



United States
Department of
Agriculture

Agricultural
Marketing
Service

Fruit and
Vegetable
Programs

Fresh Products
Branch

July 2004

Nectarines

Shipping Point and Market Inspection Instructions



Shipping Point and Market Inspection Instructions for Nectarines

These inspection instructions are specifically developed by the Fresh Products Branch to assist officially licensed inspectors in the interpretation and application of the U.S. Standards for Grades of Nectarines Section 51.3145.

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 the General Inspection Instructions for additional information pertaining to date, inspection point, carrier, condition of carrier, lading, etc. that is not covered in this handbook. 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 problems these instructions beginning with the section number §51.--- and followed by bold print are sections or portions of sections copied directly from U.S. standards. The U.S. Standards for Grades of Nectarines are printed in the appendix of this handbook. All U.S. standards are available on the Internet under the USDA homepage.

July 2004

This replaces Shipping Point and Market Inspection Instructions for Nectarines dated June 1975.

This publication may be duplicated without authorization from USDA.

Table of Contents

REPRESENTATIVE SAMPLING	1
SIZE OF SAMPLE	1
SAMPLING FOR INTERNAL DEFECTS	2
NUMBER OF SAMPLES	3
TOLERANCES AND APPLICATION OF TOLERANCES	3
SUMMARY OF TOLERANCE	4
COLOR TOLERANCES	5
APPLICATION OF TOLERANCES	5
NOTESHEET AND CERTIFICATE	5
PRODUCT	6
NUMBER/TYPE OF CONTAINERS	6
BRANDS/MARKINGS.....	6
ORIGIN	7
CONDITION OF PACK	7
STANDARD PACK	7
TEMPERATURE OF PRODUCT	9
SIZE	9
COUNT/SIZE DESIGNATIONS	10
DIAMETER	10
DEFECTS (QUALITY AND CONDITION).....	10
BRUISING (C).....	11
CLEANNESS (Q)	13
COLOR (C)	13
GROUND COLOR	13
SIMILAR VARIETAL CHARACTERISTIC (Q).....	14
GROWTH CRACKS (Q)	14
HEAT INJURY, SPRAYBURN OR SUNBURN (Q)	14
INTERNAL BREAKDOWN (C).....	15
MATURITY (Q).....	15
RIPENESS (C)	16
RUSSETING (Q).....	16
SCAB AND BACTERIAL SPOT (Q).....	17
SCARS AND HAIL INJURY (Q).....	17
SCALE (Q).....	18
SHAPE (Q)	18
SHRIVELING (C)	18
SILVERING (Q).....	18

SPECKLING (Q).....	19
SPLIT PIT (Q).....	19
STAINING (Q).....	19
DECAY (C)	20
APPENDIX I U.S. GRADE STANDARDS.....	21
UNITED STATES STANDARDS FOR GRADES OF NECTARINES	21
APPENDIX II.....	27
COMPARISON OF AREAS OF CIRCLES.....	27
NECTARINES GRADE EXAMPLES.....	28
CALIFORNIA NECTARINES	29
APPENDIX III.....	30
EXAMPLE 1 – INSPECTION CERTIFICATE	30
EXAMPLE 2 – INSPECTION CERTIFICATE	31
EXAMPLE 3 - INSPECTION CERTIFICATE.....	32

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. Anytime the entire lot requested is not accessible for sampling, the inspection and certificate must be restricted to the accessible portion.

Size of Sample

The tolerances in the U.S. Standards for Grades of Nectarines are determined on the basis of count.

§51.3150 Tolerances. In order to allow for variations incident to proper grading and handling in each of the following grades, the following tolerances, by count, based on a minimum 50-count sample, except when packages contain less than 50 fruit, a minimum 25-count sample shall be examined, (when packages contain less than 25 fruit adjoining packages shall be opened to obtain the 25-count minimum sample), are provided as specified:

SHIPPING POINT

In-line Certification.

The minimum sample size for grades of nectarines is 50 fruit for containers with 50 or more fruit. For containers with less than 50 fruit, a minimum of 25 fruit must be examined. If containers have less than 25 fruit, a 25 fruit sample must be examined. Therefore, the additional fruit to make up the 25 fruit minimum sample must be obtained from another container. The U.S. standard states, "When packages contain less than 25 fruit, adjoining packages shall be opened to obtain the 25-count minimum sample." For in-line sampling, the next container of the same type and size fruit shall be considered the "adjoining packages." For example, a 20-count pack is not to be combined with a 48-count pack. The next 20-count pack is to be used.

Stationary Lots.

The minimum sample size for grades of nectarines is 50 fruit for containers with 50 or more fruit. For containers with less than 50 fruit, a minimum of 25 fruit must be examined. If containers have less than 25 fruit, a 25 fruit sample must be examined. Therefore, the additional fruit to make up the 25 fruit minimum sample must be obtained from adjoining packages. Whenever defects exceed the container or lot tolerances in

one or more samples, the entire contents of at least one of those packages must be examined.

MARKET

The minimum sample size for grades of nectarines is 50 fruit for containers with 50 or more fruit. For containers with less than 50 fruit, a minimum of 25 fruit must be examined. If containers have less than 25 fruit, a 25 fruit sample must be examined. Therefore, the additional fruit to make up the 25 fruit minimum sample must be obtained from adjoining packages. Whenever defects exceed the container or lot tolerances in one or more samples, the entire contents of at least one of those packages must be examined.

Sampling for Internal Defects

During examination for external defects it may be difficult for inspectors to detect the presence of internal defects. Some fruit must be cut from every sample. The number of specimens cut is discretionary and based on such factors as varietal characteristics (some varieties are more susceptible to internal discoloration than others), growing conditions, time of year, ripeness of fruit and any external characteristics of *possible* internal defects.

When there are external indications of possible internal defects, such as riper fruit may have internal discoloration; the percentage of internal defects is based upon the entire sample examined. It is not based upon the number of fruit cut. For example, if an inspector examines a 50-count sample of nectarines, and after cutting 10 suspicious specimens finds 1 with an internal defect, the percentage of internal defects is 2%. (1 defective fruit out of the entire sample, 50 fruit in this case.)

When it is known or suspected that internal defects are present, but there are no external indications of possible internal defects a random sample shall be used to determine percentages. Select and cut 10 fruit free from external defects from each sample. When any cut sample exceeds the container tolerance the sample should be doubled to 20 fruit. At least one entire container or 100 count should be cut to determine if the application of tolerances have been exceeded. If the lot fails to meet container tolerances after an entire container (or 100 count) has been cut, revert back to the above-mentioned plan of cutting 10 fruit free from external defects. The percentages shall be based on the cut sample and not on the total grade sample. Each cut sample must be recorded so that a range and an average may be reported. A mixing of samples, commonly called a composite sample, is not allowed. This is because of the limitation of individual container tolerances in the standard. If this sampling plan is used, remember to note on the certificate the fact that percentages of internal defects were based upon cut samples.

Number of Samples

At destination, as a general rule a minimum of 1% of the lot must be examined. For lots of less than 300 packages a minimum of 3 samples must be examined. It is the inspector's responsibility to examine additional representative samples when the quality, condition, or size in samples is decidedly different to ensure an accurate description of the lot.

At shipping point, at least 2 samples from the first 100 containers shall be examined, and an additional sample for each additional 100 containers shall be examined. If the lot contains several growers and/or sizes, each lot must be adequately sampled.

TOLERANCES AND APPLICATION OF TOLERANCES

The tolerances in the U.S. Standards for Grades of Nectarines are based on count. Therefore, the determination of percentages must be made on that basis.

§51.3150 Tolerances (a) U.S. Fancy, U.S. Extra No. 1, and U.S. No. 1 grades (1) For defects at shipping point. 8 percent for nectarines which fail to meet the requirements of the specified grade: *Provided*, That included in this amount not more than 4 percent shall be allowed for defects causing serious damage, including in this latter amount not more than one-half of 1 percent for nectarines which are affected by decay.

(2) For defects en route or at destination. 12 percent for nectarines which fail to meet the requirements of the specified grade: *Provided*, That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) 8 percent for permanent defects;

(ii) 6 percent for defects causing serious damage, including therein not more than 4 percent for serious damage by permanent defects and not more than 2 percent for decay.

§51.3150 (b) U.S. No. 2 grade (1) For defects at shipping point. 8 percent for nectarines which fail to meet the requirements of the grade: *Provided*, That included in this amount not more than 4 percent shall be allowed for sunscald, decay, or serious damage by insects or heat injury, including in this latter amount not more than one-half of 1 percent for nectarines which are affected by decay.

(2) For defects en route or at destination. 12 percent for nectarines which fail to meet the requirements of the grade: *Provided*, That included in this amount not more than the following percentages shall be allowed for defects listed:

- (i) 8 percent for permanent defects including therein not more than 4 percent for sunscald, or serious damage by insects or heat injury; and,
- (ii) 2 percent for decay.

Summary of Tolerance

Shipping Point

	U.S. Fancy, U.S. Extra No. 1, and U.S. No. 1.
Total Defects	8%
<i>Including serious damage</i>	4%
<i>including decay</i>	1/2%
	U.S. No. 2
Total Defects	8%
<i>Including decay, or sunscald, or serious damage by insects or heat injury</i>	4%
<i>including decay</i>	1/2%

En Route or at Destination

	U.S. Fancy, U.S. Extra No. 1, and U.S. No. 1.
Total Defects	12%
<i>Including permanent defects</i>	8%
<i>Including serious damage</i>	6%
<i>including serious damage by permanent defects</i>	4%
<i>including decay</i>	2%
	U.S. No. 2
Total Defects	12%
<i>Including permanent defects</i>	8%
<i>including sunscald, or serious damage by insects or heat injury</i>	4%
<i>including decay</i>	2%

Color Tolerances

(3) For color -- (i) U.S. Fancy grade. 10 percent for nectarines in any lot which fail to meet the requirements of the grade.

(ii) U.S. Extra No. 1 grade and when specified in connection with a grade. Individual containers may contain not more than 10 percentage points less than the required percentage of nectarines showing the amount of color specified for the grade: *Provided*, That the entire lot averages not less than the required percentage of nectarines showing the specified color for the grade.

	U.S. Fancy
Color	10%
	U.S. Extra No. 1 and when specified.
Color (individual packages)	10%
<i>Provided</i> the entire lot averages not less than amount specified for the grade.	

Refer to section entitled "Color."

Application of Tolerances

§51.3151 *Application of Tolerances.* (a) A package may contain not more than double any specified tolerance except that at least two defective specimens may be permitted in any package; *Provided*, That the average percentage for the lot must be within the tolerance specified for the grade.

The two defective specimens, which are permitted in any package, may be damaged, seriously damaged or decayed.

NOTESHEET AND CERTIFICATE

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

that notesheets and certificates are Prima-facie evidence and must be able to withstand legal scrutiny.

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.

Product

The common name "nectarines" shall be used to describe this commodity in the product heading. Variety may be reported in conjunction with "nectarines" or may be reported in the "Product/Variety" section on the shipping point inspection certificates or in the "Lot ID" section on market notesheet and certificate when marked on the containers or on the applicant's authority.

Number/Type of Containers

The number of containers shall always be reported. In the market and at shipping point locations for stationary lot certification, the inspector shall always verify the container count provided by the applicant for each lot and report it as "inspector's count." If the number of containers available for inspection does not match the application it is the inspector's responsibility to confirm that the amount presented for inspection constitutes the lot. If an accurate count cannot be determined the inspector may report the count on someone else's authority. However, the reason for doing so must be reported on the notesheet (e.g., numerous pallets with mixed product).

At shipping point locations for "days-run" certification the applicant generally provides a manifest for count and it is acceptable to use this for the number of containers.

Nectarines are usually packed and shipped in volume-filled fiberboard lugs or tray-packed one or two-layer fiberboard lugs.

Brands/Markings

The brand, variety, size, count, grade, weight, 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 key markings necessary to properly identify the lot for certification should appear in this section on the certificate.

Origin

The inspectors should not make a positive statement on their own authority, but when container markings list the state or country of origin, it should be quoted in the appropriate space on the notesheet and the certificate. If origin is not marked, it is the inspector's responsibility to make an effort to obtain this information for the applicant. 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 what state or country the nectarines were grown.

CONDITION OF PACK

The following terms should be used to describe pack:

Volume Filled or Jumble Pack containers:

Well filled - means that the nectarines packed in loose or volume filled containers are packed within 1 inch of the top of the container.

Fairly Well Filled - the contents have some movement and may be slightly below the top edge of the container, but not more than 1 inch below the top edge.

Slack - the contents are loose and the fruit is more than 1 inch below the top edge of the container. This term must always be qualified by showing how much the fruit is below the top edge in fractions of an inch or inches.

Tray pack containers:

Very Tight - the pack is too tight and usually results in bruising.

Tight - means the nectarines are the proper size for the mold or cell compartments in which they are packed, and the molds or cells are filled in such a way that movement is not allowed.

Fairly Tight - there is only slight fruit movement in the cups.

Slack - there is free movement of the fruit in the cups. When this term is used, the amount of slackness must always be reported in fractions of an inch or inches.

Standard Pack

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

§51.3152 Standard pack. (a) Nectarines shall be fairly uniform in size and shall be packed in boxes, lugs, crates, or cartons and arranged according to the approved and recognized methods. All such containers shall be tightly packed and well filled but the contents shall not show excessive or unnecessary bruising resulting from overfilling. The nectarines in the shown face shall be reasonably representative in size, color and quality of the contents of the container.

(b) When packed in closed containers, the size shall be indicated by marking the container with the numerical count, the pack arrangement, or the minimum diameter or minimum and maximum diameters in terms of inches and not less than one-eighth fractions of inches, or a count-size based on equivalent tray pack size designations.

(c) Boxes, lugs or cartons: (1) Nectarines packed in containers equipped with cell compartments, cardboard fillers or molded trays shall be of the proper size for the cells, fillers, or molds in which they are packed, and the number of nectarines in the container shall correspond to the count marked on the container.

(2) In order to allow for variations incident to proper packing, when packed in other types of packs in lugs, cartons, or boxes, the number of nectarines in the container may vary not more than two from the number marked on the container.

(d) “Well filled” means that the nectarines packed in loose or volume filled containers are packed within 1 inch of the top of the container.

(e) “Fairly uniform in size” means that when the average diameter of nectarines in any container is 2 inches or smaller not more than 5 percent, by count, of the nectarines in the container shall be outside a diameter range of one-fourth inch; when the average diameter of nectarines in any container is over 2 inches not more than 5 percent, by count, of the nectarines in the container shall be outside a diameter range of three-eighths inch.

(f) Minimum size: When size is indicated in terms of minimum diameter not more than 5 percent, by count, of the fruit in any container may be smaller than the size marked.

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

(h) Tolerances. In order to allow for variations incident to proper sizing and packing, not more than 10 percent, by count, of the containers in any lot may fail to meet the requirements for standard pack.

Important points to remember when determining standard pack:

- The application of tolerances does not apply to standard pack. Not more than 10% of the containers in a lot may fail to meet the requirements of standard pack.
- A lot of nectarines 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 the certificate and notesheet "Standard pack determined at applicant's request."

TEMPERATURE OF PRODUCT

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 determine 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. Report all temperatures to the nearest whole degree.

A minimum of three temperatures for each lot must be taken and recorded on the notesheet. More temperatures must be taken if the lot is abnormally cold, heated, or there is a specific request for temperature, and these must be reported in greater detail specifying location in lot or load.

SIZE

There are no size requirements in any of the grades for nectarines. However, size is sometimes expressed using “diameter” in inches or in “count per package.”

Count/Size Designations

Size or jumble packs are generally marked with one of the count/size designations, such as 36, 40, 42, etc. The California Tree Fruit Agreement's Nectarine Committee (the Marketing Order committee established to recommend count/size designations) has established size regulations in terms of the maximum number of nectarines in a 16-pound sample. These count/size regulations apply to all types of containers and are listed in the Summary of Marketing Orders and Import Regulations. By the use of these equivalent nectarine sizes, the inspector can determine whether the contents of jumble packs meet the size markings.

Count/Size Designations and 16-Pound Sample Weights

This chart may change from season to season and such changes will be published as soon as they are available. If in doubt at any time, check with your supervisor.

To determine compliance with count/size markings, take a randomly selected 16-pound sample from the container sampled for quality and condition and count the number of nectarines in the sample. If the count is no more than shown in the table for the specified size marked, the marking will be considered correct. For example, in a 16-pound sample of fruit marked "36," 25 fruit were counted – this sample meets the count/size markings.

Compliance with such size markings for volume-filled packs cannot be certified for varieties or sizes not shown in the table.

Diameter

The diameter of nectarines is defined as meaning the greatest dimension measured at right angles to a line from stem to blossom end of the fruit. This is best measured with a sizing ring. A caliper may also be used to measure diameter.

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 (**Quality**, sometimes referred to as "**permanent**" defects, means defects which do not change during storage or shipment (shape, scars, etc.).

Factors noted with **(C)** shall be reported as **CONDITION** on market certificates. (**Condition defects** are defects which are subject to change during shipment or storage, including but not limited to bruising, discoloration, shriveling and decay.)

Those factors noted with **(Q or C)** may be considered as **QUALITY or CONDITION**, depending on the circumstances.

Bruising (C)

Careless or rough handling generally causes bruising, by packing too tightly, too high, or too loosely in the container. Severe bruises are a serious defect and materially affect the commercial value of the fruit. Nectarines that are only slightly flattened on one side by pressure of the pack and show no discoloration should not be scored.

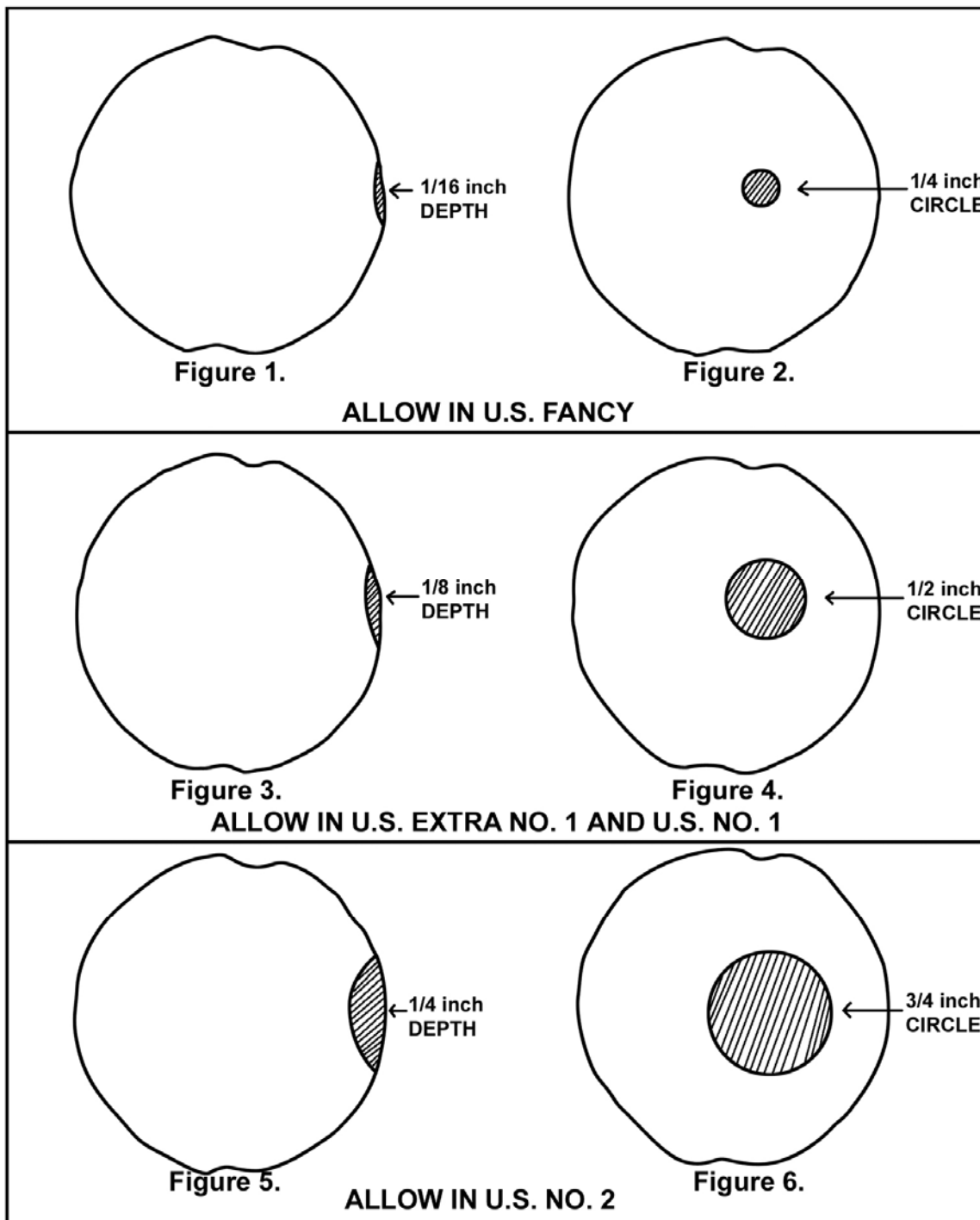
Bruises are sometimes mistaken for decay. To distinguish the two, it is only necessary to remember that with bruising the flesh has a mottled brown and white appearance and the skin is usually not discolored; whereas with decay, both the skin and flesh are discolored.

Bruises are scored on the basis of depth, area and aggregate area. In addition, discoloration characteristic of bruising is usually also present. The following chart provides a summary for scoring bruises against the grades:

	Allowed in U.S. Fancy	Allowed in U.S. Extra No. 1 and U.S. No. 1	Allowed in U.S. No. 2
Depth	1/16"	1/8"	1/4"
Area One Bruise	1/4"	1/2"	3/4"
Aggregate Area	In Proportion To Above Allowances		

The above guides are based on a nectarine 2 inches or smaller in diameter. Correspondingly greater depths or areas should be allowed on correspondingly larger fruit.

NECTARINE BRUISING GUIDE
(SINGLE BRUISES ON 2 INCH DIAMETER FRUIT)



Cleanness (Q)

All grades require nectarines to be clean. This means that the fruit is practically free from dirt or other foreign material.

Color (C)

The U.S. Standards for Grades of Nectarines have the following color requirements:

§51.3145 U.S. Fancy. (a) Each nectarine shall have not less than one-third of its surface showing red color characteristic of the variety.

§51.3146 U.S. Extra No. 1. (a) At least 75 percent of the nectarines in any lot shall show some blushed or red color including therein at least 50 percent of the nectarines with not less than one-third of the fruit surface showing red color characteristic of the variety.

Grade	Minimum Amount of Color
U.S. Fancy	33% characteristic red color on each fruit.
U.S. Extra No. 1	75% of fruit in the lot shows some blushed or red color; including at least 50% with 1/3 or more of surface showing red color characteristic of the variety.
U.S. No. 1	None.
U.S. No. 2	None.

Color may be specified in connection with any U.S. grade. However, it may not be specified for a lower percentage than the minimum requirement for the grade.

Ground Color

Ground color of nectarines may be described as light green, turning yellow, yellow, or orange. In describing ground color, consider the predominating color of the fruits even though varying degrees of color are present.

Similar Varietal Characteristic (Q)

All grades in the U.S. Standards require nectarines to be of “one variety.” Therefore, if any nectarines are found in a container that are obviously not the same variety as the majority of the fruit, they should be scored as defects (dissimilar variety).

Growth Cracks (Q)

Growth cracks are scored on the basis of depth, length, number and whether healed or not healed (and/or in combination).

Score as **injury**:

- (1) When not healed;
- (2) When more than one in number;
- (3) When more than one-eighth inch in depth; or,
- (4) When more than one-eighth inch in length.

Score as **damage**:

- (1) When not healed;
- (2) When more than one in number;
- (3) When more than one-eighth inch in depth;
- (4) When more than three-eighths inch in length if within the stem cavity; or,
- (5) When more than one-fourth inch in length if outside of the stem cavity;

Score as **serious damage**:

- (1) When not healed and more than one-eighth inch in length or depth;
- (2) When healed and more than three-sixteenths inch in depth;
- (3) When healed and aggregating more than five-eighths inch in length if within the stem cavity; or,
- (4) When healed and aggregating more than one-half inch in length if outside of the stem cavity;

Heat Injury, Sprayburn or Sunburn (Q)

This group of similarly appearing defects is scored on the basis of color, area, depth and appearance of skin.

Score as **injury** when the normal color of the skin or flesh is more than slightly changed or any indentation is present.

Score as **damage** when the skin is blistered, cracked or decidedly flattened; or the normal color of the skin or flesh has materially changed; or there is more than one indentation; or an indentation is more than 3/16" deep.

Score as **serious damage** when the skin is blistered, cracked or decidedly flattened; or causing any dark discoloration of the flesh; or there are more than 2 indentations; or the indentations aggregate more than the area of a 3/8" circle; or, causing noticeable brownish or darker discoloration affecting more than 1/4 of the surface.

Internal Breakdown (C)

Most nectarines can be stored for a week to 10 days at 40° F with little or no deterioration. They can be stored for up to 3 weeks at 31 to 32° F without serious loss of quality. If stored for longer periods, they are subject to internal breakdown, loss of flavor, discoloration of the flesh, surface pitting and decay.

Following longer storage periods, the fruit may appear normal, but often develops serious internal breakdown when transferred to ripening temperatures. ***Fruit must be cut to determine the presence of internal breakdown.*** Refer to section entitled "Sampling for Internal Defects."

The first evidence of breakdown is a reddish brown discoloration and a granular texture of the flesh. The discoloration is usually darker near the pit. Later the flesh becomes a darker brown, often with gray-brown water soaked areas extending from around the pit into the flesh. The graininess increases and the affected flesh has a woody or mealy texture, is off-flavored and lacks juiciness. Even in such advanced stages of breakdown, the fruits usually have a normal external appearance. Internal breakdown is scorable against all grades. If the inspector is not sure that the evidence found indicates internal breakdown, or other symptoms are found such as surface pitting, surface discoloration, etc., simply describe them and score the fruit under the general definitions of injury, damage or serious damage.

Maturity (Q)

All grades require nectarines to be "mature." This is defined as "having reached the stage of maturity which will insure the proper completion of the ripening process. Maturity is one of the most important factors in determining the quality of the fruit, as it has a direct bearing on the flavor and palatability of the fruit. There are several indicators of "immaturity" including:

- Lack of sufficient flesh;
- Lack of sufficient ground color;
- Shriveling (when held a sufficient length of time to show shriveling without normal ripening);

- Sour, unpalatable taste; and
- Flesh exceedingly tough and leathery.

Nectarines at the minimum passable maturity should be reported as “hard.”

At shipping point, for compliance with the Marketing Order, there are various color chips that must be used for specific varieties to determine well mature. Other methods may also be used to determine maturity at shipping point.

Ripeness (C)

**** **Hard** - means that the nectarine does not yield to moderate pressure. This is the stage at which nectarines are usually picked when long keeping or carrying quality is the prime consideration. Such fruit will ripen but will not be as large or well flavored as if it were allowed to remain longer on the tree.

Firm - means that the nectarine yields very slightly to moderate pressure. Fruit at this stage of maturity is not yet palatable.

Firm Ripe - means that the nectarine yields slightly to moderate pressure. The flesh is fairly palatable but has not reached the prime eating stage. ****

Ripe - Fruit in this condition yield readily to slight pressure, and are ready for immediate consumption. Ripe fruit, although they may be past the desirable stage for shipment, are in prime eating condition and should be immediately moved into retail channels. Such fruit are not to be scored as grade defects, unless soft. In this case, they are scored against grade at shipping point and against condition in the market and reported as “soft.”

Soft - The flesh of the fruit is mushy. This is the final stage of maturity before complete deterioration. Soft fruit is scored as serious damage against all grades. Ripe fruit showing damage or serious damage by soft bruises is to be scored as bruised and not as soft. Fruits having only soft tips are not to be scored as soft but shall be scored as damaged or seriously damaged if sufficient volume of the flesh is affected.

Russeting (Q)

All russeting is scored on the basis of degree of roughness and size of area affected. Since more than one type of russeting is often found on a single nectarine, it must be remembered that a combination of two or more types must be scored whenever it affects the appearance to a greater extent than the maximum allowed for any one type.

Score as **injury** when rough or slightly rough russeting and the area exceeds 1/8” circle on fruit 2” or smaller; and when the area exceeds 1/4” circle on fruit over 2 inches; when fairly smooth or smooth russeting or staining and the area exceed 10% of surface (characteristic speckling shall not be considered as russeting or discoloration).

Score as **damage** when rough and the area exceeds 1/4” circle on fruit 2” or smaller; and when the area exceeds 1/2” circle on fruit over 2 inches; when slightly rough and

the area exceeds 5/8" circle on fruit 2" or smaller; and when the area exceeds 3/4" circle on fruit over 2 inches; when fairly smooth or smooth and the area exceed 15% of surface.

Score as **serious damage** when rough or slightly rough and the area exceeds 10% of the surface; when fairly smooth or smooth and the area exceeds 50% of the surface.

Scab and Bacterial Spot (Q)

Scab and Bacterial Spot are both scored on the basis of area and whether cracked.

Score as **injury** when cracked; or when aggregating more than a 1/8" circle on fruit 2 inches in diameter and smaller, or aggregating more than a 1/4" circle on larger fruit.

Score as **damage** when cracked; or when aggregating more than a 1/4" circle on fruit 2" in diameter and smaller, or aggregating more than a 3/8" circle on larger fruit.

Score as **serious damage** against the U.S. No. 2 grade when aggregating more than a 1/2" circle on fruit 2" in diameter and smaller, or aggregating more than a 3/4" circle on larger fruit.

Scars and Hail Injury (Q)

Scars, including those caused by hail, are scored on the basis of color, degree of roughness, depth and area. Since more than one type of scar is often found on a single nectarine, it must be remembered that a combination of two or more types must be scored whenever it affects the appearance to a greater extent than the maximum allowed for any one type.

Score as **injury** when depressed more than 1/16" or not light colored or not smooth, or aggregating more than the following areas:

Light colored, smooth scars when more than 1/4" circle on 2 inches or smaller fruit; more than 1/2" circle on larger fruit;

Twig or limb scratches when not well healed; or aggregating more than 1/4" long.

Score as **damage** when depressed more than 1/16" or aggregating more than the following areas:

Dark or rough scars when more than 1/4" circle on fruit 2" in diameter or smaller; more than 3/8" on larger fruit;

Fairly light colored or fairly smooth scars when more than 1/2" circle on fruit 2" in diameter or smaller; more than 5/8" on larger fruit;

Light colored, smooth scars when more than 3/4" circle on fruit 2" in diameter and smaller; more than 7/8" circle on larger fruit;

Score **serious damage** when depressed more than 3/16" or aggregating more than the following areas:

Dark or rough scars when more than 3/4" circle on fruit 2" in diameter or smaller; more than 1" on larger fruit;

Scars not dark or rough when more than 1/4 surface of the fruit.

Scale (Q)

Scale insects are tiny insects that appear as a hard, tiny covering. Scale marks are the spot or mark left behind when the scale has been removed from the surface of the fruit, and are scored the same as if the scale insect were still present on the fruit. Score as **injury** when the fruit shows more than 1 large scale or scale mark or when the fruit shows more than 3 scales or scale marks of any size.

Score as **damage** when the scale or scale marks aggregate more than a 1/4" circle.

Score as **serious damage** when scale or scale marks aggregate more than a 3/8" circle.

Shape (Q)

"Well formed" is the minimum requirement for the U.S. Fancy, U.S. Extra No. 1 and U.S. No. 1 grades.

§51.3154 "Well Formed" means that the nectarine has the shape characteristic of the variety and that bumps or other roughness do not materially detract from the appearance.

The U.S. No. 2 grade requires that nectarines must not be "badly misshapen."

§51.3158 "Badly Misshapen" means that the nectarine is so decidedly deformed that its appearance is seriously affected.

Shriveling (C)

Shriveling can be problem in all stone fruit. Score as injury when any pronounced shriveling occurs on the fruit. Score as damage when pronounced shriveling occurs on the shoulders of the fruit or when it affects more than 3% of the surface. Score as serious damage when shriveling is deep or affects more than 5% of the surface.

Silvering (Q)

This injury occurs as diffused to solid silvery white areas. It is caused by thrips rasping the surface of the fruit and feeding on the sap that oozes out.

In the U.S. Fancy, U.S. Extra No. 1 and U.S. No. 1 grades not more than 10% of the surface may be affected by silvering. Score against U.S. No. 2 grade when more than 25% of the surface is affected.

Speckling (Q)

Speckling is characteristic of the Sunrise and Princess varieties and it occurs as numerous yellow spots that are more pronounced on the blush or red color of the nectarine.

When speckling occurs as densely concentrated and distinctly contrasting with the surface color of a dark red colored fruit, it shall be considered as damage when more than one-half (50%) of the surface of the fruit is affected. Allow a larger area when the speckling is less conspicuous, such as when occurring on lighter red colored fruit or when the speckling is not densely concentrated. Speckling shall not be considered as serious damage.

In some cases, the speckling also shows very slight, light colored russeting in the center of many of the speckled areas. This does not appear to be readily noticeable unless the fruit is very closely examined. If the fruit must be closely studied in order to detect the russeting, the russeting should be disregarded and the fruit scored under the above guide for speckling. In cases where there is obviously noticeable russeting, the russeted areas must be scored under the established definitions of russeting in the U.S. standards.

Split Pit (Q)

Split pits are scored on the basis of whether they are healed or unhealed, length and how they affect the shape of the fruit. The U.S. Standards for Grades of Nectarines require the U.S. Fancy, U.S. Extra No. 1 and U.S. No. 1 to be free from **injury** by split pits and the U.S. No. 2 grade be free from **serious damage** by split pit.

Score split pit as **injury** when causing any unhealed crack; or healed and aggregating more than 1/4 inch in length; or causing the fruit to be not well formed.

Score split pit as **serious damage** when causing any unhealed crack; or healed and aggregating more than 3/8 inch in length; or causing the fruit to be badly misshapen.

Staining (Q)

Staining is characteristic of the Early LeGrand, Grand River and LeGrand varieties. It occurs as a yellow to brown discoloration of the skin. This staining gives the nectarine a dirty appearance. Staining should not be considered as russeting.

Staining shall be considered “damage” when materially detracting and “serious damage” when seriously detracting from the appearance of the individual nectarine.

Decay (C)

Decays are progressive in nature and seriously affect the marketability of the fruit. When decay exceeds the tolerance, report the range as well as the average.

The most common decays that affect nectarines include Brown Rot, Rhizopus Rot, Blue Mold Rot and Gray Mold Rot. However, **do not** name the decay; instead, describe it and the stage that it is in (early – up to 10% of the individual fruit affected, moderate – over 10% to 25% of fruit affected, or advanced – more than 25% of fruit affected).

For a more detailed description of the above diseases and others that affect nectarines consult ARS Agriculture Handbook No. 414.

Appendix I U.S. Grade Standards

United States Standards for Grades of Nectarines¹

March 29, 2004

Grades

- 51.3145 U.S. Fancy.
- 51.3146 U.S. Extra No. 1.
- 51.3147 U.S. No. 1.
- 51.3148 U.S. No. 2.
- 51.3149 Reserved.

Tolerances

- 51.3150 Tolerances.

Application of Tolerances

- 51.3151 Application of tolerances.

Standard Pack

- 51.3152 Standard pack.

Definitions

- 51.3153 Mature.
- 51.3154 Well formed.
- 51.3155 Clean.
- 51.3156 Injury.
- 51.3157 Damage.
- 51.3158 Badly misshapen.
- 51.3159 Serious damage.

Metric Conversion Table

- 51.3160 Metric conversion table.

Grades

§51.3145 U.S. Fancy.

"U.S. Fancy" consists of nectarines of one variety which are mature but not soft or overripe, which are well formed, clean, and free from decay, broken skins which are not healed, worms, worm holes, and free from injury caused by bruises, growth cracks, hail, sunburn, sprayburn, scab, bacterial spot, scale, split pit, scars, russeting, other disease, insects, or mechanical or other means.

(a) Each nectarine shall have not less than one-third of its surface showing red color characteristic of the variety. (See §51.3150.)

§51.3146 U.S. Extra No. 1.

"U.S. Extra No. 1" consists of nectarines of one variety which are mature but not soft or overripe, which are well formed, clean, and free from decay, broken skins which are not healed, worms, worm holes and free from injury caused by split pit and free from damage caused by bruises, growth cracks, hail, sunburn, sprayburn, scab, bacterial spot, scale, scars, russeting, other disease, insects or mechanical or other means.

(a) At least 75 percent of the nectarines in any lot shall show some blushed or red color including therein at least 50 percent of the nectarines with not less than one-third of the fruit surface showing red color characteristic of the variety. (See §51.3150.)

§51.3147 U.S. No. 1.

¹Compliance 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.

“U.S. No. 1” consists of nectarines of one variety which are mature but not soft or overripe, which are well formed, clean, and free from decay, broken skins which are not healed, worms, worm holes, and free from injury caused by split pit and free from damage caused by bruises, growth cracks, hail, sunburn, sprayburn, scab, bacterial spot, scale, scars, russeting, other disease, insects, or mechanical or other means.

§51.3148 U.S. No. 2.

“U.S. No. 2” consists of nectarines of one variety which are mature but not soft or overripe, which are not badly misshapen, which are clean and free from decay, broken skins which are not healed, worms, worm holes, and free from serious damage caused by bruises, growth cracks, hail, sunburn, sprayburn, scab, bacterial spot, scale, split pit, scars, russeting, other disease, insects, or mechanical or other means.

§51.3149 [Reserved].

Tolerances

§51.3150 Tolerances.

In order to allow for variations incident to proper grading and handling in each of the following grades, the following tolerances, by count, based on a minimum 50-count sample, except when packages contain less than 50 fruit, a minimum 25-count sample shall be examined, (when packages contain less than 25 fruit adjoining packages shall be opened to obtain the 25-count minimum sample), are provided as specified:

(a) U.S. Fancy, U.S. Extra No. 1, and U.S. No. 1 grades -- (1) For defects at shipping point.² 8 percent for nectarines which fail to meet the requirements of the specified grade: **Provided**, That included in this amount not more than 4 percent shall be allowed for defects causing serious damage, including in this latter amount not more than one-half of 1 percent for nectarines which are affected by decay.

(2) For defects en route or at destination. 12 percent for nectarines which fail to meet the requirements of the specified grade: **Provided**, That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) 8 percent for permanent defects;

(ii) 6 percent for defects causing serious damage, including therein not more than 4 percent for serious damage by permanent defects and not more than 2 percent for decay.

(3) For color -- (i) U.S. Fancy grade. 10 percent for nectarines in any lot which fail to meet the requirements of the grade.

(ii) U.S. Extra No. 1 grade and when specified in connection with a grade. Individual containers may contain not more than 10 percentage points less than the required percentage of nectarines showing the amount of color specified for the grade: **Provided**, That the entire lot averages not less than the required percentage of nectarines showing the specified color for the grade.

(b) U.S. No. 2 grade -- (1) For defects at shipping point.² 8 percent for nectarines which fail to meet the requirements of the grade: **Provided**, That included in this amount not more than 4 percent shall be allowed for sunscald, decay, or serious damage by insects or heat injury, including in this latter amount not more than one-half of 1 percent for nectarines which are affected by decay.

(2) For defects en route or at destination. 12 percent for nectarines which fail to meet the requirements of the grade: **Provided**, That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) 8 percent for permanent defects including therein not more than 4 percent for sunscald, or serious damage by insects or heat injury; and,

(ii) 2 percent for decay.

Application of Tolerances

§51.3151 Application of tolerances.

The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations:

² Shipping point, as used in these standards, means the point of origin of the shipment in the producing area or at port of loading for ship stores or overseas shipment, or, in the case of shipments from outside the continental United States, the port of entry into the United States.

(a) A package may contain not more than double any specified tolerance except that at least two defective specimens may be permitted in any package: **Provided**, That the averages for the entire lot are within the tolerances specified for the grade.

Standard Pack

§51.3152 Standard pack.

(a) Nectarines shall be fairly uniform in size and shall be packed in boxes, lugs, crates, or cartons and arranged according to the approved and recognized methods. All such containers shall be tightly packed and well filled but the contents shall not show excessive or unnecessary bruising resulting from overfilling. The nectarines in the shown face shall be reasonably representative in size, color and quality of the contents of the container.

(b) When packed in closed containers, the size shall be indicated by marking the container with the numerical count, the pack arrangement, or the minimum diameter or minimum and maximum diameters in terms of inches and not less than one-eighth fractions of inches, or a count-size based on equivalent tray pack size designations.

(c) Boxes, lugs or cartons: (1) Nectarines packed in containers equipped with cell compartments, cardboard fillers or molded trays shall be of the proper size for the cells, fillers, or molds in which they are packed, and the number of nectarines in the container shall correspond to the count marked on the container.

(2) In order to allow for variations incident to proper packing, when packed in other types of packs in lugs, cartons, or boxes, the number of nectarines in the container may vary not more than two from the number marked on the container.

(d) "Well filled" means that the nectarines packed in loose or volume filled containers are packed within 1 inch of the top of the container.

(e) "Fairly uniform in size" means that when the average diameter of nectarines in any container is 2 inches or smaller not more than 5 percent, by count, of the nectarines in the container shall be outside a diameter range of one-fourth inch; when the average diameter of nectarines in any container is over 2 inches not more than 5 percent, by count, of the nectarines in the container shall be outside a diameter range of three-eighths inch.

(f) Minimum size: When size is indicated in terms of minimum diameter not more than 5 percent, by count, of the fruit in any container may be smaller than the size marked.

(g) "Diameter" means the greatest dimension measured at right angles to a line from stem to blossom end of the fruit.

(h) Tolerances. In order to allow for variations incident to proper sizing and packing, not more than 10 percent, by count, of the containers in any lot may fail to meet the requirements for standard pack.

Definitions

§51.3153 Mature.

"Mature" means that the nectarine has reached the stage of growth which will insure a proper completion of the ripening process.

§51.3154 Well formed.

"Well formed" means that the nectarine has the shape characteristic of the variety and that bumps or other roughness do not materially detract from the appearance.

§51.3155 Clean.

"Clean" means that the fruit is practically free from dirt and other foreign material.

§51.3156 Injury.

"Injury" means any specific defect defined in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which more than slightly detracts from the appearance, or the edible or marketing quality of the fruit. The following specific defects shall be considered as injury:

(a) Growth cracks:

- (1) When not healed;
- (2) When more than one in number;
- (3) When more than one-eighth inch in depth; or,
- (4) When more than one-eighth inch in length.

(b) Heat injury, sprayburn or sunburn when the normal color of the skin or flesh is more than slightly changed, or when any indentation is present;

- (c) Scab or bacterial spot when cracked, or when the aggregate area exceeds that of a circle one-eighth inch in diameter on a fruit 2 inches in diameter or smaller; or when the aggregate area exceeds that of a circle one-fourth inch in diameter on a fruit larger than 2 inches in diameter;
- (d) Scale or scale marks when more than one large scale or scale mark or when more than three scales or scale marks of any size are present;
- (e) Split pit when causing any unhealed crack, or when healed and aggregating more than one-fourth inch in length, or when affecting the shape to the extent that the fruit is not well formed;
- (f) Drought spots or external gum spots which have an aggregate area exceeding that of a circle one-eighth inch in diameter;
- (g) Scars, including those caused by hail, when the surface of the fruit is depressed more than one-sixteenth inch or when not light in color, or when not smooth, or when exceeding any of the following aggregate areas, or a combination of two or more types of scars the seriousness of which exceeds the maximum allowed for any one type:
 - (1) Light colored, smooth scars when the area exceeds that of a circle one-fourth inch in diameter on a fruit 2 inches in diameter or smaller; or when the area exceeds that of a circle one-half inch in diameter on a fruit larger than 2 inches in diameter;
 - (2) Twig or limb scratches which are not well healed or which have an aggregate length of more than one-fourth inch; and
- (h) Russeting which exceeds any of the following aggregate areas of any one type of russeting, or a combination of two or more types of russeting the seriousness of which exceeds the maximum allowed for any one type:
 - (1) Rough or slightly rough russeting when the area exceeds that of a circle one-eighth inch in diameter on a fruit 2 inches in diameter or smaller; or when the area exceeds that of a circle one-fourth inch in diameter on a fruit larger than 2 inches in diameter;
 - (2) Fairly smooth or smooth russeting or staining when the area exceeds 10 percent of the fruit surface: **Provided**, That speckling characteristic of certain varieties shall not be considered as russeting or discoloration.

§51.3157 Damage.

"Damage" means any specific defect defined in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or marketing quality of the fruit. The following specific defects shall be considered as damage:

- (a) Growth cracks:
 - (1) When not healed;
 - (2) When more than one in number;
 - (3) When more than one-eighth inch in depth;
 - (4) When more than three-eighths inch in length if within the stem cavity; or,
 - (5) When more than one-fourth inch in length if outside of the stem cavity;
- (b) Heat injury, sprayburn or sunburn:
 - (1) When the skin is blistered, cracked, or decidedly flattened;
 - (2) When the normal color of the skin or flesh has materially changed;
 - (3) When there is more than one indentation; or,
 - (4) When an indentation exceeds three-sixteenths inch in diameter;
- (c) Scab or bacterial spot when cracked, or when the aggregate area exceeds that of a circle one-fourth inch in diameter on a fruit 2 inches in diameter or smaller; or when the aggregate area exceeds that of a circle three-eighths inch in diameter on a fruit larger than 2 inches in diameter;
- (d) Scale or scale marks when the aggregate area exceeds that of a circle one-fourth inch in diameter;
- (e) Drought spots or external gum spots which have an aggregate area exceeding that of a circle one-fourth inch in diameter;
- (f) Scars, including those caused by hail, when the surface of the fruit is depressed more than one-sixteenth inch, or when exceeding any of the following aggregate areas, or a combination of two or more types of scars the seriousness of which exceeds the maximum allowed for any one type:
 - (1) Dark or rough scars when the area exceeds that of a circle one-fourth inch in diameter on a fruit 2 inches in diameter or smaller; or when the aggregate area exceeds that of a circle three-eighths inch in diameter on a fruit larger than 2 inches in diameter;

- (2) Fairly light colored, fairly smooth scars when the area exceeds that of a circle one-half inch in diameter on a fruit 2 inches in diameter or smaller; or when the area exceeds that of a circle five-eighths inch in diameter on a fruit larger than 2 inches in diameter;
- (3) Light colored, smooth scars when the area exceeds that of a circle three-fourths inch in diameter on a fruit 2 inches in diameter or smaller; or when the area exceeds that of a circle seven-eighths inch in diameter on a fruit larger than 2 inches in diameter;
- (4) Twig or limb scratches which are not well healed or which have an aggregate length of more than one-half inch; and
- (g) Russetting which exceeds any of the following aggregate areas of any one type of russetting, or a combination of two or more types of russetting the seriousness of which exceeds the maximum allowed for any one type:
 - (1) Rough russetting when the area exceeds that of a circle one-fourth inch in diameter on a fruit 2 inches in diameter or smaller; or when the area exceeds that of a circle one-half inch in diameter on a fruit larger than 2 inches in diameter;
 - (2) Slightly rough russetting when the area exceeds that of a circle five-eighths inch in diameter on a fruit 2 inches in diameter or smaller; or when the area exceeds that of a circle three-fourths inch in diameter on a fruit larger than 2 inches in diameter;
 - (3) Fairly smooth or smooth russetting when the area exceeds 15 percent of the fruit surface: **Provided**, That discoloration occurring as yellow to brown staining of the skin shall not be considered as russetting and shall be considered as causing damage only when materially detracting from the appearance of the nectarine, and that speckling characteristic of certain varieties shall not be considered as russetting or discoloration.

§51.3158 Badly misshapen.

“Badly misshapen” means that the nectarine is so decidedly deformed that its appearance is seriously affected.

§51.3159 Serious damage.

“Serious damage” means any specific defect defined in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects which seriously detracts from the appearance or the edible or marketing quality of the fruit. The following specific defects shall be considered as serious damage:

- (a) Growth cracks:
 - (1) When not healed and more than one-eighth inch in length or depth;
 - (2) When healed and more than three-sixteenths inch in depth;
 - (3) When healed and aggregating more than five-eighths inch in length if within the stem cavity; or,
 - (4) When healed and aggregating more than one-half inch in length if outside of the stem cavity;
- (b) Heat injury, sprayburn or sunburn:
 - (1) When the skin is blistered, cracked, or decidedly flattened;
 - (2) When causing any dark discoloration of the flesh;
 - (3) When there are more than two indentations;
 - (4) When the aggregate area of indentations exceeds that of a circle three-eighths inch in diameter; or,
 - (5) When causing noticeable brownish or darker discoloration over more than one-fourth of the fruit surface;
- (c) Scab or bacterial spot when the aggregate area exceeds that of a circle one-half inch in diameter on a fruit 2 inches in diameter or smaller; or when the aggregate area exceeds that of a circle three-fourths inch in diameter on a fruit larger than 2 inches in diameter;
- (d) Scale or scale marks when the aggregate area exceeds that of a circle three-eighths inch in diameter;
- (e) Split pit when causing any unhealed crack or when healed and aggregating more than three-eighths inch in length, or when affecting the shape to the extent that the fruit is badly misshapen;
- (f) Drought spots or external gum spots which have an aggregate area exceeding that of a circle one-half inch in diameter;
- (g) Scars, including those caused by hail, when the surface of the fruit is depressed more than three-sixteenths inch, or when exceeding any of the following aggregate areas, or a combination of two or more types of scars the seriousness of which exceeds the maximum allowed for any one type:
 - (1) Dark or rough scars when the area exceeds that of a circle three-fourths inch in diameter on a fruit 2 inches in diameter or smaller; or when the area exceeds that of a circle one inch in diameter on fruit larger than 2 inches in diameter;

- (2) Scars which are not dark or rough when the area exceeds one-fourth of the fruit surface;
- (h) Russeting which exceeds any of the following aggregate areas of any one type of russeting, or a combination of two or more types of russeting the seriousness of which exceeds the maximum allowed for any one type:
 - (1) Rough or slightly rough russeting when the area exceeds 10 percent of the fruit surface; or
 - (2) Fairly smooth or smooth russeting when the area exceeds 50 percent of the fruit surface: **Provided**, That discoloration occurring as yellow to brown staining of the skin shall not be considered russeting and shall be considered as causing serious damage only when seriously detracting from the appearance of the nectarine, and that speckling characteristic of certain varieties shall not be considered as russeting or discoloration.
- (i) Soft or overripe nectarines;
- (j) Nectarines affected by decay;
- (k) Unhealed broken skins except those associated with growth cracks; and,
- (l) Wormy fruit or worm holes.

Metric Conversion Table
§51.3160 Metric conversion table.

Inches	Millimeters (mm)
1/8 equals.....	3.2
1/4 equals.....	6.4
3/8 equals.....	9.5
1/2 equals.....	12.7
5/8 equals.....	15.9
3/4 equals.....	19.1
7/8 equals.....	22.2
1 equals.....	25.4
1-1/4 equals.....	31.8
1-1/2 equals.....	38.1
1-3/4 equals.....	44.5
2 equals.....	50.8
3 equals.....	76.2
4 equals.....	101.6

Appendix II

Comparison of Areas of Circles

Diameter	1/16"	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
1/16"	1	4	16	36	63	99	143	194	253
1/8"		1	4	9	16	25	36	49	64
1/4"			1	2-1/4	4	6-1/4	9	12-1/4	16
3/8"				1	1-3/4	2-3/4	4	5-1/2	7
1/2"					1	1-2/5	2-1/4	3	4
5/8"						1	1-2/5	2	2-1/2
3/4"							1	1-1/3	1-3/4
7/8"								1	1-2/3
1									1"

To compare the area of a small circle with a larger one, select the diameter of the small circle from the vertical list on the left side. Follow the horizontal row beside this diameter to the right and stop under the diameter of the larger circle to be compared. This will show the area of the number of small circles needed to equal the area of the larger circle.

Example: It takes nine circles 1/8" in diameter to equal the area of a circle 3/8" in diameter; or,

It takes 1-2/5 circle 1/2 inch in diameter to equal the area of a circle 5/8" in diameter; or,

It takes 4 circles 3/8" in diameter to equal the area of a circle 3/4" in diameter.

Nectarines Grade Examples

TYPE OF DEFECT	D I A M E T E R	
	*2" & under	Over 2"
U. S. FANCY-PASS AS NOT INJURED		
	<u>Inches</u>	
Growth cracks-Maximum <u>length</u>	1/8	1/8
Scab or Bacterial Spot-Max. agg. <u>area</u>	1/8	1/4
Scars, including Hail-Max. agg. <u>area</u> - light colored, smooth	1/4	1/2
Russetting-Maximum aggregate <u>area</u> - Rough or slightly rough	1/8	1/4
Fairly smooth or smooth	10% of surf.	10% of surf.
U.S. NO. 1 - PASS AS NOT DAMAGED		
Growth cracks - Maximum <u>length</u> - Within stem cavity	3/8	3/8
Outside stem cavity	1/4	1/4
Scab or Bacterial Spot-Max.agg. <u>area</u>	1/4	3/8
Scars, including Hail-Max. agg. <u>area</u> - Dark or rough	1/4	3/8
Fairly light, fairly smooth	1/2	5/8
Light, smooth	3/4	7/8
Russetting - Maximum aggregate <u>area</u> - Rough	1/4	1/2
Slightly rough	5/8	3/4
Fairly smooth or smooth	15% of surf.	15% of surf.
(except Freedom, Early LeGrand, Quetta)	25% of surf.	25% of surf.
U.S. NO. 2 - PASS AS NOT SERIOUSLY DAMAGED		
Growth cracks-Maximum aggregate <u>length</u> - Within stem cavity	5/8	5/8
Outside stem cavity	1/2	1/2
Scab or Bacterial Spot-Max. agg. <u>area</u>	1/2	3/4
Scars, including Hail - Max. agg. <u>area</u> - Dark or rough	3/4	1
Not dark or rough	1/4 of surf.	1/4 of surf.
Russetting - Maximum aggregate <u>area</u> - Rough or slightly rough	10% of surf.	10% of surf.
Fairly smooth or smooth	50% of surf.	50% of surf.

* 2" diameter is equivalent to 4x4 size.

California Nectarines

<u>VARIETY</u>	<u>COLOR OF FLESH</u>	<u>PIT</u>	<u>*FIRST SHIPPING DATE FRESNO</u>
May Red	Yellow	Semi-cling	2nd week of May
Arm King	Yellow	Semi-cling	4th week of May
June Bell	Yellow	Semi-cling	1st week of June
May Grand	Yellow	Semi-cling	1st week of June
Red June	Yellow	Semi-free	1st week of June
May Fair	Yellow	Semi-cling	2nd week of June
June Grand	Yellow	Semi-cling	2nd week of June
Zee Gold	Yellow	Semi-cling	2nd week of June
Early Sun Grand	Yellow	Semi-free	3rd week of June
Independence	Yellow	Free	3rd week of June
Sun Grand	Yellow	Free	4th week of June
Star Grand	Yellow	Free	4th week of June
Granderli	Yellow	Cling	1st week of July
Summer Grand	Yellow	Free	1st week of July
Flavor Top	Yellow	Free	2nd week of July
Grand Prize	Yellow	Free	2nd week of July
Hi Red	Yellow	Semi-free	2nd week of July
Red Grand	Yellow	Cling	2nd week of July
Sun Flame	Yellow	Free	2nd week of July
LeGrand	Yellow	Cling	2nd week of July
Fantasia	Yellow	Free	2nd week of July
Clinton-Strawberry	Yellow	Cling	3rd week of July
Late LeGrand	Yellow	Cling	3rd week of July
Grandeur	Yellow	Cling	3rd week of July
Gold King	Yellow	Cling	1st week of August
Regal Grand	Yellow	Cling	2nd week of August
Flame Kist	Yellow	Cling	2nd week of August
Autumn Grand	Yellow	Cling	3rd week of August
Richard Grand	Yellow	Cling	3rd week of August
September Grand	Amber	Cling	4th week of August

*Approximate first shipping date will vary with seasons, age of trees and soil.

FEDERAL-STATE INSPECTION CERTIFICATE

This certificate is issued in compliance with the regulations of the Secretary of Agriculture governing the inspection of various products pursuant to the Agricultural Marketing Act of 1946, as amended (7 U.S.C. 1621 et seq.) and the applicable statutes of the State in which issued, and is admissible as prima facie evidence in all courts of the United States and State courts where provided by law.

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.

APPLICANT NAME AND ADDRESS Hanson Farms Dinuba, California		SHIPPER NAME AND ADDRESS Paul Jones Co. Exeter, California	
		INSPECTION POINT Dinuba, California	INITIAL NO. OR LICENSE NO. PFE 18765
		CARRIER: <input checked="" type="checkbox"/> CAR <input type="checkbox"/> TRUCK <input type="checkbox"/> TRAILER	

INSPECTION BEGUN		INSPECTION COMPLETED			CONDITION OF CARRIER	
HOUR	DATE	HOUR	DATE			
10:00 a.m.	June 30, 1974	3:00 p.m.	June 30, 1974	Mechanical unit in operation		
PRODUCT	BRAND OR STAMPING	MANIFESTED	TYPE & SIZE OF CONTAINER	SIZE, COUNT, RANGE, OTHER	DEFECTS, DECAY, SOFT ROT, DECAY	GRADE
Sun Grand	Top Hat	800	lugs	88, 72 & 80's	Mostly hard, some firm. 75%	U. S. Extra No. 1
NECTARINES					or more show blushed or red surface color, including 60% showing 1/3 or more surface blushed or red color. Grade defects within tolerance.	
					No decay.	

REMARKS:

WEIGHT:	
FEE:	\$ 25.00
EXPENSES:	\$

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 above described products were inspected and the quality and/or condition as shown by said samples were as herein stated

John _____

(INSPECTOR)

ORIGINAL

