

Standardization and Inspection

Marita Cantwell

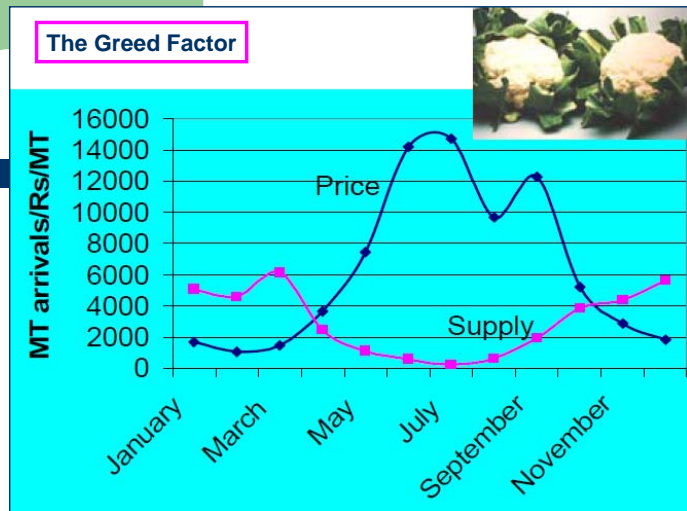
Thanks to:

- Michael Morrelli, mike.morrelli@usda.gov
- Jennifer Dougherty, jennifer.dougherty@ams.usda.gov
- Michael Reid, msreid@ucdavis.edu
- Adel Kader, aakader@ucdavis.edu

Reference: Standardization and Inspection of Fresh Fruits and Vegetables
Chapter 23, Postharvest Technology Horticultural Crops

Postharvest Technology Short Course, June 2009

The Greed Factor



Slide from Michael Reid

What Are Grade Standards?

Marketing Tools that provide:

- Uniform definitions for determining levels of quality
- Common language for trading
- Classification of numerous characteristics
 - Grade (Quality)
 - Condition
- A means of marking official USDA quality levels on product labels



Fresh Fruit and Vegetable Standards

- U.S. Grade Standards
 - US Fancy, US No.1, US No. 1;
<http://www.ams.usda.gov/AMSv1.0/standards>
 - FFV Grade Stds: Vegetables Fresh market, Fruit Fresh market, Vegetables for Processing; Fruit for Processing; Nuts and Specialty Crops
- California Grade Standards
 - Products produced and sold within the state
 - Compare with U.S. Standards (Table 23.1)
 - Honeydew melon; CA std has %SS requirement
- International Grade Standards
 - OECD, European imports
 - Extra class, Class I, Class II
- Industry Standards
 - Standards between producers-processors
 - Companies, cooperatives (banana, fresh-cut)



USDA United States Department of Agriculture
Agricultural Marketing Service

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You are here: Home / Fresh Product Inspection Service

Grading, Certification and Verification

Fresh Products Grading and Quality Certification

If you are part of the vast U.S. fruit and vegetable market, the Agricultural Marketing Service (AMS) official grading services can make your farm or company more profitable. For sellers, these services ensure that their products meet specified grade or contract requirements; for buyers, grading services ensure that they get the quality that they expect.

What's new?

- Newsletter on Training Initiatives for Industry (PDF)
- Current Inspection Fees (PDF)

I Want To

- Know About the Services Provided
- Download Inspection Certificates
- Buy Inspection Equipment (PDF)
- Request an Inspection/Contact an Office
- Know Fresh Inspection's Values, Mission, Vision
- Know Fresh Customer Service Standards

Resources

- How to Read FV-300 Paper Certificate (PDF)
- U.S. Grade Standards
- Federal Register Notices

Media Help

- Download Adobe Acrobat

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Last Modified Date: 08/05/2008

USDA Grade Standards are free, available online

Website
ams.usda.gov/freshinspection

USDA United States Department of Agriculture
Agricultural Marketing Service

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Grading, Certification and Verification

Fresh Market Fruit Grade Standards

- Apples, effective December 19, 2003 (PDF)
- Appos, effective October 28, 1994 (PDF)
- Avocados, Florida, effective September 3, 1957 (PDF)
- Blueberries, effective March 20, 1995 (PDF)
- Cherries, Sweet, effective May 7, 1971 (PDF)
- Cranberries, Fresh, effective August 28, 1971 (PDF)
- Dezberries and Blackberries, effective February 13, 1928 (PDF)
- Grapes, American, (Eastern Type) Bunch, effective September 8, 1993 (PDF)
- Grapes, June (European or Vinifera Type), effective July 20, 1939 (PDF)
- Grapes, Muscadine, effective February 13, 2006 (PDF)
- Grapes, Table (European or Vinifera Type), effective March 29, 1999 (PDF)
- Grapefruit (California and Arizona), effective December 27, 1999 (PDF)
- Grapefruit (Florida), effective February 20, 1997 (PDF)
- Grapefruit (Texas and States other than Florida, California and Arizona), effective September 5, 2003 (PDF)
- Kiwifruit, effective October 15, 1986 (PDF)
- Lemons, effective December 27, 1999 (PDF)
- Limes, Persian (Tahiti), effective May 31, 2006 (PDF)
- Mango, effective August 24, 2007 (PDF)
- Nectarines, effective March 29, 2004 (PDF)
- Oranges (California and Arizona), effective December 27, 1999 (PDF)
- Oranges and Tangelos (Florida), effective February 20, 1997 (PDF)
- Oranges (Texas and States Other Than Florida, California and Arizona), effective September 5, 2003 (PDF)
- Peaches, effective May 31, 2004 (PDF)
- Pears, Summer and Fall, effective August 20, 1955 (PDF)
- Pears, Winter, effective September 10, 1955 (PDF)
- Pineapples, effective May 2, 2008 (PDF)
- Plums and Prunes, Fresh, effective March 29, 2004 (PDF)
- Raspberries, effective February 23, 2006 (PDF)
- Strawberries, effective December 27, 1999 (PDF)
- Tangerines (Florida), effective February 20, 1997 (PDF)

See Also

- Fresh Vegetable Grade Standards
- Fresh Vegetables for Processing Grade Standards
- Fresh Fruit for Processing Grade Standards
- Fresh Nut and Specialty Crop Grade Standards

Media Help

- Download Adobe Acrobat

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Last Modified Date: 04/30/2008

Select the Link to the Standard you are Looking for

www.ams.usda.gov/freshinspection



Doc.—Markets 7.

Issued September 10, 1917.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF MARKETS,
CHARLES J. BRAND, CHIEF.

POTATO GRADES RECOMMENDED
BY THE
UNITED STATES DEPARTMENT OF AGRICULTURE
AND THE
UNITED STATES FOOD ADMINISTRATION.

Last updated November 21, 2008

Development/Revision of U.S. Grade Standards

- 1) Official Request
- 2) Gathering of Information from all participants in the value chain
- 3) Discussion Draft for comment
- 4) Rulemaking—officially publish

Recently Published Standards:

- Mangos
- Leaf Lettuce (Field Grown)
- Pea Pods
- Mixed Standard
- Muscadine Grapes
- Cultivated Ginseng
- Peppers (other than sweet)
- Tomatoes (TOV)



United States
Department of
Agriculture

Agricultural
Marketing
Service

Fruit and
Vegetable
Programs

Fresh
Products
Branch

United States Standards for Grades of Peaches

Peach Grades
US Fancy
US Extra No.1
US No.1,
US No. 2

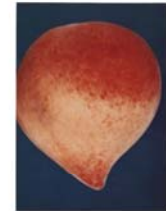
Effective May 21, 2004

Inspection Instructions (Handbooks)

USDA United States
Department of
Agriculture
Peaches
Shipping Point and Market
Inspection Instructions
Agricultural
Marketing
Service
Fruit and
Vegetable
Programs
Fresh
Products
Branch
May 2004



Shape -
Maximum allowed
Left: U.S. No. 1
Right: U.S. No. 2



Shape -
Maximum allowed - U.S. No. 1



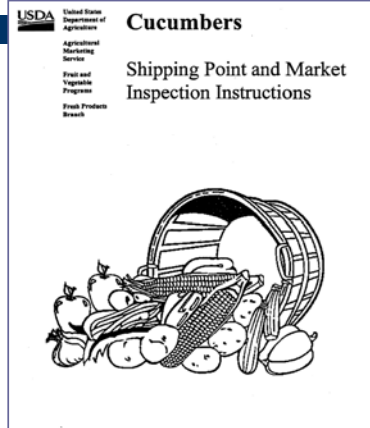
Shape -
Maximum allowed
equal halves
U.S. No. 1



PCH CP-2-A
Shape
April 1990
(Previously June 1977,
Sib. 6)

Inspection Instructions (Handbooks)

- Updated Jan 1998
- 28pp +diagrams +std
- Sample worksheet
- Sample certificate



Summaries of Stds to Facilitate Inspections



CUCUMBERS

10% Total lot tolerance
Including not more than 1% decay

Total Off-size (incl. min length)- 10%
Including under min diameter - 5%
max diameter - 5%

Fairly Well Colored
Not less than two-thirds of the surface of the cucumber is of a medium green or darker color & at least a light green color extends to within one-half inch of the blossom end on one side of the cucumber

Scars
Score as **damage** when aggregating more than the area of a circle 5/8 inch in diameter on a cucumber 6 inches in length
Score as **serious damage** when aggregating more than the area of a circle 1 inch in diameter on a cucumber 6 inches in length
Correspondingly smaller or greater areas on smaller or larger cucumbers

Yellowing
Damage when any spot of yellow color predominates over the green
Serious damage when the aggregate area of yellow color predominates over the green exceeds 1/2 inch in diameter

GRADE	DIAMETER	LENGTH
U.S. Fancy	2-3/8 in. max	6 in. min
U.S. Extra No. 1	2-3/8 in. max	6 in. min
U.S. No. 1	2-3/8 in. max (UOS)	6 in. min (UOS)
U.S. No. 1 Small	1-1/2 in. min 2 in. max	No requirements
U.S. No 1 Large	2-1/4 in. min	6 in. min (UOS)
U.S. No. 2	2-3/8 in. max (UOS)	5 in. min (UOS)

Pulled Stems

Score as **damage** when there is any breaking of the flesh at the stem end and aggregating more than the area 1/2 inch in diameter, incl. the stem scar if stem has been removed.
Or- any breaking of the flesh at the stem end aggregating more than 3/8 inch in diameter and over 1/8 inch in depth.
Or- any breaking of the flesh regardless of area if more than 1/4 inch in depth.

Sunken Areas

Score as **damage** when the area exceeds 3/8 inch in diameter (aggregate area)
Score as **serious damage** when the area exceeds 5/8 inch in diameter (aggregate area)

Summaries of Stds to Facilitate Inspections

....Quality Defects- Shape

Top- Damage



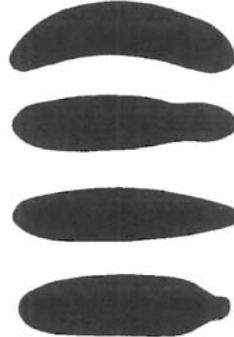
Center- Damage

Bottom- U.S. No. 1



All cucumbers are considered as damage (none serious damage)

MINIMUM SHAPES PERMISSIBLE IN U.S. NO. 1 GRADE
(About 15 actual size)



PARTS OF A STANDARD

- INDEX
- GRADES
- TOLERANCES
- APPLICATION OF TOLERANCES
- DEFINITIONS
- EXTRAS (Size Requirements, Sample Size, Standard Pack, etc.)

INDEX

Peach Std.

United States Standards for Grades of Peaches

May 21, 2004

Grades

- 51.1210 U.S. Fancy.
- 51.1211 U.S. Extra No. 1.
- 51.1212 U.S. No. 1.
- 51.1213 U.S. No. 2.

Tolerances

- 51.1214 Tolerances.

Application of Tolerances

- 51.1215 Application of tolerances to individual packages.

Size

- 51.1216 Size requirements.

Standard pack

- 51.1217 Standard pack.

Definitions

- 51.1218 Mature.
- 51.1219 Well formed.
- 51.1220 Leaf or limb rub injury.
- 51.1221 Damage.
- 51.1222 Serious damage.
- 51.1223 Badly misshapen.

GRADES

Peach Std.

Grades

§51.1210 U.S. Fancy.

“U.S. Fancy” consists of peaches of one variety which are mature but not soft or overripe, well formed and which are free from decay, bacterial spot, cuts which are not healed, growth cracks, hail injury, scab, scale, split pits, worms, worm holes, leaf or limb rub injury; and free from damage caused by bruises, dirt or other foreign material, other disease, insects or mechanical or other means. In addition to the above requirements, each peach shall have not less than one-third of its surface showing blushed, pink or red color.

§51.1211 U.S. Extra No. 1.

Any lot of peaches may be designated “U.S. Extra No. 1” when the peaches meet the requirements of the U.S. No. 1 grade: **Provided**, That in addition to these requirements, 50 percent, by count, of the peaches in any lot shall have not less than one-fourth of the surface showing blushed, pink or red color.

§51.1212 U.S. No. 1.

“U.S. No. 1” consists of peaches of one variety which are mature but not soft or overripe, well formed, and which are free from decay, growth cracks, cuts which are not healed, worms, worm holes, and free from damage caused by bruises, dirt, or other foreign material, bacterial spot, scab, scale, hail injury, leaf or limb rubs, split pits, other disease, insects or mechanical or other means.

GRADES- BASIC REQUIREMENTS

for U.S. No.1(Peaches)

- **One variety**
- **Mature (not soft or overripe)**
- **Well formed; and**

GRADES- FREE FROM

U.S. No.1 (Peaches)

- **Decay**
- **Growth cracks**
- **Cuts which are not well healed**
- **Worms**
- **Worm holes; and**

GRADES- FREE FROM DAMAGE

U.S. No. 1 (Peaches)

- Bruises;
- Dirt or other foreign material;
- Bacterial spot;
- Scab;
- Scale;
- Hail injury;

GRADES- FREE FROM DAMAGE cont.

U.S. No.1 (Peaches)

- Leaf or limb rubs;
- Split pits;
- Other disease;
- Insects;
- Mechanical;
- Or other means

Tolerances- Shipping Point



	Total
Damage	10%
Serious damage	5%
Decay	1%

Tolerances- En Route or at Destination



	Total
Total defects	14%
Damage - perm/qty	10%
Total Serious damage	7%
Tot. serious damage – perm/qty	5%
Decay	2%

Tolerance review

SPI		MKT	
Parameter	Total	Parameter	Total
		Total defects	14%
Damage	10%	Damage - perm/qty	10%
		Total Serious damage	7%
Serious damage	5%	Total serious damage – perm/qty	5%
Decay	1%	Decay	2%

Application of Tolerances More than 10 LBS.

- For packages which contain more than 10 pounds, and a tolerance of 10 percent or more is provided..., individual packages in any lot shall not have more than one and one-half times the tolerance specified.
- For packages which contain more than 10 pounds and a tolerance of less than 10 percent is provided, individual packages in any lot shall have not more than double the tolerance specified,
- Except that at least one peach which is seriously damaged by insects or affected by decay may be permitted in any package.

Definitions – Basic Requirements

- **What is “Mature?”**

Means that the peach has reached the stage of growth which will insure a proper completion of the ripening process.

- **What is “Damage by leaf or limb rubs?”**

... When not smooth, or when not light colored, or when aggregating more than ½ inch in diameter.

Peach Std.

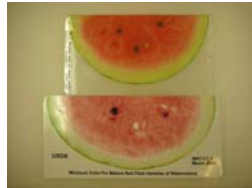
§51.1212 U.S. No. 1.

“U.S. No. 1” consists of peaches of one variety which are mature but not soft or overripe, well formed, and which are free from decay, growth cracks, cuts which are not healed, worms, worm holes, and free from damage caused by bruises, dirt, or other foreign material, bacterial spot, scab, scale, hail injury, leaf or limb rubs, split pits, other disease, insects or mechanical or other means.

Extras

- Size Requirements
- Color Requirements
- Standard Pack (§51.1217)
- Marking Requirements
- Sample Size (§51.1214, included in tolerances)
- Allowances

Standard for color
For watermelon



Peach Std. ~ Size requirements

Size

§51.1216 Size requirements.

- (a) The numerical count or a count-size based on equivalent tray pack size designations or the minimum diameter of the peaches packed in a closed container shall be indicated on the container.
- (b) When the numerical count is not shown the minimum diameter shall be plainly stamped, stenciled, or otherwise marked on the container in terms of whole inches, whole and half inches, whole and quarter inches, or whole and eighth inches, as 2 inches minimum, 2-1/4 inches minimum, 1-7/8 inches minimum, in accordance with the facts. The minimum and maximum diameters may both be stated, as 1-7/8 to 2 inches, or 2 to 2-1/4 inches, in accordance with the facts.
- (c) "Diameter" means the greatest dimension measured at right angles to a line from stem to blossom end of the fruit.
- (d) In order to allow for variations incident to proper sizing, not more than 10 percent, by count, of peaches in any lot may be below the specified minimum size and not more than 15 percent may be above any specified maximum size.

Sweet Pepper Std. ~ example

§51.3271 U.S. No. 1.

"U.S. No. 1" consists of mature green sweet peppers of similar varietal characteristics (except when more than one variety and/or color are marked on the container), which are firm, fairly well shaped, and free from sunscald and decay affecting calyxes and/or walls, decay affecting stems, and free from damage caused by freezing injury, hail, scars, sunburn, disease, insects, mechanical or other means.

(a) **Size.** Unless otherwise specified, the diameter of each pepper shall be not less than 2-1/2 inches and the length of each pepper shall be not less than 2-1/2 inches.

(b) **Color.** Any lot of peppers which meet all the requirements of this grade, except those relating to green color, may be designated as "U.S. No. 1" with the characteristic color specified in connection with this grade, provided that at least 90 percent of the peppers show any amount of the specified characteristic color, and provided further, that if the peppers fail to meet the color requirements of either "U.S. No. 1" or "U.S. No. 1 (color specified)," they may, when requested, be designated as "U.S. No. 1 Mixed Color" (See Tolerances, §51.3274).

§51.3272 U.S. No. 2.

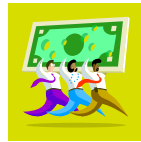


Where Inspections Occur


- At Shipping Point
 - Packing sheds
 - Grower Fields
- At Receivers
 - After Transport
 - Distribution Center
 - Terminal Market



Why Get an Inspection Use of Certificates



- Product information—Quality and Condition
 - Grower payment
 - Information after storage
- Verify sales contract
 - At shipping point
 - At destination
- Compliance with mandatory requirements
 - Marketing Orders
 - Export Acts (Apples & Grapes)
 - Import requirements
 - Institutional purchases (Government, Commissary, other)
- Letters of credit



The screenshot shows the USDA Agricultural Marketing Service website. The main heading is "Grading, Certification and Verification". Below this, there is a section titled "Fresh Products Grading and Quality Certification" with a USDA FRESH logo. The text explains that AMS official grading services can make farms or companies more profitable by ensuring products meet specified grade or contract requirements. A "What's new?" section lists a newsletter on training initiatives and current inspection fees. On the right, there are sections for "I Want To" (with links like "Know About the Services Provided", "Download Inspection Certificates", etc.) and "Resources" (with links like "How to Read FV-300 Paper Certificate", "U.S. Grade Standards", etc.). A "Media Help" section includes a link to "Download Adobe Acrobat". The footer contains navigation links and a "Last Modified Date: 08/05/2008".

USDA Grade Standards
ams.usda.gov/freshinspection