



United States
Department of
Agriculture

Apples for Processing

Agricultural
Marketing
Service

Inspection Instructions

Fruit and
Vegetable
Programs

Fresh Products
Branch

November 1979

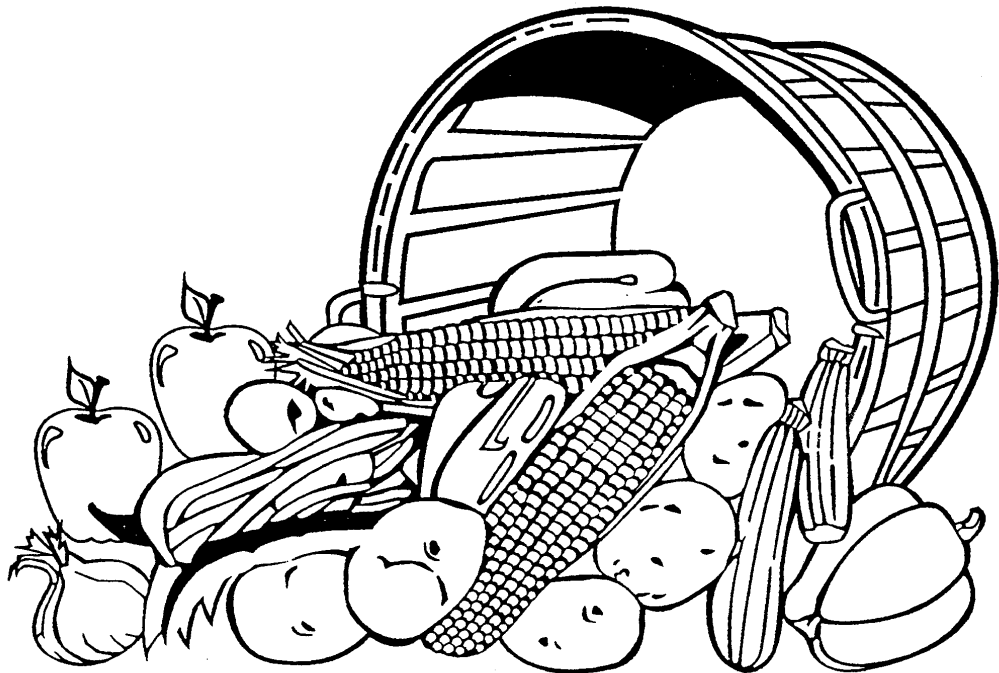


TABLE OF CONTENTS

	<u>Paragraph Numbers</u>
INTRODUCTION -----	1
THE STANDARDS FOR INSPECTION -----	2
GROWERS - PROCESSOR CONTRACTS -----	3
SUPPLIES AND INSPECTION EQUIPMENT -----	4 - 6
PROPER LIGHT -----	7
INSPECTION PROCEDURE -----	8 - 18
The Sample -----	8 - 12
Size Determination -----	13 - 14
Machine Sizing -----	15
Hand Sizing -----	16
Grading Samples -----	17 - 18
GRADE INTERPRETATIONS -----	19 - 25
Varieties -----	20
Cutting to Determine Waste -----	21
The U.S. No. 1 Grade -----	22
The U.S. No. 2 Grade -----	23
U.S. Cider -----	24
Culls -----	25
GRADE FACTORS -----	26 - 51
Firmness -----	26
Decay -----	27
Worm Holes -----	28
Red Banded Leaf Roller -----	29
Lesser Apple Worm Injury -----	30
Red Bug -----	31
Internal Breakdown -----	32 - 33
APPENDIX I .....U.S. STANDARDS	

II

Paragraph
Numbers

GRADE FACTORS (cont'd)

Frozen Apples -----	34
Freezing Injury -----	35 - 36
Bruising -----	37
Handling Bruising of Apples at Destination -----	38
Water Core -----	39 - 40
Scab -----	41
Hail -----	42
Misshapen Apples -----	43
Other Grade Factors -----	44
Method to Determine Percentage of Invisible Water Core, Cork or Other Defects Not Visible Externally -----	45 - 46
Lots Inspected to Meet a Specified U.S. Grade -----	47
Detailed Instructions for Handling Apples On the Basis of U.S. No. 1 Grade with price differentials for 2-1/4" to 2-1/2", 2-1/2" to 3", and over 3" -----	48 - 49
Export Lots Inspected on Basis of U.S. No. 1 Apples for Processing -----	50 - 51

INSPECTION MEMORANDA

Care of Memoranda -----	52 - 53
Care of Recording -----	54
Signing Inspection Memoranda -----	55
Correcting Inspection Memoranda -----	56
Issuing Restricted Memoranda Where It Is Not Possible to Obtain Samples From All Parts of Lot -----	57 - 58
Reporting Lot Number Instead of Grower's Name on Memoranda Where Identity is Unknown -----	59
Distribution of Copies of Memoranda -----	60

REINSPECTION AND APPEAL INSPECTION ----- 61 - 63

Delayed Appeal Handled As New Inspection ----- 63

IMPORTANT INFORMATION TO REMEMBER ----- 64

	<u>PAGE</u>
Optional Tests -----	27
Soluble Solids -----	28
Pressure Test For Firmness -----	29

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
FRUIT AND VEGETABLE DIVISION
FRESH PRODUCTS BRANCH

INSPECTION INSTRUCTIONS FOR APPLES FOR PROCESSING 1/ 2/

INTRODUCTION

The inspector will be guided by the instructions in this handbook, (1)
the latest U.S. Standards for Grades of Apples for Processing, and by
any additional instructions which may be given either orally or in
writing by a Supervisor. These instructions cover inspection of
apples for processing which are intended for domestic or export
shipment as well as inspection of orchard run lots received at process-
ing plants. When in doubt on any matter that is not fully covered, the
inspector should get in touch with a Supervisor. If it is necessary
to take immediate action, the inspector's best judgement should be
used and a Supervisor advised of the action that was taken so that
corrections can be made if the proper procedure was not followed.

THE STANDARDS FOR INSPECTION

All inspection of apples for processing will be based on U.S (2)
Standards for Grades of Apples for Processing, unless an agreement
has been reached between a Federal Supervisor and the applicant as
to modifications of these standards or the use of others which may
be included in the contract between the processor and the grower. The
inspector is to accept instructions as to such modifications only from
a Supervisor and not from the applicant.

- 1/ These Inspection Instructions supersede Apples for Processing
Inspection Instructions, revised March, 1974.
2/ These Instructions do not establish a new or revised substantive
rule. (United States Standards for Grades of Apples for
Processing CFR § 51.340-51.349)

REPRINTED SEPTEMBER 1988 TO INCLUDE
BRANCH NOTICES AND INSPECTION
INSTRUCTION MEMOS.

REPRINTED DECEMBER 2001

GROWERS - PROCESSOR CONTRACTS

- (3) The grower and processor usually enter into a formal agreement covering the various terms of the purchase of apples. A number of these terms have a bearing on the inspection work and a Supervisor should obtain a copy of the contract and familiarize inspectors with all terms which will in any way affect their work. Processors may deviate from the terms of their contracts at times and wish inspection to be modified accordingly. A Supervisor should always insist on a written statement from the processor of any such change far enough in advance of its effective date to permit proper notification to all inspectors. A Supervisor will also issue instructions as to changes in inspection procedure and memorandum writing when any new specifications are issued. In no case should the Inspection Service assume the responsibility of notifying growers of changes in contract specifications.

SUPPLIES AND INSPECTION EQUIPMENT

- (4) The following is a list of inspection supplies and equipment needed:
1. Inspection Memoranda.
 2. Small sizing machine furnished by the processor.
 3. Direct reading scales. (The number of scales will depend on the arrangement of grading facilities).
 4. Suitable metal weighing containers. (Boxes or baskets may be used but are harder to keep clean.)
 5. Paring knife.
 6. Slide rule or computation chart.

The memorandum form will have spaces for recording weights and percentages of applicable grades, (U.S. No. 1, U.S. No. 2, U.S. Ciders) and Culls, and the different size ranges. (5)

No special grading table will be needed since the actual separation into grades will be done from the bins into which the sizing machine has separated the lot. The adjustment and operation of the sizing machine will vary with the contract and with the setup of the processing plant and so is not described here. (6)

PROPER LIGHT

It is important that the inspector have good light in order to properly grade the fruit. It is frequently necessary to work under artificial light which will be satisfactory if the strength and arrangement of the light gives the practical equivalent of good daylight. (7)

INSPECTION PROCEDURE

The Sample. The sample must be representative; that is, it must come from enough sections of the lot to truly represent the entire lot, and must be large enough to allow accurate determination for size and grade. (8)

It is the duty of each Federal Supervisor to arrange for adequate and representative sampling methods to cover all situations that may exist. This applies to lots being dumped into the line at the storage plant, storage lots, or any other lots. (9)

- (10) When samples are drawn by an employee of the plant any such employee always takes instructions from the inspector stationed at the plant. The inspector must make certain the "sampler" understands how to do the job and check frequently to make sure the sampling is properly done.
- (11) It is not practical to establish a uniform sampling procedure for all states since canning facilities vary in different areas. However, supervisors should insist on a sampling system which will provide representative samples. There are several good sampling systems which are being used in various states. For boxes, in drawing a composite sample, the upper one-third of the first container selected, the center portion of the second container selected, and the lower third of the third container selected are poured into an empty basket or box. This procedure is continued until the composite sample is secured. This method has shown a high degree of accuracy and, in general, has eliminated complaints from growers and processors. Separator gates may also be used on a conveyor line to obtain samples.
- (12) Other excellent systems, such as securing the sample with a butterfly net or scoop as the fruit is being unloaded and carried by belt to designated bins, are being used. In this manner, the sample is secured during the process of unloading, insuring representative sampling throughout the load.

Size Determination. Processors' contracts vary somewhat with respect (13)
to size classifications but usually a contract specifies different
prices for apples classified within certain size ranges. Practically
all of the larger processors furnish a sizing machine to aid the
inspector in the separation of the apples into the various classifications.
In some of the smaller plants, such machines are not furnished and it is
necessary for the inspector to classify the apples for size by means
of a ring sizer.

In the larger plants, speed is essential if the inspector is to keep (14)
up with deliveries of loads to the plants. Therefore, it is usually
not practicable to spend much time checking the size of apples in the
various bins as separated by the machine sizer. Previous studies
indicate that machines, equipped with chains which are not worn, do
a very satisfactory job of sizing. Naturally some apples are improperly
classified owing to peculiarities in shape. However, if some apples
are found to be above maximum for a certain classification and are
placed in the next larger classification, it will usually be found
that there are some under sized apples in this bin which must be
returned to the next lower classification. In other words, it has
been found that the percentages of apples improperly classified by
machines tend to balance when the incorrectly sized apples are transferred
to their proper classification.

- (15) Machine Sizing. At the beginning of each season and at any other time when there is reason to doubt the machine, its accuracy must be checked against hand sizing. When hand sizing of the machine sized sample shows more than slight amount of off-size in any other sized categories, it is the responsibility of the processor to make necessary corrections. When checking the accuracy of the machine, the entire sample must be hand sized, not merely one size classification. Inspections must not be made using machine sizers which show more than slight degrees of error.

Hand Sizing. Both minimum and maximum size in the Apples for Processing

- (16) grades are determined by finding the smallest diameter of the apples regardless of its stem or calyx position. Thus using any position to pass an apple through the ring is the correct method to hand size apples for processing. To separate a sample into four size categories using minimum diameter ring measurement proceed as follows:

	<u>SIZE CATEGORY</u>
1. Separate apples under 2-1/4 inches.	Under 2-1/4 inches
2. Separate apples under 2-1/2 inches.	2-1/4 to 2-1/2 inches
3. Separate apples under 2-3/4 inches.	2-3/4 inches and up

- (17) Grading the Sample: A possible in-plant procedure is as follows:
1. Run the sample over the machine sizer to separate it into bins according to size.

2. Pick out the U.S. No. 1 fruit and place into proper container on the scales.
3. The culls are tossed into the cull container as they are found.
4. The U.S. Ciders are placed in the bin containing apples under 2-1/4 inches.
5. The U.S. No. 2's are left in the bins until the U.S. No. 1 apples have been weighed.
6. The U.S. No. 2's, the U.S. Ciders, and the Culls are then weighed separately.
7. The percentages of the different grades and sizes are figured on the basis of the total weight of the sample.

(The above is merely a suggested sequence to follow.)

When direct reading or digital scales with quarter pound gradations are used, weights may be recorded to the nearest 1/4, 1/2, or whole pound at the request of the applicant and with the concurrence of the Federal Supervisor. There may be times in computing percentages on the slide rule or computation chart when adjustments will be needed to make the percentages total 100. When this situation occurs, add to or subtract from the percentage figure on the note sheet which the slide rule or chart indicates is farthest away from the nearest whole number. For example, the slide rule may show 10.4 percent U.S. No. 2 and by recording 10 percent for this category, only 99 percent shows as the total sample. Since the other categories do not have variations as much as .4 over or under the figure reported, the percentage of U.S. No. 2 should be changed to 11 making the total 100 percent.

(18)

GRADE INTERPRETATIONS

(19) The U.S. Standards for Grades of Apples for Processing are based primarily on the amount of waste which occurs during "the usual commercial preparation for use." "Commercial preparation" presumes the use of power peeling machines followed by the necessary hand-trimming. In order to arrive at a correct basis of judgement for deciding how much waste results from different types of malformation, injuries or defects, an inspector may find it necessary to take apples to the preparation room in the plant where an operator can peel and trim them, if time permits, while the inspector observes the operation. In some states the processor furnishes the inspector with a peeling machine and it is desirable that these machines be furnished by the processor wherever possible.

(20) Varieties. Inspectors should have sufficient experience and training to readily identify major varieties of apples offered for inspection. In the case of mixed varieties, a lot may be certified as such when designated by the processor - grower contract. When lots are not designated as "mixed varieties" and do contain two or more varieties the inspection shall be based on predominant one. When this occurs, other varieties become defects of the U.S. No. 1 and U.S. No.2 grades and are classed as U.S. Ciders, unless showing decay, worm holes or internal breakdown, in which case they are classed as Culls. Remember, "one variety" includes all bud sports and strains of the specified variety.

Cutting to Determine Waste. The inspector will have to use considerable (21) judgement as to the proper cut for removing a defect, depending on the type of injury and location on the apple. In removing the defective part, only a normal amount of uninjured tissue should be removed, such as in the ordinary commercial preparation for processing. As a general policy, in removing bruises or shallow defects, a rounded or curved cut should be used. For injuries that penetrate deep into the flesh a cone shaped cut should be employed.

The U.S. No.1 Grade. Surface defects or blemishes that will be removed (22) during peeling are not considered when applying this grade. Except for decay, worm holes, freezing injury, internal breakdown, and overripe (none of which are permitted in this grade) the factor determining whether an apple meets the requirements of the U.S. No. 1 grade is the waste involved by usual commercial preparation in the removal of defects. If 5% or less, by weight, of the apples is lost in removing the defect it meets the requirements of U.S. No. 1.

The U.S. No. 2 Grade. This grade permits 12% waste in removal of (23) defects. In all other respects it is the same as U.S.No. 1 grade.

U.S. Cider. The U.S. Cider grade consists of apples which are free (24) from decay, worm holes and internal breakdown. There are no other requirements.

Culls. Culls consist of apples which fail to meet the requirements (25) of the U.S. Cider Grade.

GRADE FACTORS

- (26) Firmness. The U.S. No. 1 and U.S. No. 2 grades permit any degree of firmness except "overripe" which is defined as "dead ripe, flesh very mealy or soft." The U.S. Cider grade has no restriction on firmness. Immature apples are not prohibited in any of the U.S. Grades of Apples for Processing. An apple which is so ripe that it is thrown from the spindle of a properly adjusted peeling machine when being turned against the knife is overripe as far as its usefulness for processing is concerned. See paragraphs 47 for instructions covering firmness when the lot is required to meet specific grade.
- Decay. Apples affected by decay are not permitted in any of the U.S
- (27) Grades. Decayed areas are not judged on the basis of a waste percentage for any grade. Apples affected by decay are culls regardless of the degree.
- Worm Holes. Apples showing worm holes are defects of all U.S. Grades.
- (28) The presence of one or more worm holes classes the apple as a cull.
- (29) Red Banded Leaf Roller. The leaf roller larvae are generally surface feeders and such injury should not be considered as worm holes. The scoring of this defect is on a waste basis. Apples showing leaf roller injury should be cut to determine whether they also have holes made by codling moth since this larva sometimes enters or leaves the apple through leaf roller injury. If the cut exposes a worm hole the apple is a cull.

Lesser Apple Worm Injury. The lesser apple worm is also a surface feeder. It usually causes injury resembling that of the red banded leaf roller. The larvae occasionally penetrate deeper into the flesh causing injury similar to the codling moth. The inspector should be guided by the depth of the injury as to whether or not it should be classed as a worm hole or judged on the basis of waste. Ordinarily, a worm hole will be deeper than 1/8 inch. (30)

Red Bug. This injury causes depressed spots on the apple which may be shallow or may penetrate to the core area. When extending to the core, ordinarily one such depressed spot will not cause more than 5% waste, and two spots not more than 12%. When injury does not extend to the core, allow additional spots in proportion to the degree of penetration. For example, two spots half way to the core should involve no more waste than one spot extending to the core. (The above procedure is merely suggestive material.) (31)

Internal Breakdown. Internal breakdown is prohibited in all grades. As in the case of decay and worm holes this factor is not handled on a waste basis. All apples showing internal breakdown are Culls. This defect is characterized by the breaking down and browning of the interior of the apple. It is often associated with the end of the storage life of apples. However, it may occur earlier following water core, freezing, severe bruising, or as a result of certain growing, handling or storage practices. There are two important factors to remember in the identification of internal breakdown: (32)

1. The affected tissues are brown.
2. The affected tissues are mealy or soft.

- (33) When both these conditions exist it is proper to score as internal breakdown. Some varieties, particularly Greenings, show brown, discolored tissue, sometimes associated with water core, which is firm. Apples with this condition may develop internal breakdown later, but if the flesh is firm such color is designated as internal browning and is not scored as internal breakdown.
- (34) Frozen Apples. These are apples with ice crystals present in the tissue. Frozen apples are not allowed in the U.S. No. 1 or U.S. No. 2 grades. They are however, passed for U.S. Cider grade regardless of the degree of freezing present.
- (35) Freezing Injury. This defect is usually indicated by the following:
1. Browning of a few to all 10 vascular bundles around the core.
 2. Extensive browning of the flesh.
 3. Large flattened bruises from contact with sides or bottoms of containers, the central portion of the bruise being decidedly sunken.
 4. Extensive browning of both large and small vascular bundles.
- (36) Apples must be free from freezing injury to be permitted in the U. S. No. 1 or U.S. No. 2 grade. The U. S. Cider grade has no restrictions on freezing injury. Remember, if the browning described above is also accompanied by a soft mealy condition of the flesh, the defect should be identified as internal breakdown and scored against all grades.

Bruising. This defect is scored on a waste basis. A few slight, oxidized bruises which are not corky or tough should be disregarded since this type tends to bleach out in the processing operation. (37)

Handling Bruising of Apples at Destination. At times cannery apples are shipped to processors in other States or to pie bakers in terminal markets. Often they are sold on the processing grades on an F.O.B. or delivered basis and inspection is made at one or both places. Bruising may be the determining factor and it is often necessary at destination to classify the specimens that are damaged by bruising into Condition or Quality classes. This is also true of other condition factors. (38)

Water Core. Water core should be scored on a waste basis in Apples for Processing, whether it is visible or invisible externally. In determining waste, the core and normal peel should be disregarded. (39)

Upon request of the processor, apples with water core scored as either U.S. No. 2 or U.S. Ciders may be listed separately. This is to allow processors who do not object to water core in one or more of their products to pay for usable fruit with water core. There is no intention here to pass apples with water core as U.S. No. 1 or U.S. No. 2 when the trim amounts to more than 5% or 12% respectively. This way of listing water core by itself is to enable this type of defect to be separated from others for the above stated reasons. It could be set up on the certificate in the following manner: 80% U.S. No. 1; 10% U.S. No. 2 including 3% water core; 5% U.S. Ciders including 2% water core; 5% Culls. Or, water core may be listed in "Remarks." (40)

- (41) * Scab - Ordinarily, if the affected area is not cracked it can be *
* assumed that the apple will peel satisfactorily and it should be passed *
* as U.S. No. 1, provided it meets all other requirements of the grade. *
* Apples affected with hard, cracked and barklike scab are often thrown *
* off the spindle during peeling. For this reason, if scab is cracked *
* and so hard that it takes considerable pressure to pass a knife through *
* the area when peeling, the apple should be classed as a cider. *
- (42) * Hail - Hail marks which are superficial or which will be removed by *
* peeling should be ignored. Hail marks affecting the flesh should be *
* considered on the waste basis. Old Hail marks with healed, broken skin *
* and dry, corky tissue which is so hard that it takes considerable *
* pressure to pass a knife through the area when peeling, should be *
* classed as a cider the same as hard scab. *
- (43) Misshapen Apples. Misshapen apples are those that cannot be cored or
peeled properly with machine operation. To determine if an apple is
misshapen, place it calyx-end up on a flat surface and pass a knife
blade vertically through the apple at the center of the calyx. If the
blade comes out anywhere between the stem and crown of the shoulder it
will core and peel well enough to meet the requirements of U.S. No. 1
and U.S. No. 2. If the blade emerges outside the crown of the shoulder,
the apple should be classed as a Cider. Refer to drawing on page 26.
- (44) Other Grade Factors. All other factors of U.S. No. 1 Grade are to
be judged on the basis of 5% waste, by weight, in excess of that
which would occur if the apple were perfect. This means 5% after the
peel and core have been removed. A Supervisor may demonstrate how to
estimate this percentage or the inspector can figure it out by
taking a peeled and cored apple and cutting it into quarters. Each
quarter is cut into five approximately equal parts, each of which will

be, for practical purposes, about 5%. In determining allowances of U.S. No. 2, cut apple into quarters as above, then divide one quarter equally and each piece will approximate 12%.

Method to Determine Percentage of Invisible Water Core, Cork or Other Defects not Visible Externally. (45) A composite sample of 10 pounds is taken for a particular reason from the large size apples of a lot previously sized. The ten pounds are cut, each pound representing 10%. In the example below two pounds were scored against U.S. No. 1 but these two pounds were passable as U.S. No. 2.

Category	Pounds Before Cutting	Adjusted Pounds After Cutting	Percent After Cutting
U. S. No. 1, 2-3/4 inch and up	80	64	50
U.S. No. 1, 2-1/2 to 2-3/4 inch	30	30	23
U.S. No. 1, 2-1/4 to 2-1/2 inch	10	10	8
U.S. No. 2	4	20	15
U.S. Cider	3	3	2
Culls	<u>2</u>	<u>2</u>	<u>2</u>
Total	129	129	100

- (46) The two pounds of defects found represent 20% of the apples in the 2-3/4 inch and up size. 20% of 80 pounds is 16 pounds which is deducted from this category, leaving 64 pounds. Since these 16 pounds were U.S. No. 2 apples, they must be added to this grade. (4 plus 16 = 20). Inspectors must cut in all categories when internal defects are found in any one size so that these are also reported accurately. In most cases cutting a few apples in the other sizes will establish the presence or absence of internal defects. When defect is present in any smaller size, follow the procedure outlined above for the large size.
- (47) Lots Inspected to Meet a Specified U.S. Grade. To meet a specific grade, lots must meet the following requirements:
- (a) Must not be further advanced in ripeness than generally firm ripe.
 - (b) Must not exceed a total of 10% failing to meet grade requirements, including not more than the following:
 - (1) 2% decay
 - (2) 2% internal breakdown
 - (3) 5% worm holes
 - (c) If size is specified, 5% undersize and 10% oversize are allowed.
 - (d) Application of tolerances - in closed containers, one and one-half times a tolerance of 10% or double a tolerance of less than 10%. There is no container limit in open containers. In open containers, as in bulk, the average percentage of defects is the only determining factor.

Detailed instructions for handling apples on the basis of U. S. No. 1 (48)
grade with price differentials for 2-1/4" to 2-1/2", 2-1/2 to 3",
and Over 3".

1. Size entire contents of container into the following Size Classifications:

- a. Under 2-1/4 inch
- b. 2-1/4 to 2-1/2 inch
- c. 2-1/2 to 3 inch
- d. 3 inch and up

2. Grade and report as shown in the following examples:

Example #1:

If the undersize is within 5 percent and the defects are not over 10 percent, report as follows:

Grades U.S. No. 1 Apples for Processing, 2-1/4 inch minimum.

3%.....	Under 2-1/4 inch
20%	2-1/4 to 2-1/2 inch
42%	2-1/2 to 3 inch
35%	3 inch and up

Example #2:

If the undersize exceeds tolerance of 5 percent and the defects do not exceed 10 percent, report as follows:

Grades U.S. No. 1 Apples for Processing, but fails to meet 2-1/4 inch minimum account of undersize:

8%	.....	Under 2-1/4 inch
25%	.....	2-1/4 to 2-1/2 inch
52%	.....	2-1/2 to 3 inch
15%	.....	3 inch and up

Example #3

If undersize does not exceed 5 percent and the total defects exceed 10 percent, report as follows:

Fails to grade U.S. No. 1 Apples for Processing account of grade defects, but meets 2-1/4 inch minimum:

2%	.....	Under 2-1/4 inch
25%	.....	2-1/4 to 2-1/2 inch
55%	.....	2-1/2 to 3 inch
18%	.....	3 inch and up

Example #4:

If the undersized exceeds a tolerance of 5 percent and the defects exceed 10 percent, report as follows:

Fails to grade U.S. No. 1, 2-1/4 inch minimum on account grade defects and undersize:

10%	Under 2-1/4 inch
25%	2-1/4 to 2-1/2 inch
50%	2-1/2 to 3 inch
15%	3 inch and up

The preceding examples are given to cover only the more common situations for most buying contracts. Some processors may also ask for the percentage of U.S. No. 2 grade in a lot along with the size of fruit in this grade and other special information. (49)

Export Lots Inspected on Basis of U.S. No. 1 Apples for Processing. (50)

The U.S. No. 1 Grade for Apples for Processing is the only acceptable processing grade for export apples under the present Export Apple and Pear Act. (Canadian Import Requirements allow U.S. No. 1 grade for Apples for Processing only upon special concession granted by Canada). When inspecting apples on the basis of the processing grades, decay and other factors of deterioration affect not only condition but also grade. This is in sharp contrast to the wholesale fresh apple standards. The grade specifications must be met and the markings required by the Export Apple and Pear Act must be present. Also, it must be remembered that

apples in any count pack including tray or cell, or in any container using vertical or horizontal dividers, or if in wraps, or in film bags, are not eligible to be exported under the U.S. No. 1 Grade for Apples for Processing.

- (51) In addition, the same requirements for cleanness shall apply to apples exported under the processing grade as to those exported under fresh standards.

INSPECTION MEMORANDA

- (52) Care of Memoranda. Inspectors should take necessary precautions to prevent blank memoranda from falling into hands of persons who have no right to use them. Each inspector shall be held responsible for the return of all unused memoranda to the Supervising Inspector or inspection office at the close of the season.
- (53) Inspectors will receive specific instructions from the Supervising Inspector with reference to mailing the inspection copy of the memoranda. Some States desire these mailed daily, while others may make different arrangements.
- (54) Care in Recording. The memoranda must be easily legible. All data set down during the process of inspection should be complete, neat in appearance, and clear. All computations should be checked carefully for errors. Inspectors will be held responsible for figures being legible on all copies of the memorandum. Remember that the original memorandum is sometimes lost, and then it becomes absolutely necessary to use the carbon copies.

Signing Inspection Memoranda. The inspector shall sign the memorandum (55) with his full name, or the initials of his given name, and his last name in full. This warning is given because some new inspectors have been found to either initial or simply sign the last name to the memorandum. Legally either of these signatures is worthless. Also, never sign a memorandum before the inspection is complete.

Correcting Inspection Memoranda. If the corrections are not too conspicuous, minor mistakes which would not affect the credibility of the (56) memorandum if presented in court may be changed by crossing out the part in error, and inserting the correct information. No corrections should be made on any memorandum unless the inspector has all copies so that all may be corrected at the same time. No attempt should be made to erase errors on memoranda. All corrections should be initialed to show the authority for the correction. When an error has been discovered and the inspector does not have all copies of the memorandum, a new memorandum should be issued upon which the following statement should be made:

"This memorandum supersedes memorandum No. _____
which is in error.

Issuing Restricted Memoranda Where It Is Not possible to Obtain (57)
Samples From All Parts of Lot. Memos restricting the inspection to certain portions of large loads may be issued at receiving stations located at considerable distances from the processing plant where the processor refuses, or is unwilling, to make the load accessible. Such is the case when the processor has the inspection made at outlying receiving stations and then hauls the apples some distance to his

processing plant. Naturally it is usually not practicable to break down large loads to the point of making all parts accessible for sampling before the long haul to the plant. A similar situation in which it is permissible to issue a restricted memo is when an inspector is called upon to inspect a large block of packages stacked in a warehouse or cold storage plant where it is not possible to obtain samples from all parts of the block.

(58) Under most circumstances, inspectors located at processing plants should not issue restricted memos on loads as it is usually possible for them to obtain representative samples in one way or another either before or during the processing of unloading.

(59) Reporting Lot Number Instead of Grower's Name on Memorandum Where Identity is Unknown. Often inspectors are called upon to grade lots of apples of unknown identity. For example, a processor may buy on a certain minimum size and run the apples over a sizing machine to remove the undersize before they are offered to the inspector for sampling. Possibly the grower might deliver 300 containers and after the undersized apples were removed, the processor would request inspection on the remainder, which might be 265 containers stacked in the processing plant. The inspector probably never saw the grower deliver the apples and it would be improper for him to certify that a certain grower delivered 300 containers of apples. In such an instance or in similar instances where identity is lost, the inspector should request the processor to furnish a lot number for the apples inspected and this should be shown on the memo in lieu of the growers name.

Distribution of Copies of Memoranda. The distribution of the original memorandum and one copy will depend on the arrangements made by the party requesting the inspection. In most cases, the applicant will be the processor, and in all probability he will request that the inspector give the original and one copy to the grower, who will present these documents to the processor along with the load. The processor usually keeps the original and gives the copy to the grower for his files. The second carbon copy is retained in the inspection office files for at least one year, or two years if feasible. (60)

REINSPECTION AND APPEAL INSPECTION

Growers or processors occasionally request reinspections. These requests are usually based either upon the claim that (1) the sample examined was not representative, or (2) that the inspector's scoring of the sample was incorrect. (61)

- (1) When Adequacy of Sampling is Questioned. When a grower or processor questions the accuracy of an inspection because he does not believe the sample was representative of the quality or size of the lot, it will be permissible for the inspector to select and grade another sample. When this sample has been graded, the results of the two inspections should be combined in a weighted average and shown on the inspection memorandum. If a memorandum covering the first inspection has been issued previously, it should be voided.

- (2) When Accuracy of Scoring is Questioned, Make an Appeal Inspection. When either the grower or processor questions the correctness of an inspector's scoring of samples, it will usually be desirable to have an appeal inspection if time permits. The inspector should politely explain that the grower or processor is entitled to have an appeal inspection made whenever he doubts the accuracy of the results or the inspector's judgement. In many, instances, the complainant may be satisfied if the original inspector will draw additional samples and show the dissatisfied party how he scores them and explain why he does so. Frequently, growers are not well informed as to the grade terminology or meaning. However, if after such an explanation the party is still not satisfied with the inspector's interpretation of grade factors, the supervisor should be called. He should receive a full explanation of the case involved and be furnished with a copy of the memorandum of the previous inspection. The supervisor will either personally inspect a new sample or assign another inspector to make the appeal inspection.

- (62) A memorandum issued on an appeal inspection should include only the results of the second examination and the following should be written across the face of the memorandum:

"Appeal Inspection - this memorandum supersedes
memorandum No. _____."

Delayed Appeal Handled as New Inspection. If sufficient time has elapsed (63) since the first inspection for material change to have taken place in the condition of the fruit or the identity of the lot has not been maintained, a second inspection should be made without reference to the first memorandum.

IMPORTANT INFORMATION TO REMEMBER

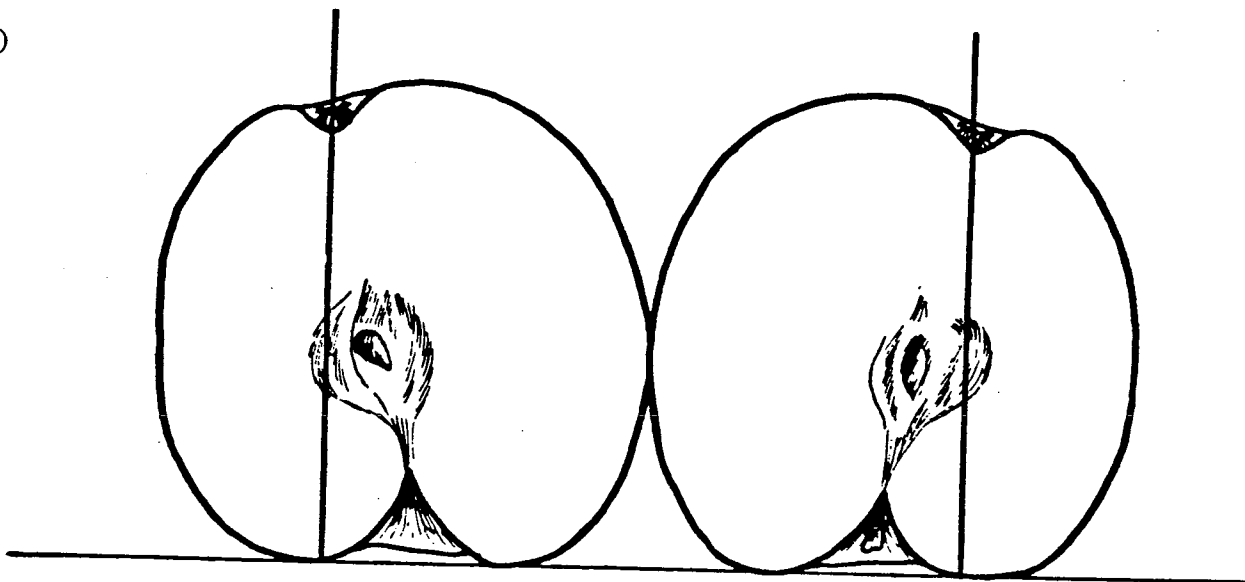
(64)

	<u>Pass for U. S. No. 1</u>	<u>Pass for U. S. No. 2</u>	<u>Pass for U. S. Cider</u>
Shape	If knife blade emerges between stem and crown of shoulder when passed vertically through at center of calyx.	Same as U.S. No. 1	Any shape
Bruising	If not more than 5% waste.	If not more than 12% waste.	Any amount
Overripe	None	None	Any amount
Immature	Any amount	Any amount	Any amount
Freezing Injury	None	None	Any amount
Decay	None	None	None
Worm Holes	None	None	None
Internal Breakdown	None	None	None
All other factors	If not more than 5% waste.	If not more than 12% waste.	Any amount

There is no requirement in any grade that apples be hand picked.

APPLES FOR PROCESSING
SHAPE

(65)



TWO HALVES OF SAME APPLE - LOWER LIMIT U.S. No. 1 and U.S. No. 2

Added May 1986, BN-99-1(c)
Pages 27, 28 and 29
Inspection Instructions Apples
for Processing, November 1979.

- 27 -

OPTIONAL TESTS

- * In recent years the inspection service has received more and more *
 - * requests to determine pressure test readings and soluble solids *
 - * readings on apples for processing. This information is beneficial to *
 - * the processors in that they can: 1) determine the order in which each *
 - * lot should be used (storage life); 2) determine the amount of *
 - * additives needed for the finished product; and, 3) use this *
 - * information as a basis for incentive payments. *
-
- * Unless otherwise directed by the applicant or contract specifications, *
 - * the procedures on the following pages shall be used in making these *
 - * determinations. If procedures are based on contract specifications or *
 - * applicants' request this should be shown under the remarks statement *
 - * on the certificate, etc., "Soluble Solids determination is based on *
 - * contract specifications." *

OPTIONAL TEST FOR DETERMINING
SOLUBLE SOLIDS

* Equipment needed:

- * Knife
- * Distilled water
- * Cheesecloth (or equal)
- * Refractometer
- * Cup or small container
- * Blender or Garlic Press

* A. SAMPLING

* Randomly select 10 apples in proportion to fruit sizes in the lot.
* (one apple for each 10% of a certain size, rounding to the nearest
* 10%) (Note - if "optional pressure test has been determined, the
* same 10 apples may be used for soluble solids).

* Example:

<u>Size</u>	<u>Results of Grade</u>	<u>Number of Apples to be Selected</u>
U.S. No. 1, 2-1/2 inches & up	63%	6
U.S. No. 2, under 2-1/2 inches	37%	4

* B. REFRACTOMETER

- * 1. Use distilled water to ensure that refractometer reads zero.
- * 2. Clean and dry prism before determining soluble solids.

* C. METHOD OF EXTRACTING JUICE

- * 1. Quarter each of the 10 apples (including peel and seeds).
- * 2. Use one quarter of each apple for "juice" sample.
- * 3. Extract juice by means of a garlic press or blender.
 - * a) Garlic Press - using a small container to collect the
* juice - press each quarter to get a
* "composite sample."
 - * b) Blender - place all 10 quarters in the blender and
* blend for 10 or 15 seconds, place a small
* amount of the pulp into a piece of
* cheesecloth and squeeze a couple of drops
* of juice onto the prism of the refractometer.
- * 4. Determine Soluble Solids immediately after placing juice on
* prism.

OPTIONAL - PRESSURE TEST FOR FIRMNESS

A. FRUIT PRESSURE TESTER

The pressure tester to be used on apples should have a plunger measuring 7/16 of an inch in diameter and a penetrating depth of 5/16 of an inch. To provide a more accurate reading, the pressure tester may be mounted on a drill press type instrument. ****

B. SAMPLING

Randomly select 10 apples in proportion to fruit sizes in the lot (one apple for each 10% of a certain size, rounding to the nearest 10%).

Example:

<u>Size</u>	<u>Results of Grade</u>	<u>Number of Apples to be Selected</u>
U.S. No. 1, 2-1/2 inches & up	63%	6
U.S. No. 2, under 2-1/2 inches	37%	4

C. PROCEDURE

The skin on an apple may mask the true firmness of the flesh. For this reason the skin should be removed on the areas to be tested.

Two readings should be made on each apple midway between the stem and calyx ends and on opposite sides.

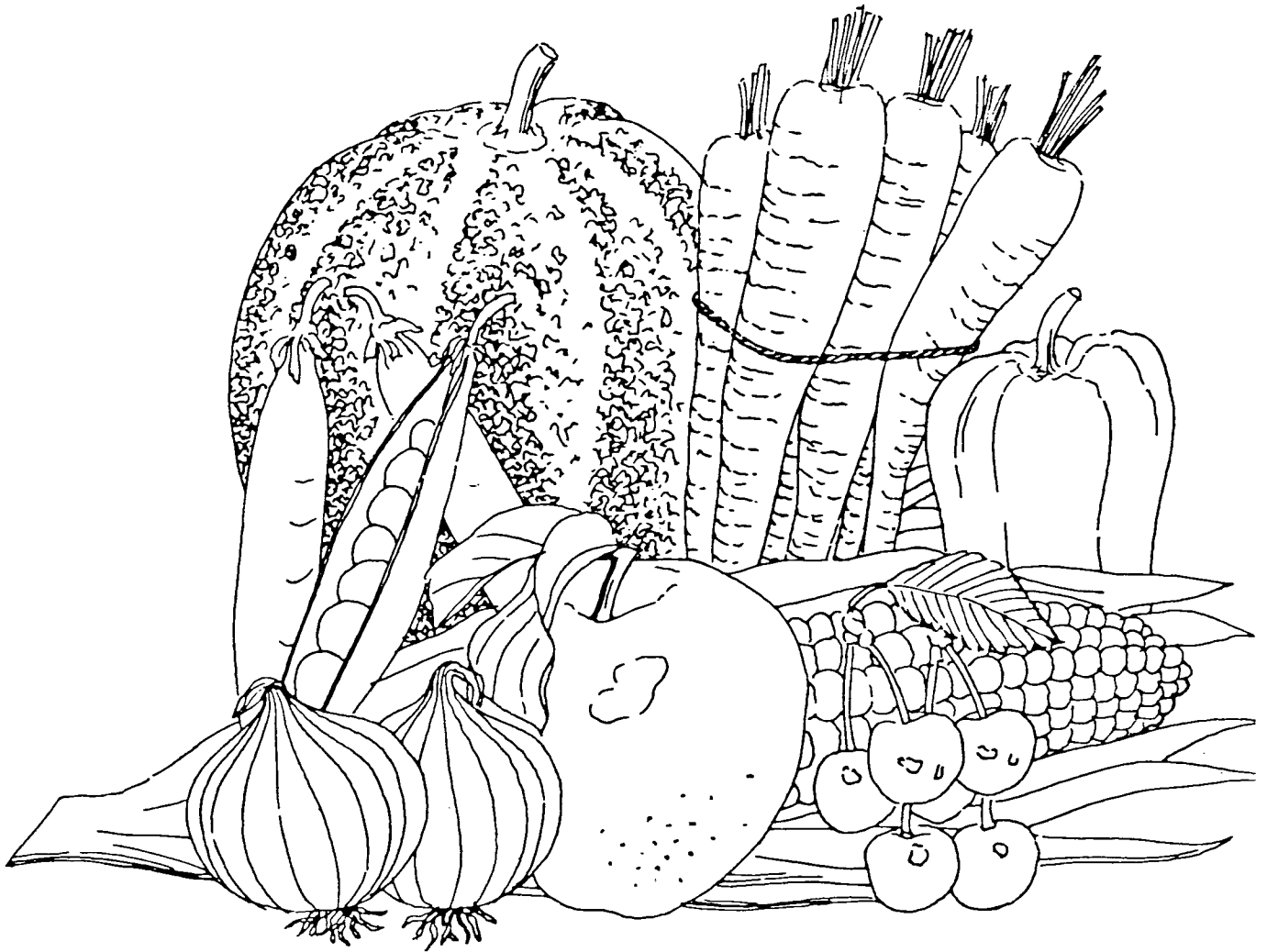
For the first reading the fruit should be placed against a solid surface (wall or table) and steady pressure applied until the plunger penetrates the flesh. The "pressure point" where the apple was against the solid object could possibly have a slight softening of the flesh due to pressure from the first reading. To ensure that the second reading is not in error this exact spot should not be used.

With the apple against a solid surface the second pressure test should be made midway between the stem and calyx ends and approximately one inch away from the point at which the apple was against the table in the first reading.

Unless otherwise requested by the applicant, simply report the range and average of the pressure readings.

Appendix I

United States Standards



UNITED STATES STANDARDS FOR GRADES OF APPLES FOR PROCESSING ¹

SOURCE: 26 FR 3604, Apr. 27, 1961, unless
otherwise noted. Redesignated at 42 FR
32514, June 27, 1977 and at 46 FR 63203,
Dec. 31, 1981.

Effective June 1, 1961

Sec.	GRADES
51.340	U.S. No. 1.
51.341	U.S. No. 2.
51.342	U.S. Cider.
	CULLS
51.343	Culls.
	SIZE
51.344	Size.
	APPLICATION OF STANDARDS
51.345	Application of standards.
	TOLERANCES
51.346	Tolerances.
	APPLICATION OF TOLERANCES
51.347	Application of tolerances.
	DEFINITIONS
51.348	One variety.
51.349	Oversize.

AUTHORITY: §§ 51.340 to 51.349 issued under secs. 202-208, 60 Stat. 1087, as amended; 7 U.S.C. 1621-1627.

GRADES

§ 51.340 U.S. No. 1.

"U.S. No. 1" consists of apples of one variety, unless designated as mixed varieties, which are not overripe, which are free from decay, worm holes, freezing injury and internal breakdown and free from any other defect, or combination of defects, the removal of which in the usual commercial preparation for use will cause a loss of more than 5 percent, by weight, of the apple.

§ 51.341 U.S. No. 2.

"U.S. No. 2" consists of apples of one variety, unless designated as mixed varieties, which are not overripe, which are free from decay, worm holes, freezing injury and internal breakdown and free from any other defect, or combination

of defects, the removal of which in the usual commercial preparation for use will cause a loss of more than 12 percent, by weight, of the apple.

§ 51.342 U.S. Cider.

"U.S. Cider" consists of apples which are free from decay, worm holes and internal breakdown.

CULLS

§ 51.343 Culls.

"Culls" consist of apples which fail to meet the requirements of U.S. Cider Grade.

SIZE

§ 51.344 Size.

(a) The minimum and maximum sizes or range of sizes shall be determined as agreed upon by buyer and seller.

(b) Unless otherwise specified, the minimum and maximum sizes or range of sizes shall be determined by the use of an approved sizing chain of the exact dimension specified in the agreement between buyer and seller.

(c) Size is the dimension of the apple determined by the smallest opening through which it will pass.

APPLICATION OF STANDARDS

§ 51.345 Application of standards.

(a) When a lot of apples is required to meet a specific U.S. grade, the tolerances as set forth in § 51.346 shall apply. When packed in closed packages the application of tolerances in § 51.347 shall apply. The application of tolerances shall not apply to apples in open or bulk containers.

(b) In the application of these standards to determine the percentage of the lot which meets the requirements of each of the grades, tolerances shall not apply.

¹ 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.

TOLERANCES

§ 51.346 Tolerances.

When a lot of apples is required to meet one of the U.S. grades, the apples shall not be further advanced in maturity than generally firm ripe, and the following tolerances, by weight, shall apply:

(a) *For defects.* 10 percent for apples which fail to meet the requirements of the grade: *Provided*, That included in this amount not more than the following percentages shall be allowed for the defects listed:

- (1) 2 percent for apples which are affected by decay;
- (2) 2 percent for apples which are affected by internal breakdown; and,
- (3) 5 percent for apples which are affected by worm holes.

(b) *For off-size.* 5 percent for apples which are smaller than any specified minimum size, and 10 percent for apples larger than any specified maximum size.

APPLICATION OF TOLERANCES

§ 51.347 Application of tolerances.

Apples in closed packages are subject to the following limitations provided the averages for the entire lot are within the tolerances specified for the grade:

(a) For a tolerance of 10 percent, individual packages shall have not more than one and one-half times the tolerance specified. For a tolerance of less than 10 percent, individual packages shall have not more than double the tolerance specified.

DEFINITIONS

§ 51.348 One variety.

"One variety" within the meaning of these standards shall include all bud sports and strains of the specified variety.

§ 51.349 Overripe.

"Overripe" means apples which are dead ripe, and with flesh very mealy or soft.

Dated: April 24, 1961.

ROY W. LENNARTSON,
Deputy Administrator,
Marketing Services.

[F.R. Doc. 61-3834; Filed, Apr. 26, 1961;
8:49 a.m.]