanwhile Thailand has also been importing the fruits from many countries with the value nearly as much as the exporting one. Therefore, there is a need to have criteria for the trade of these loose-skin citrus fruits which are locally produced and imported. The Ministry of Agriculture and Cooperatives deems it proper to establish a standard for mandarins and tangerines.

The provisions of this Thai Agricultural Standard are based upon information from a study project on important characteristic indices of the fruit that are used as criteria in indicating quality, classification and size codes of these citrus fruits of the Thai Bureau of Agricultural Commodity and Food Standards. The operation was cooperated by the Faculty of Agriculture, Kasetsart University; and the following documents are used as guideline:

Remark:

The standard title has been revised from “Thai Agricultural Commodity and Food Standard (TACFS X-XXXX)” to “Thai Agricultural Standard (TAS X-XXXX)” in accordance with the application of the Agricultural Standards Act B.E. 2551 (2008).



**NOTIFICATION OF THE NATIONAL COMMITTEE ON
AGRICULTURAL COMMODITY AND FOOD STANDARDS
SUBJECT: THAI AGRICULTURAL COMMODITY AND FOOD STANDARD:
MANDARINS/TANGERINES
B.E. 2550 (2007)**

The resolution of the 2/2550 session of the National Committee on Agricultural Commodity and Food Standards dated 28 August B.E. 2550 (2007) endorsed the Thai Agricultural Commodity and Food Standard entitled Mandarines/Tangerines for the benefit of development of agricultural commodity and food which is safe and in accordance with the standard.

By virtue of the Cabinet Resolution on Appointment and Authorization of the National Committee on Agricultural Commodity and Food Standards dated 3 April B.E. 2550 (2007), the Notification on Thai Agricultural Commodity and Food Standard entitled Mandarines/Tangerines is hereby issued as voluntary standard, the details of which are attached herewith.

Notified on 20 September B.E. 2550 (2007)

Mr. Theera Sutabutra

Minister of Agriculture and Cooperatives

Chairperson of the National Committee on Agricultural Commodity and Food Standards

THAI AGRICULTURAL STANDARD

MANDARINS OR TANGERINES

1 DEFINITION OF PRODUCE

This standard applies to commercial varieties of “loose – skin citrus”¹ with the common name called mandarins or tangerines grown from *Citrus reticulata* Blanco of the *Rutaceae* family, to be supplied fresh to the consumer and excluding those for processing.

2 PROVISIONS CONCERNING QUALITY

2.1 MINIMUM REQUIREMENTS

In all classes, subject to the special provisions for each class and the tolerances allowed, the citrus² must be:

- (1) Whole;
- (2) Firm fresh with original shape;
- (3) Fruit shape, color and taste are of the characteristics of the variety, the season and geographical location;
- (4) Sound, produce affected by rotting and bruising or deterioration such as to make it unfit for consumption is excluded;
- (5) Clean, practically free of any visible foreign matter;
- (6) Practically free of pests affecting the general appearance of the produce;
- (7) Practically free of damage caused by pests;
- (8) Free of abnormal external moisture, excluding condensation following removal from cold storage;
- (9) Practically free of damage caused by high and/or low temperature;
- (10) Free of any foreign smell and/or taste.

2.1.2 The citrus must be properly mature, appropriate to the variety and geographical location. They must be correctly harvested, post harvest handled and transported in order to obtain the produce in acceptable condition on arrival at the destination.

2.1.3 Determination on the proper maturity of the citrus fruits may be carried out from any kind of the characteristics of the following:

¹ / loose- skin citrus: citrus fruits that the peel can be easily removed by hands such as those known under the varieties: Som Kheaw Waan, Som Sai Num Phueng or Som Shogun and Som Fremont.

² / citrus in the provisions of this standard refers to “loose-skin citrus”

- (1) Juice content of not less than 35%: divide juice weight by fruit weight (w/w)
- (2) Total soluble solids content³ for Som Sai Num Phueng or Som Shogun is 9.0 degrees Brix up, and that for other loose-skin citrus fruits is 8.0 degrees Brix up.
- (3) The ratio between degrees Brix and % acid is not less than 13:1

2.1.4 Degreening is allowed, provided that it does not affect the produce quality.

2.1.5 Waxing is allowed, provided that it does not affect the produce quality.

2.2 CLASSIFICATION

Citrus is classified in three classes defined below:

2.2.1 Extra Class

Citrus fruit in this class must be of superior quality. They must be characteristic of the variety and/or commercial type with fruit stem intact. They must be free of defects, with the exception of very slight superficial defects, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package.

2.2.2 Class I

Citrus fruit in this class must be of good quality. They must be characteristic of the variety and/or commercial type. The following slight defects in shape, skin, color, peel uniformity and external impact, 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. The total defects do not exceed 10% of the total surface area, and do not affect the produce quality.

2.2.3 Class II

Citrus fruit in this class which do not qualify for inclusion in the higher classes, but satisfy the minimum requirements specified in Section 2.1 above. The following slight defects in shape, skin, color, peel uniformity and external impact, 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. The total defects do not exceed 20% of the total surface area and do not affect the produce quality.

3 PROVISIONS CONCERNING SIZING

Size is determined by the maximum diameter of the equatorial section of the fruits, or by number of fruits per container, in accordance with the following table 1:

^{3/} Total soluble solids are generally called sweetness

Table 1. Size Code of Loose-Skin Citrus Fruits⁴

SIZE CODE	DIAMETER (mm)
1	>90
2	>85 to 900
3	>80 to 85
4	>75 to 80
5	>70 to 75
6	>65 to 70
7	>60 to 65
8	>57 to 60
9	>52 to 57
10	>47 to 52
11	<47

Classification and provisions concerning sizing of this standard can be used for trading consideration by combining the two into provisions concerning trading. The trade partners may set up different trading classes depending on their requirements or seasonal limitations⁵.

4 PROVISIONS CONCERNING TOLERANCES

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

4.1 QUALITY TOLERANCES

4.1.1 Extra Class

Ten percent by number or weight of the fruits not satisfying the requirements of the class, but meeting those of Class I or, exceptionally, coming within the tolerances of that class.

4.1.2 Class I

Ten percent by number or weight of the citrus not satisfying the requirements of the class, but meeting those of Class II, coming within the tolerances of that class.

⁴ / Different size code of loose skin citrus fruits and their commercial packaging in term of number of fruits per container of about 10 kg are as follows:

Size Code 1 : Number of fruits/Container = 30

Size Code 2 : Number of fruits/Container = 36

Size Code 3 : Number of fruits/Container = 45

Size Code 4 : Number of fruits/Container = 54

Size Code 5 : Number of fruits/Container = 60

Size Code 6 : Number of fruits/Container = 72

Size Code 7 : Number of fruits/Container = 84

Size Code 8 : Number of fruits/Container = 105

⁵ /Data on size code comparison of citrus fruit standard at present trading practice between Som Kheaw Waan and other lose-skin fruits are present in Annex A

4.1.3 Class II

Fifteen percent by number or weight of the citrus 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.

4.2 SIZE TOLERANCES

For all classes five percent by number or weight of the citrus not satisfying the requirements as regards sizing, but falling within the size immediately above and/or below those indicated in Section 3.

5 PROVISIONS CONCERNING PRESENTATION

5.1 UNIFORMITY

The contents of each package must be same variety. The size are uniform as well as the quality. The visible part of the contents of the package must be representative of the entire contents.

5.2 PACKAGING

Citrus fruit must be packed in such a way as to protect the produce properly. The materials used inside the package must be new, clean, and of a quality such as to avoid causing any damage to the produce, and contamination which effect to safety of consumer.

5.3 DESCRIPTION OF CONTAINER

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

6 MARKING OR LABELLING

6.1 CONSUMER PACKAGES

Each package shall bear the following particulars, legibly marked, and without false or deceptive information.

(1) Nature of the Produce

If the produce is not visible from the outside, each package shall be labeled with the name of the produce "Mandarin/Tangerines" and/or "Variety".

(2) Net weight in grams or kilograms

(3) Distributor information

Name and address of the producer or packer produced or distributor or head office of producer in the country. Name and address of importer for imported mandarins.

(4) Origin of produce

Country of origin, except it is produced for domestic distribution.

6.2.1 NON-RETAIL CONTAINERS

Each package must bear the following particulars, in the documents accompanying the shipment, in the label or on package, with legibly, indelibly marked and without false or deceptive information.

(1) Nature of Produce

If the produce is not visible from the outside, each package shall be labeled with the name of the produce “Mandarin/Tangerines” and/or “Variety”.

(2) Class;

(3) Size, if the produce is classified size or count by the number of fruits per container

(4) Net weight in grams or kilograms

(5) Distributor information

Name and address of the producer or packer produced or distributor or head office of producer in the country. Name and address of importer for imported mandarins.

(6) Origin of produce

Country of origin, except it is produced for domestic distribution.

(7) Language

Label of produce must be in Thai Language. Produce label for export can be in any language.

6.3 OFFICIAL INSPECTION MARK OR CERTIFICATION MARK

Comply with the provisions and condition of the inspection or certification agency recognized by Ministry of Agriculture and Cooperatives of Thailand.

7 FOOD ADDITIVE

Comply with the provisions of relevant regulations and the Thai Agricultural Standard on Food Additives.

8 CONTAMINANTS

Comply with the provisions of relevant regulations and the Thai Agricultural Standard on Contaminant.

9 PESTICIDE RESIDUES

Comply with the provisions of relevant regulations and the Thai Agricultural Standard on Pesticide Residues.

10 HYGIENE

Harvest and handling of various steps including storage packed and transport of the fruits must be carried out hygienically in order to prevent contamination which will be harmful to consumers.

11 METHODS OF ANALYSIS AND SAMPLING

Comply with the provisions of relevant regulations and the Thai Agricultural Standard on Methods of Analysis and Sampling.

ANNEX A

DATA ON SIZE CODE COMPARISON - SECTION 3

Data on size code comparison of the fruits standard at present trading practice between Som Kheaw Waan and other loose-skin fruits

Size Code In the standard	Size Code Som Kheaw Waan	Size Code Other Loose-Skin Fruits	Diameter
1	-	11	>90
2	-	10	>85 to 900
3	-	9	>80 to 85
4	000	8	>75 to 80
5	00	7	>70 to 75
6	0	6	>65 to 70
7	1	5	>60 to 65
8	2	4	>57 to 60
9	3	3	>52 to 57
10	-	2	>47 to 52
11	-	1	<47

ANNEX B**UNIT**

The units and symbols used in this standard and the units recognized by the International System of Units (*le Système International d'Unités*) or SI are as follows:

Measurement	Unit	Symbols
Length	millimeter	mm
Weight	kilogram	