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Persian (Tahiti) Limes

Shipping Point and Market Inspection Instructions



Shipping Point and Market Inspection Instructions for Persian (Tahiti) Limes

These inspection instructions are specifically developed and designed by the Fresh Products Branch to assist officially licensed inspectors in the interpretation and application of the U.S. Standards for Grades of Persian (Tahiti) Limes, Section 51.1000.

These instructions do not establish any substantial rule not legally authorized by the official grade standards. This publication supersedes any previously issued inspection instructions.

Refer to General Inspection Instructions for additional information pertaining to date, inspection point, carrier, condition of carrier, lading, etc. not covered in these instructions. (Reference to "General Inspection Instructions" in all Fresh Products Branch publications refers to any one, or all of the following - General Shipping Point Inspection Instructions, General Market Inspection Instructions, or Fresh Fruit and Vegetable Certificate Writing Handbooks.)

Any portion of these instructions beginning with a section number such as 51.--- and followed with **bold** print is material copied directly from the U.S. standards. The U.S. Standards for Grades of Persian (Tahiti) Limes are printed in the appendix of this instruction. All of the U.S. standards are available on the Internet under the USDA homepage.

June 2007

This replaces inspection instructions dated, November 2000.

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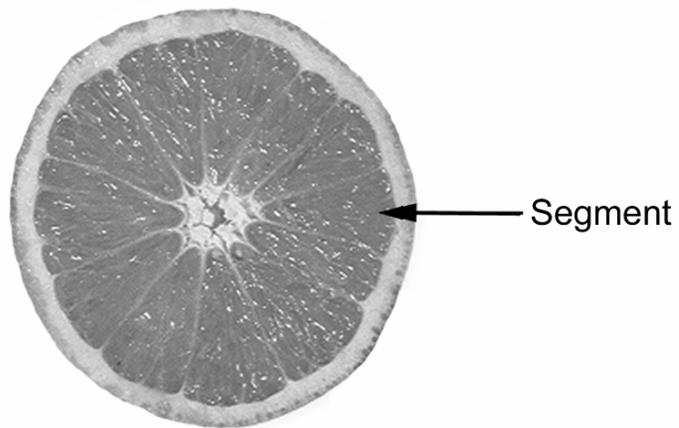
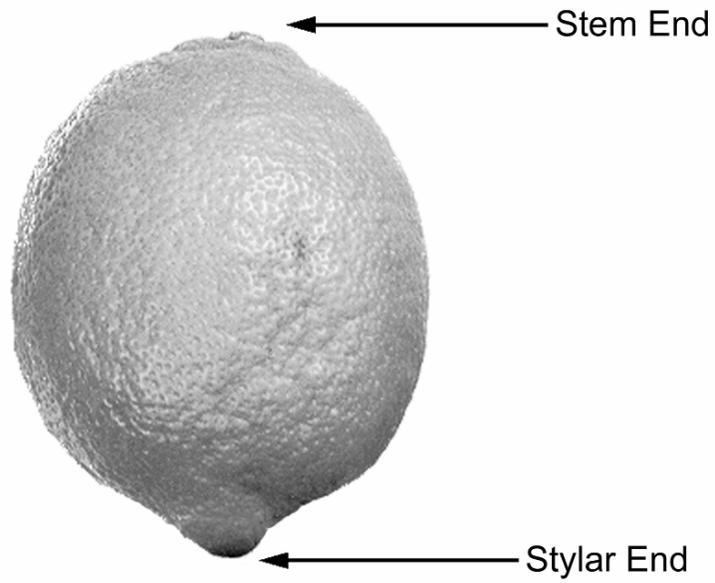
Factors noted with **(Q)** are considered **quality** only. Factors noted with **(C)** are considered **condition** at market. Factors with **(Q or C)** may be considered as **quality** or **condition** depending on the circumstances.

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LIME ILLUSTRATION



GENERAL

These inspection instructions apply to Persian (Tahiti) limes. Persian (Tahiti) type limes are practically always **seedless** and include varieties of Tahiti, Bearss, and other similar varieties. The other groups of limes are referred to as **true limes** or **seeded** limes. Limes of this group are also known as Mexican, West Indian, or Key limes.

The U.S. standards only apply to Persian (Tahiti) limes. When inspecting all other limes, these instructions are to only be used as a guide. Do not use the terms “damage,” “serious damage,” or “very serious damage.” Further, do not use descriptive terms such as “materially” or “seriously affecting the appearance” as these are used in the general definitions of damage and serious damage. Describe the objectionable factors in terms of color, area affected and depth, etc.

REPRESENTATIVE SAMPLING

The importance of obtaining representative samples cannot be over emphasized. Accurate certification is possible only if the samples examined are truly representative of the entire lot or accessible portion. All portions of a lot or load should receive the same attention in sampling regardless of the difficulty involved in reaching all layers or parts of a lot or load.

Size of Sample

The tolerances of the U.S. Standards for Grades of Persian (Tahiti) Limes are determined on the basis of count. Examine a **minimum of 25** limes from containers with 25 or more fruit (including bulk bins). The entire contents of containers shall be examined for packages with less than 25 fruit, regardless of the quality or condition of the lot. Whenever defects exceed the container or lot tolerance in one or more samples, the **entire contents** of at least one of those packages must be examined.

Number of Samples

Due to potential variations in size, quality, condition, no definite rule can be provided as to a required number of samples. A minimum of one percent (1%) of the load is recommended. It is the inspector's responsibility to examine enough samples to ensure an accurate description of the entire lot. Regardless of the number of containers in the lot a minimum of three samples shall be examined.

TOLERANCES AND APPLICATION OF TOLERANCES

§51.1000 U.S. No. 1...(c) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of the fruit in any lot may fail to meet the color requirements. In addition, not more than 10 percent, by count, of the fruit in any lot may be below the remaining requirements of this grade, but not more than one-half of this amount, or 5 percent, shall be allowed for decay, stylar end breakdown, broken skins which are not healed, or defects causing serious damage including not more than one-half of 1 percent for decay at shipping point: *Provided*, That an additional tolerance of 2-1/2 percent, or a total of not more than 3 percent, shall be allowed for decay en route or at destination.

§51.1001 U.S. Combination...(b) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of the fruit in any lot may fail to meet the color requirements. In addition, not more than 10 percent, by count, of the fruit in any lot may be below the remaining requirements of the lower grade in the combination, but not more than one-half of this amount, or 5 percent, shall be allowed for limes affected by decay, stylar end breakdown and broken skins which are not healed, including not more than one-half of 1 percent for decay at shipping point: *Provided*, That an additional tolerance of 2-1/2 percent, or a total of not more than 3 percent, shall be allowed for decay en route or at destination.

§51.1002 U.S. No. 2...(c) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of the fruit in any lot may fail to meet the color requirements. In addition, not more than 10 percent, by count, of the fruit in any lot may be below the remaining requirements of this grade, but not more than one-half of this amount, or 5 percent, shall be allowed for decay, stylar end breakdown, and broken skins which are not healed, including not more than one-half of 1 percent for decay at shipping point: *Provided*, That an additional tolerance of 2-1/2 percent, or a total of not more than 3 percent, shall be allowed for decay en route or at destination.

Table of Tolerances - U.S. No. 1, U.S. Combination¹, and U.S. No. 2 Grades

	Shipping Point	Additional Decay ONLY	En Route or At Destination Total
Color	10%		10%
Total Defects	10% ¹	2-1/2%	12-1/2%
<i>Including</i> Stylar End Breakdown, Unhealed Broken Skins, Decay, and Serious Damage by Other Means	5% ²	2-1/2%	7-1/2
<i>Including</i> Decay	1/2%	2-1/2%	3%

¹ U.S. Combination: At least 60 percent, by count, of the limes must meet the requirements of the U.S. No. 1 grade; however, the defect tolerance is based on limes which will not meet the U.S. No. 2 grade.

² U.S. Combination and U.S. No. 2: This restrictive tolerance includes ONLY Decay, Stylar End Breakdown, and unhealed broken skins.

Application of Tolerances

§51.1004 Application of Tolerances. (a) The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations: *Provided*, That the averages for the entire lot are within the tolerances specified for the grade:

(1) For packages which contain more than 3 pounds and a tolerance of 10 percent or more is provided, individual packages in any lot shall have not more than one and one-half times the tolerance specified. For packages which contain more than 3 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 decayed fruit may be permitted in any package; and,

(2) For packages which contain 3 pounds or less, individual packages in any lot are not restricted as to the percentage of defects: *Provided*, That not more than 10 percent of the packages may have more than one decayed fruit.

Packages containing more than 3 pounds:

- 10% tolerance - not more than 1-1/2 times the tolerance.
- Less than 10% tolerance - not more than double the tolerance except at least 1 decayed fruit permitted in any package.

Packages containing 3 pounds or less:

- Individual packages not restricted; *provided*, not more than 10% of packages have more than 1 decayed fruit.

NOTESHEET AND CERTIFICATE

Entries on the notesheet and certificate are to be kept in a legible and accurate manner. It is mandatory that all information appearing on the certificate be supported by information on the notesheet. When the inspection is complete, it is the responsibility of the inspector to ensure that all information is properly recorded. Notations shall be recorded so anyone familiar with inspection procedures can interpret them and write a certificate.

Headings on Notesheets

Detailed instructions pertaining to date, inspection point, place of inspection, type of carrier, lading, etc., which are not covered by these instructions may be found in the General Inspection Instructions. Your supervisor may give additional information and instructions.

Handwritten Certificates

The handwritten certificate (FV-184 at shipping point and FV-300 at market) should be written with great care since they are given to the applicant at the completion of the inspection.

Please refer to the FV-184 or FV-300 certificate handbooks and your immediate supervisor for instructions regarding the procedures to follow when writing certificates.

Product

“Limes” shall be used to describe this commodity in the “Product” section. Type, such as “seeded” or “seedless” may be used in conjunction with “Limes” or may be reported in the “Lot ID” section on market notesheets and certificates.

Number/Type of Containers

The number of containers shall always be reported. The count of large lots certified in a warehouse or on a platform may be reported on the authority of someone other than the inspector. However, the inspector is responsible for assuring that the approximate numbers of the containers reported in the lot are present. Small lots (100 containers or less) and lots that can be counted with accuracy are to be reported on the inspector's authority as “inspector's count.”

The type of container shall always be reported under this heading. The 4/5-bushel carton and the 10-pound carton are the most common type of lime containers. Other containers include the 2/5-bushel, consumer bags and bulk bins.

Brands/Markings

The brand, variety, size, count, point of origin and other important information appearing on the container should be reported on the notesheet in the “Brands/Markings” section. Only the brand name and other pertinent information should appear in this section on the certificate.

Origin

The inspector should not make a positive statement regarding product origin on their own authority. When container markings list the State or country of origin, it should be quoted in the appropriate space on notesheets and certificates. This policy is necessary because some firms may use one mark on the same product packed in several States. The inspector can certify only to the marks and has no means of verifying as to what State or country the limes are grown. If packages are not marked, or the limes are in bulk, refer to the *General Inspection Instructions*.

CONDITION OF PACK

Pack shall be judged according to both bulge and filling of containers.

In addition to the statement concerning condition of pack, it will sometimes be desirable to mention the bulge. As a rule, when the bulge is sufficiently high to indicate a satisfactory pack, it need not be mentioned. Unusual conditions, such as excessively high bulge, should be reported.

Bulge - When determining bulge, measure the distance from the bottom of the carton to the bottom edge of the telescoping cover when in place.

Well filled - means the carton is filled so that the fruit is slightly below the top edge, but not more than 1/2 inch below.

Slack - means the fruit is more than 1/2 inch below the top edge of the carton. This term should also be qualified by showing how much the fruit is below the top edge in inches or fractions of an inch.

Standard Pack

Standard pack is only determined when specifically requested by the applicant, as it is not a requirement of the grade(s). When requested to determine standard pack, use the following requirements:

§51.1005 *Standard pack.* (a) Fruit shall be fairly uniform in size, and when placed packed in crates or cartons, the fruit shall be arranged according to the approved and recognized methods.

(b) All packages shall be well filled but the contents shall not show excessive or unnecessary bruising because of over-filled packages.

(c) “Fairly uniform in size” means that not more than 10 percent, by count of the fruit in any container may vary more than four-sixteenths of an inch in diameter.

(d) In order to allow for variations, other than sizing, incident to proper packing, not more than 5 percent of the packages in any lot may fail to meet the requirements of standard pack.

Some important points to remember when determining standard pack:

- The application of tolerances does not apply to standard pack. Not more than 5% of the containers in a lot may fail to meet the requirements of standard pack.
- A lot of limes can fail to meet standard pack and still meet grade. The grade statement would be as follows: “U.S. No. 1. Fails to meet the requirements of standard pack.”
- Note in the “Remarks” section of certificates and notesheets: “Standard pack determined at applicant’s request.”

TEMPERATURE OF PRODUCT

Refer to the General Inspection Instructions for information not covered in this section.

Inspectors would not normally determine or report temperatures at shipping point. However, due to the importance of the pulp temperature of fresh fruits and vegetables when in transit or at destination, it is essential that the inspector accurately read and report the temperature or range in temperatures on each lot. Pulp temperature should be reported regardless of the location of the product, whether in the carrier, warehouse, or stacked on the platform. Remember to pre-cool the thermometer in order to obtain true readings.

A minimum of three temperatures for each lot must be taken and recorded on the notesheet. More temperatures shall be taken if the lot is abnormally cold, heated, or there is a specific request for temperature.

SIZE

The following terms shall be used when reporting size:

§51.1005...(c) “Fairly uniform in size” means that not more than 10 percent, by count of the fruit in any container may vary more than four-sixteenths of an inch in diameter.

“Irregular.” A lot would be considered “irregular” when not meeting the requirements of “fairly uniform” as defined above. When reporting a lot as irregular the percentage that fails to meet the requirement of “fairly uniform” shall be shown to justify the use of the term “irregular.”

The term “**uniform**” shall not be used.

Determining Size

§51.1016 Diameter. “Diameter” means the greatest dimension measured at right angles to a line from stem to blossom end of the fruit.

The diameter should be determined by using ring sizers or calipers. When using a caliper, turn the fruit in the caliper to make sure that the greatest dimension is obtained.

Marking as to Count

Lime cartons are commonly marked as to “count” or “approximate count.” Note: If the applicant specifically requests count and the containers are marked to count and **do not** conform to count, report this fact in the “Other” section on market notesheets and certificates and in the “Description of Products” section on shipping point notesheets and certificates. Report the range and average of fruit per container as well as percentage of containers not conforming to count. For example: “Counts range from 38 to 42, average 40; 50% of cartons fail to meet count as marked.” This may be a misbranding violation. Note: Unless the applicant specifically requests certification of marked count, do not report “Meets marked count” or “Does not meet marked count” to PACA. For further instructions see PACA Ruling on Grade and Size Markings in the General Inspection Instructions.

DEFECTS (QUALITY AND CONDITION)

Statements pertaining to freshness, maturity, shape, color, the amount and type of defects, and the amount of decay are shown under the appropriate headings. Factors noted with **(Q)** are considered as **QUALITY** only. Factors noted with **(C)** shall be reported as **CONDITION** on market certificates. Those factors noted with **(Q or C)** may be considered as **QUALITY or CONDITION**, depending on the circumstances.

Broken Skins (Q or C)

Broken skins due to stem punctures or other causes will vary in size depending on the tenderness of flesh, thinness of skin, length of stems, and handling methods. The U.S. No. 1 and U.S. No. 2 grades require that limes be “free from broken skins which are not healed.”

Scoring Guide

Score any **unhealed** broken skin against the restrictive 5 percent tolerance in both the U.S. No. 1 and U.S. No. 2 grades.

Score a **healed** broken skin as damage when it exceeds the aggregate area of a circle 1/4-inch in diameter. Score as serious damage when it exceeds the aggregate area of a circle 1/2-inch in diameter.

En route or at destination **healed** broken skins are considered a **quality** factor and **unhealed** broken skins are considered a **condition** factor.

Buckskin (Q)

This disease is a result of injury by rust mites when the fruit is small; it becomes aggravated and extended by a surface growing fungus following the mite injury. The rind becomes abnormally thick and the surface becomes slightly roughened and grayish in appearance.

Scoring Guide

§51.1010 *Damage...(I)* Buckskin when more unsightly than the maximum discoloration allowed, or the fruit texture is materially affected.

§51.1015 *Serious damage...(I)* Buckskin when more unsightly than the maximum discoloration allowed, or the fruit texture is seriously affected.

Color (Q or C)

Limes can be affected by two categories of color defects: **Blanching (Q)** and **Yellowing (C)**. These are two distinct defects and must be considered separately. The 10% tolerance for color is for limes affected by blanching only. Yellowing is included in the 10% total tolerance for defects.

Lots of limes which fail to meet the U.S. No. 1, U.S. Combination, or U.S. No. 2 grade requirements **only** because of **blanching** may be (if requested) designated as **U.S. No. 1 Mixed Color, U.S. Combination Mixed Color, or U.S. No. 2 Mixed Color, respectively.**

Lots of limes which fail to meet the U.S. No. 1, U.S. Combination, or U.S. No. 2 grade requirements **only** because of **turning yellow or yellow color**, caused by the ripening process may be (if requested) designated as **U.S. No. 1 Turning, U.S. Combination Turning, or U.S. No. 2 Turning, respectively.**

The U.S. grades for Persian limes have the following requirements for color:

U.S. No. 1: Each fruit shall have an aggregate area of at least 3/4 of the surface showing good green color characteristic of the Persian lime.

U.S. Combination: U.S. No. 1 limes shall meet the color requirements of the U.S. No. 1 grade and U.S. No. 2 limes must meet the color requirements of the U.S. No. 2 grade.

U.S. No. 2: Each fruit shall have an aggregate area of at least 1/2 of the surface showing good green color characteristic of the Persian lime.

Definition

§51.1011 Good green color. “Good green color” means that the skin of the lime is of a good green color characteristic of the Persian variety.

The official color comparator LIM-CC-1 shall be used when determining color as it depicts “good green color” characteristic of the Persian lime. Limes will appear greener under artificial light than under daylight. Therefore, if color is in question, judge it under daylight conditions.

Blanching (Q)

Blanching is a permanent defect and is the result of insufficient sunlight on the lime during its growth. Blanched fruits will be either uniformly under colored (light greenish) or may have areas of whitish to yellowish green with sharply defined margins.

Typically, uniformly under colored limes grow and develop on a part of the tree where sunlight is greatly diffused or very low. This may be near the center or on a side of the tree that did not receive direct sunlight. Limes that are shaded by leaves, resting on the ground, or are in contact with leaves, limbs, or other fruit will usually have under colored areas that are surrounded by sharply defined margins. Refer to visual aid LIM-1-IDENT.

Scoring Guide

§51.1010 Damage...(i) Blanching when more than 25 percent, in the aggregate, of the fruit surface shows a whitish to yellowish green area or areas because of shading, resting on the surface of the ground, or contact with other fruit on the tree. Such areas are not to be confused with limes which are turning yellow due to the ripening process;

§51.1015 Serious damage...(i) Blanching when more than 50 percent, in the aggregate, of the fruit surface shows a whitish to yellowish green area or areas because of shading, resting on the surface of the ground, or contact with other fruit on the tree. Such areas are not to be confused with limes which are turning yellow due to the ripening process;

The amount of blanching is always reported separately from other defects because it is applied to the separate 10% color tolerance. When the only defect in excess of the tolerance is blanching, the grade of the lot may be (if requested) qualified with the term "Mixed Color." For example: "Fails to grade U.S. No. 1 account of blanching. Now grades U.S. No. 1 Mixed Color."

Yellow Color (C)

The color of a ripe lime is yellow. However, limes are harvested and marketed while still having green color. Yellow color caused by ripening is considered a condition factor en route or at destination. Inspectors should remember that yellow color may also result from sunburn, abnormal physiological development, or other means. When applicable, score these defects according to general and/or specific guidelines shown in the grade standards or other sections in these inspection instructions. Refer to visual aid LIM-1-IDENT.

Scoring Guide

§51.1010 Damage...(j) Yellow color when plainly visible and caused by the ripening process;

§51.1015 *Serious damage...*(j) Yellow color when plainly visible and caused by the ripening process;

It is important to remember when scoring yellowing, it must be plainly visible. The definition in the standard for damage and serious damage by yellowing is the same; therefore, all yellowing scored would be considered serious damage.

Whenever the total lot tolerance exceeds an unqualified U.S. grade (U.S. No. 1, U.S. Combination, and U.S. No. 2) only because of yellowing, the grade of the lot may be (if requested) qualified with the term "Turning." For example: "Fails to grade U.S. No. 1 account of yellowing. Now grades U.S. No. 1 Turning." However, if not requested, lots would fail to grade U.S. No. 1 or other grade applied.

Qualified grades of "Mixed Color" (U.S. No. 1 Mixed Color, U.S. Combination Mixed Color, and U.S. No. 2 Mixed Color) may also fail to meet the grade requirements only because of turning yellow or yellow color. The appropriate grade statement could be (if requested to requalify): "Fails to grade U.S. No. 1 Mixed Color account of yellowing. Now grades U.S. No. 1 Turning."

Discoloration (Q or C)

Rust mite, melanose or similar types of discoloration are quality factors en route or at destination. Discoloration, which occurred during transit, is a condition factor.

Scoring Guide

§51.1010 *Damage...*(k) Discoloration caused by rust mite, melanose or other means, when fairly smooth and more than 10 percent of the fruit surface is affected, or when slightly rough and in the aggregate exceeds the area of a circle one-half inch in diameter.

§51.1015 *Serious damage...*(k) Discoloration caused by rust mite, melanose or other means, when fairly smooth and more than 50 percent of the fruit surface is affected, or when slightly rough and more than 25 percent of the fruit surface is affected.

Dryness and/or Mushiness (Q or C)

Limes may exhibit dryness or mushiness as a result of being frozen on the tree or due to granulation (tree dryness).

Granulation or tree dryness is either due to a peculiarity of the variety or the result of growing conditions. Fruit harvested late in the season or from young trees, especially after a drought, frequently show granulation or tree dryness, particularly in the larger sizes. During some shipping seasons, granulation may affect varieties that

do not normally exhibit this characteristic. The granulated condition may appear throughout the pulp of affected fruit, but more often it will affect only the stem end portion.

Juice sacs of granulated fruit remain swollen and do not separate from each other or the from segment walls. In such cases, the juice is displaced by yellow to grayish-white solid matter. Affected fruit will generally feel firm, but very light in weight.

Dryness as a result of freezing differs from dryness from granulation (tree dryness) in that the juice sacs are collapsed, withered or shriveled, and separate from each other or from the segment walls.

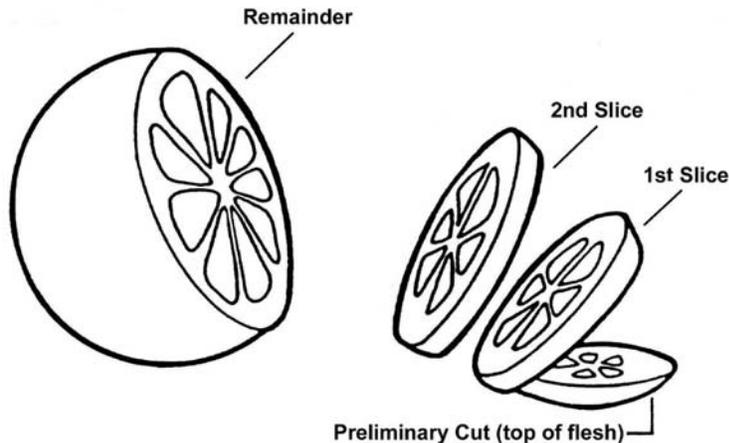
The internal condition of fruit, which has been frozen on the tree, is characterized by:

- Segment walls show buckling at a cross section cut near the stem end of the fruit;
- Watersoaked condition of the core;
- Mushy condition of segments or portions of segments;
- Partly or completely dry portions of segments; and,
- Open spaces between the juice sacks.

Scoring Guide

§51.1010 *Damage...*(a) Dryness or mushy condition which extends into all segments more than one-eighth of an inch at the stem end, or more than the equivalent of the amount, by volume, when occurring in other portions of the fruit.

§51.1014 *Serious Damage...*(a) Dryness or mushy condition which extends into all segments more than one-fourth inch at the stem end, or more than the equivalent of this amount, by volume, when occurring in other portions of the fruit.



Preliminary Cut: This cut is intended to remove only the rind down to the fleshy portion of the fruit under the stem button and will vary in depth depending on rind thickness.

1st Slice: 1/8 inch in width. This slice may be totally dry or mushy to dry in all segments. This is the maximum amount permitted in the U.S. No. 1 grade. If the total volume of **this** slice is affected, any dryness-mushiness condition in the remaining portion of the fruit will be considered as **damage**.

If any portion of the segments in the slice is **not** mushy or affected by dryness-mushiness condition, additional dryness or mushiness may be allowed in other portions of the fruit, but the total amount must not exceed the equivalent volume permitted. If this is encountered, it will be necessary to cut several slices to determine the total amount of dryness-mushiness present in the fruit.

2nd Slice: 1/8 inch in width. This slice, plus the first slice (totaling 1/4 inch) may be totally dry or from mushy to dry in all segments. This represents the maximum volume permitted in the U.S. No. 2 grade. If the total volume of **this** slice is affected, dryness-mushiness condition in the remaining portion of the fruit will be considered **serious damage**.

Exanthema (Ammoniation) (Q)

Exanthema is a non-parasitic, nutritional disease of the fruit. The distinguishing characteristics of the disease are dark brown, glossy spots on the rind, which may be of various sizes and shapes. The surface spots or scars may be pimple-like and reddish-brown, coalescing to form large roughened areas on the fruit. The pimple stage of exanthema is sometimes mistaken for melanose. The two can be distinguished by the fact that exanthema originates in tissues beneath the epidermis and seems to come up through the epidermis, while melanose is on the surface of the rind.

Scoring Guide

§51.1010 Damage...(c) Exanthema (ammoniation) which materially detracts from the appearance of the fruit, or which occurs as small, thinly scattered spots over more than 10 percent of the fruit surface, or as solid scarring (not cracked) or depressions which in the aggregate exceed the area of a circle one-half inch in diameter.

§51.1015 Serious damage...(c) Exanthema (ammoniation) which occurs as small spots over more than 25 percent of the fruit surface or as solid scarring (not cracked) or depressions which aggregate more than 10 percent of the fruit surface.

Firmness (C)

The U.S. grades for Persian limes have the following requirements for firmness:

U.S. No. 1: Firm.

U.S. Combination: At least 60 percent firm, the remainder fairly firm.

U.S. No. 2: Fairly firm.

Definitions:

§51.1006 Firm. “Firm” means that the fruit is not soft or flabby.

§51.1012 Fairly firm. “Fairly firm” means that the fruit is not soft or excessively flabby.

Scoring Guide

Limes which do not meet the requirement for the grade(s) are scored against the total tolerance of the grade.

Keep in mind that limes may feel soft and pliable due to thin skin and yet be properly described as “firm.” Such fruit may be in prime condition and may (depending on storage conditions) keep for a long period of time before becoming “soft.” Soft or excessively flabby limes would be considered serious damage and scored against the 5% restrictive tolerance for the U.S. No. 1 grade.

Freezing and Freezing Injury (C)

The term “frozen” should only be used when ice crystals are present. Frozen limes will be darker in color and glassy in comparison to unaffected limes.

“Freezing injury” is the term that should be used when it is evident that the limes have been frozen, but are not in a frozen condition at the time of inspection. The limes may be soft and mushy. The rind may be pitted.

When reporting freezing or freezing injury, it is important to give the following information:

- Record pulp temperatures taken at various locations.
- Extent of the injury in the load.
- Extent of the injury in the containers.
- The degree to which individual specimens are affected.
- The **pattern** of freezing or freezing injury in clear, concise terms.

When the location of injury indicates where or when the freezing occurred this is to be stated. For example: “Freezing injury so located as to indicate it occurred after packing but not in present location.”

Hard or Dry Skins (Q)

Hard or dry skins may be due to several causes, including aging, wind injury, or any injury to the oil cells which may result in drying and hardening of the skin. Do not confuse this with sunburn.

Scoring Guide

All grades require the fruit to be “free from” hard or dry skins. Fruits affected by any amount of hard or dry skins shall be scored against the total defect tolerance of 10%.

Maturity (Juice Content) (Q)

Maturity requirements are described in the standards as “juice content.” All grades require the fruit to have a juice content of not less than 42 percent, by volume or weight.

Juice Content Determination

Juice content can be determined by either volume or weight.

Use an approved scale (one that has been calibrated or verified with a check weight) when determining the juice content by weight to determine weight of the ten limes and the extracted juice from them.

When determining the percentage of juice by volume, the following equipment is necessary:

- Hand lever-type squeezer;
- A receptacle to receive the juice;
- Graduated cylinder, 1000 cubic centimeters;
- Opened top, galvanized metal cylinder, 17 inches high by 5 inches in diameter, with overflow spout, with a tube spout 3 inches long and 1/2 inch in diameter, located approximately 2 inches from top of cylinder; and,
- Galvanized cage to fit loosely into the cylinder with top well below the spout opening.

Sampling Procedure to Determine Juice Content

Select a minimum of 10 limes, which are of average size for the lot. As the juice content is intended to be the average for the lot, the samples shall be taken at random by size. Limes shall be tested as soon as possible after the sample has been secured because of the rind's susceptibility to rapid drying that may cause a change in the percentage of juice content.

Volume Measurement of Limes

- (1) Place equipment on level surface convenient to water supply and sink.
- (2) Place the empty cage in the galvanized cylinder and fill cylinder with water to overflow level. When overflow drip has ceased, place graduated glass cylinder in position under overflow spout.
- (3) Remove the cage, place limes in cage, lower into the metal cylinder. Record the volume of water displaced by the limes (water in graduated cylinder).

Weight Measurement of Limes

- (1) The ten limes selected would be weighed and recorded (do not round off).
- (2) Cut and juice the limes as described in the "Extraction of Lime Juice" procedures that follow and record the weight of the extracted juice (do not round off).
- (3) Multiply the weight of the juice by 100. Take that number and divide by the total weight of the ten limes. The final number is the percentage of juice content of the limes by weight (do not round off).

Extraction of Lime Juice for Both Methods

- (1) Cut limes crosswise at the center of the stem to blossom axis.
- (2) Juice is extracted separately from each half by placing it in the squeezer with the cut surface on the strainer. Place squeezer at approximately waste high level. Only one firm and steady downward pressure stroke on the squeezer handle shall be made. Do not make repetitive squeezes. The lime-half shall not be moved or turned over and squeezed again.
- (3) Measure the extracted juice in the graduated cylinder, as it comes from the extractor without being further strained.

Calculation and Reporting the Percentage of Juice Content by Volume

$$\frac{\text{Volume of Juice}}{\text{Volume of Fruit}} \times 100 = \text{Percentage of juice by volume.}$$

All grades require the fruit to have a juice content of not **less** than 42 percent, therefore 41.9% would **not** be rounded up to 42 percent.

Additional Steps After Weight or Volume of Juice Has Been Determined

When the percent of juice content is 42 percent or more, the size or the lot from which the sample was drawn will meet the minimum juice requirement of the grade. When the percent of juice content is 38 percent or more, but less than 42 percent, two additional tests shall be made. If the average of the three tests is less than 42 percent, the size or lot will fail to meet the minimum juice requirement of the grade.

When the fruit meets the minimum juice requirement of the grade, do not show the percentage of juice content on the certificate. However, if the percentage of juice is below the minimum requirement of the grade, report as: "Fails to grade U.S. No. 1 account juice content is less than 42% by volume (or by weight)."

Oil Spots (Q)

This injury occurs as irregularly shaped yellow, green, or brown spots in which the oil glands of the skin stand out because of slight sinking of the tissue. Field observations indicate that oil spots are a form of bruising. It is likely to occur on green fruit if it is handled while wet. Pressure incident to the picking and handling of green fruit is also likely to cause oil spots.

Scoring Guide

Score as damage when oil spots aggregate more than the area of a circle 1/4-inch in diameter. Score as serious damage when oil spots aggregate more than the area of a circle 1/2-inch in diameter.

Scab (Q)

Scab is a common disease in humid growing areas. Scab occurs on leaves, twigs, and fruit, but attacks only young host tissues. Symptoms start as small translucent spots, which, as they grow older with the maturation of the host tissues, become irregular scabby areas or warty protuberances ranging in color from buff to dark olive-gray. These protuberances may be single, or they may coalesce to form large raised patches of gray or tan colored scab. Limes severely infected while young may become misshapen because of excessive development of the warty outgrowths.

Scoring Guide

§51.1010 *Damage...(h)* Scab which materially affects the shape or texture.

§51.1015 *Serious damage...(h)* Scab which seriously affects shape or texture.

Scale (Q)

There are several types of scale which may be observed when inspecting limes. The most common types of scale are red and purple scale. However, it is not necessary for the inspector to identify the type of scale. All types of scale shall be reported as "scale."

Scoring Guide

§51.1010 *Damage...(f)* Scale when the appearance of the fruit is affected to a greater extent than that of a lime which has 10 medium to large California red or purple scale attached.

§51.1015 *Serious damage...(f)* Scale when the appearance of the fruit is affected to a greater extent than that of a lime which has a blotch the area of a circle one-half inch in diameter.

Scars (Q)

Thrips, other insects, thorn scratches and limb rubs may cause scarring while the fruit is still attached to the tree. When scoring scars, the color, depth, and texture of the scar are all considered.

Scoring Guide

§51.1010 *Damage...*(d) Scars which are dark, rough, or deep and in the aggregate exceed the area of a circle one-fourth inch in diameter, or scars which are fairly light in color, slightly rough, or slight depth and in the aggregate exceed the area of a circle one-half inch in diameter, or scars which are light colored, fairly smooth, with no depth and aggregate more than 10 percent of the fruit surface.

§51.1015 *Serious damage...*(d) Scars which are dark, rough, or deep and aggregate more than 5 percent of the fruit surface, or scars which are fairly light in color, slightly rough, or of slight depth and aggregate more than 10 percent of the fruit surface, or scars which are light colored, fairly smooth with no depth and aggregate more than 25 percent of the fruit surface.

Shape (Q)

The U.S. grades for Persian limes have the following requirements for shape:

U.S. No. 1: Fairly well formed.

U.S. Combination: At least 60 percent fairly well formed, the remainder not badly deformed.

U.S. No. 2: Not badly deformed.

The normal characteristic shape for the Persian variety must be considered when determining the correct term(s) used to describe shape.

Definitions

§51.1007 *Fairly well formed.* “Fairly well formed” means that the fruit shows normal characteristic shape for the Persian variety and is not materially flattened on one side.

§51.1013 *Badly deformed.* “Badly deformed” means that the fruit is seriously misshapen from any cause.

Skin Breakdown (C)

Skin breakdown appears as sunken areas, having distinct and abrupt margins, and may vary in color from tan to deep brown. The affected areas usually discolor to a

darker color than the surrounding areas. The affected areas may occur on any part of the fruit, but can be more common on the side of the fruit. Large areas of the surface may also be affected.

Scoring Guide

Score as damage when the affected area aggregates more than a circle 1/4-inch in diameter. Score as serious damage when the aggregate area exceeds the area of a circle 1/2-inch in diameter.

Sooty Mold (Q)

Sooty mold is caused by a fungus that adheres to excretions of the white fly and other insects. It may occur as light deposits scattered over the fruit surface or as heavily concentrated areas at the stem end.

Scoring Guide

When sooty mold affects more than 10% of the fruit surface, score as damage. When affecting more than 50% of the fruit surface, score as serious damage.

Sprayburn (Q)

Sprayburn injury appears as slightly sunken areas with abrupt margins having an irregular outline and a hard unnatural texture. The epidermal cells are killed, first turning gray and later may crack. The spots vary in size from 1/4 to 1 inch in diameter.

Scoring Guide

§51.1010 *Damage... (b)* Sprayburn which changes the color to such an extent that the appearance of the fruit is materially affected, or which causes scarring that in the aggregate exceeds the area of a circle one-fourth inch in diameter.

§51.1015 *Serious damage... (b)* Sprayburn which changes the color to such an extent that the appearance of the fruit is seriously injured or which causes scarring that in the aggregate exceeds the area of a circle one-half inch in diameter.

Stylar End Breakdown (C)

Stylar End Breakdown is a physiological disease usually starting at the stylar end near the base of the nipple or tip and appears as a grayish tan, watersoaked spot. The affected area enlarges rapidly involving up to 1/3 or 1/2 of the fruit. Occasionally, the

disease appears at the stem end as well as at the stylar end. The affected area remains firm but becomes darker with age and usually sinks below the level of healthy surface. There is often a partial collapse of the flesh and a watersoaking of the core tissue within the stylar end of the fruit. The affected rind is quickly invaded by bacteria or fungi, causing the fruit to deteriorate rapidly.

Scoring Guide

The standards require all grades to be “free from” Stylar End Breakdown. Therefore, any amount of Stylar End Breakdown is scored as a defect against the five (5) percent restrictive tolerance. Score against the decay tolerance only when Stylar End Breakdown advances into decay.

Sunburn (Q)

This defect is characterized by a toughened area of the rind on the side exposed directly to intense sunlight. It usually shows a bleached effect or a deep yellow color and a definite flattening of the fruit surface. The yellow surface may have a brown or gray center where the surface cells have been killed. The flesh under the affected area is dried out and contains little or no juice. Do not confuse this with “hard or dry skins.”

Scoring Guide

§51.1010 *Damage...(g)* Sunburn which causes appreciable flattening of the fruit, drying of the skin, material change in the color of the skin, appreciable drying of the flesh underneath the affected area, or which affects more than 5 percent of the fruit surface.

§51.1015 *Serious damage...(g)* Sunburn which causes decided flattening of the fruit, marked drying or dark discoloration of the skin, material drying of the flesh underneath the affected area, or which affects more than 10 percent of the fruit surface.

Texture (Q)

The U.S. grades for Persian limes have the following requirements for texture:

U.S. No. 1: Fairly smooth.

U.S. Combination: At least 60 percent fairly smooth, the remainder not of excessively rough texture.

U.S. No. 2: Not of excessively rough texture.

Texture refers to the smoothness or roughness of the skin, and is important in judging the quality of limes. Larger sizes are normally rougher than smaller sizes of the same variety. When reporting texture, the size of fruit and variety must be considered to determine the proper descriptive term. Fruit having a smooth texture is generally thin-skinned while rough fruit is generally thick skinned.

Definitions

§51.1008 *Fairly smooth texture.* “Fairly smooth texture” means that the fruit is comparatively free from lumpiness and that pebbling is not abnormally coarse. Coarse pebbling is not objectionable as it is indicative of good keeping quality and is characteristic of the fruit, especially that from young trees.

§51.1014 *Excessively rough texture.* “Excessively rough texture” means that the skin is badly ridged or very decidedly lumpy.

Thorn Scratches (Q)

Injuries caused by thorn scratches are often found on limes. When deep and well marked, they are easily recognized. When shallow, thorn scratches may appear as scars.

Scoring Guide

§51.1010 *Damage...(e)* Thorn scratches when the injury is not well healed, or when dark colored, rough or deep and in the aggregate exceeds the area of a circle one-fourth inch in diameter, or when light colored, fairly smooth and concentrated and in the aggregate exceeds the area of a circle one-half inch in diameter, or light colored and scattered thorn injury which detracts from the appearance of the fruit to a greater extent than the aggregate area of one-half inch permitted for light colored concentrated injury.

§51.1015 *Serious damage...(e)* Thorn scratches when the injury is not well healed, or when dark colored, rough or deep and aggregates more than 5 percent of the fruit surface, or when light colored, fairly smooth and concentrated and aggregates more than 10 percent of the fruit surface, or light colored and scattered thorn injury which detracts from the appearance of the fruit to a greater extent than the 10 percent light color concentrated injury.

All thorn scratches that are **not well healed** are considered serious damage.

Decay (C)

All grades require limes to be free from decay; any amount is scored against the decay tolerance (1/2% shipping point, 3% en route or destination). The most common types affecting limes are Blue Mold Rot, Green Mold Rot, Stylar End Rot and Stem-End Rot. The type of decay is not to be reported on the certificate. However, when the decay is in excess of the tolerance, report the degree of advancement as: early, moderate, or advanced stages.

APPENDIX I -- U.S. GRADE STANDARDS

United States Standards for Grades of Persian (Tahiti) Limes¹

Effective May 31, 2006

Grades

51.1000 U.S. No. 1.

51.1001 U.S. Combination.

51.1002 U.S. No. 2.

Unclassified

51.1003 Unclassified.

Application of Tolerances

51.1004 Application of tolerances.

Standard Pack

51.1005 Standard pack.

Definitions

51.1006 Firm.

51.1007 Fairly well formed.

51.1008 Fairly smooth texture.

51.1009 Styler end breakdown.

51.1010 Damage.

51.1011 Good green color.

51.1012 Fairly firm.

51.1013 Badly deformed.

51.1014 Excessively rough texture.

51.1015 Serious damage.

51.1016 Diameter.

Grades

§51.1000 U.S. No. 1.

“U.S. No. 1” consists of Persian limes which are firm, fairly well formed, of fairly smooth texture, which are free from decay, styler end breakdown or other internal discoloration, broken skins which are not healed, bruises (except those incident to proper handling and packing), hard or dry skins, and free from damage caused by freezing, dryness or mushy condition, sprayburn, exanthema (ammoniation), scars, thorn scratches, scale, sunburn, scab, blanching, yellow color, discoloration, buckskin, dirt or other foreign material, disease, insects or mechanical or other means.

(a) Each fruit in this grade shall have not less than an aggregate area of three-fourths of the surface of the fruit which shows good green color characteristic of the Persian lime:

Provided, That lots of limes which fail to meet the U.S. No. 1 grade requirements only because of blanching may be designated as “U.S. No. 1, Mixed Color:” **And provided further**, That lots of limes which fail to meet the U.S. No. 1 or U.S. No. 1 Mixed Color

¹ Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

grade requirements only because of turning yellow or yellow color, caused by the ripening process, may be designated as "U.S. No. 1, Turning."

(b) The fruit shall have a juice content of not less than 42 percent, by volume or weight.

(c) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of the fruit in any lot may fail to meet the color requirements. In addition, not more than 10 percent, by count, of the fruit in any lot may be below the remaining requirements of this grade, but not more than one-half of this amount, or 5 percent, shall be allowed for decay, stylar end breakdown, broken skins which are not healed, or defects causing serious damage including not more than one-half of 1 percent for decay at shipping point: **Provided**, That an additional tolerance of 2-1/2 percent, or a total of not more than 3 percent, shall be allowed for decay en route or at destination.

§51.1001 U.S. Combination.

"U.S. Combination" consists of a combination of U.S. No. 1 and U.S. No. 2 limes:

Provided, That at least 60 percent, by count, of the limes in the lot meet the requirements of U.S. No. 1 grade.

(a) In this grade the U.S. No. 1 limes shall meet the color requirements of the U.S. No. 1 grade and the U.S. No. 2 limes shall meet the color requirements of the U.S. No. 2 grade: **Provided**, That lots of limes which fail to meet the U.S. Combination grade requirements only because of blanching may be designated as "U.S. Combination, Mixed Color:" **And provided further**, That lots of limes which fail to meet the U.S. Combination or U.S. Combination Mixed Color grade requirements only because of turning yellow or yellow color, caused by the ripening process, may be designated as "U.S. Combination, Turning."

(b) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of the fruit in any lot may fail to meet the color requirements. In addition, not more than 10 percent, by count, of the fruit in any lot may be below the remaining requirements of the lower grade in the combination, but not more than one-half of this amount, or 5 percent, shall be allowed for limes affected by decay, stylar end breakdown and broken skins which are not healed, including not more than one-half of 1 percent for decay at shipping point: **Provided**, That an additional tolerance of 2-1/2 percent, or a total of not more than 3 percent, shall be allowed for decay en route or at destination.

(c) No part of the above tolerances shall be allowed to reduce for the lot as a whole, the 60 percent of U.S. No. 1 limes required in the U.S. Combination grade, but individual containers may have not less than 50 percent of the higher grade.

§51.1002 U.S. No. 2.

"U.S. No. 2" consists of Persian limes which are fairly firm, which are not badly deformed, and not of excessively rough texture, which are free from decay, stylar end breakdown or other internal discoloration, broken skins which are not healed, bruises (except those incident to proper handling and packing), and hard or dry skins, and free from serious damage caused by freezing, dryness or mushy condition, sprayburn, exanthema (ammoniation), scars, thorn scratches, scale, sunburn, scab, blanching, yellow color, discoloration, buckskin, dirt or other foreign material, disease, insects or mechanical or other means.

(a) Each fruit in this grade shall have not less than an aggregate area of one-half of the surface of the fruit which shows good green color characteristic of the Persian lime:

Provided, That lots of limes which fail to meet the U.S. No. 2 grade requirements only because of blanching may be designated as "U.S. No. 2, Mixed Color;" **And provided further**, That lots of limes which fail to meet the U.S. No. 2 or U.S. No. 2 Mixed Color grade requirements only because of turning yellow or yellow color, caused by the ripening process, may be designated as "U.S. No. 2, Turning."

(b) The fruit shall have a juice content of not less than 42 percent, by volume or weight.

(c) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of the fruit in any lot may fail to meet the color requirements. In addition, not more than 10 percent, by count, of the fruit in any lot may be below the remaining requirements of this grade, but not more than one-half of this amount, or 5 percent, shall be allowed for decay, stylar end breakdown, and broken skins which are not healed, including not more than one-half of 1 percent for decay at shipping point:

Provided, That an additional tolerance of 2-1/2 percent, or a total of not more than 3 percent, shall be allowed for decay en route or at destination.

Unclassified

§51.1003 Unclassified.

"Unclassified" consists of Persian limes which have not been classified in accordance with any of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no grade has been applied to the lot.

Application of Tolerances

§51.1004 Application of tolerances.

(a) The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations: **Provided**, That the averages for the entire lot are within the tolerances specified for the grade:

(1) For packages which contain more than 3 pounds and a tolerance of 10 percent or more is provided, individual packages in any lot shall have not more than one and one-half times the tolerance specified. For packages which contain more than 3 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 decayed fruit may be permitted in any package; and,

(2) For packages which contain 3 pounds or less, individual packages in any lot are not restricted as to the percentage of defects: **Provided**, That not more than 10 percent of the packages may have more than one decayed fruit.

Standard Pack

§51.1005 Standard pack.

(a) Fruit shall be fairly uniform in size, and when place packed in crates or cartons, the fruit shall be arranged according to the approved and recognized methods.

(b) All packages shall be well filled but the contents shall not show excessive or unnecessary bruising because of over-filled packages.

(c) "Fairly uniform in size" means that not more than 10 percent, by count of the fruit in any container may vary more than four-sixteenths of an inch in diameter.

(d) In order to allow for variations, other than sizing, incident to proper packing, not more than 5 percent of the packages in any lot may fail to meet the requirements of standard pack.

Definitions

§51.1006 Firm.

“Firm” means that the fruit is not soft or flabby.

§51.1007 Fairly well formed.

“Fairly well formed” means that the fruit shows normal characteristic shape for the Persian variety and is not materially flattened on one side.

§51.1008 Fairly smooth texture.

“Fairly smooth texture” means that the fruit is comparatively free from lumpiness and that pebbling is not abnormally coarse. Coarse pebbling is not objectionable as it is indicative of good keeping quality and is characteristic of the fruit, especially that from young trees.

§51.1009 Styler end breakdown.

“Styler end breakdown” is a physiological breakdown starting at the base of the nipple as a grayish tan water-soaked spot. A brownish discoloration develops in the rind. As it progresses the color of the affected area becomes darker and usually sinks below the healthy surface, but the area remains firm unless infected with secondary organisms that cause soft decay.

§51.1010 Damage.

“Damage” means any defect which materially affects the appearance, or the edible or shipping quality of the fruit. Any one of the following defects, or any combination of defects the seriousness of which exceeds the maximum allowed for any one defect, shall be considered as damage:

- (a) Dryness or mushy condition which extends into all segments more than one-eighth of an inch at the stem end, or more than the equivalent of this amount, by volume, when occurring in other portions of the fruit;
- (b) Sprayburn which changes the color to such an extent that the appearance of the fruit is materially affected, or which causes scarring that in the aggregate exceeds the area of a circle one-fourth inch in diameter;
- (c) Exanthema (ammoniation) which materially detracts from the appearance of the fruit, or which occurs as small, thinly scattered spots over more than 10 percent of the fruit surface, or as solid scarring (not cracked) or depressions which in the aggregate exceed the area of a circle one-half inch in diameter;
- (d) Scars which are dark, rough, or deep and in the aggregate exceed the area of a circle one-fourth inch in diameter, or scars which are fairly light in color, slightly rough, or of slight depth and in the aggregate exceed the area of a circle one-half inch in diameter, or scars which are light colored, fairly smooth, with no depth and aggregate more than 10 percent of the fruit surface;
- (e) Thorn scratches when the injury is not well healed, or when dark colored, rough or deep and in the aggregate exceeds the area of a circle one-fourth inch in diameter, or when light colored, fairly smooth and concentrated and in the aggregate exceeds the area of a circle one-half inch in diameter, or light colored and scattered thorn injury which detracts from the appearance of the fruit to a greater extent than the aggregate area of one-half inch permitted for light colored concentrated injury;

- (f) Scale when the appearance of the fruit is affected to a greater extent than that of a lime which has 10 medium to large California red or purple scale attached;
- (g) Sunburn which causes appreciable flattening of the fruit, drying of the skin, material change in the color of the skin, appreciable drying of the flesh underneath the affected area, or which affects more than 5 percent of the fruit surface;
- (h) Scab which materially affects the shape or texture;
- (i) Blanching when more than 25 percent, in the aggregate, of the fruit surface shows a whitish to yellowish green area or areas because of shading, resting on the surface of the ground, or contact with other fruit on the tree. Such areas are not to be confused with limes which are turning yellow due to the ripening process;
- (j) Yellow color when plainly visible and caused by the ripening process;
- (k) Discoloration caused by rust mite, melanose or other means, when fairly smooth and more than 10 percent of the fruit surface is affected, or when slightly rough and in the aggregate exceeds the area of a circle one-half inch in diameter; and,
- (l) Buckskin when more unsightly than the maximum discoloration allowed, or the fruit texture is materially affected.

§51.1011 Good green color.

“Good green color” means that the skin of the lime is of a good green color characteristic of the Persian variety.

§51.1012 Fairly firm.

“Fairly firm” means that the fruit is not soft or excessively flabby.

§51.1013 Badly deformed.

“Badly deformed” means that the fruit is seriously misshapen from any cause.

§51.1014 Excessively rough texture.

“Excessively rough texture” means that the skin is badly ridged or very decidedly lumpy.

§51.1015 Serious damage.

“Serious damage” means any defect which seriously affects the appearance, or the edible or shipping quality of the fruit. Any one of the following defects, or any combination of defects the seriousness of which exceeds the maximum allowed for any one defect, shall be considered as serious damage:

- (a) Dryness or mushy condition which extends into all segments more than one-fourth of an inch at the stem end, or more than the equivalent of this amount, by volume, when occurring in other portions of the fruit;
- (b) Sprayburn which changes the color to such an extent that the appearance of the fruit is seriously injured or which causes scarring that in the aggregate exceeds the area of a circle one-half inch in diameter;
- (c) Exanthema (ammoniation) which occurs as small spots over more than 25 percent of the fruit surface, or as solid scarring (not cracked) or depressions which aggregate more than 10 percent of the fruit surface;
- (d) Scars which are dark, rough, or deep and aggregate more than 5 percent of the fruit surface, or scars which are fairly light in color, slightly rough, or of slight depth and aggregate more than 10 percent of the fruit surface, or scars which are light colored, fairly smooth, with no depth and aggregate more than 25 percent of the fruit surface;
- (e) Thorn scratches when the injury is not well healed, or when dark colored, rough or deep and aggregates more than 5 percent of the fruit surface, or when light colored, fairly smooth and concentrated and aggregates more than 10 percent of the fruit

surface, or light colored and scattered thorn injury which detracts from the appearance of the fruit to a greater extent than the 10 percent light colored concentrated injury;

(f) Scale when the appearance of the fruit is affected to a greater extent than that of a lime which has a blotch the area of a circle one-half inch in diameter;

(g) Sunburn which causes decided flattening of the fruit, marked drying or dark discoloration of the skin, material drying of the flesh underneath the affected area, or which affects more than 10 percent of the fruit surface;

(h) Scab which seriously affects shape or texture;

(i) Blanching when more than 50 percent, in the aggregate, of the fruit surface shows a whitish to yellowish green area or areas because of shading, resting on the surface of the ground, or contact with other fruit on the tree. Such areas are not to be confused with limes which are turning yellow due to the ripening process;

(j) Yellow color when plainly visible and caused by the ripening process;

(k) Discoloration caused by rust mite, melanose or other means, when fairly smooth and more than 50 percent of the fruit surface is affected, or when slightly rough and more than 25 percent of the fruit surface is affected; and,

(l) Buckskin when more unsightly than the maximum discoloration allowed, or the fruit texture is seriously affected.

§51.1016 Diameter.

“Diameter” means the greatest dimension measured at right angles to a line from stem to blossom end of the fruit.

Appendix II -- Notesheets and Certificate Examples

Example 1 -- Inspection Notesheet

APPLICANT NUMBER: 7243308		A: NUMBER: 08 SIZE: 1/2 UNIT: CONT GRADE: MMI ACCOUNT: COL		B: NUMBER: 08 SIZE: 1/2 UNIT: CONT GRADE: MMI ACCOUNT: COL		C: NUMBER: 08 SIZE: 1/2 UNIT: CONT GRADE: MMI ACCOUNT: COL		D: NUMBER: 08 SIZE: 1/2 UNIT: CONT GRADE: MMI ACCOUNT: COL		INSPECTION NOTESHEET U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE FRUIT & VEGETABLE DIVISION	
CARRIER - LOT IDENTIFICATION: LOT 440		LOADING: UL		CERTIFICATE NUMBER: EXAMPLE # 1		INSPECTION STARTED: 10 06 00 06:40 A M		INSPECTION COMPLETED: 10 06 00 07:35 A M		APPLICANT: Lemon Lime House Address: Brony New York	
PREFIX NUMBER STATE: 1440		Carrier No. Stated by: applicant		Carrier Type/Name:		Refrigeration Unit: <input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF Doors: <input type="checkbox"/> OPEN <input checked="" type="checkbox"/>		Condition of Carrier:		SHIPPER: Lime World Address: Key West Florida	
Inspection Site: applicant's warehouse		A: PRODUCT: Limes NUMBER OF CONTAINERS: 700 cartons TEMPERATURES: 47-49		BRANDS / MARKS: "Lime world" "Lime world Distributors Packers Shippers and Growers Key West Florida net wt 40 lbs 42 Sqr Produce of USA stamped USDA/FL 426 H.E.M.I. Growers 9.31							
B: PRODUCT:		NUMBER OF CONTAINERS:		TEMPERATURES:		C: PRODUCT:		NUMBER OF CONTAINERS:		TEMPERATURES:	
D: PRODUCT:		NUMBER OF CONTAINERS:		TEMPERATURES:		Condition of Load & Containers: <input checked="" type="checkbox"/> STACKED ON PALLETS AT ABOVE LOCATION		<input type="checkbox"/> INTACT THROUGH LOAD		<input type="checkbox"/> PARTLY UNLOADED	

FORM FV-300-N (3-93)

Example 1 -- Inspection Scoresheet

A		B		C		D	
PACK: WF		PACK:		PACK:		PACK:	
SIZE: Fairly uniform		SIZE:		SIZE:		SIZE:	
SCORESHEET				Q	SO	Q	SO
USDA/PLI Number	Other PLI Number	TEMP.	Sample CT	SCR SCL	Q	SO	Q
426HEM	931	48	196	8	01	22	25
426HEM	931	49	194	10	02	20	25
426HEM	931		50	2	0	4	0
426HEM	931	49	50	3	0	6	2
426HEM	931	47	50	4	1	5	31
426HEM	931	48	50	2	0	3	0
426HEM	931		50	3	0	6	31
426HEM	931		50	2	0	5	0
				(5%)	(1%)	(10%)	(2%)
						(1%)	(-1/2%)
				ADV STAGE			
				C - Generally firm			
				Q - M CL (FS) S (FWE) WF			
REMARKS / RESTRICTIONS / SPI							
CARLOT Basis: _____		HOURLY Basis: _____		TRAVEL Time: _____		EXPENSES: _____	
EST. TOTAL: _____		REPORTED TO: Vern		DATE: 10/06/00		TIME: 7:45 AM	
		REQUESTED BY: Vern		DATE: 10/06/00		TIME: 6:30 AM	
				INSPECTED BY: Sydney Seedless			
				ASSISTED BY: _____			

CARRIER IDENTIFICATION LOT 440		Applicant: <u>Lemon Lime House</u>		U. S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE INSPECTION CERTIFICATE EXAMPLE # 1	
ADDRESS: <u>BRONX New York</u>		Address: <u>Lemon Lime House</u>			
Carrier / Lot ID. Stated by: <u>applicant</u>		Shipper: <u>Lime World</u>			
Carrier Type / Name:		Address: <u>Key West Florida</u>			
Refrigeration Unit: <input type="checkbox"/> On <input type="checkbox"/> Off		Insp. Site: <u>applicant's Warehouse</u>		10106100106.40 AM	
Doors: <input type="checkbox"/> Open <input type="checkbox"/> Closed					
LOT	WEIGHT	DESCRIPTION	STATE	MARKET OFFICE	ESTIMATED TOTAL
A:	47 to 49	Jimes "Lime World" 42 size	FL	USDA/FL	700 cartons
B:		NET WT 40 lbs		426 HEMI	
C:		Grown 931			
D:					
AVERAGE DEFECTS		OPPSIZE DEFECTS		OTHER	
10	02	Quality (Blanding)		Generally firm	
05	01	Quality other (scars, scab) (4108%)			
01	01	Style and Breakdown			
-1/2	-1/2	Decay			
16	04	Check sum			
GRADE: <u>USNO1</u>					
REMARKS:					
<p>WARNING: Any person who knowingly shall falsely make, issue, alter, forge, or counterfeit this certificate, or participate in any such actions, is subject to a fine of not more than \$1,000 or imprisonment for not more than one year, or both.</p>					
I, the undersigned, a duly authorized inspector of the United States Department of Agriculture, do hereby certify that at the request of the applicant and on the date indicated, samples of the herein described product were inspected and the quality and/or condition as shown by said samples were as herein stated.				ESTIMATED TOTAL	
Inspector's Signature: <u>Sydney Seedless</u>				Market Office: <u>BRONX New York</u>	

Example 2 -- Inspection Notesheet

APPLICANT'S BUSINESS ADDRESS 2177 3141		A: NUMBER SIZE UNIT 08 CANTON 08 CANTON		B: NUMBER SIZE UNIT 08 CANTON 08 CANTON		C: NUMBER SIZE UNIT 08 CANTON 08 CANTON		D: NUMBER SIZE UNIT 08 CANTON 08 CANTON		E: NUMBER SIZE UNIT 08 CANTON 08 CANTON		F: NUMBER SIZE UNIT 08 CANTON 08 CANTON		G: NUMBER SIZE UNIT 08 CANTON 08 CANTON		H: NUMBER SIZE UNIT 08 CANTON 08 CANTON		I: NUMBER SIZE UNIT 08 CANTON 08 CANTON		J: NUMBER SIZE UNIT 08 CANTON 08 CANTON		K: NUMBER SIZE UNIT 08 CANTON 08 CANTON		L: NUMBER SIZE UNIT 08 CANTON 08 CANTON		M: NUMBER SIZE UNIT 08 CANTON 08 CANTON		N: NUMBER SIZE UNIT 08 CANTON 08 CANTON		O: NUMBER SIZE UNIT 08 CANTON 08 CANTON		P: NUMBER SIZE UNIT 08 CANTON 08 CANTON		Q: NUMBER SIZE UNIT 08 CANTON 08 CANTON		R: NUMBER SIZE UNIT 08 CANTON 08 CANTON		S: NUMBER SIZE UNIT 08 CANTON 08 CANTON		T: NUMBER SIZE UNIT 08 CANTON 08 CANTON		U: NUMBER SIZE UNIT 08 CANTON 08 CANTON		V: NUMBER SIZE UNIT 08 CANTON 08 CANTON		W: NUMBER SIZE UNIT 08 CANTON 08 CANTON		X: NUMBER SIZE UNIT 08 CANTON 08 CANTON		Y: NUMBER SIZE UNIT 08 CANTON 08 CANTON		Z: NUMBER SIZE UNIT 08 CANTON 08 CANTON	
CARRIER'S LOT IDENTIFICATION 1234 10K		LOADING U.L.		INSPECTION NOTESHEET U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE FRUIT & VEGETABLE DIVISION		CERTIFICATE NUMBER EXAMPLE #2		INSPECTION STARTED: 10 02 00 07:50 A M		INSPECTION COMPLETED: 10 02 00 08:45 A M		CARRIER NO. STATED BY: APPLICANT		ADDITIONAL LOT ID.: F3941		CARRIER TYPE / NAME: _____		REFRIGERATION UNIT: <input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF		DOORS: <input type="checkbox"/> OPEN <input checked="" type="checkbox"/> CLOSED		CONDITION OF CARRIER: _____		INSPECTION SITE: APPLICANTS Warehouse		APPLICANT: Citrus Plus		ADDRESS: Chicago IL		SHIPPER: Key Lime Inc		ADDRESS: Island FL																					
A: PRODUCT: Limes		NUMBER OF CONTAINERS: 600 CARTON Y		INSP. COUNT: _____		TEMPERATURES: 47 to 49° F		BRANDS / MARKS: "Islands Best" Key Lime INC. Island FL. NET WT 10lbs Produce OF USA STAMPED size 36, 42, 54, 63 USDA/FL 454-649 FEO STATE		B: PRODUCT: _____		NUMBER OF CONTAINERS: _____		INSP. COUNT: _____		TEMPERATURES: _____		C: PRODUCT: _____		NUMBER OF CONTAINERS: _____		INSP. COUNT: _____		TEMPERATURES: _____		D: PRODUCT: _____		NUMBER OF CONTAINERS: _____		INSP. COUNT: _____		TEMPERATURES: _____																					
Condition of Load & Containers: <input checked="" type="checkbox"/> STACKED ON PALLETS AT ABOVE LOCATION () INTACT THROUGH LOAD () PARTLY UNLOADED																																																					

FORM FV-300-N (3-93)

Example 2 -- Inspection Scoresheet

A		B		C		D							
PACK: WF		PACK:		PACK:		PACK:							
SIZE: FL		SIZE:		SIZE:		SIZE:							
SCORESHEET				Q	SD			Q	SD			Q	SD
PLI Number	Other S2C	TEMP.	Sample CT	Q	Q	DK		Q	SD	BLANCHING	YEL	SKB	
454-649	36	48	35	1	0	0		7	2	6	6	1	0
454-649	36		36	2	1	0		5	0	7	7	0	0
454-649	42	49	44	0	0	0		8	1	9	9	1	0
454-649	42	49	42	2	0	0		10	2	8	8	0	0
454-649	54	47	56	2	1	0		9	0	11	11	2	0
454-649	54		55	3	0	0		13	1	14	14	0	0
454-649	63	48	66	4	1	0		12	2	15	15	1	0
454-649	63		63	2	0	0		14	0	14	14	2	0
				4%	1%	0		30%	3%	21%	7%	0	0
								(14-24%)		(17-25%)			
Q - MCI (S) (WF) FWF													
C - FRM													
REMARKS / RESTRICTIONS / SPI													
CARLOT Basis: _____				REPORTED TO: Mike				INSPECTED BY: Keith Zimmerman					
HOURLY Basis: _____				DATE: 10/2/00		TIME: 8:45AM							
TRAVEL Time: _____				REQUESTED BY: FAX		DATE: 10/2/00		TIME: 7:35AM		ASSISTED BY: _____			
EXPENSES: _____				EST. TOTAL: _____									

Example 2 -- Inspection Certificate

CARRIER IDENTIFICATION NUMBER: 1234 STATE: OK U.L.		Applicant: <i>Clerus Plus</i> Address: <i>Chicago IL</i>		U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE INSPECTION CERTIFICATE EXAMPLE #2	
Carrier/Lot ID Stated by: <i>applicant's</i> Additional Lot ID: <i>F 3941</i>		Shipper: <i>Key Lime Inc</i> Address: <i>Island FL</i>		Inspection Period: <i>10/02/00</i> to <i>07.50</i> A.M.	
Refrigeration Unit: <input type="checkbox"/> Off <input checked="" type="checkbox"/> On Door: <input checked="" type="checkbox"/> Open <input type="checkbox"/> Closed		Insp. Site: <i>Applicant's warehouse</i>			
A: 47 to 49 B: C: D: 		Product: <i>Limes</i> Description: <i>"Island's Best" net wt 40lbs</i> Size: <i>36 42, 54, 63 size</i>		Origin: <i>F, U</i> Standard: <i>USDA/FL</i> Quantity: <i>600 Cartons</i> Insp. Result: <i>Y</i>	
AVERAGE DEFECTS 20 04 21 02 00 47		OTHER DEFECTS 02 01 21 00 00 24		OPPOSITE DEFECTS <i>Quality (Blanching (14 to 24%))</i> <i>Quality Other (Stars)</i> <i>Yellowing (17 to 25%)</i> <i>Skin Breakdown</i> <i>Decay</i> <i>Checkrun</i>	
GRADE: <i>Fruit to grade US NO. 1 Mixed Color account of yellowing Now grade is US NO. 1 Turning</i>					
REMARKS: <i>Inspection based on US NO. 1 Mixed Color at applicant's request</i>					
WARNING: Any person who knowingly shall falsely make, issue, alter, forge, or counterfeit this certificate, or participate in any such actions, is subject to a fine of not more than \$1,000 or imprisonment for not more than one year, or both.		I, the undersigned, a duly authorized inspector of the United States Department of Agriculture, do hereby certify that at the request of the applicant and on the date indicated, samples of the herein described product were inspected and the quality and/or condition as shown by said samples were as herein stated.		ESTIMATED TOTAL \$ <i> </i>	
		Inspector's Signature: <i>Keith J. Jureman</i>		Market Office: <i>Chicago IL</i>	

FORM FV-200 (10-80) Replaces FV-200 (4-86) and FV-200 (11-80) which are obsolete.