



United States  
Department of  
Agriculture

Food Safety  
and Quality  
Service

Fruit and  
Vegetable  
Quality Division

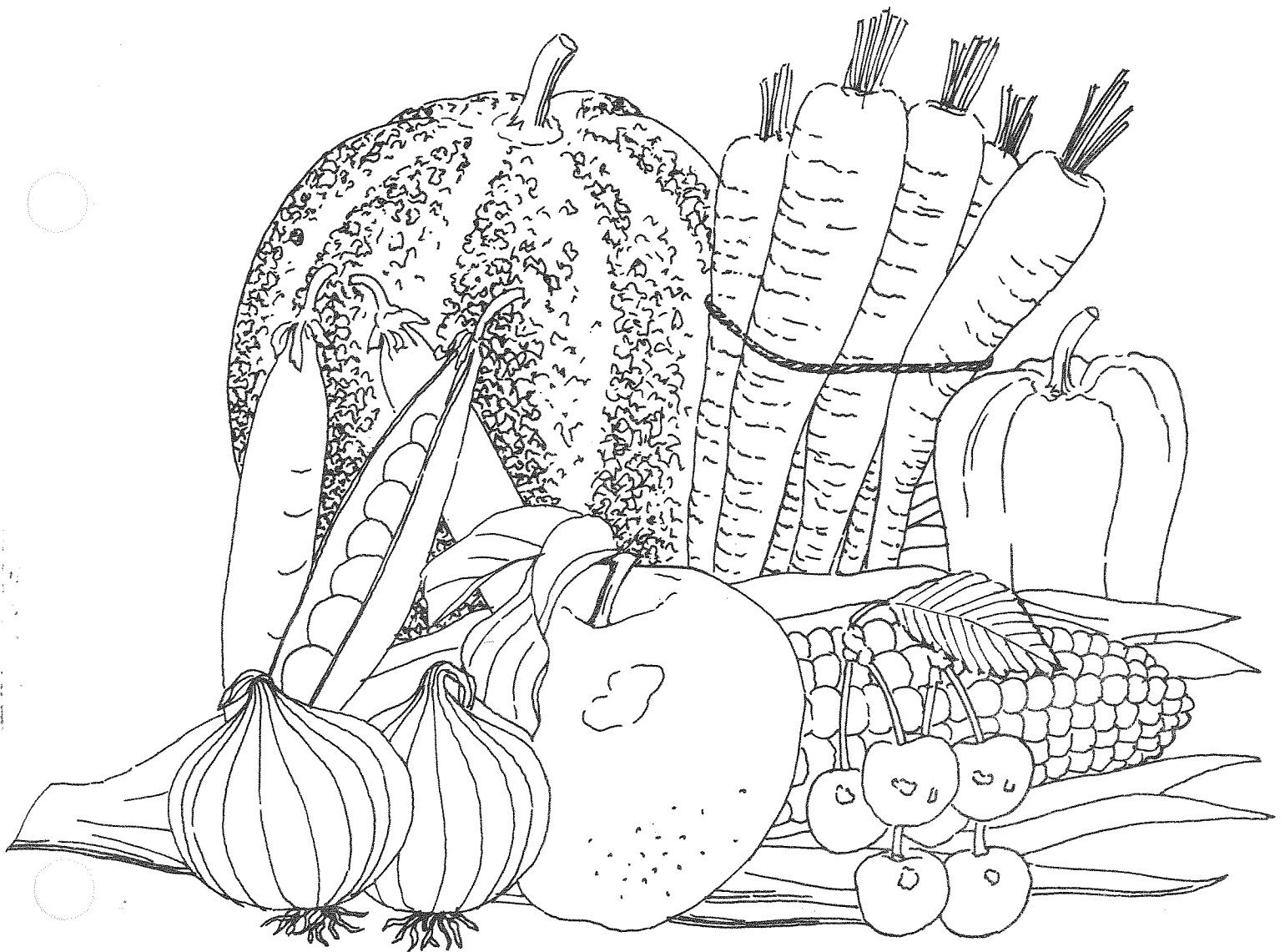
Fresh Products  
Branch

Washington, DC

November, 1962

# Mushrooms for Processing

## Inspection Instructions



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UNITED STATES DEPARTMENT OF AGRICULTURE  
Agricultural Marketing Service  
Fruit and Vegetable Division

INSPECTION INSTRUCTIONS  
MUSHROOMS FOR PROCESSING 1/

Revised Nov. 12, 1962

INTRODUCTION

The inspector will be guided by these instructions and by such additional instructions as may be given him either orally or in writing by his supervisor. When in doubt in any matter, he should consult his supervisor. If it is necessary to take immediate action, he must use his best judgement and advise his supervisor of the action taken as soon as possible so that corrective steps can be taken, in case the procedure followed was not proper. (1)

These instructions cover methods of inspection which must be learned in detail before any attempt is made to inspect mushrooms. The inspector must know the complete details of the specifications of the suggested U. S. Standards for Fresh Mushrooms for Processing. (2)

Buying and selling on the basis of uniform standards encourages better production and better handling methods. The practice of paying a flat price for all mushrooms which are accepted discriminates against the better growers. The grower should be paid a suitable premium for mushrooms which will make a high quality manufactured product. (3)

The Inspection Service has no authority to reject loads that do not meet contract specifications. The duty of the inspector is to perform the inspection for the processor according to the agreement between the processor and the Inspection Service, and to issue a certificate showing the facts. It is then the processor's responsibility to reject or accept a load. (4)

Necessary Equipment

(5)

1. Inspection certificates.
2. Suitable grading table.
3. Sample divider.
4. Approximately 10 suitable identical containers.
5. One direct reading table scale, in ounces or tenths of a pound.
6. Equipment essential to blanch specimens.
7. Slide Rule.
8. Sizing gauge.

1/ These instructions supersede "Inspection Instructions for Mushrooms for Processing" issued October 1961.

9. Satisfactory lighting.
10. Fresh water and towels.
11. Trash can.
12. Any other equipment or materials necessary to enable the inspector to conduct his work in the proper manner.

REPRESENTATIVE SAMPLE

- (6) In inspecting mushrooms, or any other commodity, selection of the sample is of primary importance. If the sample drawn is not truly representative of the lot, the result cannot be correct regardless of the care and precision used in the actual inspection.
- (7) It may prove impossible for the inspector to select all of his own samples. When this is the case, it will be permissible, to have a specifically designated and properly instructed assistant select the samples.
- (8) However, it is the licensed Federal-State inspector's responsibility to see that representative samples are selected. Therefore, he must take whatever steps are necessary to insure that samples are properly drawn. The inspector should supervise and observe the sampling process, and if he has any reason to believe that representative samples are not being drawn he should correct the helper or assistant immediately.

- (9) Type of Inspection Service Performed

The three types of inspection which may be performed are:

- A. Determine the weight and percentage of Cull Material only.
- B. Determine the weight and percentage of:
  1. Cull Material
  2. Culls
- C. Determine the weight and percentage of:
  1. Cull Material
  2. Culls
  3. No. 1 Stock
  4. No. 2 Stock

NOTE: For each type of inspection the inspector will use the "Suggested U. S. Standards for Fresh Mushrooms for Processing", dated Sept. 6, 1962.

- (10) LOT SAMPLING PROCEDURE

Generally mushrooms are delivered to the processing plant in twelve quart climax baskets. The baskets arrive on skids, or put on skids at time of delivery to the plant. To obtain the number of baskets to be sampled determine the total number of baskets on the skid and refer to the following sampling rate.

SAMPLING RATE FOR EACH SKID

(11)

<u>Total number of baskets on skid</u>	<u>Number of baskets selected</u>
14 or less	1
15-24	2
25-34	3
35-44	4
45-54	5
55-64	6
65-74	7
75-84	8
85-94	9
95-104	10
105-114	11
115-124	12
125-134	13

After determining the number of baskets to be included in the sample, (12) select these baskets at random throughout the skid, if the mushrooms in each basket are predominantly one size (fairly uniform) with no extreme variation in size of mushrooms from basket to basket.

If a skid contains baskets of large and/or extra large mushrooms, (13) baskets of small mushrooms, and/or baskets of medium-sized mushrooms, obtain a rough estimate of the proportion of baskets on the skid for each size group. Then draw a sample in which each size group is represented in the sample as closely as possible in the same proportion as on the skid. For example, assume a skid has 100 baskets; 10 baskets each contain predominately large mushrooms 50 contain predominately medium size, and 40 contain predominately small. For the sample select at random 1 basket from the 10 large, 5 baskets from the 50 medium and 4 baskets from the 40 small. The same sampling procedure will apply to all mushrooms. However, if at time of delivery white, cream and brown are mixed on the same truck they should be placed on separate skids when unloaded because each type should be graded as a separate sample.

After the sample baskets have been selected they are dumped over a (14) sample divider which consists of four equal sections. Each of the four containers into which the mushrooms fall should contain approximately 1/4 of the total.

The inspector will use a uniform procedure of selecting the proper (15) 1/4 sample to be used. The sections of the divider are marked 1 thru 4 from left to right. Beginning with the first lot each day use the first quarter sample. For the second lot use the second and so on and repeat in this order for the entire day. It makes no difference which quarter sample was the last selected at the end of a workday. For the first lot the next day again start with quarter sample number one.

The total weight of this sample will depend upon the number of baskets (16) selected. For example, if six baskets are taken from a skid and each

contains approximately nine pounds the quarter sample selected should consist of approximately 2 pounds. This is the sample which is used to determine the Cull Material in a lot, (A on page 3).

- (17) Qualified plant personnel, working under close supervision of the inspector, will cut this sample to remove all cull material. Cutting shall be in conformity with good commercial practice. NOTE: The Cull Material is then weighed and the amount recorded in the following manner.

(18) DETERMINATION OF CULL MATERIAL

Date	No. of Baskets	Total Sample Weight	Cull Material <u>1/</u>
		ozs.	ozs.
10:00 A.M.	50	176	17
12:30 P.M.	37	144	9
3:40 P.M.	15	80	6
	102	300	32

Percent Cull Material =  $\frac{32}{300} \times 100 = 10.7\%$

NOTE: Inspection for Cull Material is entirely separate from the inspection to determine grade and non-grade percentages and should always be reported separately.

(19) SUB-SAMPLING PROCEDURE

A sub-sample is used to determine the amount of Culls, No. 1 and No. 2 stock. This sub-sample is taken from that portion of the original sample which remains after all Cull Material is removed. The amounts of No. 1, No. 2 and Culls are related to the weight of this sub-sample, not to the weight of the original sample. The sub-sample for grade determination shall be not less than one-sixth (1/6), by weight, or not less than 1 pound of the cut mushrooms remaining after the cull material has been removed.

- (20) These represent minimum sample sizes. It is permissible to increase the sample size when circumstances warrant, providing, the increased sample size is maintained throughout the entire day for all lots delivered by the same grower.

1/ Practically all of the dirt which drops on the grading table and cutting machine should be added to the cull material for each lot sampled. All mushrooms which drop on cutting machine, floor or grading table should be placed in proper container.

After grading this sub-sample the weights and percent are recorded (21) as follows, when only the amount of culls has been requested.

DETERMINATION OF CULLS

Date	No. of Baskets	Weight of Sub-Sample ozs.	Weight of Culls ozs.
Oct. 10			
10:00 A.M.	50	44	1
12:30 P.M.	37	36	1
3:40 P.M.	15	20	1
	102	100	3

Percent Culls =  $\frac{3}{100} \times 100 = 3\%$

When the processor requests that the inspection be made to determine the amount of No. 1's, No. 2's and Culls the weights and percentages will be recorded as follows: (22)

DETERMINATION OF  
NO. 1's, NO. 2's AND CULLS

Date	No. of Baskets	Weight of Sub-Sample Ozs.	Weight of No. 1's Ozs.	Weight of No. 2's Ozs.	Weight of Culls Ozs.
Oct. 10					
10:00 A.M.	50	44	25	18	1
12:30 P.M.	37	36	23	12	1
3:40 P.M.	15	20	9	10	1
	102	100	57	40	3

Percent # 1's =  $\frac{57}{100} \times 100 = 57\%$

Percent #2's =  $\frac{40}{100} \times 100 = 40\%$

Percent Culls =  $\frac{3}{100} \times 100 = 3\%$

Established inspection procedures require that inspection of all fruit and vegetables be determined on an individual "lot" or "daily" basis. (23)

"Lot" means inspection of each delivery by a grower, regardless of the number of containers in a lot. (24)

"Daily" means the inspection of a composite sample drawn from several lots delivered, the same day, by one grower. (25)



(26) This is the procedure which the inspection service has always followed. It is necessary to follow this procedure because interested parties are entitled to request a reinspection. The right of reinspection is defined in SF. - AMS - 93.

(27) Certification of results from lot or daily inspections may be accumulated and reported on a pay period basis, usually a week, provided all parties concerned thoroughly understand this type of reporting and all agree to abide by it.

(28) GRADE INTERPRETATIONS

Firm. The veil is contracted and the mushroom gives very little when moderate pressure is applied to the shoulder or edge of the cap. The cap is that portion of the mushroom not including the stem. To apply this pressure hold the cap between the thumb and forefinger. Occasionally the center of the cap may be slightly concave. This is a condition which may indicate over maturity. However, this should be ignored if the cap is firm and the veil is intact.

(29) If upon casual observation an opening in the veil is observed a mushroom is not firm. Any mushroom with a weak or stretched veil which will open during the normal blanching process shall not be considered firm. (Equipment necessary to blanch borderline specimens should be provided).

(30) Well Shaped. Individual mushrooms may not be more than moderately misshapen. Normally mushrooms with flat shoulders are not scoreable as this will occur after the mushrooms are processed and placed in cans or jars, even if they are perfectly round when inspected. However, mushrooms which are materially scalloped or misshapen are scoreable.

(31) Spot or Disease. This is usually associated with Brown Spot (*Verticillium*) or *Trichoderma*. Discolored spots occur on the surface of the cap. These will be of different shades of brown and various sizes, some sunken with underlying flesh discolored. If any one spot or any combination of spots exceeds an area one-eighth inch in diameter the mushroom is a cull.

(32) Discoloration. Scoreable when white or cream mushrooms are darker than dark tan or light brown in color. Surface discoloration should not be confused with discoloration which is associated with mechanical damage.

(33) Mechanical Damage. Score the individual mushroom when the flesh of the cap is penetrated and imbedded dirt will not be removed in the normal washing process.

(34) Cull Material. Although not stated in the standards, cull material will include mushrooms or pieces of mushrooms which would not under any circumstances be considered as usable material.

(35) Diameter. Refers to the size of the cap only and means the greatest dimension of the cap when measured at right angle to the stem.

Scoring Caps and Stems. It will be permissible to score the cap and the stem separately according to the circumstances encountered. The following examples will be followed whenever they apply. (36)

1. A mushroom which has a defective stem and the cap is No. 1 quality (37)  
Remove the stem, grade the cap as No. 1 and the stem as either No. 2 or as a Cull.
2. Caps with stems "broken" out, can grade No. 1, provided the gills (38)  
are pink and not discolored or dirty and it is apparent that the stem was torn out in the plant.