THAI AGRICULTURAL STANDARD

TAS 3-2013

DURIAN

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

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DURIAN

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Technical Committee on the Elaboration of the Thai Agricultural Standard on Good Agricultural Practices for Durian

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Regarding the Ministry of Agriculture and Cooperatives Notification on the Thai Agricultural Standard entitled Durian (TAS 3-2546) on November 6, B.E.2546 published in the Announcement and General Publication of the Royal Gazette dated December 19, B.E. 2546. In order to revise this standard to the changing situation, the Agricultural Standards Committee deems it necessary to amend such standard for enhancing Thai durian to be recognized on its quality and safety at the national and international levels.

This Standard is based on the following document:


NOTIFICATION OF THE MINISTRY OF AGRICULTURE AND COOPERATIVES
SUBJECT: THAI AGRICULTURAL STANDARD: DURIAN
UNDER THE AGRICULTURAL STANDARDS ACT B.E. 2551 (2008)

Whereas the Agricultural Standards Committee, by the decision of the fifth session of B.E. 2556 (2013) on 20 September B.E. 2556 (2013), deems it necessary to establish an agricultural standard for durian as a voluntary standard in accordance with the Agricultural Standards Act B.E. 2551 (2008) to promote such agricultural commodity to meet its standard on quality and safety.

By virtue of Section 5, Section 15 and Section 16 of the Agricultural Standards Act B.E. 2551 (2008), the Minister of Agriculture and Cooperatives hereby issues this Notification on Establishment of Thai Agricultural Standard: Durian as follows:

1. The Notification of the National Committee on Agricultural Commodity and Food Standards entitled the establishment of Thai Agricultural Commodity and Food Standards: Durian, dated 6 November 2546 (2003) is repealed.

2. The Thai Agricultural Standard for Durian (TAS 3-2013) is established as a voluntary standard, details of which are attached herewith.

Notified on 16 October B.E.2556 (2013)

Mr. Yukol Limlamthong
Minister of the Ministry of Agriculture and Cooperatives
1. **SCOPE**

1.1 This standard applies to commercial varieties of durian grown from *Durio* spp. of the Bombacaceae family, to be supplied fresh to the consumer.

1.2 This standard does not apply to durian for further processing.

2. **DEFINITION**

For the purpose of this standard:

2.1 Hard pulp means durian pulp characteristic is hard in texture with lighter colour than normal.

2.2 Tip burn means certain portions of durian pulp characteristic turns brown or dark brown.

2.3 Water core or wet core means fruit core is very moist or watery. In severe case, durian pulp adjacent to the core could be affected.

2.4 Fertile lobe means the characteristic of durian locule which is fully developed throughout the length of the fruit.

3. **QUALITY**

3.1 Minimum requirements

3.1.1 In all classes, subject to the special provisions for each class and the tolerances allowed, durian shall be as follows:

(1) whole with peduncle intact;

(2) characteristic of the variety;

(3) fresh;

(4) clean, practically free of any visible foreign matter;

(5) free of crack;

(6) practically free of pests affecting the general appearance;

(7) free of damage caused by pest affecting flesh quality;

(8) free of damage caused by low and/or high temperature;

(9) free of any foreign smell and/or taste;

(10) when ripe, the following abnormal pulp is not allowed: hard pulp, tip burn and water core. If present of any or mixed, the total defects shall not exceed 5% of the edible portion.
3.1.2 The durian shall reach an appropriate degree of development in accordance with criteria proper to the variety, season and planting area.

Postharvest handling, packing and transporting shall be carefully managed to allow the fruit to arrive in satisfactory condition at the place of destination.

3.2 Classification

Durian is classified into 3 classes as follows:

3.2.1 “Extra” Class

Durians in this class shall be of superior quality with well developed thorns. The fruit shall have a minimum of 4 fertile lobes. They shall be well-formed, free of abnormality and defects, with the exception of very slight superficial defects provided that these do not affect the general appearance, the flesh quality, the keeping quality and presentation in the package.

3.2.2 Class I

Durians in this class shall be of good quality, slight abnormality or defects may be allowed, as follows:

(1) slight defects in shape and carrying a minimum of 3 fertile lobes and 2 infertile lobes. The defects shall not affect the fruit shape.

(2) slight defects due to preharvest and postharvest handling or transport such as shallow healed defects and bruised or broken thorns, provided that the total defect area shall not exceed 10% of the fruit surface.

The defects shall not affect the general appearance, the pulp quality, the keeping quality, and presentation in the package.

3.2.3 Class II

This class includes durian which does not qualify for inclusion in the higher classes, but satisfy the minimum requirements specified in Section 3.1. The following defects may be allowed:

(1) defect in shape and carrying a minimum of 2 fertile lobes and 2 infertile lobes. The defects shall not affect the fruit shape.

(2) slight defects due to preharvest and postharvest handling or transport such as shallow healed defect, and bruised or broken thorns, provided that the total defect area shall not exceed 10% of the fruit surface.

The defects shall not affect the general appearance, the pulp quality, the keeping quality, and presentation in the package.

4. SIZING

4.1 Weight per fruit of commercial varieties, in general, shall be as follows:
4.1.1 Chanee not less than 1.5 kg and not exceeding 4.5 kg
4.1.2 Monthong not less than 1.5 kg and not exceeding 6.0 kg
4.1.3 Karyao not less than 1.5 kg and not exceeding 4.0 kg
4.1.4 Kradoomthong not less than 1.3 kg and not exceeding 4.0 kg
4.1.5 Nualthongchan not less than 1.5 kg and not exceeding 4.5 kg
4.1.6 Puangmanee not less than 1.0 kg
4.1.7 Longlublae not less than 1.0 kg
4.1.8 Other commercial varieties not less than 0.5 kg
4.2 Size codes of durian are determined by weight per fruit as shown in Table 1.

<table>
<thead>
<tr>
<th>Size code</th>
<th>Weight per fruit (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&gt; 4</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 3 to 4</td>
</tr>
<tr>
<td>3</td>
<td>&gt; 2 to 3</td>
</tr>
<tr>
<td>4</td>
<td>&gt; 1 to 2</td>
</tr>
<tr>
<td>5</td>
<td>0.5 to 1</td>
</tr>
</tbody>
</table>

Note: The classification of quality and size code according to this standard may be combined to stipulate trade classification. Trade partners may name the trade classification differently depending on their requirements or seasonal limitations.

5. TOLERANCES

The following tolerances in respect of quality and size shall be allowed in each package/lot for produce not satisfying the requirements of the class indicated:

5.1 Quality tolerances

5.1.1 “Extra” Class

Ten percent by number or weight of durians not satisfying the requirements of “Extra” class (Section 3.2.1), but meeting those of Class I (Section 3.2.2) or, exceptionally, coming within the tolerances of Class I (Section 5.1.2) is allowed. However, tolerances on the number of fertile lobes are not allowed.
5.1.2 Class I
Ten percent by number or weight of durians not satisfying the requirements of Class I (Section 3.2.2), but meeting those of Class II (Section 3.2.3) or, exceptionally, coming within the tolerances of Class II (Section 5.1.3) is allowed. However, tolerances on number of fertile lobes are not allowed.

5.1.3 Class II
Ten percent by number or weight of durians not satisfying either the requirements of Class II (Section 3.2.3), or the minimum requirements (Section 3.1) is allowed, provided that the fruit is free of rotting or other characteristics rendering it unfit for consumption.

5.2 Size tolerances
For all size codes, 25% by number or weight of durians corresponding to the size code immediately above or below that indicated on the package is allowed.

6. PACKAGING

6.1 Package
The package shall be of good quality, hygienic and free of any foreign material and smell. It shall be able to protect durian from damage affecting the fruit quality. The materials used inside the package shall be clean and of good quality. The use of such materials, particularly of paper or stamps bearing trade specifications is allowed, provided that the printing or labelling has been done with non-toxic ink or glue.

6.2 Uniformity
The contents of each package shall be uniform and contain only durian of the same variety, quality and size. The visible part of the content of the package shall be representative of the entire contents.

7. MARKING AND LABELING

7.1 Consumer packages
The information shall appear on the package, wrapping material, fastening material, tag or on the fruit in a manner that is legible, clear, and indelible without false or deception as follows:

(1) Name of the produce;
To be labelled as “durian” and “durian variety”
(2) Net weight;
(3) Class;
(4) Size code and/or size;
(5) Information of producer and/or importer and/or distributor
Indicate the name and address of producer or re-packer or distributor. Name and address of
the head office of producer or re-packer may be given. If the produce is imported, importer’s
name and address shall be indicated.

(6) Origin of produce
Indicate country of origin, except for domestic market

(7) Date of production and/or packaging

(8) Language
Label of produce for domestic market shall be in Thai, however, foreign language may also
be added. Label of produce for export can be in foreign language.

7.2 Non-retail containers
The information shall be shown on the accompanied documents of the shipment, on the label,
or on the container in a manner that is legible, indelible without false or deception as follows:
(1) Name of the produce
To be labelled as “durian” and “durian variety”
(2) Net weight
(3) Class
(4) Size code and/or size
(5) Information of producer and/or importer and/or distributor
Indicate the name and address of producer or re-packer or distributor. Name and address of
the head office of producer or re-packer may be given. If the produce is imported, importer’s
name and address shall be indicated.

(6) Origin of produce.
Indicate country of origin, except for domestic market

(7) Date of production and/or packaging

(8) Language
Label of produce for domestic market shall be in Thai, however, foreign language may also
be added. Label of produce for export can be in foreign language.

7.3 Certification mark
The use of certification mark under the Agricultural Standards Act B.E.2551 (2008) and its
amendments shall be complied with the Ministerial Regulation of B.E.2553 (2010) on
Provisions Concerning Characteristics of Mark, Application and Display, and the related
Notifications of National Bureau of Agricultural Commodity and Food Standards.
8. CONTAMINANTS

Type and maximum level of contaminants in durian shall be in compliance with the relevant laws and regulations \(^1\).

9. PESTICIDE RESIDUES

Type and maximum residue limit in pesticide residues in durian shall be in compliance with the related laws and regulations \(^2\) and the requirements under the Thai Agricultural Standards on Pesticide Residues: Maximum Residue Limits (TAS 9002) and Pesticide Residues: Extraneous Maximum Residue Limits (TAS 9003).

10. HYGIENE

Durians shall be produced under good hygienic practices in accordance with related standard on Good Agricultural Practices (GAP), and TAS 9035, Thai Agricultural Standard on Good Manufacturing Practices for Packing House of Fresh Fruits and Vegetables or other equivalent standards.

11. METHODS OF ANALYSIS AND SAMPLING

11.1 Method of analysis

Methods of analysis are shown in Table 2:

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\(^1\) Ministerial Notification of Ministry of Public Health on Standards of Contaminants in Foods

\(^2\) Ministerial Notification of Ministry of Public Health on Pesticide Residues in Foods
### Table 2 Analytical method

<table>
<thead>
<tr>
<th>Provisions</th>
<th>Analytical method</th>
<th>Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quality: minimum requirements (Section 3.1.1)</td>
<td>Visual inspection</td>
<td>-</td>
</tr>
<tr>
<td>2. Durian at appropriate degree of development</td>
<td>2.1 Visual Inspection on External Quality</td>
<td>Gravimetry</td>
</tr>
<tr>
<td>(Section 3.1.2)</td>
<td>2.2 Visual Inspection on Internal Quality</td>
<td></td>
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<td></td>
<td>2.3 Calculation of dried pulp weight (details are in Annex B)</td>
<td></td>
</tr>
<tr>
<td>3. Defects in shape (Section 3.2)</td>
<td>Visual inspection</td>
<td>-</td>
</tr>
<tr>
<td>4. Sizing (Section 4)</td>
<td>Weighing</td>
<td>Gravimetry</td>
</tr>
</tbody>
</table>

11.2 Sampling method

Sampling method shall be in accordance with the related laws, and provisions of the Agricultural Standard related to method of sampling.
Appendix A

Photos of Durian

(a) Chanee variety, fruit shape is cylindroidal or elliptical.

(b) Monthong variety, fruit shape is oblong

(c) Karnyao variety, fruit shape is oval or ovate.

Figure A.1 Examples of commercial varieties of durian (Section 1.1)
(c) Kradoomthong variety, fruit shape is oblate or cylindroidal.

(d) Puangmanee variety, fruit shape is elliptical.

(e) Nualthongchan variety, fruit shape is elliptical.

(f) Longlublae variety, fruit shape is oval.

Figure A.1 (cont.) Examples of commercial varieties durian (Section 1.1)
Figure A.2. Whole durian fruit with peduncle (Section 3.1(1))

(a) Cracked skin (Section 3.1 (5)).

(b) Pests affecting general appearance (Section 3.1 (6))

(c) Defects by pests (Section 3.1 (7))

(d) Pulp abnormality (Section 3.1 (10))
(e) Pulp abnormality (Section 3.1 (10))          (f) Pulp abnormality (Section 3.1 (10))

Figure A.3. Examples of durians that do not meet the minimum requirements (Section 3.1)
Appendix B

Examination for durian maturity

B.2.1 Visual inspection of external characteristics of durian at appropriate maturity:

(1) Stiff stem and peduncle with dark colour. Peduncle skin is corky with rough feeling by touch. The separation zone between peduncle and stem or the abscission layer is bulging.

(2) Thorn ends are withered with brown colour. Spaces between thorns become wider; when two thorn tips are pressed against each other, they are pliable.

(3) The separation line along the middle of a lobe appears clearer, except Karnyao variety.

B.2.2 Visual Inspection of internal characteristics of each variety at appropriate maturity:

(1) Kradoomthong: yellow pulp and brown seeds. Under natural condition, the fruit is ripening in approximately 4 to 5 days after harvest;

(2) Chanee: yellow pulp and creamy brown seeds. Under natural condition the fruit is ripening in approximately 4 to 5 days after harvest;

(3) Monthong: light yellow pulp and creamy brown seeds. Under natural condition the fruit is ripening in approximately 6 to 9 days after harvest.

B.2.3 Calculation of dried pulp weight

B.2.3.1 Criteria for each durian variety are as follows:

(1) Kradoomthong: minimum dry weight of 27%

(2) Chanee: minimum dry weight of 30%

(3) Monthong: minimum dry weight of 32%

(4) Puangmanee: minimum dry weight of 30%

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1/ A research project of National Bureau of Agricultural Commodity and Food Standards (B.E.2546) on The Use of Dried Weight to Establish Maturity Standard of Durians var. Kradoom, Chanee and Puangmanee with the cooperation of Department of Horticulture, Faculty of Agriculture, Kasetsart University at Kampaengsaen; and Chantaburi Horticultural Research Center, Department of Agriculture.
B.2.3.2 Determination of durian dried pulp weight:

(1) Open each fruit and randomly remove 3 lobes, the pulp at the middle of each lobe is collected;

(2) Slice the sample into fine pieces of 1 x 1 x 5 mm., mix them thoroughly and randomly take 20 g sample per fruit, and place it in a container.

(3) Dry the sample in an oven at 70°C for 48 hours or until the dried weight is constant. Calculate the percentage of dried weight by using the following formula:

\[
\text{Durian dried pulp weight (％) } = \frac{\text{Weight after drying}}{\text{weight before drying}} \times 100
\]