



**United States
Department of
Agriculture**

**Agricultural
Marketing
Service**

**Fruit and
Vegetable
Division**

**Fresh
Products
Branch**

United States Standards for Grades of Sweet Corn for Processing

Effective May 15, 1962
(Reprinted - January 1997)

United States Standards for Grades of Sweet Corn for Processing ¹

Grades

51.3365 U.S. No. 1.

51.3366 U.S. No. 2.

Culls

51.3367 Culls.

Maturity Classifications

51.3368 Maturity classifications.

Definitions

51.3369 Similar color characteristics.

51.3370 Fresh.

51.3371 Damage.

51.3372 Blister stage.

51.3373 Milk stage.

51.3374 Cream stage.

51.3375 Dough stage.

51.3376 Hard stage.

51.3377 Serious damage.

Application of Standards

51.3378 Purpose of standards.

Grades of Standards

51.3379 Grade and maturity determination.

Grades

§51.3365 U.S. No. 1.

(a) "U.S. No. 1" consists of ears of sweet corn of similar color characteristics which are fresh and free from damage by freezing, cross pollination, denting, worms, birds, fermentation, smut or other disease or other means. Kernels on each ear shall be developed beyond the "blister stage", but shall not have reached the "hard stage" of maturity. (See §51.3379.)

(b) Unless otherwise specified, each ear shall have not less than an average of 4 inches of the cob covered with undamaged kernels, in addition to any good kernels which would necessarily be lost in the usual method of trimming to remove damaged kernels.

§51.3366 U.S. No. 2.

(a) "U.S. No. 2" consists of ears of sweet corn of similar color characteristics which are fresh, free from damage by freezing, fermentation, smut or other disease, and free from serious damage by cross pollination, denting, worms, birds or other means. Kernels on each ear shall be developed beyond the "blister stage", but shall not have reached the "hard stage" of maturity. (See

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.

§51.3379.)

(b) Unless otherwise specified, each ear shall have not less than an average of 3 inches of the cob covered with kernels which meet the requirements of U.S. No. 2 grade, in addition to any good kernels which would necessarily be lost in the usual method of trimming to remove damaged kernels.

Culls

§51.3367 Culls.

"Culls" consists of ears of sweet corn which fail to meet the requirements of U.S. No. 2 grade.

Maturity Classifications

§51.3368 Maturity classifications.

In addition to the grade classification, a lot of sweet corn may be classified for general overall maturity in terms of one of the following maturity classifications:

- (a) A-1: Includes ears in the "milk stage" or younger, more than half of which are in the very tender early "milk stage," and none of the remainder of which are bordering on the "cream stage."
- (b) A-2: Includes ears in the "milk stage" or younger with not more than 5 percent bordering on the "cream stage."
- (c) A-3: Includes ears in the "milk stage" with more than 5 percent bordering on the "cream stage."
- (d) A-B: Includes ears generally in the "milk stage" with 1 to 10 percent in the "cream stage."
- (e) B: Includes ears mostly in the "milk stage" with more than 10 percent in the "cream stage."
- (f) B-C: Includes ears generally in either the "milk" or the "cream stage" with 1 to 10 percent in the "dough stage."
- (g) C: Includes ears more than 10 percent of which are in the "dough stage."

Definitions

§51.3369 Similar color characteristics.

"Similar color characteristics" means that the kernels on the ears of corn in any lot are of the same general color.

§51.3370 Fresh.

"Fresh" means that the ear does not show evidence of dryness from excessive elapsed time after picking or from other causes.

§51.3371 Damage.

"Damage" means any specific defect described in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially lowers the processing quality of the ear. The following specific defects shall be considered as damage:

- (a) Freezing when color, texture or flavor of the kernels has been materially affected;
- (b) Denting when 5 percent or more of the kernels on the ear show conspicuous depressions in the exposed surfaces;
- (c) Cross pollination when 3 percent or more of the kernels on the ear are of a color or maturity which contrasts distinctly with most of the kernels on the ear;
- (d) Worms when a corn borer has tunneled into the cob; or when badly discolored remnants of worm-eaten kernels are located among the undamaged kernels more than one inch from the ends of the rows of usable kernels;

- (e) Birds when badly discolored or dried remnants of bird-pecked kernels are located among the undamaged kernels more than one inch from the ends of the rows of usable kernels;
- (f) Fermentation when any portion of the husked ear has a distinctly sour odor; and,
- (g) Smut when any kernel on the ear is more than slightly swollen due to smut infection.

§51.3372 Blister stage.

"Blister stage" means the stage of development in which the kernels are not sufficiently mature for processing. They are small, underdeveloped, have very tender pericarps and contain watery or cloudy liquid which runs freely when released.

§51.3373 Milk stage.

"Milk stage" means the stage of development in which the kernels are moderately to well filled out, have tender pericarps which break with light pressure from the thumb nail, and contain a milky or thin creamy liquid which spreads or runs moderately when released.

§51.3374 Cream stage.

"Cream stage" means the stage in which the kernels have attained full size, have fairly tender pericarps which break with moderate pressure from the thumb nail, and contain a thick creamy substance which spreads or runs very little when released.

§51.3375 Dough stage.

"Dough stage" means the stage in which the kernels have attained full size, have tough pericarps which require heavy pressure from the thumb nail to break, and contain a soft doughy substance which does not spread or run when released.

§51.3376 Hard stage.

"Hard stage" means the stage in which the kernels have very tough pericarps, and contain a heavy, sticky, doughy substance. Ears in this stage are overmature for any processing purpose.

§51.3377 Serious damage.

"Serious damage" means any specific defect described in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which seriously lowers the processing quality of the ear. The following specific defects shall be considered as serious damage:

- (a) Cross pollination when 5 percent or more of the kernels on the ear are of a color or maturity which contrasts distinctly with most of the kernels on the ear;
- (b) Denting when 10 percent or more of the kernels on the ear show conspicuous depressions in the exposed surfaces;
- (c) Worms when a corn borer has tunneled into the cob; or when trimming of the ear by the usual method to remove badly discolored remnants of worm-eaten kernels leaves less than the required area of the ear covered with kernels which meet the requirements of U.S. No. 2 grade; and,
- (d) Birds when trimming of the ear by the usual method to remove badly discolored or dried remnants of bird-pecked kernels leaves less than the required area of the ear covered with kernels which meet the requirements of U.S. No. 2 grade.

Application of Standards

§51.3378 Purpose of standards.

These standards are intended for use in describing the quality and maturity of loads of sweet corn being delivered by growers to processors. The grade and maturity classification of a load is useful in two ways. First, it provides an equitable basis for pricing the load in relation to its quality.

Second, it enables the processor to use the corn more advantageously.

§51.3379 Grade and maturity determination.

(a) A representative sample from the load shall be used for grade and maturity determination. An exactly weighed quantity from this sample shall be used for analysis. All ears in the analysis sample shall be completely husked. A husked ear is one which has all of the husks removed, the shank or stem trimmed to one inch or less in length, and the cob trimmed, if necessary, so that the portion remaining without usable kernels is not more than one-fourth the length of the trimmed ear.

(b) The husked ears shall be sorted into groups of U.S. No. 1 grade, U.S. No. 2 grade and Culls. The percentage of each group shall be calculated on the basis of weight. Percentages may be determined either on the basis of the total weight of ears in the husk or on the basis of the total weight of husked ears in the sample, depending upon the wording of the contract between grower and processor.

(c) The maturity of the individual ears shall be determined during the process of grading, and a maturity classification assigned to the load on the basis of the percentages of ears in the various stages of maturity.