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Branch

Spinach Plants, Spinach Leaves, and Bunched Spinach

Shipping Point and Market Inspection Instructions

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Market Inspection Instructions for Spinach Plants, Spinach Leaves, and Bunched Spinach

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 Spinach Plants, Section 51.2880, U.S. Standards for Grades of Spinach Leaves, Section 51.1730, and U.S. Standards for Grades of Bunched Spinach, Section 51.2891.

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 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 Spinach Plants, Spinach Leaves, and Bunched Spinach are printed in the appendix of this handbook. All U.S. standards are available on the Internet under the USDA homepage.

April 2006

This publication may be duplicated without authorization from USDA.

This replaces Market Inspection Instructions for Spinach Plants and Spinach Leaves dated August 1957.

Factors noted with **(Q)** are considered **quality** only. Factors noted with **(C)** are considered **condition** at market. Factors noted with **(Q or C)** may be **quality or condition** depending on the circumstances. Factors not designated do not pertain to either category.

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GENERAL

Spinach is a cool-season crop and belongs to the goosefoot family (*Chenopodiaceae*) as do beets and Swiss chard. This crop is becoming more popular as evidenced by increases in consumption of both fresh (salads) and processed spinach. The principal commercial types of spinach are “Savoy” (crinkly leaf type) and “flat leaf.”

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.

Number of Samples

As a general rule a minimum of 1% of the lot must be examined. For lots of less than 300 packages a minimum of three (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.

NOTESHEET AND CERTIFICATES

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 must be properly recorded and supported by information on the notesheet. It is the responsibility of the inspector to ensure that all 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 you additional information and instructions.

Number/Type of Containers

The number of containers shall always be reported. In the market, the inspector shall always verify the container count provided by the applicant for each lot and report it as the "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 at 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.

Spinach plants and bunched spinach is usually packed and shipped in cartons, bushel cartons, crates or baskets. Spinach leaves are often washed and packaged in sealed, sometimes perforated plastic bags.

Brands/Markings

At shipping point, the brand, size, PLI and other important information appearing on the container shall be reported on the notesheet and certificate in the appropriate section.

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

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 from 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 spinach is grown.

CONDITION OF PACK

The following terms should be used to describe tightness of pack:

Very tight means the containers are so tightly filled that many of the plants are badly crushed or broken. This condition may be the result of either too much spinach or pack ice.

Tight means the containers are properly filled without serious crushing of the plants, and show some bulge.

Fairly tight means the containers are full but show little or no bulge.

Slightly slack means the pack is slightly below the top edge.

Slack means the container is not sufficiently filled to prevent the movement of the spinach. Whenever the term slack is used it should be described.

Pack Ice

The presence or absence of pack ice in containers that are intended to have pack ice can be a very important factor in spinach inspections. Therefore, in addition to reporting the tightness of the pack, report on the notesheet the amount of pack ice in the cartons. If the absence of pack ice is a factor in the condition of the spinach the pack ice statement shall also be reported on the certificate.

The following terms could be used to describe the amount of ice remaining in the pack:

“**No ice**” when there is no ice present.

“**Practically no ice**” when there is only occasional pieces.

“**Small amount crushed ice**” when there is ice but less than what would normally fill the container under normal commercial practices.

“**Good amount crushed ice**” when the normal amount is present.

“**Large amount crushed ice**” when there is more than the normal amounts considered proper for a good commercial pack.

Iceless Type Packs

Spinach is being packed in various types of containers, some which are not intended to be packed with pack ice. This type of pack will generally have spinach in a film bag. Report this in accordance with the facts on the notesheet.

TEMPERATURE OF PRODUCT

Temperature would not normally be taken 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 precool 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 shall be taken if the lot is abnormally cold, heated, or there is a specific request for temperature. The location in the lot and/or load must be specified in greater detail when additional temperatures are taken.

SPINACH PLANTS

Product

The common name Spinach Plants shall be used to describe this commodity in the product heading. Type may be reported in conjunction with Spinach Plants/Leaves or may be reported in the "Lot ID" section on market notesheet and certificate.

Types of Spinach

The principal commercial types of spinach are Savoy and the flat leaf type. Savoy is a type of spinach and not a variety. There is no such variety listed in the seed catalogs as "Savoy," although several are classed as "Savoy type." Savoy type refers to varieties of spinach that have crinkled leaves. No attempt shall be made to certify the variety, and spinach shall be classified as "Savoy type" or "flat leaf type." Some plants may show the outer leaves less crinkled or somewhat flattened, but this is no indication that such plants are not "Savoy type." No lot should be classed as flat leaf type unless the inner or younger leaves, as well as the outer leaves are distinctly flat. (See official visual aid Photo No. 1.)

Size of Sample

The tolerances in the U.S. Standards for Grades of Spinach Plants are determined on the basis of weight.

The sample size shall be 5 pounds. If the application of tolerances for the sample is exceeded double the sample size to 10 pounds in at least one sample which has exceeded the tolerance.

TOLERANCES AND APPLICATION OF TOLERANCES

§51.2880 U.S. No. 1... (a) In order to allow for variations incident to proper grading and handling, not more than a total of 10 percent, by weight, of the spinach plants in any lot may fail to meet the requirements of the grade: *Provided*, That not more than one-half of this amount, or 5 percent, shall be allowed for serious damage, including therein not more than 1 percent for decay.

§51.2881 U.S. Commercial...(a) In order to allow for variations incident to proper grading and handling, not more than a total of 20 percent, by weight, of the spinach plants in any lot may fail to meet the requirements of the grade: *Provided*, That not more than one-half of this amount, or 10 percent, shall be allowed for serious damage, including therein not more than 1 percent for decay.

	<u>U.S. No. 1</u>	<u>U.S. Commercial</u>
Total Defects	10%	20%
<i>Including</i> serious damage	5%	10%
<i>including</i> decay	1%	1%

Application of Tolerances

§51.2883 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 grades:

(1) For a tolerance of 10 percent or more, individual packages in any lot may contain not more than one and one-half times the tolerance specified; and,

(2) For a tolerance of less than 10 percent, individual packages in any lot may contain not more than double the tolerance specified.

	<u>U.S. No. 1</u>	<u>U.S. Commercial</u>
Total Defects	$10\% \times 1\text{-}1/2 = 15\%$	$20\% \times 1\text{-}1/2 = 30\%$
<i>Including</i> serious damage	$5\% \times 2 = 10\%$	$10\% \times 1\text{-}1/2 = 15\%$
<i>Including</i> decay	$1\% \times 2 = 2\%$	$1\% \times 2 = 2\%$

SIZE

Size is not part of the U.S. Standards for Grades of Spinach Plants. However, size may be described by showing a range followed with a “mostly” statement. The measurement for the length of plant shall be from the tip of the longest leaf to the point where the root is cut off.

The following terms and definitions can be used to describe size:

Small means up to 4 inches in length.

Medium means over 4 to 8 inches in length.

Large means over 8 inches in length.

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.

Budworm Injury (C)

Budworm injury is caused by a small white grub that eats into the center of the rosette or inner leaves, which generally turns brown or black in color. The actual waste in removing the injury in most cases is relatively small. Budworm injury affects the edible quality as well as the appearance. Slight injury affecting two or three of the very small heart leaves should not be scored, unless infestation by live worms is present.

Scoring Guide

Score as damage when affecting 10% of the plant’s surface. Score as serious damage when affecting 25% of the plant’s surface. The presence of live worms shall be considered serious damage.

Cleanness (Q)

Spinach plants must be “fairly clean” in order to meet the requirements of the U.S. No. 1 Grade.

The following terms should be used in describing cleanness:

Clean means when there is practically no dirt.

Fairly clean means that the plant is reasonably free from dirt or other adhering foreign matter, and that the general appearance of the plants in the container is not materially affected.

Slightly dirty means when the amount of dirt materially affects the appearance.

Dirty means there is sufficient dirt to seriously affect the appearance or quality.

Scoring Guide

In scoring dirt on spinach, the severity, as well as the color should be considered. The same amount of dirt in the heart leaves is more objectionable than the outer lower leaves. Likewise, dark or black soil would affect the appearance more than the same amount of lighter colored soil. All these factors should be kept in mind in determining when to score for dirt. It should be remembered that it is practically impossible to harvest spinach in a commercial way without some dirt.

Spinach plants that are materially affected by dirt shall be scored as damage and reported as “not fairly clean.”

Coarse Stalks or Seed Stems (Q)

“Coarse stalks or seed stems” is the central portion that shoots up from the center rosette when the plant begins to go to seed.

§51.2889 Damage...(a) Coarse central stalks or seedstems when causing more than 10 percent waste of the individual plant; or when the flower buds are plainly visible;

Scoring Guide

To determine the percentage of waste caused by a coarse stalk or seed stem, first weigh the entire plant. Next cut or break off the central stalk or seed stem just above the crown, and remove all leaves and leaf stems at point of attachment to the stalk, and also remove the tip portion of the stalk which is as tender as leaf stems.

Then weigh the remaining tough portion of the stalk, and compute the percentage of waste on the basis of the weight of the entire plant. (See official visual aids: Photo No. 2 and Photo No. 3.)

Color

Color refers to the color of the leaves and not to the color of the leaf stems and stalks. There is no color requirement in the U.S. Standards for Grades of Spinach Plants, however the following terms should be used in describing color: good green, light green, turning yellow, and yellow.

Discoloration (C)

Discoloration affecting the spinach may be caused by aging, insect damage, or other factors. It may be yellow, brown, or black in color.

Scoring Guide

When materially affecting the general appearance of the plant it the plants should be scored as damage. When the plants are badly discolored they should be scored as serious damage. (See official visual aid: CC PL-1.)

Yellowing (C)

Yellow leaves are one of the most important factors affecting the market quality of spinach. Take into consideration the degree of yellowing, size of plant, and number of leaves when determining extent of yellowing.

Scoring Guide

Score as damage when materially affecting the appearance of the plant. Score as serious damage when seriously affecting the appearance of the plant. Heart leaves, which are yellow or partially blanched, shall not be considered as damaging the plant. Be sure not to confuse the heart leaves with outer leaves that are turning yellow or yellow. These outer leaves should be scored and reported as yellowing. (See official visual aid: CC PL-1.)

Crushed or Broken Plants (Q)

Crushed or broken plants refer to the injury that is caused by rough handling and washing of the plants during packing. Some broken or crushed plants is to be expected in the center of the basket or next to the edges of the cover and should not be noted on the certificate.

Scoring Guide

Score as damage when materially affecting the appearance of the plant. Score as serious damage when seriously affecting the appearance of the plant.

Dead Water Soaked or Bruised Leaves (C)

Dead water soaked and/or bruised leaves may result from a very tight pack, excessive pack ice, or rough handling. Slight bruising affecting the tips of the leaves should not be scored.

Scoring Guide

Score as damage when affecting more than 20% of the leaves on the plant, or when materially affecting the appearance. Score as serious damage when affecting more than 30% of the leaves of the plant, or when the appearance is seriously affected.

Development of Plants (Q)

Spinach plants must be “well grown” in order to meet the requirements of the U.S. Grades.

§51.2885 *Well grown.* “Well grown” means that the plants are not stunted or poorly developed.

Scoring Guide

Plants that are stunted, or otherwise deformed are scored as defects against the total tolerance for the grade. This defect shall be reported as **poorly developed**. Usually plants that are not over 3 inches long with the slender leaf stems or plants which have slender leaf stems with very few leaves of a length somewhat longer than 1-1/2 inches should be considered poorly developed.

Downy Mildew (C)

The first symptom of infection is the small, pale, or water-soaked spots on the leaves. These spots rapidly enlarge and become pale yellow on the topside of the leaf, while the lower side shows a yellowish gray to a violet gray color. The yellowish spots are usually small, ranging in size from 1/4 to 1/2 inch in diameter, and irregular in outline.

Scoring Guide

Score as damage when materially affecting the appearance of the plant. Score as serious damage when seriously affecting the appearance of the plant.

Flower Buds (Q)

Small buds that open or flower as the spinach matures and can affect the appearance of the plants.

Scoring Guide

Score as damage when developed flower buds are plainly visible. Score as serious damage when seriously affecting the appearance of the spinach.

Foreign Material (Q)

Foreign material means that weeds, grass or any loose material other than spinach is present in a sufficient amount to materially affect the edible quality or the general appearance of the spinach in the container.

Scoring Guide

Score as damage when materially affecting the appearance of the spinach in the container. Score as serious damage when seriously affecting the appearance of the spinach in the container.

Freezing or Freezing Injury (C)

The term “frozen” should only be used when ice crystals are present. Frozen spinach will be “dark colored, watersoaked, and translucent” in comparison to unaffected spinach.

“Freezing injury” is the term that should be used when it is evident that the spinach has been frozen, but is not in a frozen condition at the time of inspection. The affected spinach may be dull, watery, and/or translucent.

Use the following procedures when reporting freezing or freezing injury:

- Record pulp temperatures taken at various locations.
- Determine and record extent of the injury in the load.
- Determine and record extent of the injury in the containers.
- Determine and record the degree to which individual specimens are affected.
- Describe 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 freezing occurred after packing but not in present location,” or “freezing injury so located as to indicate freezing occurred on trailer.”

Freshness (C)

Spinach Plants must be “fresh” in order to meet the requirements of the U.S. Grades.

§51.2886 *Fresh* means that the spinach is not more than slightly wilted.

Scoring Guide

Plants that do not meet the requirements for “fresh” shall be reported as “wilted.” Score as damage when spinach is more than slightly wilted. Score as serious damage by wilting when seriously affecting the appearance of the plants.

Insect Injury (Q or C)

Several types of insects, one of the most common being the Aphid, may cause insect injury. No attempt should be made at trying to determine the type of insect(s) that is/are present.

Scoring Guide

Plants showing more than slight infestation should be scored as damage. A spinach plant will be considered seriously damaged by insects when it is noticeably infested or when seriously damaged by them.

Live insects shall be reported as condition, if dead report as quality. If both live and dead insects are present, report as condition.

Similar Varietal Characteristics (Q)

The U.S. Standards for Grades of Spinach Plants require them to be of similar varietal characteristics in all grades. A mixture of distinctly savoy and flat leaf type plants that affects the general appearance of the lot is very objectionable and such stock is not considered as meeting the requirements of the U.S. No. 1 grade.

§51.2884 *Definitions.* (a) “Similar varietal characteristics” means that the spinach shall be of one type, such as crinkly leaf type or flat leaf type. No mixture of types shall be permitted which materially affects the appearance of the spinach in the container.

Scoring Guide

Spinach Plants that fail to meet the requirements of “similar varietal characteristics” shall be reported as “dissimilar varietal characteristics” and scored against the total tolerance for the grade.

Trimming (Q)

Spinach plants must be “well trimmed” in order to meet the requirements of the U.S. Grades.

§51.2888 *Well trimmed.* “Well trimmed” means that the spinach plant is cut at the crown of the root, or cut so that the root is not longer than 1 inch.

Scoring Guide

Spinach plants that fail to meet the requirements of “well trimmed” shall be reported as “not well trimmed” and scored against the total tolerance for the grade.

White Rust (C)

These are very small (pin-head size or smaller), white, raised pustules on the under side of the leaves. They may be scattered or grouped together to cover large areas of the leaf. On the upper surface of the leaf the disease, where severe, produces a general yellowing over the infected portion of the leaf.

Scoring Guide

As a rule, it is the mottled or yellowish appearance of the leaves that justifies scoring the plants. If the spore cases or pustules on the under side of the leaves are present in sufficient quantity to materially affect the appearance without considering the yellowish or mottled color, such plants should be scored as damage.

Score as damage when materially affecting the appearance of the plant. Score as serious damage when seriously affecting the appearance of the plant. (See official visual aid: CC PL-1.)

Decay (C)

The decay most commonly found in spinach is bacterial soft rot, and to a lesser extent watery soft rot. All grades require that spinach plants be free from decay. Any amount of decay is scorable against the 1% restrictive tolerance. Do not report the type of decay on the certificate; however, when decay is in excess of the tolerance, report the degree and advancement in general terms as: early, moderate, or advanced stages.

SPINACH LEAVES

Product

The common name "Spinach Leaves" shall be used to describe this commodity in the product heading. Type may be reported in conjunction with Spinach Leaves or may be reported in the "Lot ID" section on market notesheet and certificate.

Size of Sample

The tolerances in the U.S. Standards for Grades of Spinach Leaves are determined on the basis of count. The sample size shall be 100 leaves. If the application of tolerances for the sample is exceeded double the sample size to 200 leaves in at least one sample which has exceeded the tolerance.

TOLERANCES AND APPLICATION OF TOLERANCES

§51.1730 U.S. Extra No. 1... (a) In order to allow for variations incident to proper grading and handling, not more than 5 percent, by count, of any lot may fail to meet the requirements of this grade, including not more than 1 percent for spinach leaves which are affected by decay.

§51.1731 U.S. No. 1... (a) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of any lot may fail to meet the requirements of this grade, including not more than 1 percent for spinach leaves which are affected by decay.

§51.1732 U.S. Commercial...(a) In order to allow for variations incident to proper grading and handling, not more than 20 percent, by count, of any lot may fail to meet the requirements of this grade, including not more than 1 percent for spinach leaves which are affected by decay.

	<u>U.S. Extra No. 1</u>	<u>U.S. No. 1</u>	<u>U.S. Commercial</u>
Total Defects	5%	10%	20%
Including decay	1%	1%	1%

Application of Tolerances

§51.1733 Application of tolerances. The contents of individual containers 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:

(a) When a tolerance is 10 percent, or more, individual containers in any lot shall have not more than one and one-half times the tolerance specified.

(b) When a tolerance is less than 10 percent, individual containers in any lot shall have not more than double the tolerance specified.

	<u>U.S. Extra No. 1</u>	<u>U.S. No. 1</u>	<u>U.S. Commercial</u>
Total Defects	5% x 2 = 10%	10% x 1-1/2 = 15%	20% x 1-1/2 = 30%
<i>Including decay</i>	1% x 2 = 2%	1% x 2 = 2%	1% x 2 = 2%

SIZE

Size is not part of the U.S. Standards for Grades of Spinach Leaves. However, size may be described by showing a range followed with a “mostly” statement. The measurement for the length of the leaf shall be from the extreme tip to the lowest point of attachment of the blade to the stem.

The following terms and definitions can be used to describe size:

Small means up to 3-1/2 inches in length.

Medium means over 3-1/2 to 6 inches in length.

Large means over 6 inches in length.

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.

Budworm Injury (C)

Budworm injury is caused by a small white grub that eats into the center of the rosette or inner leaves, which generally turns brown or black in color. The actual waste in removing the injury in most cases is relatively small. Budworm injury affects the edible quality as well as the appearance of the leaves. Slight injury affecting two or three of the very small heart leaves should be ignored, unless infestation by live worms is present.

Scoring Guide

Score as damage when materially affecting the appearance of the leaf. Any presence of live worms should be scored.

Cleanness (Q)

Spinach leaves must be “fairly clean” in order to meet the requirements of the U.S. Grades.

The following terms should be used in describing cleanness:

Clean means there is practically no dirt.

Fairly clean means that the leaves are reasonably free from dirt or other adhering foreign matter, and that the general appearance of the plants in the container is not materially affected.

Slightly dirty means the amount of dirt materially affects the appearance.

Dirty means there is sufficient dirt to seriously affect the appearance or quality.

Scoring Guide

In scoring dirt on spinach, the severity, as well as the color should be considered. The same amount of dirt in the heart leaves is more objectionable than the outer lower leaves. Likewise, dark or black soil would affect the appearance more than the same amount of lighter colored soil. All these factors should be kept in mind in determining when to score for dirt. It should be remembered that it is practically impossible to harvest spinach in a commercial way without some dirt.

Spinach leaves that are materially affected by dirt shall be scored as damage and reported as “not fairly clean.”

Clusters of Leaves in Packages of Leaves (Q)

Spinach leaves are required to be free from damage by clusters of leaves.

Scoring Guide

Clusters, when more than 3 leaves attached, except that clusters of heart leaves with any number of leaves shall not be considered as damaged, provided the length of the longest leaf in the cluster is not over 3 inches.

Coarse Stalks or Seed Stems (Q)

In all the spinach leaf grades the leaves are required to be free from coarse stalks or seed stems. This defect is usually tough, fibrous and runs through the central portion of the leaf.

Scoring Guide

When encountering coarse stalks or seedstems any amount should be scored against all grades. (See official visual aids: Photo No. 2 and Photo No. 3.)

Color

Color refers to the color of the leaves and not to the color of the leaf stems and stalks. There is no color requirement in the U.S. Standards for Grades of Spinach Leaves, however the following terms should be used in describing color: good green, light green, turning yellow, and yellow.

Discoloration (C)

Discoloration affecting the spinach may be caused by aging, insect damage or other factors. It may be yellow, brown, or black in color.

Scoring Guide

When materially affecting the general appearance of the leaves it should be scored as damage. (See official visual aid: CC PL-1.)

Yellowing (C)

Yellow leaves are one of the most important factors affecting the market quality of spinach. Take into consideration the degree of yellowing and the size of the leaf, when determining the extent of yellowing.

Scoring Guide

Score as damage when materially affecting the appearance of the plant. Heart leaves which are yellow or partially blanched shall not be considered as damaging the plant. Be sure not to confuse the heart leaves with outer leaves that are turning yellow or yellow. These outer leaves should be scored and reported as yellowing. (See official visual aid: CC PL-1.)

Crushed or Broken Leaves (Q)

Crushed or broken leaves refer to the injury that is caused by rough handling and washing of the leaves during packing. Some broken or crushed leaves is to be expected in the center of the basket or next to the edges of the cover and should not be noted on the certificate.

Scoring Guide

Score as damage when materially affecting the appearance of the leaf.

Dead Water Soaked or Bruised Leaves (C)

Dead water soaked and/or bruised leaves may result from a very tight pack or rough handling. Slight bruising affecting the tips of the leaves should not be scored.

Scoring Guide

Score as damage when materially affecting the appearance of the leaf.

Downy Mildew (C)

The first symptom of infection is the small, pale, or water-soaked spots on the leaves. These spots rapidly enlarge and become pale yellow on the topside of the leaf, while the lower side shows a yellowish gray to a violet gray color. The yellowish spots are usually small, ranging in size from 1/4 to 1/2 inch in diameter, and irregular in outline.

Scoring Guide

Score as damage when materially affecting the appearance of the leaf.

Foreign Material (Q)

Foreign material means that weeds, grass or any loose material other than spinach is present in a sufficient amount to materially affect the edible quality or the general appearance of the spinach in the container.

Scoring Guide

Score as damage when materially affecting the appearance of the individual leaves or when materially affecting the appearance of the lot as a whole.

Freezing or Freezing Injury (C)

The term “frozen” should only be used when ice crystals are present. Frozen spinach will be “dark colored, watersoaked, and translucent” in comparison to unaffected spinach.

“Freezing injury” is the term that should be used when it is evident that the spinach has been frozen, but is not in a frozen condition at the time of inspection. The affected spinach may be dull, watery, and/or translucent.

Use the following procedures when reporting freezing or freezing injury:

- Record pulp temperatures taken at various locations.
- Determine and record extent of the injury in the load.
- Determine and record extent of the injury in the containers.
- Determine and record the degree to which individual specimens are affected.
- Describe 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 freezing occurred after packing but not in present location.”

Freshness (C)

Spinach Leaves must be “fresh” in order to meet the requirements of the U.S. Grades. Fresh means that the spinach is not more than slightly wilted.

Scoring Guide

Score as damage when spinach is more than slightly wilted.

Insect Injury (Q or C)

Several types of insects, one of the most common being the Aphid, may cause insect injury. No attempt should be made at trying to determine the type of insect(s) that is/are present.

Scoring Guide

Leaves showing more than slight infestation should be scored as damage.

Live insects shall be reported as condition if dead, report as quality. If both live and dead insects are present, report as condition.

Similar Varietal Characteristics (Q)

The U.S. Standards for Grades of Spinach Leaves requires them to be of similar varietal characteristics in all grades.

§51.1734 *Similar varietal characteristics.* “Similar varietal characteristics means that the spinach shall be generally of one type, as crinkly leaf type, or flat leaf type. No mixture of varieties shall be permitted which materially affects the appearance of the lot.

Scoring Guide

Spinach Leaves that fail to meet the requirements of “similar varietal characteristics” shall be reported as “dissimilar varietal characteristics” and scored against the total tolerance for the grade.

Trimming (Q)

Spinach leaves are required to be “well trimmed” in order to meet the requirements of the grades.

§51.1735 *Well trimmed.* “Well trimmed” means that the leaf stems or petioles are not excessively long in relation to the size of the leaf blades.

Leaf stems or petioles exceeding 1-1/2 times the length of the leaf blade would be considered excessively long.

Scoring Guide

Leaves that are not well trimmed should be scored with other grade defects as poorly trimmed against the total tolerance for the grade.

White Rust (C)

The presence of very small (pin-head size or smaller), white, raised pustules on the under side of the leaves. These may be scattered or grouped together to cover large areas of the leaf. On the upper surface of the leaf the disease, where severe, produces a general yellowing over the infected portion of the leaf.

Scoring Guide

As a rule, it is the mottled or yellowish appearance of the leaves that justifies scoring the plants. If the spore cases or pustules on the under side of the leaves are present in sufficient quantity to materially affect the appearance without considering the yellowish or mottled color, such leaves should be scored as damage.

Score as damage when materially affecting the appearance of the leaf. (See official visual aid: CC PL-1.)

Decay (C)

All grades require that spinach leaves be free from decay. Any amount of decay is scorable against the 1% restrictive tolerance. Do not report the type of decay on the certificate; however, when decay is in excess of the tolerance, report the degree and advancement as: early, moderate, or advanced stages.

BUNCHED SPINACH

These inspection instructions are applicable to spinach of goosefoot (Chenopodiaceae) family which is bunched separately and packed separately in containers as either leaves or plants. (See §51.2891.)

Product

The common name "Bunched Spinach" shall be used to describe this commodity in the product heading. Plants or leaves may be reported in the "Lot ID" section in conjunction with Bunched Spinach on market notesheet and certificate.

Size of Sample

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

**** For a container with less than 24 bunches the entire contents shall be your sample size. For a container with 24 bunches or more, your sample size shall consist of at least 24 bunches. ****

TOLERANCES AND APPLICATION OF TOLERANCES

§51.2894 Tolerances. In order to allow for variations incident to proper grading and handling in each of the foregoing grades, the following tolerances, by count, are provided as specified:

(a) **Defects (1) U.S. No. 1.** 12 percent for bunches in any lot which fail to meet the requirements of this grade: *Provided*, That included in this amount not more than 6 percent shall be allowed for defects causing serious damage; *And provided further*, That included in this latter amount not more than 3 percent for bunches that are affected by decay.

(2) **U.S. No. 2.** 12 percent for bunches in any lot which fail to meet the requirements of the specified grade: *Provided*, That included in this amount not more than 3 percent for bunches which are affected by decay.

(b) Size. 10 percent in any lot for bunches which are smaller than a specified minimum size and 15 percent which are larger than a specified maximum size.

	<u>U.S. No. 1</u>	<u>U.S. No. 2</u>
Total Defects	12%	12%
<i>Including serious damage</i>	6%	
<i>Including decay</i>	3%	3%
Size (when specified)		
Under specified size	10%	10%
Over specified size	15%	15%

Application of Tolerances

§51.2895 Application of tolerances. The contents of individual containers in a lot shall be the sample and, based on sample inspection, are subject to the following limitations:

(a) For a tolerance of 10 percent or more, individual packages in any lot may contain not more than one and one-half times the tolerance specified, except that when the package contains 13 bunches or less, individual packages may contain not more than double the tolerance specified; *Provided*, That the averages for the entire lot are within the tolerances specified for the grade.

(b) For a tolerance of less than 10 percent, individual packages in any lot may contain not more than double the tolerance specified. *Provided*, That at least one bunch which does not meet the requirements shall be allowed in any one package, *And provided further*, That the averages for the entire lot are within the tolerances specified for the grade.

Application of Tolerances (cont.)

	<u>U.S. No. 1</u>	<u>U.S. No. 2</u>
More than 13 Bunches		
Total Defects	12% x 1-1/2 = 18%	12% x 1-1/2 = 18%
<i>Including serious damage</i>	6% x 2 = 12%	
<i>Including decay</i>	3% x 2 = 6%	3% x 2 = 6%
13 Bunches or less		
Total Defects	12% x 2 = 24%	12% x 2 = 24%
<i>Including serious damage</i>	6% x 2 = 12%	
<i>including decay</i>	3% x 2 = 6%	3% x 2 = 6%

Size (when specified)

More than 13 Bunches

Under specified size	10% x 1-1/2 = 15%	10% x 1-1/2 = 15%
Over specified size	15% x 1-1/2 = 22.5%	15% x 1-1/2 = 22.5%

13 Bunches or less

Under specified size	10% x 2 = 20%	10% x 2 = 20%
Over specified size	15% x 2 = 30%	15% x 2 = 30%

SIZE

Size is not part of the U.S. Standards for Grades of Bunched Spinach but can be specified in connection with the grade at applicant's request.

§51.2893 Size. Size may be specified in connection with grade in terms of number of bunches per container, or with minimum and/or maximum size of bunches in inches or pounds and/or fractions thereof.

The measurement for the length of bunches shall be from the tip of the longest plant or leaf to the point where the root is cut off.

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.

Budworm Injury (C)

Budworm injury is caused by a small white grub that eats into the center of the rosette or inner leaves, which generally turns brown or black in color. The actual waste in removing the injury in most cases is relatively small. Budworm injury affects the edible quality as well as the appearance. Slight injury affecting two or three of the very small heart leaves should be ignored, unless infestation by live worms is present.

Scoring Guide

Score as damage when materially affecting the appearance of the plant. Score as serious damage when seriously affecting the appearance of the plant. Any presence of live worms is serious damage.

Cleanness (Q)

The U.S. grades for bunched spinach have the following requirements for cleanness.

U.S. No. 1 grade requires bunched spinach to be fairly clean.

U.S. No. 2 grade requires bunched spinach to be reasonably clean.

The following terms should be used in describing cleanness:

Clean means there is practically no dirt.

§51.2896 Definitions... (d) "Fairly clean" means generally free from dirt, sand or other adhering foreign matter and the appearance of the bunch is not materially affected.

(e) "Reasonably clean" means mostly free from dirt, sand or other adhering foreign matter and that the appearance of the bunch is not seriously affected.

Slightly dirty means the amount of dirt materially affects the appearance.

Dirty means there is sufficient dirt to seriously affect the appearance or quality.

Scoring Guide

In scoring dirt on spinach, the severity, as well as the color should be considered. Dark or black soil would affect the appearance more than the same amount of lighter colored soil. Spinach plants that are materially affected by dirt shall be scored as damage and reported as "not fairly clean in the U.S. No. 1 grade and "not reasonably clean" in the U.S. No. 2 grade."

Color

Color refers to the color of the leaves and not to the color of the leaf stems and stalks. The following terms should be used in describing color: good green, light green, turning yellow, and yellow.

Discoloration (C)

Discoloration affecting the spinach may be caused by aging, insect damage, or other factors, and may be yellow, brown, or black in color.

Scoring Guide

When affecting an aggregate area of more than 10 percent of the total surface area of the leaves in the bunch score as damage. When affecting an aggregate area of more than 25 percent of the total surface area of the leaves in the bunch score as serious damage. (See official visual aid: CC PL-1.)

Yellowing (C)

Yellow leaves are one of the most important factors affecting the market quality of spinach. Take into consideration the degree of yellowing, size of bunch, and number of leaves when determining extent of yellowing. Heart leaves which are yellow or partially blanched shall not be considered as damaging the plant. Be sure not to confuse the heart leaves with outer leaves that are turning yellow or yellow. These outer leaves should be scored and reported as yellowing.

Scoring Guide

When affecting an aggregate area of more than 10 percent of the total surface area of the leaves in the bunch score as damage. When affecting an aggregate area of more than 25 percent of the total surface area of the leaves in the bunch score as serious damage. (See official visual aid: CC PL-1.)

Dead Water Soaked or Bruised Leaves (C)

Dead water soaked and/or bruised leaves may result from a very tight pack, excessive pack ice, or rough handling. Slight bruising affecting the tips of the leaves should not be scored.

Scoring Guide

Score as damage when affecting more than 20% of the leaves in the bunch, or when materially affecting the appearance. Score as serious damage when affecting more than 30% of the leaves in the bunch, or when the appearance is seriously affected.

Development of Bunches (Q)

Bunched Spinach must be “well grown” in order to meet the requirements of the U.S. grades.

§51.2892 Definitions...(c) “Well Grown” means not stunted or poorly developed.

Scoring Guide

Bunched spinach that fails to meet the requirements of “well grown” shall be scored and reported as “poorly developed.”

Downy Mildew (C)

The first symptom of infection is the small, pale, or water-soaked spots on the leaves. These spots rapidly enlarge and become pale yellow on the topside of the leaf, while the lower side shows a yellowish gray to a violet gray color. The yellowish spots are usually small, ranging in size from 1/4 to 1/2 inch in diameter, and irregular in outline.

Scoring Guide

Score as damage when materially affecting the appearance of the bunch. Score as serious damage when seriously affecting the appearance of the bunch.

Flower Buds (Q)

Small buds that open or flower as the spinach matures and can affect the appearance of the bunch.

Scoring Guide

Damage when mostly opening in the bunch. Serious damage when generally open in the bunch.

Foreign Material (Q)

Foreign material means that weeds, grass or any loose material other than spinach is present in a sufficient amount to materially affect the edible quality or the general appearance of the spinach in the container.

Scoring Guide

Score as damage when materially affecting the appearance of the bunch. Score as serious damage when seriously affecting the appearance of the bunch.

Freezing or Freezing Injury (C)

The term “frozen” should only be used when ice crystals are present. Frozen spinach will be “dark colored, watersoaked, and translucent” in comparison to unaffected spinach.

“Freezing injury” is the term that should be used when it is evident that the spinach has been frozen, but is not in a frozen condition at the time of inspection. The affected spinach may be dull, watery, and/or translucent.

Use the following procedures when reporting freezing or freezing injury:

- Record pulp temperatures taken at various locations.
- Determine and record extent of the injury in the load.
- Determine and record extent of the injury in the containers.
- Determine and record the degree to which individual specimens are affected.
- Describe 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 freezing occurred after packing but not in present location."

Freshness (C)

Bunched Spinach must be "fresh" in order to meet the requirements of the U.S. grades.

§51.2896 Definitions...(h) "Fresh" means that the spinach is not more than slightly wilted.

Scoring Guide

Plants that do not meet the requirements for "fresh" shall be reported as "wilted." Score as damage when spinach is more than slightly wilted. Score as serious damage by wilting when seriously affecting the appearance of the bunch.

Insect Injury (Q or C)

Several types of insects, one of the most common being the Aphid, may cause insect injury. All insects shall be reported as a grade factor unless there is evidence to clearly indicate that they were not present at time of shipment in sufficient numbers to affect the grade at that time.

Scoring Guide

When scattered or concentrated or when insect feeding materially affects the appearance of the bunch it should be scored as damage. When very concentrated or when the insect feeding seriously affects the appearance of the bunch it should be scored as serious damage.

Live insects shall be reported as condition, if dead report as quality. If both live and dead insects are present, report as condition.

Mechanical Damage (Q)

Mechanical damage refers to the injury that is caused by rough handling and washing of the plants during packing.

Scoring Guide

When more than 25 percent of the leaves in the bunch are crushed, torn or broken should be scored as damage. When more than 50 percent of the leaves in the bunch are crushed, torn or broken should be scored as serious damage.

Similar Varietal Characteristics (Q)

The U.S. Standards for Grades of Bunched Spinach requires them to be of similar varietal characteristics in all grades.

§51.2896 Definitions. “Similar varietal characteristics” means that the spinach shall be generally of one type, as crinkly leaf type, or flat leaf type. No mixture of varieties shall be permitted which materially affects the appearance of the lot.

Scoring Guide

Bunched Spinach that fails to meet the requirements of “similar varietal characteristics” shall be reported as “dissimilar varietal characteristics” and scored against the total tolerance for the grade.

Same Form (Q)

The U.S. Standards for Grades of Bunched Spinach requires them to be the same form in all grades.

§51.2896 Definitions...(b) "Same form" means bunches and containers shall contain either plants or leaves with no more than a 15 percent by weight mixture of the other in either the bunch or the container.

Scoring Guide

Example #1: In a lot of Bunched Spinach Leaves you find a bunch of mixed leaves and plants. To determine if the bunch is scorable you must:

Weigh the bunch, then separate the leaves and plants, weigh the plants, (this is a bunch leaves lot) if the plants weigh more than 15% of the total weight of the bunch, score the bunch as “dissimilar form” against the total tolerance for the grade.

PLI Number	Other ID	TEMP.	Sample count	Quality dissimilar form
None		35°	24	1

Example 2: In a lot of Bunched Spinach Plants you find seven bunches of all leaves. To determine if the bunches are scorable you must:

Determine the total weight of all the bunches in the carton, weigh the seven bunches of leaves, if the seven bunches weigh more than 15% of the total weight of all the bunches record the seven bunches as “dissimilar form” and score against the total tolerance for the grade.

If the total weight of all spinach bunches in the carton was 17 pounds and the bunches of leaves weighed 4 pounds which equals 24%. The seven bunches of plants would be scored as “dissimilar form.”

PLI Number	Other ID	TEMP.	Sample count	Quality dissimilar form.
None		35°	24	1
None		34°	24	7

Trimming (Q)

The U.S grades of bunched spinach have the following requirements for trimming.

U.S. No. 1 grade requires bunched spinach to be well trimmed.

U.S. No. 2 grade requires bunched spinach to be fairly well trimmed.

§51.2896 Definitions... (f) "Well trimmed" means for plants that the roots are no longer than one inch below the common point of attachment of the leafstems, and for leaves that not more than 15 percent of the leaves in the bunch have leafstems longer than the length of the attached leaf.

(g) "Fairly well trimmed" means for plants that roots are no longer than two inches below the common point of attachment of the leafstems, and for leaves that not more than 15 percent of the leaves in the bunch have leafstems longer than one and one-half times the length of the attached leaf.

Scoring Guide

Bunches that do not meet the above trimming requirements will be scored against the total lot tolerance and reported as "not well trimmed" or "not fairly well trimmed."

White Rust (C)

The presence of very small (pin-head size or smaller), white, raised pustules on the under side of the leaves. These may be few and scattered, or many and grouped together to cover large areas of the leaf. On the upper surface of the leaf the disease, where severe, produces a general yellowing over the infected portion of the leaf.

Scoring Guide

As a rule, it is the mottled or yellowish appearance of the leaves that justifies scoring the plants. If the spore cases or pustules on the under side of the leaves are present in sufficient quantity to materially damage the appearance without considering the yellowish or mottled color, such plants should be scored.

Score as damage when materially affecting the appearance of the bunch. Score as serious damage when seriously affecting the appearance of the bunch. (See official visual aid: CC PL-1.)

Decay (C)

All grades require that bunched spinach be free from decay. Any amount of decay is scorable against the 3% restrictive tolerance. Do not report the type of decay on the certificate; however, when decay is in excess of the tolerance, report the degree and advancement as: early, moderate, or advanced stages.

APPENDIX I U.S. GRADE STANDARDS

United States Standards for Grades of Spinach Plants¹

Effective November 19, 1956

Grades

51.2880 U.S. No. 1.

51.2881 U.S. Commercial.

Unclassified

51.2882 Unclassified.

Application of Tolerances

51.2883 Application of tolerances.

Definitions

51.2884 Similar varietal characteristics.

51.2885 Well grown.

51.2886 Fresh.

51.2887 Fairly clean.

51.2888 Well trimmed.

51.2889 Damage.

51.2890 Serious damage.

Grades

§51.2880 U.S. No. 1.

"U.S. No. 1" consists of spinach plants of similar varietal characteristics which are well grown, fresh, fairly clean, well trimmed, and which are free from decay, and free from damage caused by coarse stalks or seed stems, discoloration, foreign material, second growth, freezing, disease, insects or mechanical or other means.

(a) In order to allow for variations incident to proper grading and handling, not more than a total of 10 percent, by weight, of the spinach plants in any lot may fail to meet the requirements of the grade:

Provided, That not more than one-half of this amount, or 5 percent, shall be allowed for serious damage, including therein not more than 1 percent for decay.

§51.2881 U.S. Commercial.

"U.S. Commercial" consists of spinach plants which meet all the requirements for U.S. No. 1 grade except that the spinach plants need only be free from damage by dirt and except for the increased tolerances specified in this section.

(a) In order to allow for variations incident to proper grading and handling, not more than a total of 20 percent, by weight, of the spinach plants in any lot may fail to meet, the requirements of the grade:

Provided, That not more than one-half of this amount, or 10 percent, shall be allowed for serious damage, including therein not more than 1 percent for decay.

Unclassified

§51.2882 Unclassified.

"Unclassified" consists of spinach plants which have not been classified in accordance with either 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

§51.2883 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 grades:

(1) For a tolerance of 10 percent or more, individual packages in any lot may contain not more than one and one-half times the tolerance specified; and,

¹Packing of the product in conformity with the requirements 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.

(2) For a tolerance of less than 10 percent, individual packages in any lot may contain not more than double the tolerance specified.

Definitions

§51.2884 Similar varietal characteristics.

"Similar varietal characteristics" means that the spinach shall be of one type, such as crinkly leaf type or flat leaf type. No mixture of types shall be permitted which materially affects the appearance of the spinach in the container.

§51.2885 Well grown.

"Well grown" means that the plants are not stunted or poorly developed.

§51.2886 Fresh.

"Fresh" means that the spinach is not more than slightly wilted.

§51.2887 Fairly clean.

"Fairly clean" means that the individual spinach plant is reasonably free from dirt or other adhering foreign matter, and that the general appearance of the spinach plants in the container is not materially affected.

§51.2888 Well trimmed.

"Well trimmed" means that the spinach plant is cut at the crown of the root, or cut so that the root is not longer than 1 inch.

§51.2889 Damage.

"Damage" means any defect which materially affects the appearance, or the edible or shipping quality of the individual plant, or the general appearance of the spinach in the container. 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) Coarse central stalks or seedstems when causing more than 10 percent waste of the individual plant; or when the flower buds are plainly visible;
- (b) Discoloration when materially affecting the general appearance of the plant, except that heart leaves which are yellow or partially blanched shall not be considered as damaging the plant; and
- (c) Foreign material when materially affecting the edible quality, or the general appearance of the spinach in the container. Foreign material means weeds, grass, or any loose material other than spinach.

§51.2890 Serious damage.

"Serious damage" means any defect which seriously affects the appearance, or the edible or shipping quality of the individual plant, or the general appearance of the spinach in the container. 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) Discoloration when the plants are badly discolored;
- (b) Insects when the plant is noticeably infested, or when it is seriously damaged by them;
- (c) Mildew, white rust or similar diseases when seriously affecting the edible quality or appearance of the plant; and,
- (d) Decay.

United States Standards for Grades of Spinach Leaves (Fresh)¹

Effective December 27, 1946

Grades

51.1730 U.S. Extra No. 1.

51.1731 U.S. No. 1.

51.1732 U.S. Commercial.

Application of Tolerances

51.1733 Application of tolerances.

Definitions

51.1734 Similar varietal characteristics.

51.1735 Well trimmed.

51.1736 Damage.

Grades

§51.1730 U.S. Extra No. 1.

“U.S. Extra No. 1” shall consist of spinach leaves of similar varietal characteristics which are fairly clean, well trimmed, free from coarse stalks, seedstems, seedbuds, crowns and roots, sandburs or other kinds of burs, decay, and from damage caused by clusters of leaves, wilting, discoloration, freezing, foreign material, disease, insects, mechanical or other means.

(a) In order to allow for variations incident to proper grading and handling, not more than 5 percent, by count, of any lot may fail to meet the requirements of this grade, including not more than 1 percent for spinach leaves which are affected by decay.

§51.1731 U.S. No. 1.

“U.S. No. 1” shall consist of spinach leaves of similar varietal characteristics which are well trimmed, free from coarse stalks, seedstems, seedbuds, crowns and roots, sandburs, or other kinds of burs, decay, and from damage caused by clusters of leaves, wilting, discoloration, freezing, dirt, or other foreign material, disease, insects, mechanical or other means.

(a) In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of any lot may fail to meet the requirements of this grade, including not more than 1 percent for spinach leaves which are affected by decay.

§51.1732 U.S. Commercial.

“U.S. Commercial” shall consist of spinach leaves of similar varietal characteristics which are well trimmed, free from coarse stalks, seedstems, seedbuds, crowns and roots, sandburs, or other kinds of burs, decay, and from damage caused by clusters of leaves, wilting, discoloration, freezing, dirt or other foreign material, disease, insects, mechanical or other means.

(a) In order to allow for variations incident to proper grading and handling, not more than 20 percent, by count, of any lot may fail to meet the requirements of this grade, including not more than 1 percent for spinach leaves which are affected by decay.

Application of Tolerances

§51.1733 Application of tolerances.

The contents of individual containers in the lot, based on sample inspection, are subject to the following limitations, provided the averages for the entire lot are within the tolerances specified:

(a) When a tolerance is 10 percent, or more, individual containers in any lot shall have not more than one and one-half times the tolerance specified.

(b) When a tolerance is less than 10 percent, individual containers in any lot shall have not more than double the tolerance specified.

¹Packing of the product in conformity with the requirements 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.

Definitions**§51.1734 Similar varietal characteristics.**

“Similar varietal characteristics” means that the spinach shall be generally of one type, as crinkly leaf type, or flat leaf type. No mixture of varieties shall be permitted which materially affects the appearance of the lot.

§51.1735 Well trimmed.

“Well trimmed” means that the leaf stems or petioles are not excessively long in relation to the size of the leaf blades.

§51.1736 Damage.

“Damage” means any defect, which materially affects the appearance, or the edible or shipping quality of the individual leaves or of the lot as a whole.

United States Standards for Grades of Bunched Spinach

Effective October 26, 1987

51.2891 General.

51.2892 Grades.

51.2893 Size.

51.2894 Tolerances.

51.2895 Application of tolerances.

51.2896 Definitions.

§51.2891 General.

(a) Compliance with the provisions of these standards shall not excuse failure to comply with provisions of applicable Federal or State laws.

(b) These standards are applicable to spinach of goosefoot (*Chenopodiaceae*) family which is bunched separately and packed separately in containers as either leaves or plants.

§51.2892 Grades.

(a) "U.S. No. 1" consists of bunched spinach which meet the following requirements:

(1) Basic requirements:

- (i) Similar varietal characteristics;
- (ii) Same form;
- (iii) Well grown;
- (iv) Fairly clean;
- (v) Well trimmed; and,
- (vi) Fresh.

(2) Free from: Decay.

(3) Free from damage by:

- (i) Coarse stalks;
- (ii) Seedstems;
- (iii) Flower buds;
- (iv) Discoloration;
- (v) Wilting;
- (vi) Foreign material;
- (vii) Insects;
- (viii) Freezing; and,
- (ix) Mechanical or other means.

(4) Tolerances. (See §51.2894.)

(b) "U.S. No. 2" consists of bunched spinach which meet the following requirements:

(1) Basic requirements:

- (i) Similar varietal characteristics;
- (ii) Same form;
- (iii) Well grown;
- (iv) Reasonably clean;
- (v) Fairly well trimmed; and,
- (vi) Fresh.

(2) Free from: Decay.

(3) Free from serious damage by:

- (i) Coarse stalks;
- (ii) Seedstems;
- (iii) Flower buds;
- (iv) Discoloration;
- (v) Wilting;
- (vi) Foreign material;
- (vii) Insects;
- (viii) Freezing; and,
- (ix) Mechanical or other means.

(4) Tolerances. (See §51.2894.)

§51.2893 Size.

Size may be specified in connection with grade in terms of number of bunches per container, or with minimum and/or maximum size of bunches in inches or pounds and/or fractions thereof.

§51.2894 Tolerances.

In order to allow for variations incident to proper grading and handling in each of the foregoing grades, the following tolerances, by count, are provided as specified:

(a) **Defects** -- (1) **U.S. No. 1.** 12 percent for bunches in any lot which fail to meet the requirements of this grade: **Provided**, That included in this amount not more than 6 percent shall be allowed for defects causing serious damage; **And provided further**, That included in this latter amount not more than 3 percent for bunches that are affected by decay.

(2) **U.S. No. 2.** 12 percent for bunches in any lot which fail to meet the requirements of the specified grade: **Provided**, That included in this amount not more than 3 percent for bunches which are affected by decay.

(b) **Size.** 10 percent in any lot for bunches which are smaller than a specified minimum size and 15 percent which are larger than a specified maximum size.

§51.2895 Application of tolerances.

The contents of individual containers in a lot shall be the sample and, based on sample inspection, are subject to the following limitations:

(a) For a tolerance of 10 percent or more, individual packages in any lot may contain not more than one and one-half times the tolerance specified, except that when the package contains 13 bunches or less, individual packages may contain not more than double the tolerance specified; **Provided**, That the averages for the entire lot are within the tolerances specified for the grade.

(b) For a tolerance of less than 10 percent, individual packages in any lot may contain not more than double the tolerance specified. **Provided**, That at least one bunch which does not meet the requirements shall be allowed in any one package, **And provided further**, That the averages for the entire lot are within the tolerances specified for the grade.

§51.2896 Definitions.

(a) "Similar varietal characteristics" means that the spinach shall be of one type, such as crinkly leaf type or flat leaf type. No mixture of types shall be permitted which materially affects the appearance of the bunch.

(b) "Same form" means bunches and containers shall contain either plants or leaves with no more than a 15 percent by weight mixture of the other in either the bunch or the container.

(c) "Well grown" means not stunted or poorly developed.

(d) "Fairly clean" means generally free from dirt, sand or other adhering foreign matter and the appearance of the bunch is not materially affected.

(e) "Reasonably clean" means mostly free from dirt, sand or other adhering foreign matter and that the appearance of the bunch is not seriously affected.

(f) "Well trimmed" means for plants that the roots are no longer than one inch below the common point of attachment of the leafstems, and for leaves that not more than 15 percent of the leaves in the bunch have leafstems longer than the length of the attached leaf.

(g) "Fairly well trimmed" means for plants that roots are no longer than two inches below the common point of attachment of the leafstems, and for leaves that not more than 15 percent of the leaves in the bunch have leafstems longer than one and one-half times the length of the attached leaf.

(h) "Fresh" means not more than slightly wilted.

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

(1) Seedstems when more than one-fourth the length of the longest leaf in the bunch.

(2) Flower buds when mostly opening in the bunch.

(3) Insects when scattered or concentrated or when insect feeding materially affects the appearance of the bunch.

(4) Discoloration when affecting an aggregate area of more than 10 percent of the total surface area of the leaves in the bunch.

(5) Mechanical damage when more than 25 percent of the leaves in the bunch are crushed, torn or broken.

(j) "Serious damage" means any specific defect described in this section or an equally objectionable variation of any one of these defects, or any other defects or any combination of defects which seriously detracts from the appearance or the edible or marketing quality. The following specific defects shall be considered as serious damage.

(1) Seedstems when more than one-half the length of the longest leaf in the bunch.

(2) Flower buds when generally open in the bunch.

(3) Insects when very concentrated or when the insect feeding seriously affects the appearance of the bunch.

(4) Discoloration when affecting an aggregate area of more than 25 percent of the total surface area of the leaves in the bunch.

(5) Mechanical damage when more than 50 percent of the leaves in the bunch are crushed, torn, or broken.

APPENDIX II NOTESHEET AND CERTIFICATE EXAMPLES

Notesheet Example

Model by: INSP. BY: 001 LOT NO.: 001 COND. HALF: FULL: TRAVEL: MILES: O.T. (hr): O.T. (min): O.T. (hr): O.T. (min):	APPLICANT NUMBER: 211013456	D: NUMBER: GRADE: ACCOUNT: SIZE: UNIT:	C: NUMBER: GRADE: ACCOUNT: SIZE: UNIT:	B: NUMBER: GRADE: ACCOUNT: SIZE: UNIT:	A: NUMBER: GRADE: ACCOUNT: SIZE: UNIT:	DEFECT: COOKS: DEFECT: COOKS:	REG. NO.: 032006 06:00 AM COM. NO.: 032006 09:45 AM PURPOSE: PRODUCT: THE: CRT:	CONTAINERS: S. USTAINS: C. CORRECTS:	FV 300 CERTIFICATE NUMBER:	
CARRIER or LOT IDENTIFICATION: PREFIX: P012345 NUMBER: 1 STATE:			LOADING: Loaded - L O Ptn. Unload - P U Unloaded - U L Lot Insp. - L I			INSPECTION NOTESHEET U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE FRUIT & VEGETABLE DIVISION				
Carrier No. Stated by: applicant			INSPECTION STARTED: m m d d y y Hour Min. A/P 03 20 06 09:00 A M			CERTIFICATE NUMBER: Example #1				
Additional Lot ID.:			Inspection Completed: m m d d y y Hour Min. A/P 03 20 06 09:45 A M			APPLICANT: Green Farms				
Carrier Type / Name:			Refrigeration Unit: <input type="checkbox"/> ON <input type="checkbox"/> OFF <input type="checkbox"/> OPEN <input type="checkbox"/>			Address: Leaftown, FL				
Condition of Carrier:			Doors: <input type="checkbox"/> OPEN <input type="checkbox"/>			SHIPPER: Veg World				
Inspection Site: applicants warehouse			Address: Eatmore, CA			BRANDS / MARKS: "Greener Goods" net wt. 3LBS, produce of USA Veg. World Eatmore, CA				
A: PRODUCT: Spinach leaves NUMBER OF CONTAINERS: 250 cartons Y INSP. COUNT: TEMPERATURES: 34-36 F			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 <input type="checkbox"/> INTACT THROUGH LOAD <input type="checkbox"/> PARTLY UNLOADED							

Scoresheet Example

1 2 3 4 5 6 7

PACK: <i>In film Bags</i> SIZE: <i>mostly small some medium</i>	PACK: / SIZE: /	PACK: / SIZE: /	PACK: / SIZE: /
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SCORESHEET				ES	(insect damage quality defects)	yellowing				size
PLI Number	Other I.D.	TEMP.	Sample #	DK						
<i>NONE</i>		<i>34</i>	<i>200</i>	<i>6³</i>	<i>1'</i>	<i>8+</i>				<i>m</i>
<i>NONE</i>		<i>36</i>	<i>200</i>	<i>2'</i>	<i>0</i>	<i>2'</i>				<i>sm</i>
<i>NONE</i>		<i>35</i>	<i>100</i>	<i>2²</i>	<i>1'</i>	<i>4+</i>				<i>sm</i>
			<i>3</i>	<i>(2')</i>	<i>(1')</i>	<i>(3')</i>				
				<i>(1-3')</i>						
<div style="font-size: 2em; font-family: cursive;">FNI</div> <div style="font-size: 1.5em; font-family: cursive;">account condition</div>										
REMARKS / RESTRICTIONS / SPI										

CARLOT Basis : _____ HOURLY Basis : _____ TRAVEL Time : _____ EXPENSES : _____ EST. TOTAL : _____	REPORTED TO: <i>John Smiley</i> DATE: <i>3/20/06</i> TIME: <i>9:55am</i> REQUESTED BY: <i>John Smiley</i> DATE: <i>3/20/06</i> TIME: <i>6:00am</i>	INSPECTED BY : <i>Joe Shmoe, 001</i> ASSISTED BY : _____
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Notesheet Example

INSPI BY: <u>2017</u> LOT: <u>2017</u> COOK: <u>2017</u> QUALITY FULL: <u>2017</u> COOK HALF: <u>2017</u> O.T. (hr): <u>2017</u> O.T. (min): <u>2017</u> MILES: <u>2017</u> TRAVEL: <u>2017</u> ON-SITE: <u>2017</u> HOURS: <u>2017</u> O.T. (hr): <u>2017</u> O.T. (min): <u>2017</u> MILES: <u>2017</u> TRAVEL: <u>2017</u> ON-SITE: <u>2017</u> HOURS: <u>2017</u>	APPLICANT NUMBER: <u>211014680</u>	A: NUMBER <u>3</u> SIZE <u>24</u> UNIT <u>C</u> GRADE <u>MN1</u> ACCOUNT <u></u> B: NUMBER <u></u> SIZE <u></u> UNIT <u></u> GRADE <u></u> ACCOUNT <u></u> C: NUMBER <u></u> SIZE <u></u> UNIT <u></u> GRADE <u></u> ACCOUNT <u></u> D: NUMBER <u></u> SIZE <u></u> UNIT <u></u> GRADE <u></u> ACCOUNT <u></u>	DEFECT CODES MEG DIS YEL DELK SUM	REG: <u>03</u> <u>20</u> <u>06</u> <u>06</u> <u>00</u> <u>AM</u> COM: <u>03</u> <u>20</u> <u>06</u> <u>11</u> <u>00</u> <u>AM</u>	CONTAINERS: <u></u> U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE FRUIT & VEGETABLE DIVISION
CARRIER or LOT IDENTIFICATION: <u>P0124680</u> <u>1</u> PREFIX NUMBER STATE		LOADING: <u>UL</u> Loaded - L O Pity Unloaded - P U Unloaded - U L Lot Insp. - L I		INSPECTION NOTESHEET U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE FRUIT & VEGETABLE DIVISION CERTIFICATE NUMBER: <u>Example # 2</u>	
Carrier No. Stated by: <u>applicant</u> Additional Lot ID.: <u></u> Carrier Type / Name: <u></u>		INSPECTION STARTED: m m d d y y Hour Min. A/P <u>03</u> <u>20</u> <u>06</u> <u>10</u> : <u>00</u> <u>A</u> <u>M</u>		Inspection Completed: m m d d y y Hour Min. A/P <u>03</u> <u>20</u> <u>06</u> <u>11</u> : <u>00</u> <u>A</u> <u>M</u>	
Refrigeration Unit: <input type="checkbox"/> ON <input type="checkbox"/> OFF Doors: <input type="checkbox"/> OPEN <input type="checkbox"/>		APPLICANT: <u>Green Farms</u> Address: <u>Greenville, MD</u>		SHIPPER: <u>Veg World</u> Address: <u>Eatmore, CA</u>	
Condition of Carrier: <u></u> Inspection Site: <u>applicant's warehouse</u>		BRANDS / MARKS: <u>"Fresh World"</u> <u>2 dozen bunches, produce of USA</u> <u>Veg World Farms</u> <u>plants Eatmore, CA</u>			
A: PRODUCT: <u>Bunched Spinach</u> NUMBER of CONTAINERS: <u>285 cartons</u> INSP. COUNT: <u>Y</u> TEMPERATURES: <u>34-35° F</u>					
B: PRODUCT: <u></u> NUMBER of CONTAINERS: <u></u> INSP. COUNT: <u></u> TEMPERATURES: <u></u>					
C: PRODUCT: <u></u> NUMBER of CONTAINERS: <u></u> INSP. COUNT: <u></u> TEMPERATURES: <u></u>					
D: PRODUCT: <u></u> NUMBER of CONTAINERS: <u></u> INSP. COUNT: <u></u> TEMPERATURES: <u></u>					
Condition of Load & Containers: <input checked="" type="checkbox"/> STACKED ON PALLETS AT ABOVE LOCATION () INTACT THROUGH LOAD () PARTLY UNLOADED					

