



**THAI AGRICULTURAL STANDARD**

**TAS 1503-2007**

**TOMATO**

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

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**50 Phaholyothin Road, Ladyao, Chatuchak, Bangkok 10900**

**Telephone (662) 561 2277 [www.acfs.go.th](http://www.acfs.go.th)**

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**Ad hoc Sub-Committee on the Elaboration of Standard for Tomato**

1. Director General of Department of Agriculture or representative Chairperson  
Mr. Manoch Thongjiem, Representative of Director General
2. Representative of the Department of Agricultural Extension  
Mrs. Orasa Dissataporn
3. Representative of the Department of Export Promotion, Ministry of Commerce  
Mr. Rachain Pojanasunthorn  
Mr. Kunyaphan Raengkhum (alternate)
4. Representative of the Office of Commodity and Systems Standards,  
National Bureau of Agricultural Commodity and Food Standards  
Mrs. Oratai Silapanaporn  
Mr. Pisan Pongsapitch (alternate)
5. Representative of the Office of Postharvest and Product Processing  
Research and Development, the Department of Agriculture  
Ms. Rumphana Koslanun
6. Representative of the Horticultural Research Institute, Department of Agriculture  
Mrs. Pitsawat Buara
7. Representative of the Faculty of Agriculture, Kasetsart University  
Ms. Piyanooch Junka
8. Representative of the Horticultural Science Society of Thailand  
Mr. Suraphong Kosiyachinda  
Mrs. Kanokrat Sittipoch (alternate)
9. Experts  
ML. Anothai Choomsai  
Mrs. Singching Thongdee  
Assistant Professor Narong Singhuburaudom  
Mr. Thaworn Kowithayakorn  
Mr. Sakchai Unchittikul
10. Representative of the Office of Commodity and Systems Standards,  
National Bureau of Agricultural Commodity and Food Standards Secretary  
Ms. Namaporn Attaviroj
11. Representatives of the Office of Commodity and Systems Standards, Assistant Secretary  
National Bureau of Agricultural Commodity and Food Standards  
Ms. Monthicha Sanpa-Asa  
Ms. Yaninsiri Tinnakorn  
Ms. Panpilad Saikaew

The tomato is a Thai commodity which has a high potential in the production and export. The establishment of this standard is aiming to promote and encourage the development of production in terms of quality and safety. Therefore, it is deemed necessary for the Ministry of Agriculture and Cooperatives to elaborate a standard on tomatoes so as to be reliable and recognized both domestically and internationally. More importantly, it will be of great benefits for consumers' safety as well as for export promotion.

The provisions of this standard are based upon information of the following documents:

National Bureau of Agricultural Commodity and Food Standards B.E. 2549 (2006). The Study of the Produce on Important Characteristic Indices used as Criteria for Quality, Classification and Size Code Determination of the Tomatoes Project of National Bureau of Agricultural Commodity and Food Standards B.E. 2549 (2006) in cooperation with Kasetsart University.

FAO/WHO. 2005. Draft Codex Standard for Tomatoes (Appendix II) and Draft Section 3-Provisions Concerning Sizing and 4.2 Size Tolerances (Appendix III), pp. 30- 34. In Report of the Twelfth Session of the Codex Committee on Fresh Fruits and Vegetables (ALINORM 05/28/35). Joint FAO/WHO Food Standards Programme, FAO, Rome.

The photographs of oblong or elongated fruit tomatoes as well as the cherry and cocktail tomatoes were complimented by the courtesy of Mrs Pissawart Buara of The Horticultural Research Institute, Department of Agriculture.

***Remark:***

The standard title has been revised from “Thai Agricultural Commodity and Food Standard (TACFS)” to “Thai Agricultural Standard (TAS)” in accordance with the enforcement 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:  
TOMATO  
B.E.2550 (2007)**

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The resolution of the 1/2550 session of the National Committee on Agricultural Commodity and Food Standards dated 2 May B.E. 2550 (2007) endorsed the Thai Agricultural Commodity and Food Standard entitled Tomato for the benefits 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 Tomato is hereby issued as a voluntary standard, the details of which are attached herewith.

Notified on 2 May B.E.2550 (2007)

Professor Teera Sootabuta

Minister of Agriculture and Cooperatives  
Chairperson of the National Committee on Agricultural Commodity and Food Standards

# THAI AGRICULTURAL STANDARD

## TOMATO

### 1 DEFINITION OF PRODUCE

This standard applies to commercial varieties of tomatoes grown from *Lycopersicon esculentum* Mill. of the Solanaceae family, to be supplied fresh to the consumer, but those for processing are excluded.

### 2 TYPE OF TOMATOES

Commercial tomatoes are classified according to shape and size into four types as follows:

- (1) round;
- (2) ribbed;
- (3) oblong or elongated; and
- (4) small tomatoes - (cherry and cocktail).

The tomatoes of Sida group can be classified either in the small tomatoes or elongated tomatoes.

### 3 QUALITY

#### 3.1 MINIMUM REQUIREMENTS

3.1.1 In all classes (section 3.2), subject to the special provisions for each class and the tolerances allowed, the tomatoes shall be as follows:

- (1) whole;
- (2) fresh in appearance;
- (3) sound, produce affected by rotting and bruising mark such as to make it unfit for consumption is excluded;
- (4) free of unhealed crack;
- (5) clean, practically free of any visible foreign matters;
- (6) free of abnormal external moisture, excluding condensation following removal from cold storage;
- (7) practically free of pests affecting the general appearance of the produce;
- (8) practically free of produce damages caused by pests affecting the general appearances of the produce, and the acceptance by the consumers;
- (9) free of damages caused by low and/or high temperature affecting the general appearances of the produce and the acceptance by the consumers;
- (10) free of any foreign smell and/or abnormal taste; and

(11) In the case of trusses of tomatoes, the stalks shall be fresh, healthy, clean and free of all leaves and any visible foreign matter.

3.1.2 The tomatoes shall be carefully harvested at appropriate maturity, suitable to the variety and geographical location. They can continuously develop their ripening process to reach the appropriate degree of ripeness which is determined by tomato peel's color in order to have the fruit transported with acceptable condition on arrival at the destination.

## 3.2 CLASSIFICATION

The tomatoes in this standard are classified into three classes defined below:

### 3.2.1 Extra Class

3.2.1.1 The tomatoes in this class shall be of superior quality. They shall be characteristic of the variety as regards shape, appearance and development and shall have firm flesh.

3.2.1.2 They shall be uniform in terms of size. The coloring of individual fruit, according to their state of ripeness, shall satisfy the requirement set out in Section 3.1.2. They shall be free of greenback<sup>1/</sup> when they ripe, with the exception of the green color characteristic of the variety. In addition, they shall be free of other defects, with the exception of very slight superficial defects, provided these do not affect the general appearances of the produce, the quality, the keeping quality and presentation in the package.

### 3.2.2 Class I

3.2.2.1 The tomatoes in this class shall be of good quality with firm flesh of the characteristics of the variety.

3.2.2.2 The fruit shall be uniform in terms of size. They shall be free of visible greenback when they ripe. The following slight defects may be allowed, provided these do not affect the general appearances of the produce, the quality, the keeping quality and presentation in the package:

- (1) a slight defect in shape and development;
- (2) a slight defect in colouring;
- (3) slight skin defects; and
- (4) slight bruising marks.

3.2.2.3 The following slight defects may be allowed for ribbed tomatoes:

- (1) shallow scars or healed cracks not more than 1.0 cm in length;
- (2) no excessive protuberances;
- (3) a small umbilicus but not suberization<sup>2/</sup>; and
- (4) suberization of the stigma up to 1.0 cm<sup>2</sup>;

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<sup>1/</sup> greenback means green patch or green area that is not the characteristic of the variety when they ripe. It may appear at any place on the fruit.

<sup>2/</sup> suberization means tissue forming processes that bring about scar at the stytor end. This happens at the base of the shed stigma which turns into a brown dry scar.

(5) a linear scar not longer than two thirds of the widest diameter of the fruit.

### 3.2.3 Class II

3.2.3.1 This class includes tomatoes which qualify neither for inclusion in Extra Class nor Class I, but satisfy the minimum requirements specified in Section 3.1.

3.2.3.2 The following defects may be allowed, provided that the tomatoes still retain their essential characteristics as regards the quality, the keeping quality and presentation in the package:

- (1) slight defects in shape and development;
- (2) slight defects in colouring;
- (3) skin defects or bruising marks, provided the fruit is not seriously affected; and
- (4) shallow scars or healed cracks not more than 3.0 cm in length for round, ribbed and oblong or elongated tomatoes.

3.2.3.3 The following defects may be allowed for ribbed tomatoes:

- (1) more pronounced protuberances than allowed under Class I, but without being misshapen;
- (2) one umbilicus;
- (3) suberization of the stigma up to 2 cm<sup>2</sup>; and
- (4) fine blossom scar in elongated form (like a seam).

## 4 SIZING

4.1 Size of tomatoes is measured at the widest part of the fruit diameter stated in tables 1, 2 and 3:

4.2 The following smallest fruit measured by diameter is allowed in each type of tomatoes:

- (1) 10 mm for small size tomatoes, with the exception of those of Sida group;
- (2) 20 mm for Sida group;
- (3) 30 mm for oblong or elongated tomatoes; and
- (4) 35 mm for round and ribbed tomatoes.



**Table 1. Sizes of round, ribbed and oblong or elongated tomatoes**

<b>Size Codes</b>	<b>Diameter (mm)</b>
1	> 102
2	> 82 to 102
3	> 67 to 82
4	> 57 to 67
5	> 47 to 57
6	> 40 to 47
7	> 35 to 40
8	> 30 to 35

**Table 2. Sizes of small tomatoes, except Sida group**

<b>Size Codes</b>	<b>Diameter (mm)</b>
1	>25 to 30
2	> 20 to 25
3	> 15 to 20
4	10 to 15

**Table 3. Sizes of Sida tomatoes**

<b>Size Codes</b>	<b>Diameter (mm)</b>
1	> 40 to 45
2	> 35 to 40
3	> 30 to 35
4	> 25 to 30
5	20 to 25

## 5 TOLERANCES

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

### 5.1 QUALITY TOLERANCES

#### 5.1.1 Extra Class

Not more than 5% by number or weight of tomatoes not satisfying the requirements of the Extra class, but meeting those of Class I or, exceptionally, coming within the tolerances of Class I.

### 5.1.2 Class I

Not more than 10% by number or weight of tomatoes not satisfying the requirements of Class I, but meeting those of Class II or, exceptionally, coming within the tolerances of Class II.

For trusses of tomatoes, not more than 5% by number or weight of tomatoes detached from the stalk in each package.

### 5.1.3 Class II

Not more than 10% by number or weight of tomatoes satisfying neither the requirements of Class II nor the minimum requirements, with the exception of produce affected by rotting, bruising marks or any other deterioration rendering it unfit for consumption.

For trusses of tomatoes, not more than 10 % by number or weight of tomatoes detached from the stalk in each package.

## 5.2 SIZE TOLERANCES

For all classes and size codes or all types of presentation of tomatoes, not more than 10 % by number or weight of those immediate greater or smaller sizes.

## 6 PACKING AND PRESENTATION

### 6.1 UNIFORMITY

The contents in each package shall be uniform in respect of variety, quality, size and colour. The visible part of the contents of the package shall be representative of the entire contents.

The ripeness and coloring of tomatoes in Extra Class and Class I shall be practically uniform. In addition, the length of oblong or elongated tomatoes shall be sufficiently uniform.

### 6.2 PACKAGING

Tomatoes shall be packed in such a way as to maintain the quality of the produce properly. The material used inside the package shall be new, clean and of a quality such as to avoid causing any damages to the external or internal quality of the produce. The use of materials, in particular paper or stamps bearing trade specifications is allowed provided that the printing or labeling has been done with a non-toxic ink or glue.

#### 6.1 DESCRIPTION OF CONTAINER

The containers shall be of good quality, hygiene, good ventilation, free of abnormal smell and foreign matters, and have resistance characteristics to withstand suitable handling, shipping and preserving of the tomatoes.

## 6.4 PRESENTATION

Tomatoes shall be presented in either one of the following forms:

### 6.4.1 Individual tomatoes

Individual tomatoes may or may not have calyx and stalk, but the stalk shall be shortened.

### 6.4.2 Trusses of tomatoes

The entire or part of inflorescence shall comprise at least the following number of tomatoes:

6.4.2.1 Three fruits for round, oblong or elongated tomatoes; or two if prepackaged.

6.4.2.2 Six fruits for small tomatoes and tomatoes in Sida group; or four if prepackaged.

## 7 MARKING AND LABELLING

### 7.1 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 labelled with the name of the produce "Tomato" and/or "Variety". For tomatoes are presented as trusses of tomatoes, each package shall be labelled with the name of the produce "Trusses of tomatoes".

#### (2) Net weight in gram or kilogram

#### (3) Producer information

Name and address of the producer or packer or distributor shall be indicated. Instead of those, name and address of the head office of the producer or the packer may be labelled. In case of import, the label shall be informed the name and address of importer.

#### (4) Origin of produce

Country of origin shall be labelled, except they are domestically produced for local market.

#### (5) Language

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

### 7.2 NON-RETAIL CONTAINERS

Each package shall 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 labelled with the name of the produce “Tomato” and/or “Variety”. For tomatoes are presented as trusses of tomatoes, each package shall be labelled with the name of the produce “Trusses of tomatoes”.

(2) Class

(3) Size, if classified by size

(4) Net weight in gram or kilogram

(5) Producer information

Name and address of the producer or packer or distributor shall be labelled. Where applicable, code number of produce can be indicated in the label. Instead of those, name and address of the head office of producer or the packer may be labelled. In case of import, the label shall be informed the name and address of importer.

(6) Origin of produce

Country of origin shall be labelled, except they are domestically produced for local market.

(7) Language

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

### 7.3 CERTIFICATION MARK

Certification mark of this standard shall be complied with criteria and conditions provided by the Committee on Agricultural Standards.

## 8 CONTAMINANTS

In compliance with the provisions of the relevant laws and requirements under the Thai Agricultural Standard on Contaminants.

## 9 PESTICIDE RESIDUES

In compliance with the provisions of relevant laws and requirements under the Thai Agricultural Standard entitled Pesticide Residues: Maximum Residue Limits (TAS 9002) and Pesticide Residues: Extraneous Maximum Residue Limits (TAS 9003).

## 10 HYGIENE

Harvesting, handlings including storage and transportation shall be hygienically practiced in order to prevent any contaminations which will be harmful to the consumer.

## 11 METHODS OF ANALYSIS AND SAMPLING

In compliance with the provisions of the relevant laws and requirements under the Thai Agricultural Standard on Methods of Analysis and Sampling.

ANNEX A

TOMATO ILLUSTRATION



**Fig. 1** Round tomato



**Fig. 2** Ribbed tomato



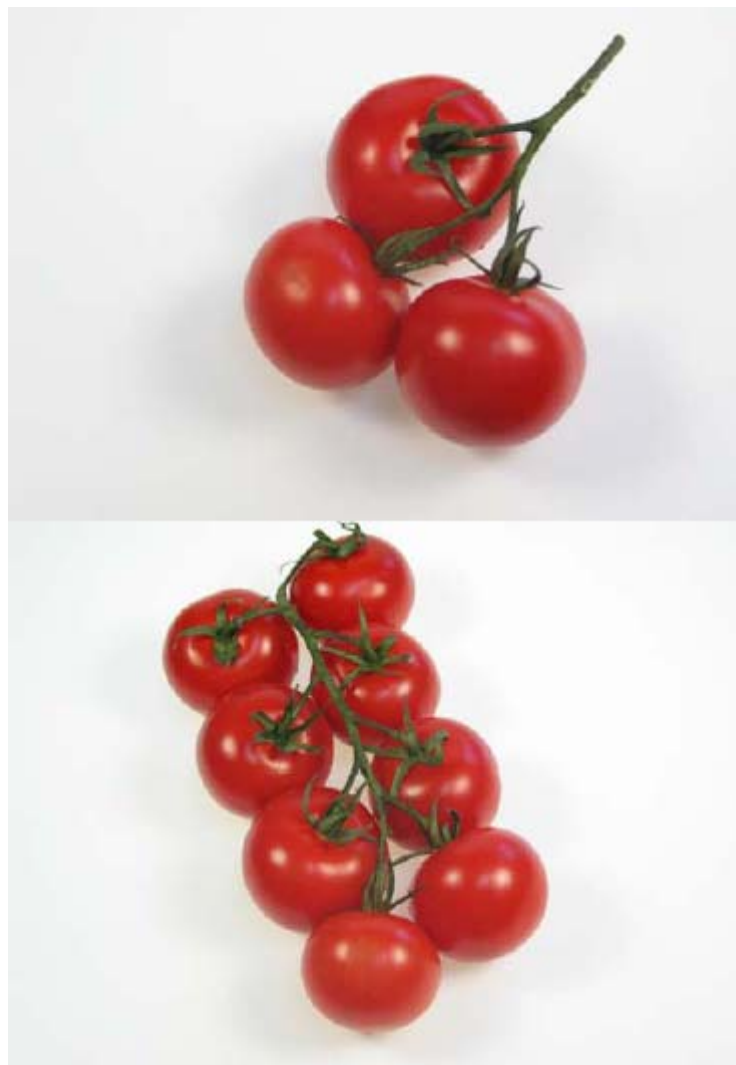
**Fig. 3** Oblong or elongated tomatoes



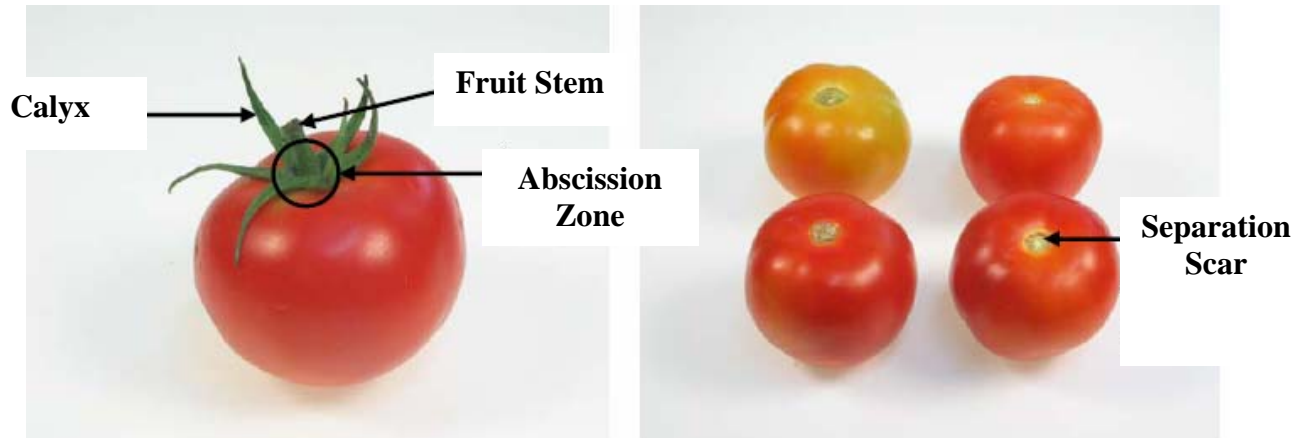
**Fig. 4** Small tomatoes (cherry and cocktail tomatoes)



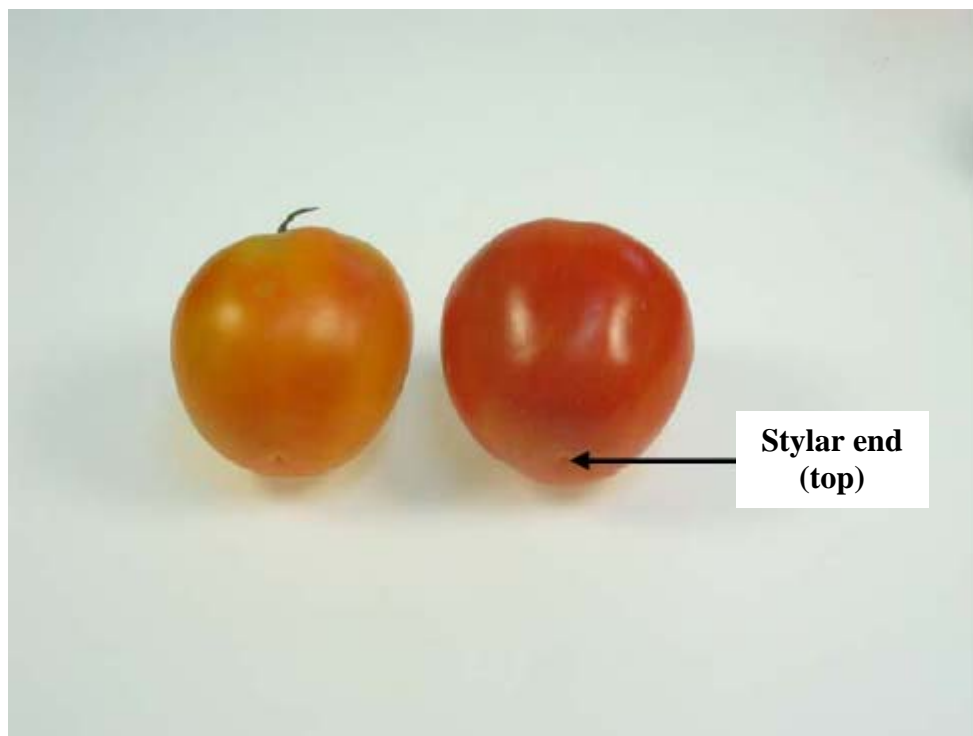
**Fig. 5** Samples of tomatoes of Sida group



**Fig. 6** Trusses of tomatoes



**Fig. 7** Calyx, fruit stem and abscission zone, and separation scar



**Fig. 8** Stylar end (top) of a tomato





**Fig. 9** Characteristic of rotting



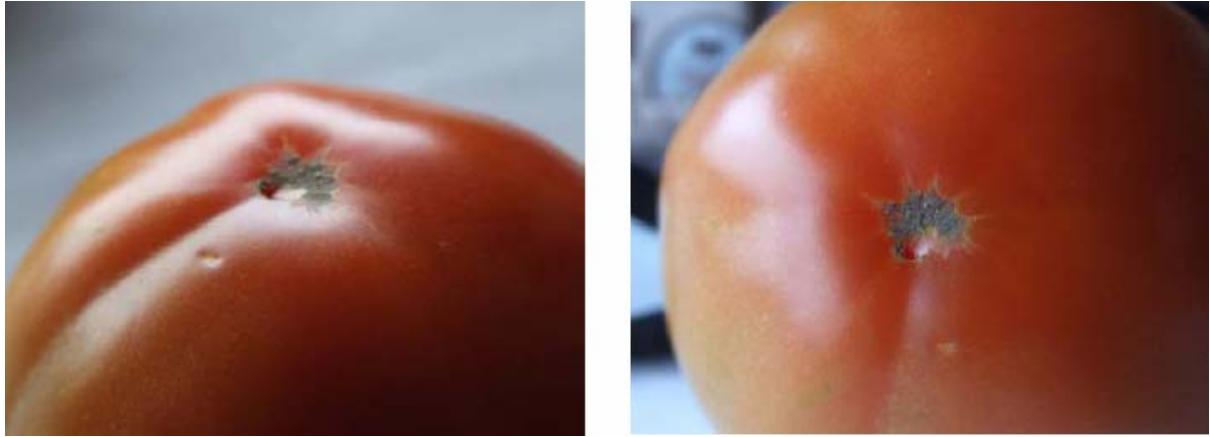
**Fig. 10** Various defects caused by pests



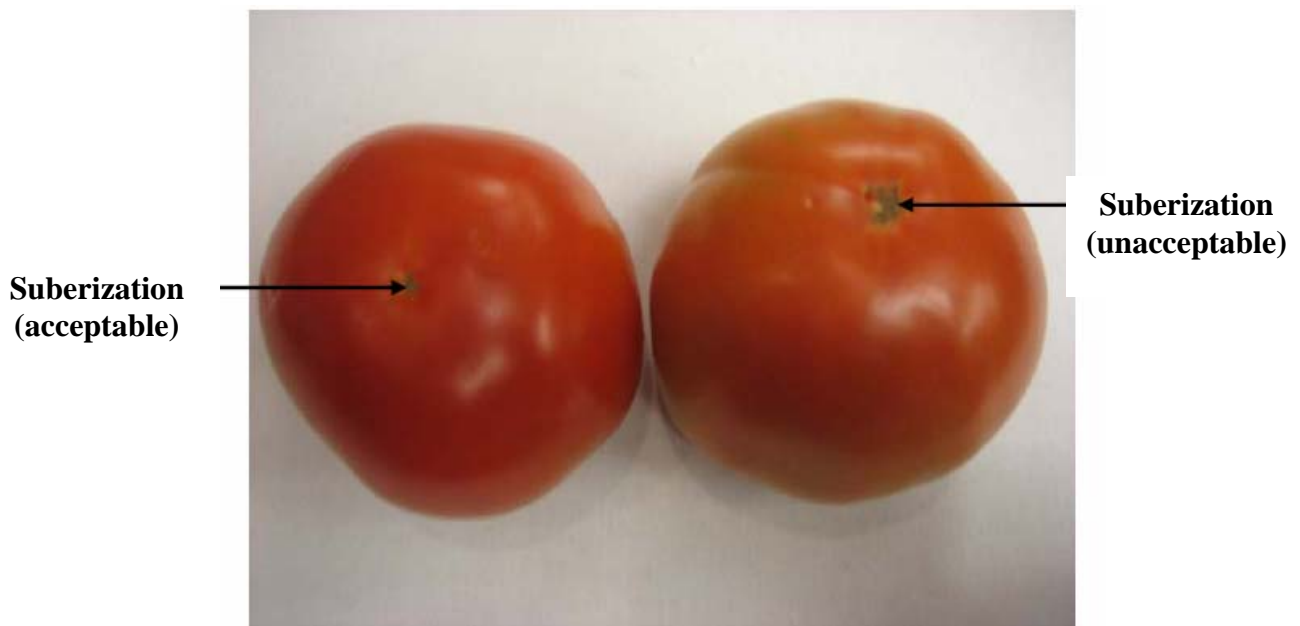
**Fig. 11** Abnormal green area (greenback) and shallow healed scar



**Fig. 12** Protuberance defect



**Fig. 13** Suberization scars of tomatoes at the styler ends



**Fig. 14** Comparison of tomato suberizations at the styler ends



**Fig. 15** Linear scars which are longer than two thirds of the widest diameter of the fruit (unacceptable)

## ANNEX B

## TOMATO SKIN COLOR LEVEL

Tomato skin color is classified in accordance with its maturity, from less to more maturity as the followings:

<b>Colour Level</b>	<b>Appearance Skin Color of Tomatoes</b>
Green	green color by 100% of the skin area, color intensity ranges from light to dark green.
Mature Green	beginning yellow.
Breaker	begin to change from green to tannish-yellow or pink or red of $\leq 10\%$ of the skin area.
Mottled	yellow with rose or red $> 10\%$ to $30\%$ of skin area.
Rose	rosy red or red $> 30\%$ to $60\%$ of skin area.
Red	rosy red or red $> 60\%$ to $90\%$ of skin area.
Mature Red	red color $> 90\%$ of skin area.

**ANNEX C****UNIT**

The unit and symbol used in this standard and the unit of SI (International System of Units or *Le Système International d'Unités*) recognized to be used are as follows:

<b>Measurement</b>	<b>Unit</b>	<b>Symbols</b>
Length	millimeter	mm
	centimeter	cm
Area	square centimeter	cm <sup>2</sup>