



**United States  
Department of  
Agriculture**

**Agricultural  
Marketing  
Service**

**Fruit and  
Vegetable  
Division**

**Fresh  
Products  
Branch**

# **United States Standards for Grades of Horseradish Roots**

**Effective July 27, 1936**  
*(Reprinted - January 1997)*

# United States Standards for Grades of Horseradish Roots<sup>1</sup>

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## **Grades**

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## **Unclassified**

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## **Grades**

### **§51.3900 U.S. Fancy.**

"U.S. Fancy" consists of horseradish roots which are firm, well trimmed, well shaped, fairly smooth, free from decay and hollow heart, and free from damage caused by dirt, sunburn, cuts, cracks, internal discoloration, mold, freezing, insects, mechanical or other means. Each root shall have good head formation. (See §51.3904.)

(a) **Size.** The roots shall be not less than 8 inches in length when the diameter is 1-1/2 inches or more: **Provided**, That if the length is greater than 8 inches, the diameter may be 1/16 inch less for each additional half inch in length, but no root shall be less than 1-1/4 inches in diameter. (See §51.3904.)

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

**§51.3901 U.S. No. 1.**

"U.S. No. 1" consists of horseradish roots which are firm, well trimmed, fairly well shaped, not excessively rough, and which are free from decay and hollow heart, and free from damage caused by dirt, sunburn, cuts, cracks, internal discoloration, mold, freezing, insects, mechanical or other means. Each root shall have fairly good head formation. (See §51.3904.)

(a) **Size.** The roots shall be not less than 6 inches in length when the diameter is 1-1/4 inches or more: **Provided**, That if the length is greater than 6 inches, the diameter may be 1/16 inch less for each additional half inch of length, but no root shall be less than 1 inch in diameter. (See §51.3904.)

**§51.3902 U.S. No. 2.**

"U.S. No. 2" consists of horseradish roots which are firm, well trimmed, free from decay and hollow heart, and free from serious damage caused by dirt, sunburn, cuts, cracks, internal discoloration, mold, freezing, insects, mechanical or other means. (See §51.3904.)

(a) **Size.** The roots shall be not less than 4 inches in length and not less than 1/2 inch in diameter. (See §51.3904.)

**Unclassified**

**§51.3903 Unclassified.**

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

**Tolerances**

**§51.3904 Tolerances.**

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

(a) **For defects.** Ten percent for roots in any lot which fail to meet the requirements of the specified grade, including therein not more than 5 percent for roots which are hollow and also including therein not more than 2 percent for roots which are affected by decay.

(b) **For size.** Five percent for roots in any lot which are smaller than the minimum size specified for the grade.

**Application of Tolerances**

**§51.3905 Application of tolerances.**

The contents of individual packages in the lot, 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 15 specimens or less, individual packages may contain not more than double the tolerance specified:

**Provided**, That the average for the entire lot is within the tolerance 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 defective and one off-size specimen may be permitted in any package: **And provided further**, That the average for the entire lot is within the tolerance specified for the grade.

## **Definitions**

### **§51.3906 Firm.**

"Firm" means that the roots are not appreciably soft, flabby, wilted, or withered.

### **§51.3907 Well trimmed.**

"Well trimmed" means that all secondary roots (plants) which are less than 5/8 inch in diameter at the point of attachment to the main root are trimmed to not more than 1 inch in length; and that tops (leaves) are trimmed to not more than 1/2 inch in length from the head.

### **§51.3908 Well shaped.**

"Well shaped" means that the root is not forked or branched. It may be slightly curved or crooked but shall not diverge in direction more than a total of 45 degrees from the course of a straight root.

### **§51.3909 Fairly well shaped.**

"Fairly well shaped" means that the root may be moderately curved or crooked but shall not diverge in direction more than a total of 90 degrees from the course of a straight root.

### **§51.3910 Fairly smooth.**

"Fairly smooth" means that the surface of the root is not bark-like or pitted to an extent appreciably detracting from its appearance. Remnants of secondary roots on the side of the main root shall not be considered as roughness.

### **§51.3911 Excessively rough.**

"Excessively rough" means that the surface of the root is pitted or furrowed to a depth of more than one-eighth of an inch over one-fourth or more of the surface in the aggregate, exclusive of the head. Remnants of secondary roots on the side of the main root shall not be considered as roughness.

### **§51.3912 Damage.**

"Damage" means any defect or combination of defects which materially detracts from the appearance or the grinding quality of the root, or which cannot be removed without a loss of more than 10 percent, by weight, of the root including the peel covering the defective area.

(a) Dirt shall be considered as damage when it is more than lightly caked on the root.

### **§51.3913 Serious damage.**

"Serious damage" means any defect or combination of defects which seriously detracts from the appearance or the grinding quality of the root or which cannot be removed without a loss of more than 25 percent, by weight, of the root including the peel covering the defective area.

(a) Dirt shall be considered as serious damage if it is more than moderately caked or encrusted on the root.

### **§51.3914 Head.**

"Head" means that part of the root to which the leaves are attached. It is usually a rounded knob at or near the top of the root.

### **§51.3915 Good head formation.**

"Good head formation" means a head formation consisting of any number of heads, provided they are at the top of the root and not more than two are separated by a deep crotch.

### **§51.3916 Fairly good head formation.**

"Fairly good head formation" means a head formation consisting of any number of heads, provided they are at the top of the root and not more than four are separated by deep crotches.

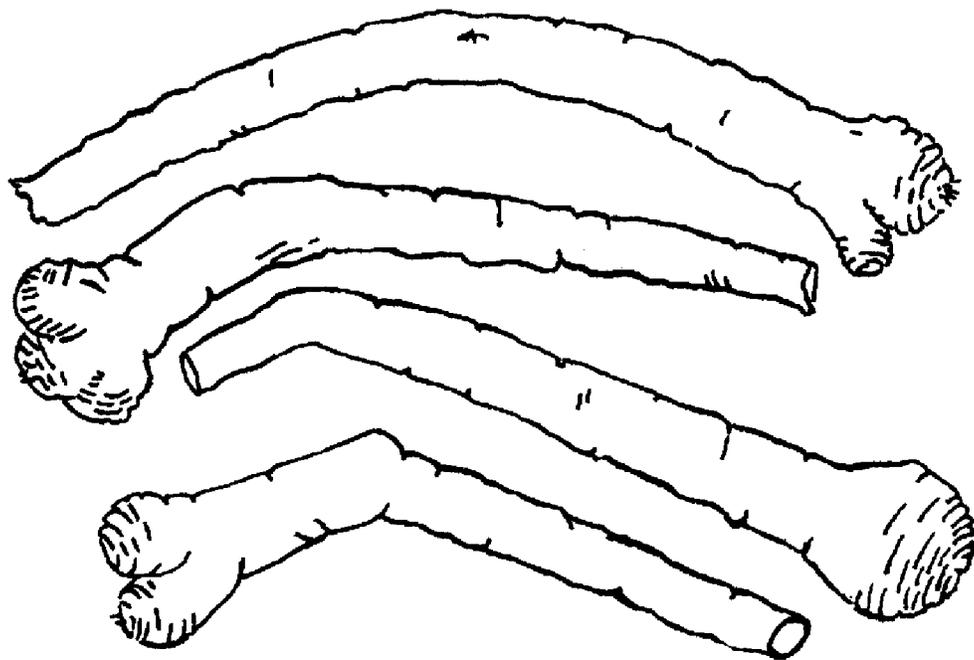
**§51.3917 Length.**

"Length" means the total over all length of the root from the top of the uppermost head to the tip of the main, usable root.

**§51.3918 Diameter.**

"Diameter" means the greatest thickness of the root at a point halfway of its length.

Well Shaped



Fairly Well Shaped

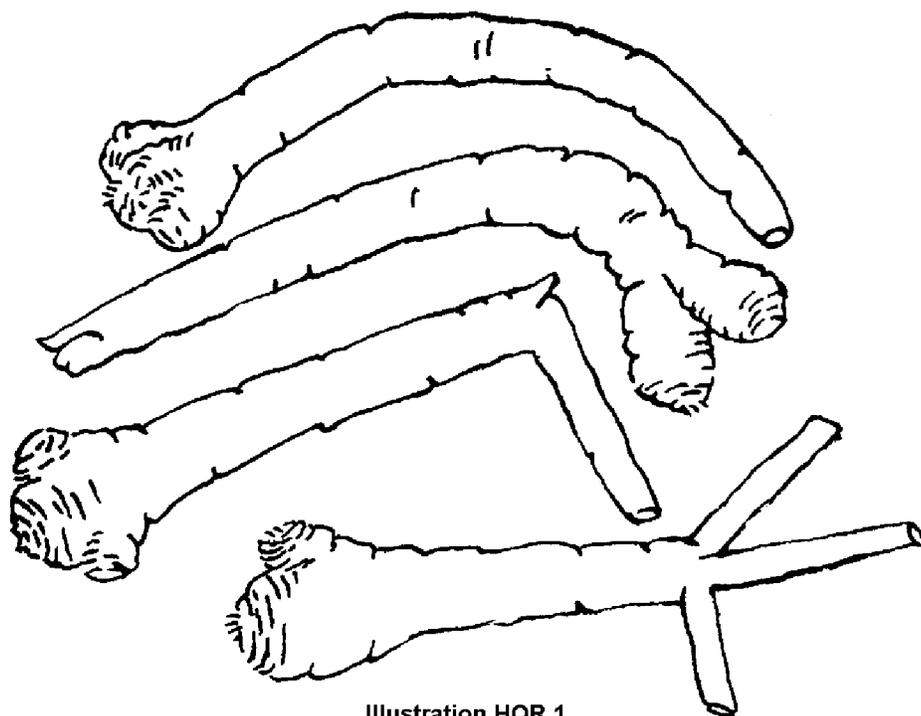


Illustration HOR 1

**Good Head Formation**



**Fairly Good Head Formation**



**Not Fairly Good Head Formation**

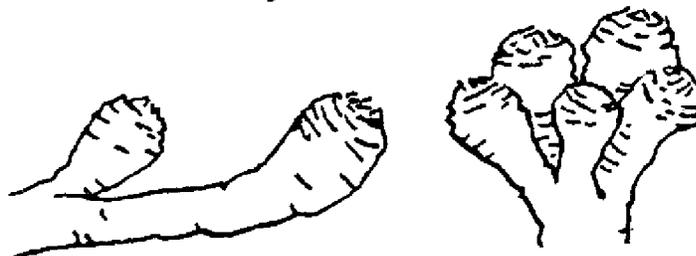


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