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REPORT OF MARKETING INVESTIGATIONS

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I N T R O D U C T I O N.

This report covers the general harvesting, picking, storing and marketing methods of the important fruits and vegetables produced in the State of Colorado.

The contents of this report have been compiled from stastics and information gathered by the employees of the Colorado Division of Marketing.

Total Acres of Apples, Peaches and Pears in Various Sections of Colorado.

	Apples	Peaches	Pears	Counties
North Eastern	1200			Larimer, Boulder and Jefferson
Arkansas Valley	4582		20	Pueblo, Crowley, Otero And Fremont.
South Western	436	47		La Plata and Montezuma
Western Grand Valley *	10250	3000	2400	Mesa and Garfield
Western Delta	6546	1154	37	Delta and Montrose
Total	23014	4201	2472	

*From Data obtained year 1915.
Balance of Data obtained 1922.

APPLES.

The commercial industry of Colorado first started in the Canon City district, about the year 1869. It was on a small scale, and the orchards were confined to a few men who had money and foresight to risk the experiment. The Western Slope, in the Northfork and Grand Valleys, opened up about some twenty-five years ago, in the late 90's. These districts today comprise about 23,014 acres of apple orchards, and are the only districts in the State of real commercial importance.

The Southwestern district, in La Plata and Montezuma Counties, will undoubtedly some day be an important commercial district. It has not been developed as yet, because it has no railroad facilities to get the fruit out to the markets.

In the Northeastern district, the winters are colder and longer, so only the hardier varieties can be grown. Much of the fruit is trucked to nearby towns for consumption. During the 1922 season, only 26 cars were shipped out in carload lots. Compared with the Arkansas Valley, Delta and Grand Valley districts, it is of no commercial importance.

Districts.

The topography of Colorado is, perhaps, different from that of any other fruit growing section of the Union. The Rocky Mountains have so divided the State that the districts are completely segregated from one another. The table on page No. 2 gives an idea of the acreage and area of apples grown in the various districts.

Northeastern district: The apple district of Northeastern Colorado includes Larimer, Boulder, Jefferson and Arapahoe counties. The fruit growing area of this district is confined to the foothills and land adjacent to them. It extends from north of Fort Collins to a little south of Littleton, in Arapahoe County, a distance of about one hundred miles. The width of the district varies with the configuration of the mountains, from less than one mile to several miles in extent, being the widest where the rivers and canyons open out on the plains.

This district is close to Denver and numerous smaller cities, which furnish excellent markets for fruit. It is also well served by several lines of railroads, thus providing good transportation facilities.

Arkansas Valley:- The Arkansas Valley district extends from the mouth of the Grand Canon of the Arkansas River at Canon City in an easterly direction to La Junta, a distance of about 120 miles, and includes the following counties: Fremont, Pueblo, Crowley and Otero. The area adapted to apple growing is confined to two rather narrow and broken strips of land on both sides of the Arkansas River. The better orchard land is mostly confined to the second river level. The upper portion of the Valley from Canon City to south of Florence, is quite extensive, and consists of series of terraces and slopes, which provide excellent soil and air drainages.

The Arkansas Valley district is ideally situated, both as to market and transportation. Its close proximity to Colorado Springs, Denver and other towns, makes the disposal of the orchard products simple and profitable.

A Common Method of Storing Apples in the Orchard. This Method is Used Principally in the Canon City District.

A Close-up View of Apples Stored in the Orchard in the Canon City District.

The Local market in Pueblo is always good, and practically all kinds of fruit are disposed of locally.

Southwestern district: The southwestern district is composed of La Plata and Montezuma Counties. The only apple district in the former county is in a relatively narrow strip of land along the margins of the Animas River Valley, and in one or two secondary valleys which join the main valley. This is not an important fruit growing section. The high altitude makes the winters too long and too cold to grow fruit commercially with much success. Montezuma county is in the extreme southwestern part of the State, directly west of La Plata. Montezuma Valley occupies the center of the county. It has a saucer-like outline, and the fruit lands are located on the northern rim or slope. This district has great possibilities for fruit growing. It has a large area of land that is equal to that of any other section in the State in its capacity for fruit production.

The orchard district and county are served by one narrow gauge railroad, which makes transportation difficult and expensive. This has greatly retarded the development of this section for fruit growing. If transportation facilities do become available, it is predicted that this district will become one of the greatest fruit sections in the State.

Delta and Montrose Counties: The western district of Colorado, commonly termed the "Western Slope" is by far, the greatest apple growing section in the State. It is roughly divided into two sections, the Upper and Lower Grand Valley comprising one, and Delta and Montrose counties the other. In Delta county, the Valley of the Northfork of the Gunnison

and the smaller tributaries make up the larger portion of the districts. This valley extends in an easterly direction from Delta for about 40 miles to the town of Bowie, and north 20 miles to Cedaredge.

The orchard district in Montrose county is situated on the adjacent mesas to the Uncompaghre River, considerably elevated above the Valley proper.

A branch of the Denver & Rio Grande railroad, connecting with the main line at Grand Junction, traverses this district. The long haul thru the mountains, combined with the slow train service, places this section at somewhat of a disadvantage in making quick shipments.

Grand Valley: The Lower Grand Valley district takes in the territory along the Valley from two miles west of Loma to an equal distance northeast of Palisade. It varies in width from less than a mile at Palisade to about five miles midway between Clifton and Grand Junction. The district from Grand Junction to Palisade comprises the largest portion of the orchards in this valley.

The Upper Grand Valley is confined to the valley of the Colorado River, extending from Glenwood Springs westward to DeBeque; the better fruit lands being along the mesas and ridges of the valley.

The D, & R. G. railroad passes thru the lower and upper Grand Valleys, and while transportation facilities are much better than in the Delta district, it is still very slow time. The completion of the Moffat Tunnel, which will be started this summer, will shorten the shipments to Denver, anywhere from a day to two days.

VARIETIES.

The varieties of apples range from about 48 in the Southwest and Northeast districts, to 136 in the lower Grand Valley. Of these, comparatively few are of commercial importance. On the Western Slope, the fall apples in order of their importance are: Jonathan, Delicious, Grimes Golden and Mammoth Bladktwig. The winter varieties are: Winesap, Rome Beauty, Gano, Ben Davis and White Winter Permain.

In the Arkansas Valley, Jonathan and Delicious are the fall varieties, and Winesap, Ben Davis, Rome Beauty and Gano the winter varieties, in order of their importance.

In the Southern and Northeastern districts, the seasons are shorter and the winters colder. For this reason, earlier stock is grown. In the Southwest, such varieties as Oldenburg, Wealthy, Northwestern Greening, McMahon, Walbridge, Yellow Transparent* and McIntosh can be grown successfully.

In the Northeast, early varieties such as Jonathan, McIntosh, Northwestern Greening, Wealthy, Yellow Transparent*, and later varieties as Gano, and Ben Davis are grown with success.

Jonathan, Winesap and Rome Beauty are the best commercial varieties grown in the State, from the standpoint of market demand. It is necessary for Colorado to compete with California, Oregon and Washington in marketing boxed apples, and these three varieties compete favorably in keeping quality, color and attractiveness, with the same varieties from the above states, and have a superior flavor.

*Yellow Transparent is a summer apple harvesting season latter part of July.

Gano is rapidly coming into great demand as a commercial variety. During the 1922 season, there was probably a greater demand for Ganos in bulk than for any variety of bulk apples.

Harvesting.

The harvesting season begins the latter part of September for the early varieties, and lasts up to generally the time of the killing frosts, in the forepart of November, for the late varieties. Some years, the seasons are a week earlier or later than the normal season.

Generally speaking, apples should be harvested when they have reached a hard ripe stage. The ground color should be well developed and the seeds dark brown in color. Those which are shipped for immediate consumption can be held on the trees for a while longer than those which are to be used for storage. Apples picked green, will shrivel up and never mature. Those which are left on the trees and let reach too ripe a stage, often have growth cracks at the stem, and will not hold up in storage.

Picking is done mostly in the regular canvas picking sacks, which open at the bottom. In picking, the stem should never be pulled off from the apple, but should be broken off where it connects to the spur. This is generally done by pinching with the thumb and forefinger. Sacks, when filled, are emptied into picking or lug boxes, or, as in the case of the Canon City district, upon the ground. Care should be taken to hold the sack close to the box or ground so that

the apples will not fall and bruise. Many growers furnish the pickers with cotton gloves to wear. The gloves probably do no material good, but they are a constant reminder to the picker to handle the fruit with great care. Too much stress cannot be laid upon the careful handling of fruit. Always handle the least number of times and as carefully as possible. Immediately after picking, the apples are hauled to the packing houses for immediate packing or storing, or sometimes they are dumped on the ground in or near the orchard, covered and stored there.

Shipping Season.

The shipping season begins with the harvesting and extends well into the latter part of February. The season in various districts depends largely upon the facilities for storage. In the Northfork district, there are good storage facilities and the season is very much prolongated. In the Grand Junction and Canon City districts, with storage not so good, the growers and shippers are compelled to market their fruit in a much shorter period of time.

Storage.

The method of storing inColorado is by common storage, and as a general rule, is in packing houses or cellars which are protected from freezing. In packing houses, apples are either stored loose in lug boxes, or are packed up and stored ready for shipment at any time. The former is the best method, because defects and diseases which might not be seen immediately after picking will show up plainly after storing. These can be removed when going over the tables to be packed.

Often times when apples are packed and stored a few weeks, it is necessary to dump the boxes and repack them.

Houses and cellars should be ventilated both at the top and bottom, to give a complete circulation. The temperature should be around 35 to 40 degrees F. and should be uniform at all times.

In cellars, the fruit is either stored in lug boxes or in bins. If in bins, the floor should be slatted to admit air circulation from underneath. If the bins are deep, it is a good idea to run ventilators down thru the apples at short distances from one another.

In many instances, when storage room in houses or cellars is not obtainable, apples are stored in piles on the ground. If just a short time before freezing season, the piles are covered with a canvas to keep them clean and dry. However, if they are stored this way up into the winter, a heavy covering of straw is put over the piles, and canvas over the straw. Sometimes dirt is banked up part way on the sides. With this method, it is much harder to ventilate than cellars of packing houses, and therefore, not as commonly used.

Packages.

Colorado packages are not standardized. Most of the apple boxes, which are the uniform packages used to ship apples in this state, are of the same size as the standard box in Washington. The inside dimensions of this are 18 inches long, 11½ inches wide and 10½ inches deep. Some cars of apples are also shipped out in one bushel baskets.

There are three common methods of arranging the product in the package. First, the diagonal pack, which is used in packing Extra Fancy, Fancy and Combination grades. The rows are 2 x 2 or 3 x 3 wide, and 4 - 4 to 7 - 7 long. Second, the face and fill pack; first two layers diagonal pack, balance jumble. This is not as commonly used as the diagonal pack. Third, the jumble pack, which is used for C grade.

Packing.

Packing is done both in the orchard and in the warehouse. Both methods are similar, so the discussion will be confined to the warehouse method. Canvas bottomed tables are used to dump the apples on. The canvas slopes to the packer. As the fruit is picked off the table, the balance rolls down to the lower side, saving the packer from reaching for them. A stand which holds 3 or 4 boxes is placed directly in front of the packer. One box holds the extra fancy, another the fandy, and another the C grade apples, or whatever grades are being packed. The packer grades these as to size, color and quality by the eye*. When the boxes are filled, they are placed on a chute and pushed to the stamper, where the Grade, Variety, Grower's name or number, minimum size or numerical count, and net contents are stamped above the label end of the box. From there the boxes are passed on to the nailer, where they are placed in a press, the cover pressed on, and nailed. This leaves the boxes with a bulge, the fruit packed tightly, with no chance of rattling around and bruising. The fruit is then loaded directly into the car, or stored for

* For Colorado grades, see page No.15

Apples Stored in the Orchard in the Canon City District.

An Apple Grading Machine in Operation in Orchard.

future loading.

Arrangement of Products in the Car.

In loading bulk, the bottom, sides and ends of the car are generally papered with two or more thicknesses of heavy building paper. This is in order to keep the fruit clean and to prevent freezing or bruising. Sometimes, only the floor is papered, and occasionally, straw is first placed on the floor and paper laid over it. V gates or bulkheads are generally placed between the doors.

In shipping some cars of apples, especially for cider, no gates are used. Both doors are boarded up on the inside a little above the level of the surface of the apples. When loading with V gates, the gates are first placed near the ends of the car. Apples are then dumped in to the desired depth, generally three or four feet, depending upon what weight car is desired. When the space is filled, the gate is pulled out about three feet, and the space again filled. This is done until the two gates meet in the center of the gangway. The gates are held in place by three or four blocks, each one or two feet long, nailed to the floor in front of the gate. When the gate is to be moved, two or three of the blocks are knocked out, and the weight of the apples against the inside of the gate forces it to slide to the next block. When loading is completed, the gates are securely braced. They are first wired together securely with bailing wire, and a 2 x 4 or similar piece of wood is placed from the top of the gates to the ceiling and nailed securely in place. This prevents the gates from buckling upward when the car is bumped hard.

When more than two varieties of apples are loaded in bulk, they are generally separated by a layer of heavy building paper. Sometimes, gates are used, but this is a much more expensive method.

Bulk cars of apples are mostly shipped Standard Ventilation. A few cars which are going long distances early in the season are iced. If under standard ventilation, the ice plugs are taken out, one or both hatches on each end opened about 45 degrees or more, and the drain pipes left open. That is during temperature above freezing. If freezing temperature, the plugs are placed in, the hatch covers closed and the drain pipes plugged.

During very cold weather in the winter, sometimes the cars are heated by a stove placed in each end of the car in the bunkers. The cars so equipped are also provided with either temporary or permanent false floors and temporary false sides. This gives an air circulation around the sides and on the floor of the car.

Boxes are generally loaded seven rows wide, five or six layers high, and eight or nine stacks deep. Sometimes, especially with short cars, part of the stacks in each end of the car are six layers high and the balance five layers high. In this case, a ladder made of two 2x4's on edge is placed the width of the car under the bottom of the first stack five layers high. The ladder raises this stack up four inches and holds the stacks which are six layers high in place. Generally, the second, fourth and top layers or the fourth and top, or third and top layers are stripped to hold the boxes in place while the cars are in transit.

In case there is no false floor, the floor is double stripped under each stack to allow circulation of air. The rows of boxes are also placed one or two inches apart to allow circulation between rows.

When the cars are loaded, there is a space between the two stacks in the doorway, of about two and one half to three feet. Gates consisting of seven perpendicular 2 x 4's are made and placed against each of the two stacks. The 2 x 4's are held in place by two 1 x 4's running crosswise, nailed to each 2 x 4; one about a foot from the top, and the other about a foot from the bottom of the gate. Fourteen pieces of 2 x 4's are cut the length of the space between the two gates. One is wedged in at the top and one at the bottom of each of the seven 2 x 4's. Brading this way keeps the boxes from sliding back and forth in the car while in transit. A 2 x 4 is placed from the top center of each gate to the ceiling and nailed securely. This prevents the gates from buckling upward in case the car is bumped hard. Sometimes, the center 2 x 4 of the gate is cut so that it extends from the floor to the ceiling.

Bushels are loaded 3 -3 offset, four, five and sometimes six layers high, the entire length of the car. The rows are generally eighteen to twenty three baskets long, depending upon the length of the car and the size of the load. Sometimes, the top layer does not extend the entire length of the car. In this case, to prevent the bushels from shifting while in transit, a 2 x 4 is placed crosswise of the car against the front stack.

Ventilation is the same with package cars as with bulk.

More of the former are shipped under ice the forepart of the season, mainly because they are shipped longer distances.

Grades.

The grades used for apples during the 1922 season were those formulated by the Bureau of Markets and Crop Estimates, United States Department of Agriculture, in co-operation with the Colorado Division of Marketing. They proved to be very agreeable, with the exception of Colorado No. 1 bulk. This grade allows too wide a range of apples to be shipped out under one grade. When there is a good demand for bulk, some cars are shipped this way which would meet the requirements of the fancy grades. Other cars are no better than C grade fruit, but with no higher grades removed, they meet the requirements of the No. 1 Bulk. On the other hand, some C grade cars, with the higher grades removed, are as good or better than the above No. 1 bulks, but because higher grades are removed, it is necessary to rate them as unclassified or No. 2 Bulk. The demand from the growers and shippers is for a Fancy and a C grade bulk, in addition to the No. 1 bulk.

The grades are as follows:

Colorado Extra Fancy or First Grade.

Colorado Extra Fancy shall consist of mature, well-formed, hand picked apples of one variety, which are free from dirt, and from damage caused by limb rub, frost, hail, sun scald, visible water core, spray burn, skin punctures, except those necessarily caused in proper packing and handling, russeting,

except that the russeting at the basin of the stem shall be permitted, or from disease, insects, or mechanical or other means.

Each apple shall have the amount of color designated for apples of this grade in table of COLOR REQUIREMENTS.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the apples in any lot may be below the requirements of this grade, but not to exceed one-half of this 10 per cent tolerance shall be allowed in any one defect.

Colorado Fancy or Second Grade.

Colorado Fancy shall consist of apples of one variety which conform to the requirements of Colorado Extra Fancy, except that slight leaf rubs, scratches, or russetting, up to a total of 10 per cent of the surface, and apples which are slightly misshapen, and which have not to exceed two healed stings may be permitted.

Each apple shall have the amount of color designated for apples of this grade in table of COLOR REQUIREMENTS except that apples which have any healed stings shall have the color required for the Colorado Extra Fancy grade.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the apples in any lot may be below the requirements of this grade, but not to exceed one-half of this 10 per cent tolerance shall be allowed for any one defect.

Colorado "C" or Third Grade.

Colorado "C" Grade shall consist of apples of one variety, which are free from worm holes, scale, and from bruises or broken skins, except those necessarily caused in proper packing and handling, and from serious damage caused by disease, insects, or other means, but stings shall be permitted in this grade.

In order to allow for variations incident to proper handling and grading, not more than 10 per cent, by count, of the apples in any one lot may be below the requirements of this grade, but not to exceed one-half of this 10 per cent tolerance shall be allowed for any one defect.

This grade shall not be designated as "Choice".

Colorado Combination Grades.

When Colorado Extra Fancy and Fance apples are packed together, the packages may be marked "Colorado Combination Extra Fancy & Fancy". When Colorado Fancy and "C" Grade apples are packed together, the packages may be marked "Colorado Combination Fancy and C Grade". Combination grades must contain at least 25 per cent of apples which are of such grade as would be permitted in the higher grades. It shall be unlawful to remove any of the higher grade apples of any lot and then pack the remainder as any "Colorado Combination Grade".

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the apples in any lot, may be below the requirements of the lower grade in any combination, but not to exceed

one half of this ten per cent tolerance shall be allowed for any one defect.

Colorado Orchard Run. Culls Out.

When Colorado Extra Fancy, Fancy and "C" Grade apples are packed together, the packages may be marked "Colorado Orchard Run, Culls Out" or "Colorado Combination Extra Fancy, Fancy and "C" Grade", but any apples so marked must not contain any fruit that will not meet the requirements of the Colorado "C" Grade. In case the packages are marked "Colorado Combination Extra Fancy, Fancy and "C" Grade" they must contain at least 25 per cent Colorado Extra Fancy apples, and it shall be unlawful to remove any of the higher grade apples of any lot and then pack the remainder as "Colorado Orchard Run, Culls Out" or "Colorado Combination Extra Fancy, Fancy and "C" Grade.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the apples in any lot, may be below the requirements of the "C" Grade, but not to exceed one-half of this 10 per cent tolerance shall be allowed for any one defect.

Because some sections were badly hit by hail during the 1922 season, the Division of Marketing for the State was asked by the growers and shippers to provide grades for the hailed fruit. For this reason, in the hailed sections, "Hail" was added after the grades of Colorado Extra Fancy, Fancy, Combination grades, and Orchard Run, Culls out.

Transporting Boxed Apples from Packing House to Car.

Loading Bulk Apples from Vehicles into Cars.

Containers packed with apples of the standard grades, either diagonal or straight packs, shall be marked with the numerical count or with the minimum size of the fruit contained therein. If either Jumble or Face and Fill packs are used in any container, the face shall fairly represent the average quality and the size of the contents of the packages, and the package shall be marked with the minimum size of the fruit contained therein, as "Colorado Fancy, 2½ in. min." or "Colorado Fancy, 2½ in. min.".

In order to allow for variations incident to proper grading and handling , not more than 10 per cent, by count, of the apples in any lot may vary from the minimum size stated.

Table of Color Requirements.

Apples shall be admitted to the first and second grades subject to the following color specifications. The percentage stated refers to the area of the surface which must be covered with a good shade of red characteristic of the variety.

Solid Red Varieties.

	Extra Fancy	Fancy
Arkansas Black	75%	25%
Baldwin	75%	25%
Black Ben Davis	75%	25%
Gano	75%	25%
King David	75%	25%
Red June	75%	25%
Vanderpool	75%	25%
Winesap	75%	25%

Striped or Partial Red Varieties.

	Extra Fancy	Fancy
McIntosh Red	66 2/3%	25%
Delicious	66 2/3%	25%
Staymen Winesap	66 2/3%	25%
Jonathan	66 2/3%	25%
Black Twig	50%	25%
Fameuse	50%	15%
Geniton	50%	15%
Hubbardston	50%	15%
Missouri Pippin	50%	15%
Northern Spy	50%	15%
Red Astrachan	50%	15%
Rome Beauty	50%	*15%
Salome	50%	15%
Stark	50%	15%
Sutton	50%	15%
Willow Twig	50%	15%
Wealthy	50%	15%
York Imperial	50%	15%
Ben Davis	50%	15%
Alexander	25%	10%
Chenango	25%	10%
Gravenstein	25%	10%
Jefferies	25%	10%
Oldenburg	25%	10%
Twenty Ounce	25%	10%

*No color requirement on Fancy Rome Beauty of 96 and larger.

Red Cheeked Varieties.

Extra Fancy------perceptibly blushed cheek.
Fancy----------no color requirements.

Hydes King
Maiden Blush
Red Cheek Pippin
Winter Banana

Green and Yellow Varieties.

Extra Fancy----characteristic color.
Fancy----no color requirements.

Grimes Golden
Ortley
Yellow Newton
Yellow Bellefleur
White Winter Permain
Rhode Island Greening
Cox's Orange Pippen

Colorado No. 1 Bulk.

Colorado No. 1 bulk shall consist of apples of one variety which are free from decay, worm holes, scale and from serious damage caused by disease or other menas. It shall be unlawful to remove any of the higher grade apples from any lot and then designate the remainder as Colorado Bulk No. 1.

The diameter of apples in this grade shall not be less that two and one-quarter inches, escepting the varieties--Winesap, Geniton, Missouri Pippin, for which the diameter shall be not less than two inches.

In order to provide for variations incident to proper grading and handling, not more than 10 per cent, by count, of the apples in any lot may be below the size requirements and in addition, not more than 10 per cent, by count, may be below the remaining requirements of this grade.

Colorado No. 2 bulk.

Colorado No. 2 Bulk shall consist of apples of one variety which are free from decay.

Ungraded.

When apples are picked and sold as they come from the trees, nothing added or removed, they shall be classified as "Ungraded".

Unclassified:

A lot of apples which do not conform to any of the foregoing specificications of grade shall be classed as "Unclassified".

Worm Injury.

In order to secure the most uniform interpretation of these grades, the following distinctions are drawn between "healed stings", "stings", and "worm holes". All are caused by the worm or larva of the codling moth. Injury by this worm varies from the slight damage caused when the worm only punctures the skin to that caused when it goes to the core and out again. The middle stages between these extremes are those which cause the trouble.

Definition of Terms:

As used in these grades:

"Healed sting" means a small, thoroughly healed over blemish which is only skin deep, and does not extend into the flesh.

"Sting" means either a healed sting or the damage caused by the entry of the worm into the flesh a short distance before it dies. Such an injury is usually surrounded by a cork y area; it must be well healed and shall not extend more than $\frac{1}{4}$ inch into the flesh of the apple, including discoloration.

"Worm hole" means any codling moth worm injury other than that covered by the term "sting".

"One defect" means any one specific injury, as limb rubs, hail, spray burn, etc. All codling moth or worm injury of any kind barred by the grade, whether stings, or worm holes shall be considered one defect, and limited to five per cent tolerance in any package grade.

"Mature" means having reached the stage of maturity which will insure the proper completion of the ripening process.

"Well formed" means having the shape characteristic of the variety.

"Free from damage" means that the apple shall not be injured to an extent apparent in the process of proper grading and handling.

"Free from serious damage" means that the apple shall not be injured so as to cause a loss of over 20 per cent in the ordinary process of preparation for use, or bruised to an extent affecting more than 10 per cent of the surface.

"Russet" means any defects caused by frost, spray injury, and similar blemishes from other causes, and shall be computed in the agregate when computing the percentage of the total defect, that is to say, when all russet netting on the specimen is added together, it shall not exceed the percentage allowed for the grade.

"Leaf rubs" means the light surface discoloration caused by rubbing, which are not blackened, as contrasted with blackened or deformed limb rubs.

"Minimum size" means the greatest transverse diameter of the smallest fruit at right angles running from the stem to the blossom end. Minimum size shall be stated in terms of whole and quarter inches, as two inches, one and one-quarter inches, two and one-half inches, and so on in accordance with the facts.

Pests Affecting Grade.

Diseases: There are four physiological diseases which materially affect the grades. The worst is Bitter pit. This is an orchard disease, but shows up mostly while in storage or transit. Considerable damage is done by it each year, especially to the fruit which is held in common storage, over a period of time.

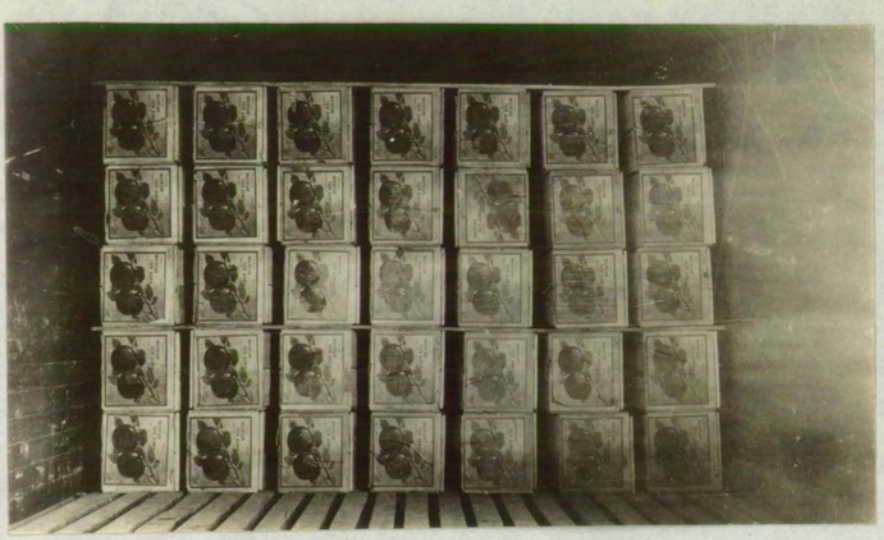
Jonathan spot is next in importance. A spot similar to this occurs on Grimes Golden, Arkansas Black and Wealthy.

Water core and internal breakdown are the other diseases found. The first is a field, and the latter a storage disease.

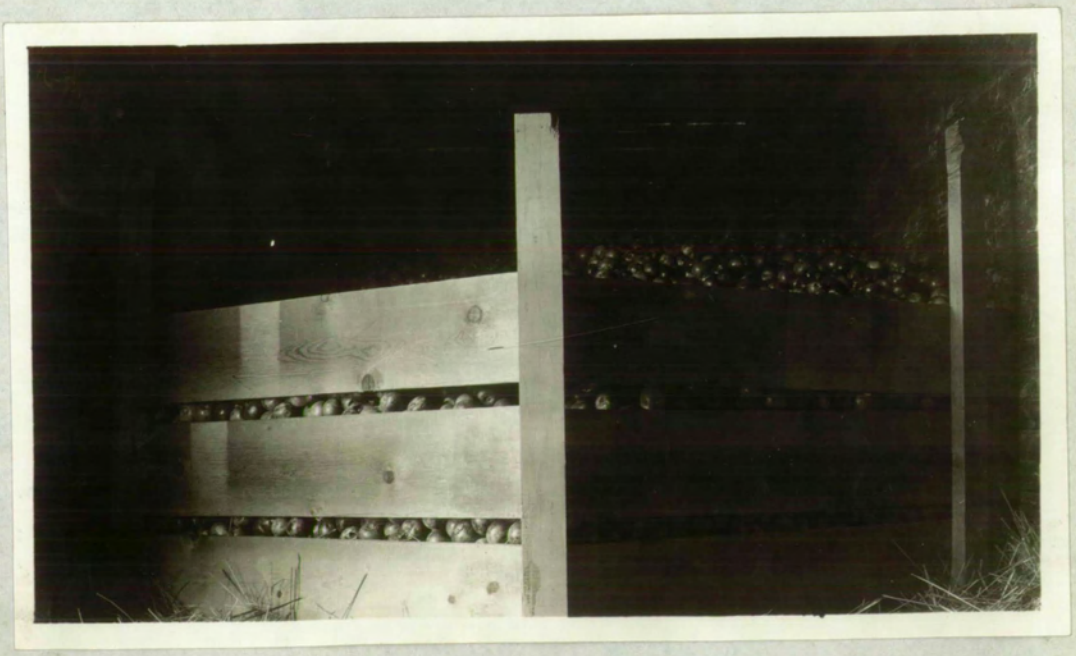
Fungus diseases, which affect the fruit, in order of their importance are: Blue mold rot, Brown spot and scab.

Insects: The most important insect affecting the grades is the Codling moth. In stings and worm holes, this does thousands of dollars of damage each year within the State.

Other insects are Green and Wooly Aphis and Blister Mite.



The Usual Method of Loading Boxed Apples in Cars.



The V Type Bulkhead which is Commonly Used When Loading Bulk Apples in Cars.

REPORT OF APPLE INSPECTIONS FOR SEASON 1921-22

District	% Cars First Grade	% Cars Under	% Cars Loaded with containers	% Cars Loaded Bulk	No.Cars First Grade	No. Cars Under	No.Cars loaded with containers	No.Cars Loaded Bulk	Total No.Cars Inspected
Delta	55	45	43	57	912	740	715	937	1652
Grand Junction	65	35	28	72	891	471	380	982	1362
Upper Grand Valley	35	65	9	91	53	98	13	138	151
Averages and totals	59	41	35	65	1856	1309	1108	2057	3165

Percentage Cars First Grade.....59
Percentage cars Under.....41
Percentage cars loaded with containers..35
Percentage cars loaded bulk.....64

Total Number cars first grade.....1856
Total number cars under.....1309
Total cars loaded with containers....1108
Total cars loaded bulk.....2057

REPORT OF APPLE INSPECTIONS FOR SEASON 1922-23.

District	% Cars First Grade	% Cars Under	% Cars Loaded with Containers	% Cars Loaded Bulk	No. Cars First Grade	No. Cars Under	No. Cars Loaded with Containers	No. Cars Loaded Bulk	Total Cars Inspected
Delta	34	66	68	32	555	1098	1127	526	1653
Grand Junction	64	36	33.5	66.5	460	259	241	478	719
Upper Grand Valley	57	43	45	55	27	20	21	26	47
Canon City	73	27	26	74	409	141	143	407	550
Ft.Collins	4	96	85	15	1	25	22	4	26
Dolores	0	100	100	0	0	11	11	0	11
Averages and totals	48	52	52	48	1452	1554	1565	1441	3006

Total Cars First Grade.....1452
Total Cars Under.....1554

Total Cars Loaded with containers..1565
Total Cars Loaded bulk.....1441

Total Number of cars inspected.....3006

Percentage Cars First Grade.....48%
Percengage Cars Under.....52

Percentage cars loaded with containers..52
Percentage cars loaded bulk.....48

Tabulation of Figures.

Tabulation of the inspection data for the season of 1921-22 shows that 3,165 cars of apples were inspected within the State. Of these 1,856 cars, or 59 per cent, met the requirements of either Colorado Extra Fancy of No. 1 Bulk Grade. 1,309 or 41% failed to meet these requirements, and were placed in lower grades. A good many cars shipped out were loaded one third each of Extra Fancy, Fancy and C grades. The cars placed in the first grade were only those whose contents consisted entirely of No. 1 products. If an accurate check could be made of the mixed cars, the percentage of No. 1 would run much higher.

Tabulation of the inspection data for the season 1922-1923 shows that 3,006 cars of apples were inspected. Of these, 1,449 cars, or 48 per cent met the requirements of either Colorado Extra Fancy or No. 1 Bulk grade. 1,557 cars, or 52 per cent, failed to meet these requirements, and were placed in the lower grades.

The same holds true of the 1922 crop as that of 1921. That is, a great many cars shipped out were loaded in some other proportion. These cars were all placed in the lower grades.

A comparison of the 1921 and 1922 data showed that the apple shipments decreased five percent and the percentage of cars which were first grade dropped from 59 to 48 per cent. This was probably due to the fact that severe hail storms damaged the crop in the Northfork Valley, and the Grand Valley had the worst infestation of codling moth in its history.

The data compiled on pages 31 to 57 is the Auction Sales for the Central and Green Auctions of Chicago for the 1922 season. This data includes every car of apples from all box apple sections, which was sold on the Chicago Auction.

Cars of apples which are first sold private sale in Chicago are later generally put on the Auction to be sold. For this reason, this is a fairly accurate report of the boxed apple sales in the city.

On pages 29 and 30 is a summary of this data. It gives comparative prices on all grades and varieties of apples, totaling 543 cars sold in Chicago from the states of Colorado, Washington, Idaho and New Mexico.

This comparison of prices is not absolutely accurate because no comparison of prices of fruit grown in districts far apart could be accurate. Perhaps one week while prices are inflated, one section will ship heavily and another lightly. Another week, when prices are deflated, the same could happen. However, during the season of 1922 the shipments from the various sections were uniform. Also, the shipping season was very uniform. In view of these facts, data covering the entire season would be fairly accurate.

Comparative Average Prices of Northwest and Colorado Apples for Season 1 9 2 2 .

Colorado.

	Extra Fancy	Fancy	C Grade	Extra And Fancy	Fancy And C Grade	Orchard Run	Face And Fill
Jonathan	1.98	1.66	1.38	1.66		1.55	1.26
Delicious	2.35	1.86	1.45				
Rome Beauty	1.75	1.50	1.25	1.50			
Winesaps		1.51	1.35				
Grimes Golden	1.65	1.00	1.11				
W.Permain	1.72	1.40	1.30				
W.Banana	1.30	1.65	1.31				
King David	1.50	1.34	1.02				1.57
N.W.Greening	1.86		1.57				
Black Twig	1.25						
Gano		1.10					

Washington

	Extra Fancy	Fancy	C Grade	Extra And Fancy	Fancy And C Grade	Orchard Run	Face And Fill
Jonahtan	1.84	1.55	1.23	1.46		1.56	1.04
Delicious	2.52	1.89	1.58				
Rome Beauty	2.02	1.55	.99	1.52	1.26		.95
W.Permain	1.43	1.20	1.30			1.49	
W.Banana			1.15				
King David	1.49	1.34					
Idaho							
Jonathan	1.76	1.59	1.61				1.31
New Mexico							
Jonathan	1.53	1.23	1.89				

REPORT OF SALES IN WESTERN BOXED APPLES ON CHICAGO MARKET, FROM OCTOBER 19,1922 to JANUARY 4, 1923, INCLUSIVE. AS REPORTED BY THE GREEN AND CENTRAL AUCTION COMPANIES OF CHICAGO.

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Variety	Brand	Grade	District	Average price per box.
Jonathan	No label	Fancy	Colorado	1.80
"	Bushels		Colorado	1.10
"	Bushels		Idaho	1.17
Jonathan	All American	Extra	Washington	1.47
"	All American	Fancy	Washington	1.39
"		Extra	New Mexico	1.41

****

Jan 4,1923. Jonathan	Unlabeled	Extra	Colorado	2.11
"	Unlabeled	Fancy	Colorado	1.70
"	Unlabeled	Choice	Colorado	1.31
"	Revelation,face and fill	Idaho	Id aho	1.27
"	Red Skin	Extra	Washington	1.71
"	Red Skin	Fancy	Washington	1.96
"	No label	Extra	Idaho	2.10
"	No label	Fancy	Idaho	1.77
"	No label	Choice	Idaho	1.35
"	Skookum	Fancy	Washington	1.80
"	Circle W	Extra	Washington	1.88
"	Circle W	Fancy	Washington	1.53
"	O.K. No.1 B.C.		Canada	1.39

****

Jan. 2,1923. Jonathan	No label	Extra	Colorado	1.90
"	No label	Fancy	Colorado	1.65
"	R & T	Extra	Washington	2.00
"	R & T	Fancy	Washington	1.70

Variety	Brand	Grade	District	Average Price Per box
Jonathan	Red Skin	Extra	Washington	1.98
"	"	Fancy	"	1.75
"	No label	Face & fill		1.40
"	Pacific	Extra	Washington	1.58

****

Ded. 26,1923.				
Romes	Columbine	Extra	Colorado	1.70
R.Beauties	Circle W	Extra	Washington	1.90
R.Beauties	Circle W	Fancy	"	1.44
Pearmain	Peony	Extra	Colorado	1.75
"	"	Fancy	"	1.54
"	Acme	Extra	Washington	1.44
"	"	Choice	"	1.20
Jonathan	Blanket brand	Extra	Colorado	2.15
"	Chief Joseph	Extra Fancy	Washington	1.60
"	" "	Choice	"	1.27
"	Face and fill			1.51
R. Beauties	Blanket Brand	Extra	Colorado	1.65
R. Beauties	Circle W	Extra	Washington	1.90
R. Beauties	Circle W	Fancy	"	1.44
W.Bananas	Tomahawk	Fancy	Colorado	1.65
W. Banana	Chief Joseph	Choice	Washington	1.15

****

Dec.19,1922.				
W.W.Permain	Silver Crest	Extra	Colorado	1.69
W.W.Permain	Silver Crest	Fancy	Colorado	1.35
W.W.Permain	Pinto	Choice	"	1.30
W.W.Permain	Acme	Ex.Fancy	Washington	1.43

Variety	Brand	Grade	District	Average price per box
W.W.Permain	Acme	Fancy	Washington	1.20
Jonathan	Pinto	Choice	Colorado	1.45
"	Satisfactoree	Choice	Washington	.75

****

Dec.18,1922 Jonathan	Mt.Elf	Choice	Colorado	1.01
"	Columbine	Ex.Fancy	Colorado	2.00
"	Peony	Fancy	"	1.65
"	Red Skin	Fancy	Washington	1.64
"		Choice	"	.84
Rome Beauty	Columbine	Ex.Fancy	Colorado	1.75
Rome Beauty	Peony	Fancy	"	1.70
Rome Beauty	Selah	Extra	Washington	2.02
Rome Beauty	Selah	Fancy	Washington	1.75

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Dec.15,1922, Jonathan	Blanket	Extra	Colorado	1.97
"	Tomahawk	Fancy	"	1.63
"	Columbine	Extra	"	2.20
"	Paonia	Fancy	"	1.70
"	School Boy	Choice	"	1.40
"	Peony	Extra	"	2.30
"	Peony	Fancy	"	1.75
"	No label	Face and fill	Washington	1.31
"	No label	Face and fill	"	.95
"	No label	Ex.Fancy and Fancy	Washington	1.00
Rome Beauty	Columbine	Extra	Colorado	1.85
Rome Beauty	No label	Face and fill	Washington	.95

Variety	Brand	Grade	District	Average Price Per box
Rome Beauty	No label	Fancy	Washington	1.04

****

Dec.14,1922. Jonathan	Blanket	Extra	Colorado	2.10
"	Tomahawk	Fancy	"	1.76
"	High Altitude	Ex.Fancy	"	2.10
"	High Altitude	Fancy	"	1.75
"	" "	Choice	"	1.40
"	Giamond G, face and fill		"	1.28
"	Blue Domino	Extra	Washington	1.83
"	Blue Domino	Fancy	"	1.67

****

Dec.13,1922. Jonathan	Big Value	Extra	Colorado	2.00
"	" "	Fancy	"	1.40
"	Big Value	Choice	"	1.25
"	Silver Crest	Extra	"	2.30
"	" "	Fancy	"	1.88
"	Pinto	Choice	"	1.45
"	No label, Face and fill		Colorado	1.25
"	No label	Choice	Colorado	1.20
"	Sweepstake	Fancy	"	1.60
"	Blanket	Extra	"	2.00
"	Tomahawk	Fancy	"	1.65
"	Wynco	Ex.Fancy	Washington	1.78
"	Winora	Choice	Washington	1.48
"	Pro-ser-co	Ex.Fancy	"	1.69
"	Pro-wer-co	Choice	"	1.38
"	Pro-ser-co	Ex. and Fancy	"	1.37

Variety	Brand	Grade	District	Average Price Per box
Jonathan	Superior	Extra	Washington	2.13
"	Mtn.Gem	Ex.Fancy	Idaho	1.25
"	Mtn.Gem	Fancy	Idaho	1.22
"	Red Diamond	Fancy	Oregon	1.69
"	Red Diamond	Choice	"	1.33
Staymen	Pinto	Extra	Colorado	1.60
King David	No label, face and fill		"	1.05
N.W.Greening	Sweepstake	Extra	Colorado	1.66
N.W.Greening	Sweepstake	Choice	"	1.57
	**********			
Dec.12,1922. W.W.Pearmain	Big Value	Choice	Colorado	1.40
Rome Beauties	Sweepstake	Extra	"	1.83
Rome Beauties	Paonia Mtn.	Extra	"	1.85
Rome Beauties	Paonia Mtn.	Fancy	"	1.65
Rome Beauty	No label	Fancy & choice	Washington	1.26
Jonathan		Choice	Colorado	1.26
"	Paonia Mtn.	Extra	"	2.10
"	Paonia Mtn.	Fancy	"	1.87
"	Mtn.Gem	Ex.Fancy	Washington	1.42
"	Mtn.Gem	Fancy	"	1.41
"	No label	Orchard Run	"	1.56
"	Otis	Ex.Fancy	"	1.67
"	No label,face and fill		Washington	1.50
"	Best Value	Fancy	"	1.24
	**********			
Dec.17,1922. Jonathan	Sweepstakes	Extra	Colorado	2.19

Variety	Brand	Grade	District	Average Price Per box
Jonathan	Peony	Fancy	Colorado	1.70
"	Paonia Mtn.	Extra	Colorado	2.25
"	Paonia	Fancy	Colorado	1.96
"	Old Homestead	Fancy	Oregon	1.47
"	Old Homestead	Choice	"	1.30

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Dec.8,1922.

Jonathan	Wild Rose	Ex.Fancy	Colorado	2.10
Winesaps	Wild Rose	Fancy	"	1.51
"	Paonia	Choice	"	1.35
Rome Beauty	"	"	"	1.35
Rome Beauty	Terrace Heights	Extra	Washington	1.69
Rome Beauty	Terrace Heights	Fancy	"	1.42

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Dec.6,1922.

Jonathan	Silver Crest	Extra	Colorado	2.15
"	Silver Crest	Fancy	"	1.85
"	Wild Rose	Extra	"	2.16
"	Wild Rose	Fancy	"	1.85
"	Ch.School boy		Colorado	1.65
"	No label, jumble		Washington	1.10
"		C. R.	"	1.54
"	Stock label	Ex.fcy.& choice	Washington	1.51
"	Stock A	Fancy	Washington	1.50
"	Paddock	Fancy	"	1.50
"	Yakima Valley	Extra	"	1.65
"	Yakima Valley	Fancy	Washington	1.46
"	Bushel baskets	Extra	Idaho	1.25

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Variety	Brand	Grade	District	Average Price Per box
Dec.10,1922. Jonathan	Sweepstake	Extra	Colorado	2.25
"	Wild Rose	Extra	"	2.16
"	Wild Rose	Fancy	"	1.86
"	Columbine	Extra	"	2.10
"	Peony	Fancy	"	1.85
"	Peony	Ex.& Fancy	"	1.85
"	School Boy	Choice	"	1.70
"	High altitude	Extra	"	2.25
"	High Altitude	Fancy	"	1.86
"	High Altitude	Choice	"	1.75
"	Paonia Mtn.	Extra Fancy	Colorado	2.15
"	Paonia Mtn.	Fancy	"	1.80
"	Panoia Mtn. Wild Rose	Ex.Fancy	Colorado	2.15
"	Paonia Mt.Wild Rose	Fancy	"	1.81
"	Big Value,High Altitude	Ex.Fancy	"	2.15
"	Big Value High Altitude	Fancy	"	1.75
"	Big Value,High Altitude	Choice	"	1.60
"	Pinto	Choice	"	1.45
"	Diamond G	Extra	Idaho	1.68
"	Diamond G	Fancy	Idaho	1.70
"	Diamond G	Fancy	Idaho	1.70
"	White Maltese Cross	Choice	Idaho	1.50
Rome Beauty	Revelation	Face & fill	Colorado	1.55
Rome Beauty	Revelation	Face & fill	Colorado	1.50
Rome Beauty	Wenatchee Belle	Extra	Washington	2.32

Variety	Brand	Grade	District	Average Price Per box
Rome Beauty	Diamond G	Fancy	Idaho	1.68
Rome Beauty	White Maltese Cross	Extra	Idaho	2.05
	**********			
Nov. 28,1922. Jonathan.	Paonia Mt.	Extra	Colorado	2.10
"	Fancy	Paonia	Colorado	1.20
"	Paonia	Choice	"	1.65
"	Columbia	Ex.Fancy	Colorado	2.08
"	Big Value	Choice	"	1.44
Black Twig	Unlabeled	Ex.Fancy	"	1.25
Rome Beauty	Revelation	Ex.&Fancy	"	1.50
Rome Beauty	Revelation, face and fill		"	1.35
Rome Beauty	Mosse	Ex.Fancy	"	1.70
	**********			
Nov.27,1922. Rome Beauty	Blanket	Extra	Colorado	1.65
Rome Beauty	Revelation	Ex.&Fancy	Washington	1.52
Jonathan	Tomahawk	Fancy	Colorado	1.53
"	Paonia Mt.	Fancy	Colorado	1.94
"	Red Ribbon	Fancy	Washington	1.24
"	Horse-Shoe	Fancy	Washington	1.37
"	Revelation,Face and fill		Washington	1.00
"	Ornodo	Fancy	Washington	1.45
"	D.B.	Extra	Oregon	1.99
"	D.B.	Fancy	Oregon	1.58
	**********			
Nov.24,1922. Jonathan	Moose	Extra	Colorado	2.05

Variety	Brand	Grade	District	Average Price Per box.
Jonathan	High Altitude	Extra	Colorado	2.14
"	" "	Fancy	Colorado	1.75
"	Brownie	Extra	Washington	2.00
"	Yakima Valley	Extra	"	1.55
"	Ornodo	Ex.Fancy	"	1.30
"	"	Fancy	"	1.35
	**********			
Nov.21,1922. Jonathan	Pinto	Choice	Colorado	1.40
"	Fancy	Big Value	"	1.65
"	Big Value	Choice	"	1.38
"	Big Value	Extra	"	1.93
"	Stock label A		Washington	1.19
"	Blue Goose	Fancy	"	1.45
	**********			
Nov.20,1922. Jonathan	High Altitude	Extra	Colorado	2.05
"	" "	Fancy	Colorado	1.78
"	" "	Choice	"	1.45
"	Silver Crest	Ex.Fancy	"	1.65
"	" "	Fancy	"	1.35
"	Pinto	Choice	"	1.25
"	Stag	Choice	"	1.40
"	Pinto	Choice	"	1.31
"	Silver Crest	Fancy	"	1.35
"	Moose	Ex.Fancy	"	1.90
"	Elk	Fancy	"	1.55
"	Star	Choice	"	1.35
"	A	Extra Fancy	Washington	1.55
"	A	Fancy	"	1.25

Variety	Brand	Grade	District	Average Price Per box
Jonathan	A	Fancy	Washington	1.37
"	Twin W	Ex.Fancy	"	1.46
"	Red Skin	Fancy	"	1.64
"	NorOWest-ter	Extra	Washington	1.83
"	Blue Jay	Extra	"	1.68
"	Blue Jay	Fancy	"	1.58
"		Ex.&Fancy	"	1.31
Delicious	Stag	Choice	Colorado	1.40
Gano	Silver Crest	Fancy	"	1.10
Delicious	B-B	Fancy	Washington	1.61
"	Blue Seal	Extra	Washington	2.66
Delicious	The B.O.	Choice	"	1.25

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Nov.17,1922 Jonathan	No label	Extra Fancy	Colorado	1.50
"	No label	Fancy	"	1.20
"	No label	Choice	"	1.05
"	Big Value	Ex.Fancy	Colorado	1.73
"	Big Value	Fancy	"	1.30
"	Paonia Mt.,Daisy, Wild Rose	Ex.Fancy	Colorado	2.00
"	Paonia Mt.,Daisy, Wild Rose	Fancy	Colorado	1.60
"	Skookum	Fancy	Washington	1.36
"	Satisfactoree	Choice	Washington	.88
Delicious	Paonia Mt.,Daisy Wild Rose	Choice	Colorado	1.46
Delicious	Siwash	Ex.Fancy	Washington	2.29
"	"	Fancy	"	1.68
"	Acme	Fancy	"	1.17

Variety	Brand	Grade	District	Average Price Per Box
Delicious	Perfect Pak	Extra	Washington	2.72
Jonathan	Sweepstake	Extra	Colorado	2.00
Jonathan	Sweepstake	Fancy	Colorado	1.69
Jonathan	Blanket	Extra	Colorado	1.74
Jonathan	Tomahawk	Fancy	Colorado	1.63
Jonathan	Tomahawk	Choice	Colorado	1.44
Jonathan	Moose	Extra	Colorado	1.93
Jonathan	Elk	Fancy	Colorado	1.70
Jonathan	Stag	Choice	Colorado	1.55
Jonathan	Anawit	Choice	Washington	83
Jonathan	Letter Buck	Extra	Washington	1.78
Jonathan	Let-er Buck	Fancy	Washington	1.58
Jonathan		Choice	Washington	77
Jonathan	Skookum	Extra	Washington	1.68
Jonathan	Skookum	Fancy	Washington	1.47
Jonathan	Satisfactoree	Choice	Washington	1.27
Rome	Silver Crest	Extra Fancy	Colorado	1.75
Rome	Pinto	Fancy	Colorado	1.15
Rome	Pinto	Choice	Colorado	1.15
Rome Beauty	Sapphire	Extra Fancy	Washington	2.59
Rome Beauty	Ruby	Fancy	Washington	2.12
Rome Beauty	No label	Fancy	Washington	1.64
Rome	Puppy	Choice	Washington	99

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Nov. 15, 1922

Jonathan	Sweeptake	Fancy	Colorado	1.82
Jonathan	Blue Goose	Extra Fancy	Washington	1.35
Jonathan		Choice	Washington	87
Jonathan	Red Skin	Extra	Washington	1.66

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Blue Ribbin	Extra	Washington	1.86
Delicious	Paonia, Mt.	Extra Fancy	Colorado	2.30
Delicious	Wild Rose	Fancy	Colorado	2.00
Delicious	Wild Rose	Choice	Colorado	1.40
Delicious	Snow Cap	Extra Fancy	Oregon	1.85
Delicious	Snow Cap	Fancy	Oregon	1.46
Delicious	Jim Dandy	Choice	Washington	1.64

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Nov. 14, 1922

Jonathan	Stag	Choice	Colorado	1.20
Jonathan	Stag	Orchar Run	Colorado	1.35
Jonathan	Pinto	Orchard Run	Colorado	1.28
Jonathan	Silver Crest	Fancy	Washington	1.00
Jonathan	Silver Crest	Choice	Washington	1.00
Jonathan	Paradise	Extra	Washington	1.89
Jonathan	Snowshoe	Fancy	Washington	1.58
Jonathan	Jim Hill	Extra	Washington	2.22

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Nov. 13, 1922

Delicious	wild Rose	Extra	Colorado	2.25
Delicious	Wild Rose	Fancy	Colorado	1.91
Delicious	Wild Rose	Choice	Colorado	1.65
Delicious	wild Rose	Extra Fancy	Colorado	2.00
Delicious	Paonia Mt.	Fancy	Colorado	1.60
Delicious	Paonia Mt.	Choice	Colorado	1.30
Delicious	Snowshoe	Fancy	Washington	1.84
Delicious	Geo. Washington	Extra Fancy	Washington	2.10
Delicious	Geo. Washington	Fancy	Washington	1.40

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Silver Crest	Extra Fancy	Colorado	1.85
Jonathan	Silver Crest	Fancy	Colorado	1.54
Jonathan	Silver Crest	Choice	Colorado	1.25
Jonathan	Silver Crest	Extra Fancy	Colorado	1.75
Jonathan	Silver Crest	Fancy	Colorado	1.50
Jonathan	Pinto	Choice	Colorado	1.35
Jonathan	Blue Goose	Fancy	Washington	1.08
Jonathan	Blue Goose	Extra Fancy	Washington	86
Jonathan	Silver Crest	Fancy	Washington	75
Jonathan	Pinto	Choice	Washington	75
Jonathan	Blue Ribbon	Extra	Washington	1.86
Jonathan	Perfect Pak	Fancy	Washington	1.46
Jonathan	Electric	Choice	Washington	1.25

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Nov. 10, 1922

Delicious	Moose	Extra	Colorado	2.50
Delicious	Stag	Fancy	Colorado	2.16
Delicious	Stag	Choice	Colorado	1.85
Delicious	Electric	Choice	Washington	1.38
Delicious	Wen	Choice	Washington	1.34
Delicious	Kettle	Extra Fancy	Washington	2.67
Jonathan	Big Value	Fancy	Colorado	1.50
Jonathan	Big Value	Choice	Colorado	1.29
Jonathan	Silver Crest	Extra Fancy	Colorado	1.90
Jonathan	Silver Crest	Fancy	Colorado	1.55
Jonathan	Big Value	Extra Fancy	Colorado	1.80
Jonathan	Big Value	Fancy	Colorado	1.55

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Electric	Choice	Washington	1.27
Jonathan	Jim Hill	Extra	Washington	1.61
Jonathan	Jim Hill	Fancy	Washington	1.56
Jonathan	Jim Dandy	Choice	Washington	1.34
Jonathan	Twin W.	Extra Fancy	Washington	1.41
Jonathan	Labeled	Orchard Run	Washington	1.30
Jonathan	Palouse	Fancy	Washington	1.30
Grimes Golden	Big Value	Fancy	Colorado	1.00
Grimes Golden	Big Value	Choice		82

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Nov. 9, 1922 Jonathan	High Altitude	Extra	Colorado	2.00
Jonathan	High Altitude	Fancy	Colorado	1.74
Jonathan	Big Value	Extra & Fancy	Colorado	1.52
Jonathan	Blanket	Extra	Colorado	1.78
Jonathan	Tomahawk	Fancy	Colorado	1.55
Jonathan	Sweepstakes	Extra	Colorado	1.83
Jonathan	Sweepstakes	Fancy	Colorado	1.56
Jonathan	No label	Extra Fancy	Colorado	1.89
Jonathan	No label	Choice	Colorado	1.35
Jonathan	High Altitude	Extra Fancy	Colorado	1.60
Jonathan	High Altitude	Choice	Colorado	1.50
Jonathan	March	Extra Fancy	Washington	1.95
King David	Paonia Mt., Wild Rose	Extra Fancy	Colorado	1.35
King David	Paonia Mt., Wild Rose	Fancy	Colorado	1.16
King David	Paonia Mt., Wild Rose	Choice	Colorado	85

Variety	Brand	Grade	District	Average Price Per Box
Delicious	Paonia Mt., Wild Rose		Colorado	1.10
Delicious	Wild Rose	Extra Fancy	Colorado	1.75
Delicious	Wild Rose	Fancy	Colorado	1.45
Delicious	Wild Rose	Choice	Colorado	1.19
Delicious	Jim Hill	Fancy	Washington	2.25
Delicious	Jim Dandy	Choice	Washington	1.69
Delicious	B B	Fancy	Washington	1.67

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Nov. 8, 1922

Jonathan		Extra Fancy	Colorado	1.60
Jonathan		Extra Fancy	Colorado	1.65
Jonathan		Fancy	Colorado	1.35
Jonathan		Choice	Colorado	1.28
Jonathan	High Altitude	Extra Fancy	Colorado	1.75
Jonathan	High Altitude	Choice	Colorado	1.85
Jonathan	No label	Extra Fancy	Colorado	1.75
Jonathan	No label	Fancy	Colorado	1.65
Jonathan	No label	Choice	Colorado	1.40
Jonathan	High Altitude	Extra Fancy	Colorado	1.90
Jonathan	Paonia Mt.	Fancy	Colorado	1.66
Jonathan	Paonia Mt.	Choice	Colorado	1.41
Grimes Golden	Unclassified		Colorado	85
W. Banana	High Altitude	Extra Fancy	Colorado	1.30
Delicious	High Altitude	Choice	Colorado	1.15
Delicious	Mtn. Goat	Fancy	Washington	2.49
Delicious	Casio	Extra Fancy	Washington	2.95
Delicious	Casco	Fancy	Washington	1.96

Variety	Brand	Grade	District	Average Price Per Box
Nov. 7, 1922				
Jonathan	Bushels		Colorado	1.15
Jonathan	Papoose	Choice	Colorado	1.49
Jonathan	Lill ranch	Extra	Colorado	1.66
Jonathan	Lill ranch	Fancy	Colorado	1.40
Jonathan	Mtn. Elf	Fancy	Colorado	1.50
Jonathan	High Altitude	Extra Fancy	Colorado	2.01
Jonathan	High Altitude	Choice	Colorado	1.39
Jonathan	Big Value	Extra Fancy	Colorado	1.85
Jonathan	Big Value	Extra Fancy	Colorado	2.00
Jonathan	Big Value	Fancy	Colorado	1.60
Jonathan	Big Value	Choice	Colorado	1.40
Jonathan	Paonia	Fancy	Colorado	1.75
Jonathan	Skookum	Extra	Washington	1.34
Jonathan	Skookum	Fancy	Washington	1.70
King David	Paonia	Fancy	Colorado	1.36
King David	Paonia	Fancy, Hail	Colorado	1.50
King David	Paonia	Choice	Colorado	1.18
		**********		
Nov. 6, 1922				
Jonathan	Columbine	Extra Fancy	Colorado	2.17
Jonathan	Peony	Fancy	Colorado	1.75
Jonathan	Stag	Extra & Fancy	Colorado	1.76
Jonathan		Extra	Colorado	1.81
Jonathan		Fancy	Colorado	1.56
Jonathan	Three E	Extra Fancy	Washington	1.80
Jonathan	Three E	Fancy	Washington	1.58
Jonathan	All American	Extra Fancy	Washington	1.51

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	All American	Fancy	Washington	1.33
Jonathan	U. S.	Extra Fancy	Washington	1.60
Jonathan	U. C.	Fancy	Washington	1.42
Jonathan	No brand	Choice	Washington	1.20
Jonathan	No label, Face and fill		Washington	50
Jonathan	Blue Seal	Extra	Washington	2.11
Jonathan		Fancy	Washington	1.27
Jonathan		Choice	Washington	1.21

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Nov. 2, 1922				
Jonathan	Columbine	Extra Fancy	Colorado	1.85
Jonathan	Peony	Fancy	Colorado	1.65
Jonathan	Unlabeled	Fancy	Colorado	1.84
Jonathan	Unlabeled	Fancy	Colorado	1.56
Jonathan	Unlabeled	Orchard Run	Colorado	1.30
Jonathan	Columbine	Extra	Colorado	2.03
Jonathan	Stock label	Extra Fancy	Washington	1.89
Jonathan	Stock label	Fancy	Washington	1.63
Jonathan	Three E	Extra Fancy	Washington	1.58
Jonathan	Three E	Fancy	Washington	1.52
Jonathan		Choice	Washington	1.29
Jonathan	Paddock	Extra	Washington	2.07
Jonathan	Paddock	Fancy	Washington	1.74

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Nov. 2, 1922				
Jonathan	Columbine	Extra Fancy	Colorado	1.85
Jonathan	Peony	Fancy	Colorado	1.65
Jonathan	Moose	Extra	Colorado	2.04

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Moose	Extra	Colorado	2.04
Jonathan	Elk	Fancy	Colorado	1.65
Jonathan	Wild Rose	Fancy	Colorado	1.56
Jonathan	Satisfactoree	Choice	Washington	1.29
Jonathan	Labeled	Largest	Washington	1.85
Jonathan	Labeled, fair		Washington	1.63
Jonathan	Unlabeled		Washington	42
Jonathan	Blue Seal	Extra	Washington	2.20
Jonathan	Blue Seal	Fancy	Washington	1.82
Jonathan	Blue Goose	Extra Fancy	Oregon	1.79
Jonathan	Red Heart	Fancy	Oregon	1.39
Grimes Golden	Moose	Extra	Colorado	1.65
Grimes Golden	Stag	Choice	Colorado	1.40
Delicious	Paonia Mtn.	Fancy	Colorado	2.50
Delicious	Paonia Mtn.	Choice	Colorado	2.00
Delicious	Paonia Mtn.	Extra	Colorado	2.76

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Oct. 31, 1922

Jonathan	Mountain Lion	Fancy	Colorado	1.68
Jonathan	Mountain Eagle	Fancy	Colorado	1.49
Jonathan	Paonia Mtn.	Fancy	Colorado	1.68
Jonathan	Silver Crest	Fancy	Colorado	2.05
Jonathan	Silver Crest	Fancy	Colorado	1.80
Jonathan	Silver Crest	Extra Fancy	Colorado	2.05
Jonathan	Silver Crest	Fancy	Colorado	1.76
Jonathan	Skookum	Extra	Washington	2.00
Jonathan	Fanc & Fill		Washington	94

Variety	Brand	Grade	District	Average Price Per Box
Ben Davis	Mtn. Eagle	Fancy	Colorado	1.25
Delicious	Mtn. Lion	Fancy	Colorado	2.45
[illegible]licious	Pussy	Fancy	Washington	2.35
Delicious	Acme	Extra Fancy	Washington	2.83
Delicious	Acme	Fancy	Washington	2.35

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May 1, 1922

Delicious	[illegible]tn. Eagle	Fancy	Colorado	1.97
Delicious	North West	Choice	Washington	2.18
Delicious	Keystone	Extra	Washington	2.95
Jonathan	Mtn. Eagle	Fancy	Colorado	1.42
Jonathand	Blanket	Extra Fancy	Colorado	1.85
Jonathan	Jewel	Fancy	Washington	1.47
Jonathan	Columbine	ExtraFancy	Colorado	1.80
Jonathan	Peony	Fancy	Colorado	1.70
Jonathan	Columbine	Extra Fancy	Colorado	1.80
Jonathan	Peony	Fancy	Colorado	1.55
Jonathan	Moose	ExtraFancy	Colorado	1.75
Jonathan	Elk	Fancy	Colorado	1.57
Jonathan	Casco	Extra Fancy	Washington	1.89
Jonathan	No label -		Washington	1.10
Jonathan	Keystone	Extra Fancy	Washington	2.27

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Oct. 30, 1922

[illegible]athan		Extra & Fancy	Colorado	1.73
Jonathan	Papoose	Choice	Colorado	1.61
Jonathan	Sweepstakes	Fancy	Colorado	1.83

Variety	Brand	Grade	District	Avera-e Price Per Box
Jonathan	Trustworthee	Choice	Washington	1.40
Jonathan	No label	Fancy	Washington	1.70
Jonathan	B-B	Extra Fancy	Washington	2.17
Jonathan	B-B	Fancy	Washington	1.74
Grimes Golden	Paonia Mtn.	Extra & Fancy	Colorado	1.50

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Oct. 27,1922

Jonathan	Wild Rose	Extra Fancy	Colorado	2.02
Jonathan	Wild Rose	Fancy	Colorado	1.75
Jonathan	Wild Rose	Choice	Colorado	1.65
Jonathan	Columbine	Extra Fancy	Colorado	2.12
Jonathan	Peony	Fancy	Colorado	1.80
Jonathan		Extra Fancy	Colorado	2.05
Jonathan		Fancy	Colorado	1.75
Jonathan	Silver Crest	Extra Fancy	Colorado	2.10
Jonathan	Silver Crest	Fancy	Colorado	1.86
Jonathan	Columbine	Extra	Colorado	2.13
Jonathan	Peonia	Fancy	Colorado	1.63
Jonathan	Paonia Mtn.	Extra	Colorado	2.12
Jonathan	Paonia Mtn.	Fancy	Colorado	1.75
Jonathan	Paonia Mtn.	Choice	Colorado	1.30
Jonathan		Extra & Fancy	Colorado	1.82
Jonathan	Papoose	Choice	Colorado	1.75
Jonathan A	Face & Fill		Washington	1.75
Jonathan B	Face & Fill		Washington	1.69
Jonathan	Rising Sun	Extra Fancy	Washington	1.98
Jonathan	Red N	Fancy	Washington	1.60

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Red Triangle	Fancy	Colorado	1.50
Jonathan	Red Triangle	Choice	Colorado	1.07
Jonathan		Extra	Colorado	2.00
Jonathan		Fancy	Colorado	1.48
Jonathan		Choice	Colorado	1.25
Jonathan	Silver Crest	Extra Fancy	Colorado	2.20
Jonathan	Columbine		Colorado	2.25
Jonathan	Peony		Colorado	2.00
Jonathan	Blue Goose	Fancy	Washington	1.69
Jonathan	Red Triangle	Fancy	Colorado	1.50
Jonathan	Red Triangle	Choice	Colorado	1.07
Jonathan	Jim Dandy	Choice	Washington	1.31
Jonathan	Trout	Fancy	Washington	1.64
Jonathan	Pacific	Extra	Washington	1.99

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Oct. 25, 1922

Jonathan	Elephant	Fancy	Colorado	1.75
Jonathan	I.I.O.	Fancy	Idaho	1.78
Jonathan	I.I.O.	Choice	Idaho	1.88
Jonathan		Extra	Colorado	1.75
Jonathan		Fancy	Colorado	1.53
Jonathan	Sweepstakes	Extra	Colorado	2.25
Jonathan	Blue Goose	Fancy	Washington	1.85
Jonathan	Martha Wash.	Extra & Fancy	Washington	2.15
Jonathan	Northwest	Orchard Run	Washington	1.27
Jonathan	Northwest	Cgoice	Washington	1.35
Jonathan	All American	Fancy	Washington	1.88

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Casco	Extra Fancy	Washington	2.03
Jonathan	Mtn. Gem	Extra Fancy	Idaho	
Jonathan	Mtn. Gem	Extra Fancy	Idaho	1.31
		**********		
Oct. 24, 1922				
Jonathan		Extra	Colorado	2.09
Jonathan		Fancy	Colorado	1.65
Jonathan		Choice	Colorado	1.36
Jonathan	Blanket	Extra	Colorado	2.09
Jonathan	Tomahawk	Fancy	Colorado	1.86
Jonathan	Tomahawk	Choice	Colorado	1.86
Jonathan	Tomahawk	Fancy	Colorado	2.00
Delicious	Blanket	Extra	Colorado	3.28
Grimes Golden	Wild rose	Orchard Run	Colorado	1.15
Nonesuch	Wild Rose	Extra Fancy	Colorado	75
W. Banana	Wild Rose	Choice	Colorado	1.31
		**********		
Oct. 23, 1922				
Jonathan	Blanket	Extra Fancy	Colorado	2.23
Jonathan	Tomahawk	Fancy	Colorado	2.00
Jonathan		Extra	Colorado	2.05
Jonathan		Fancy	Colorado	1.71
Jonathan		Extra	Colorado	1.85
Jonathan	Silver Crest	Fancy	Washington	1.85
Jonathan	Wenatchee Monitor	Orchard Run	Washington	1.45
Jonathan		Choice	Washington	1.35

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Blue Goose	Fancy	Washington	1.88
Jonathan	H	Extra	Washington	2.14
Jonathan	H	Fancy	Washington	1.88
Jonathan	Casco	Extra	Washington	1.92
Jonathan	Casco	Fancy	Washington	1.72
Jonathan	Blue Goose	Fancy	Washington	1.84
Jonathan	Jim Hill	Extra	Washington	2.01
Jonathan	Jim Hill	Fancy	Washington	1.77
Jonathan	State Seal	Extra	Idaho	1.89
	**********			
Oct. 19, 1922				
Jonathan	Wild Rose	Orchard Run	Colorado	2.27
Jonathan	Se llars	Extra Fancy	Washington	2.11
Jonathan	Mupa	Extra Fancy	Washington	2.34
Jomathan	Paradise	Extra	Washington	2.29
Jonathan	Hail Special		Washington	2.01
Grimes Golden	Wild Rose	Orchard Run	Colorado	1.83
	**********			
Oct. 16, 1922				
Jonathan	Sweepstakes	Extra	Colorado	2.50
Jonathan	Snowshoe	Fancy	Washington	1.73
Jonathan	Ruby	Extra	Washington	2.02
Jonathan	Ruby	Fancy	Washington	1.65
Jonathan	Blue Seal	Extra	Washington	2.33
Jonathan	Skookum	Extra	Washington	1.65
Jonathan		Extra Fancy	Washington	2.30
Jonathan	Jim Hill	Extra Fancy	Washington	2.36
Jonathan	Circle W	Fancy	Washington	1.38

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Circle W	Fancy	Washington	1.30
Jonathan	Satisfactoree	Choice	Washington	1.51
Jonathan		Choice	Washington	1.50
Jonathan	Circle W	Choice	Washington	1.16
Jonathan	Circle W	Choice	Washington	1.30
Jonathan		Fancy	Washington	1.93
Jonathan		Extra Fancy	Idaho	1.86
Jonathan		Extra Fancy	Idaho	2.15
King David	Silver Crest	Extra Fancy	Colorado	1.64
King David	Sapphire	Extra	Washington	1.49
King David	Sapphire	Fancy	Washington	1.34

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Oct. 12, 1922

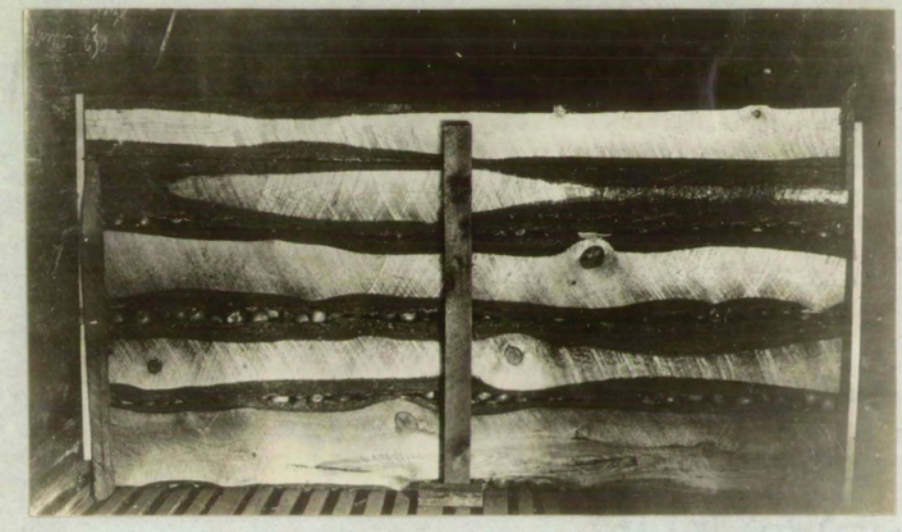
Jonathan	Blanket	Extra	Colorado	2.20
Jonathan	Tomahawk	Fancy	Colorado	1.85
Jonathan	Three E	Ex. Fcy, & C	Washington	1.75
Jonathan	Ames	Extra Fancy	Washington	2.40
Jonathan	Ames	Fancy	Washington	1.77
Jonathan	Ames	Choice	Washington	1.55
Jonathan	Circle W	Special	Washington	1.46
Jonathan	Cricle W	Choice	Washington	1.37
Jonathan	Sunny Slope	Fancy	Washington	1.59
Jonathan	Renn	Extra	Washington	2.29
Jonathan	Renn	Fancy	Washington	1.92
Jonathan	Renn	Choice	Washington	1.60
Jonathan	Beebe	Choice	Washington	1.46
Jonathan	Satisfactoree	Choice	Washington	1.69

Variety	Brand	Grade	District	Average Price Per Box
Jonathan	Blue goose	Fancy	Washington	2.29
Jonathan	Stock label	Hail Special	washington	2.15

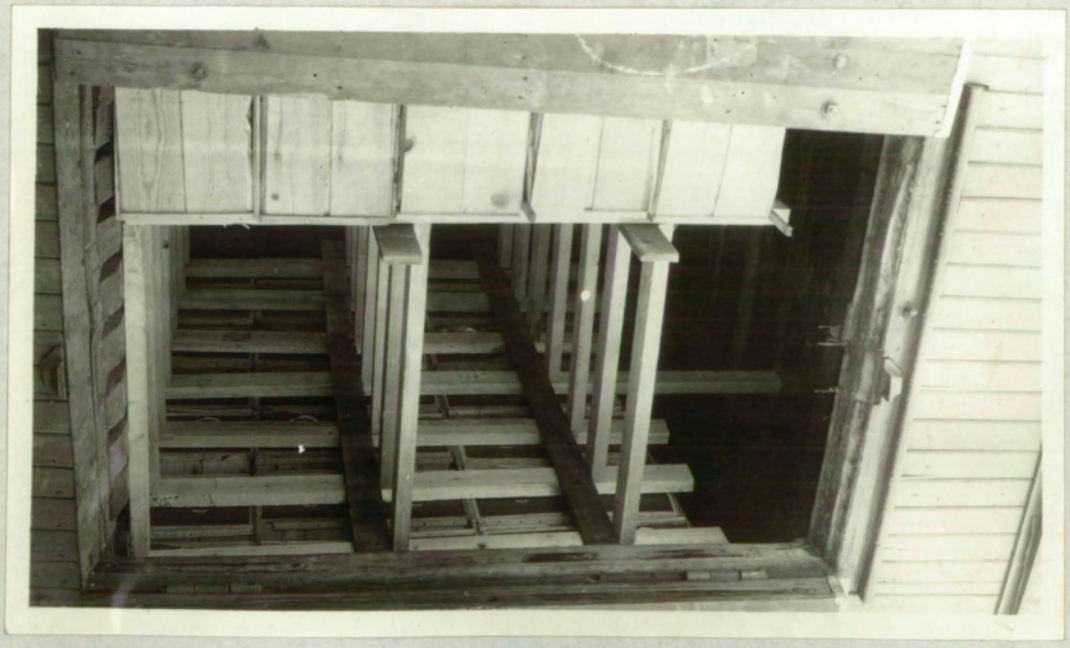
****

Oct. 11, 1922

Jonathan	Blanket	Extra	Colorado	1.97
Jonathan	Tomahawk	Fancy	Colorado	2.50
Jonathan	Red Crown	Fancy	Washington	1.89
Jonathan	Wenatchee Monitor	Orchard Run	washington	1.97
Jonathan	Omak	Hail Special	Washington	2.26



Gates or Partitions are Used to Separate Different Lots of Bulk Apples Within Cars.



Top

Showing The "Squeeze" or bulkhead Bracing of a Car of Box Apples.

PEACHES.

The commercial peach industry first started in the Delta District, about the first of the twentieth century. It has always remained an important district, because the crop comes on the market after all other peaches in the country are gone, and on this account, always bring good prices;

At a little later period, commercial growing was started in the Grand Valley. Today it is the most extensive section in the State. "Palisade Peaches" is a term that has been as popular as "Sunkist" oranges. This is due to the fact that the Palisade products are superior to nearly all others on the market.

Districts.

The suitable peach areas in the State are very limited, and have been confined to the Delta and Grand Valley districts. This is due to the fact that peaches are very susceptible to frost, and have to be grown in frost protected areas. The two sections comprise about 4,154 acres as shown on page No.2.

Delta District: In Delta County, the valley of the Northfork of the Gunnison and the smaller tributaries make up the larger portion of the district. This valley extends in an easterly direction from Delta for about 35 miles to just above Paonia, and 20 miles north to Cedaredte.

A branch of the Denver & Rio Grande railroad connecting with the main line at Grand Junction traverses

this district. The long haul thru the mountains, combined with the slow train service, places this section at somewhat of a disadvantage in making quick shipments.

Grand Valley: The Grand Valley district takes in the territory along the valley from Grand Junction to about two miles northeast of Palisade. It varies in width from less than a mile at Palisade to about five miles midway between Clifton and Grand Junction. The district immediately adjacent to Palisade comprises a large portion of the orchards.

The D.&R.G. railroad passes thru the Grand Valley, and while market facilities are much better than in the Delta district, it isstill very slow time. The completion of the Moffat tunnel will materially shorten the route. The average distance to the D.&R.G. stations for all orchards of the entire valley is 1.42 miles. Tgese short distances materially decrease the cost in hauling to station.

Varieties

The Elberta has been the leading variety in the peach districts of Colorado, as in nearly all other commercial sections. Altho there are over fifty varieties grown in the Grand Valley and the Delta districts, five-sixths of the trees are Elbertas. Other varieties are Carmen, Early Crawford, Talway, Triumph, Champion and J. H. Hale.

The popularity of the Elberta is due to the fact that it holds up so much better in shipment then any other variety. It is a freestone, attractive in appearance, splendid for canning, altho rather poor in quality.

The other varieties, with the exception of the J.H.Hale, will not hold up in transit, and for this reason, are not of commercial importance.

The J.H.Hale is said by many growers who raise it, to be a popular coming variety. It is a late season variety, about the same as the Elberta. It is much more attractive in color and blush than the Elberta. It is very firm and rated as holding up very good in transit.

Harvesting

The harvesting season begins approximately August 23rd, and lasts one month, or a few days longer. This varies a few days, according to the season. The Palisade district is the earliest in shipping. Shipping begins here about the above date and extends up to about September tenth to twelvth. In the Delta district, shipping begins about September 4th and extends to about the 25th or 27th.

Peaches are the most highly perishable of the fruits grown. When they have reached the right state of maturity, it is necessary to pick immediately and place them under refrigerations. The fruit swells up and fills out in a three or four day period just before reaching maturity. With the swelling, comes a cream color. When the fruit is will filled out and thisstage of color reached, it should be picked immediately. It is necessary for pickers to have good eyesight, because only the peaches which have reached this stage are peiked. The balance are left on the trees until mature, and then taken off. Generally three or four pickings are necessary to get all of the fruit.

In picking, canvas sacks, which dump at the bottom are used. Great care must be taken in handling the peaches to prevent bruising. Canvas gloves should be used by the pickers, and when dumping into the lug boxes, they should not let the fruit fall from the picking bag, but let it roll gently into the boxes. The lug boxes, when filled, are taken immediately to the packing house and packed out. If the fruit is to be shipped in bushel baskets, it is generally sorted in the orchard and hauled to the platform or refrigerator car, and loaded for shipment.

Shipping Season

Because the fruit is so perishable, it is generally loaded immediately into refrigerator cars. This makes the shipping season no longer than the harvesting season.

Storage

Peaches can not be stored over two or three days. This is only done when there is a car shortage or when the fruit is packed on the ranch in small quantities and is held until a carload is packed. This saves paying demurrage on cars, but it is generally thought to be cheaper paying demurrage and keeping the fruit under ice than letting it sit in the packing house and ripen. When stored, the fruit should be put in a very cool well ventilated place.

Packages

Colorado peaches are shipped in two packages; the one bushel basket and the standard peach box. The latter comes

in two heights, either 4 x 11½ x 18 or 4½ x 11½ x 18.

In arranging the peaches in the box, the diagonal pack is generally used. The rows are from 2 x 2 to 3 x 3 wide, and 4 - 4 to 8 - 8 long, two layers deep. Most of the fruit shipped out in boxes is wrapped. In the one bushel baskets, the fruit is either entirely jumble packed or sometimes, all but the top layer is jumbled, and that is ring packed.

Packing

Packing is boxes is done entirely in the packing houses, while in bushels, it is generally done in the orchards.

In the houses, canvas bottomed tables are used to dump the peaches on. The canvas slopes to the packer As the fruit is picked off the table, the balance rools down to the lower side, saving the packer from reaching far. A stand which holds two or three boxes is placed directly in fromt of the packer. The U.S. No. 1 peaches are packed according to sizes, which range from a numerical count of fifty to one hundred. The smaller peaches are put in a lug box and when this is filled, they are packed separate and stamped specials or pie peaches. The same thing is done with the firm ripe and the U.S. No. 2 peaches.

Packing in bushel baskets is generally done on tables in the orchard. The peaches are dumped onto the tables and the lower grades removed. They are then dumped into the bushels jumble pack, or the top layer ring packed and lidded ready for hauling.

Arrangement of Products in Car.

Boxed peaches are loaded in cars seven rows wide, nine to eleven layers high, and eight and nine stacks deep. Sometimes, especially with short cars, part of the stacks in one or both ends of the car are an extra layer high. That is, part of the load may be ten layers high and the balance nine layers. In that case, the first stack nine layers high would be double stripped the fourth and seventh layers. The extra strips raise this stack up a couple of inches, and hold the stacks ten layers high in place.

Generally, the third, sixth and top, or fourth, seventh and top, or fourth, eighth and top layers are stripped, to hold the boxes in place while the cars are in transit. In case there is no false floor, the floor is double stripped under each stack, to allow circulation of air. The rows of boxes are also placed one or two inches apart to allow circulation between rows.

When the cars are loaded, there is a space between the two stacks in the doorway, of about two and one-half to three feet. Gates are made similar to the gates used in bracing apple cars, as described on page No. 14. The bracing between the gates to prevent the boxes from sliding and the bracing to the ceiling to prevent the gates from buckling upward whild the cars are in transit, is also described on that page.

Bushel baskets are loaded in the cars 3-3 offset, three, four and sometimes five layers high the entire length of the car.

The rows are generally eighteen to twenty three bushels long, depending upon the length of car and size of load. Sometimes, the top layer does not extend the entire length of the car. In this case, to prevent the bushels from shifting while in transit, a 2 x 4 is placed crosswise of the car against the front stack.

Peaches are always shipped under refrigeration. The hatch covers are closed, the ice plugs in, and the drain pipes are left open to allow the melted ice to run out.

Grades.

The grades used for peaches during the 1922 season were those formulated the same way as the apple grades, which are described on page No. 15.

They proved to be very agreeable, with the exception of the peaches in U.S.No. 1 and No. 2 grades, which had reached a firm ripe condition.

Provisions were made by the Director of Markets to mark all peaches in the No. 1 grade which had reached a firm ripe condition U.S.No. 1 ripe, and those which had reached the same state in the No. 2 grade, U.S.No. 2 Ripe. These two grades should be made standard grades, and should be put into the grade books.

The grades are as follows:

U.S.No.1.

U.S.No. 1 shall consist of peaches of one variety which are firm, mature and well formed, free from growth

cracks, cuts, skin brraks and worm holes and from damage caused by dirt, scab, scale, hail, disease, insects or mechanical or other means.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of any lot may be below the requirements of this grade, but not to exceed one-half of this 10 per cent tolerance shall be allowed for any one defect.

U.S. No. 2.

U.S.No. 2 shall consist of peaches of one variety which are firm and mature and free from worm holes and serious damage caused by growth cracks, disease, insects, hail or mechanical or other means.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of any lot may be below the requirements of this grade, but not to exceed one-half of this tem per cent tolerance shall be allowed for any one defect.

U.S.No. 3.

U.S.No. 3 peaches shall consist of peaches which do not meet the requirements of the foregoing grades.

Ungraded.

When peaches are picked and sold as they come from the trees, nothing being added or removed, they shall be classified as "Ungraded".

Unclassified.

All lots of peaches which do not conform to any of the foregoing specifications of grade shall be classed and marked as "Unclassified".

Marking Requirements for Size.

The minimum size or numerical count of the peaches in any package shall be plainly labeled, stenciled or otherwise marked on the package.

"Minimum size" refers to the diameter (as hereinafter described) of the smallest peach. It shall be stated in terms of whole and quarter inches as 2 in. min., 2¼ in. min., 2¾ in. min., and so on, in accordance with the facts. In order to allow for variations incident to proper sizing, not more than 10 per cent, by count, of the peaches in any package may be below the minimum size specified.

Definition of Terms

As used in these grades:

"Firm" means mature, but not soft or overripe.

"Ripe" means ready for immediate consumption, but not soft or mellow. Ground color fully developed. Usually not suitable for storage or long distance shipment.

"Mature" means having reached the stage of maturity which will insure a proper completion of the ripening process.

"Well formed" means having the shape characteristic of the variety.

"Free from damage" means that the peach shall not be injured to an extent apparent in the process of proper grading and handling/

"Serious Damage" means an injury so serious as to cause a loss of over 20 per cent in the ordinary process of preparation for use, bruises affecting more than 10 per cent of the surface of the peach, or an injury which has caused an appreciable breaking of the skin except that well-healed growth cracks not over one-half inch in length shall not be regarded as "serious damage".

"Diameter" means the smallest diameter, measured thru the center of the peach, at right angles to a line running from stem to the blossom end.

Pests Affecting Grades.

Diseases: The worst fungus disease affecting peaches is the Brown Rot. It is a field disease, but more often does not show up until in transit. Rhizopus rot is a very similar disease in many respects, and is also serious to deal with.

The California Fruit Spot is probably next in importance. An occasional year it affects seriously an entire district, while the next few years it will hardly be noticeable.

Scab is the only other fungus disease affecting peaches, and it is not serious in Colorado as yet. Bacterial spot is a physiological disease, but is doing no damage to any extent thus far.

Insects: Twig borer is by far the worst insect affecting peaches. Thousands of boxes are dumped or placed in the lower grades because of the gumy fruit this insect causes.

Peach aphis is the only other insect found in the orchards, and it is not serious yet.

REPORT OF PEACH INSPECTION FOR SEASON 1922-23

District	% Cars First Grade	% Cars Under	% Cars loaded with Containers	% Cars Loaded Bulk	No.Cars First Grade	No.Cars Under	No.Cars loaded with containers	No.Cars Loaded Bulk	Total Cars Inspected
Delta	70	30	100	0	334	140	474	0	474
G.Junction	81	19	100	0	722	167	889		889
Upper Gr. Valley	0	100	100	0		2	2		2
Averages and Totals	78 %	22%	100%		1056	309	1365	0	1365

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Total Cars First Grade.....1056
Total Cars Under.....309
Total Cars loaded with containers..1365
Total Cars Loaded bulk.....0
Total number cars inspected.....1365

Percentage Cars First Grade.....78%
Percentage Cars Under.....22%
Percentage Cars Loaded with containers.100%
Percentage Cars Loaded bulk.....0

Tabulation of Figures.

Tabulation of the inspection data for the season 1922 shows that 1,365 cars of peaches were inspected within the State. Of these, 1,056 cars, or 78% met the requirements of the U.S.No. 1 Grade. 309 cars, or 22 per cent failed to meet these requirements, and were placed in lower grades.

Because of the car shortage during the 1922 season, a great many packages of peaches were left on the loading platform from a few hours to two or three days. Most of the fruit when first brought to the loading platforms, was U.S.No. 1 Grade. When left on the platform, it ripened rapidly and had to be placed in a lower grade. The percentage of No. 1 cars would have been materially increased if it had not been for this.

PEARS.

The commercial pear industry in the State of Colorado is about as old as the peach industry, starting during the first few years of the twentieth century. The lower Grand Valley is the only district of commercial importance. This is mostly due to the fact that the ravages of fire blight have discouraged growers from planting trees in other districts where the industry would otherwise thrive.

From a financial standpoint, pears seem to be about the best fruit for the Grand Valley to grow. They grow here to perfection, and the supply is seldom greater than the demand of any year.

Districts.

As stated above, the lower Grand Valley is the only district of commercial importance. It extends from Fruita to Palisade. About sixty percent of the fruit is raised in Grand Junction and Clifton territories.

This district has the same railroad facilities as the apple and peach districts in Grand Valley.

Varieties.

The Bartlet is the leading pear grown. Almost one-half of the trees are of this variety. Other varieties in the order of their importance are: Keiffer, Anjou, Winter Nellis, Flemish Beauty and Lawrence.

Of the first three varieties, forty-eight percent of the acreage is Bartlets, thirty-two percent Keiffers, and ten percent Anjous, or a total of ninety percent. The Bartlet is by far the most attractive and best quality, but is very susceptible to fire blight. The Anjou is next in quality, and the Keiffer last. The latter, however, is the most popular as a canning pear.

Harvesting.

The harvesting season begins about the middle of August, and lasts into the first part of November. This varies from a few days to a week or more some years, according to the season.

Generally speaking, pears should be harvested when the ground color is beginning to turn from a dull green to slightly yellow. Pears picked too gfeen do not mature properly, and those picked too ripe go down in transit rapidly. A good percentage of the fruit shipped is not used for immediate consumption. It is put in cold storage and sold out gradually. In storage, the ground color changes from a slightly turning green to a light yellow color.

Picking is done mostly in canvas picking sacks, the sam e as are used for apples and peaches. In picking, the stem should never be pulled off, but should be broken off where the stem connects to the spur. This is generally done by pinching with thumb and forefinger. It is the same method as that used in picking apples. The sacks, when filled, are emptied into picking or lug boxes.

The same care should be used in picking and hauling pears as peaches, apples or other fruit. Every bruise and cut is likely a place for some fungus or bacteria to enter and cause the fruit to decay.

Pears are packed in boxes or in one bushel baskets. If in the latter, they are generally packed in the field. If in boxes, they are hauled to a packing shed and packed.

Shipping Season.

This fruit is only placed in storage under refrigeration. There are no cold storages in the Grand Valley, so it is shipped immediately after picking. This makes the shipping season conform with the harvesting season.

Storage.

As stated above, there are no cold storages at the shipping point. The fruit is generally shipped out immediately, excepting at times when there is a car shortage, or other unforseen conditions arise. When stored for a short time, the fruit should be kept in a very cool, well ventilated place.

Packages.

Packages for pears are not standardized. Most of the boxes are the same size as the standard box in Washington. The inside dimension of this is 18" long, 11½" wide, and 8" deep.

In arranging the pears in the box, the diagonal pack is generally used. The rows are from 2 x 3 to 4 x 3 wide

and 4 - 3 to 7 - 7 long, and are packed according to numerical count. Most of the fruit shipped out in boxes is wrapped. In one bushel baskets, it is either entirely jumble packed, or sometimes, all but the top layer is jumble packed, that being ring packed.

Packing.

The packing of boxes is done mostly in packing sheds. In bushels, it is done both in the field and in the shed.

There are very few community packing houses in the Grand Valley district, and for this reason, most of the packing is done at the ranches. Barns, sheds, or most any building that has a roof over it, is used as a packing shed. The same methods are used as those in packing apples and peaches. After the fruit is packed, the packages are nailed and either loaded into cars immediately or stored for a few days.

Packing in bushels is generally done from graders or tables in the orchard or shed. Sometimes, when the crop is clean and free from disease, the picker drops the few culls to the ground, and the fruit which goes into the packing sack is dumped directly into the bushel. It is either entirely jumble packed, or jumble packed with the top layer ring packed.

Arrangement of Products in Car.

Boxes are loaded in the car seven rows wide, eight or nine stacks deep, and four or five layers high.

Gates are made and braced the same as described on page No. 14 to prevent the load from shifting. The second and top layers are generally stripped to prevent shifting of the boxes. The rows are placed a couple of inches apart, and either the floor is stripped or false floors are provided to allow circulation of air. The cars are shipped under refrigeration or standard ventilation as described on page No. 13.

Bushels are loaded 3-3 offset, four, five and sometimes six layers high, the entire length of the car. The rows are, generally speaking, eighteen to twenty three baskets long, depending upon the length of the car and the size of the load. Sometimes, the top layer does not extend the entire length of the car. In this case, to prevent the bushels from shifting, a 2 x 4 is nailed crosswise of the car against the front stack.

Grades.

The grades used for pears during the 1922 season, were those formulated the same as those described on page No. 15. The grades proved very satisfactory to the growers, shippers and buyers.

The season of 1921 was the first year of State inspection. Peaches and pears were not inspected during that season. During the 1922 season, the United States Department of Agriculture co-operated with the State in inspection, and joint Federal and State certificates were issued. Peaches and pears were then included with the other commodities inspected, and grades were formulated to cover these two fruits.

The grades on pears are as follows:

Colorado No.1

Colorado No. 1 shall consist of pears of one variety which are hard or firm, mature and well-formed, free from scale, bruises, skin breaks, except those necessarily caused in proper packing and handling, stings, worm holes, and from damage caused by abnormal russeting, dirt, sun scale, spray burn, freezing, disease, insects, hail or mechanical or other defects.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the pears in any lot may be below the requirements of this grade, but not to exceed one-half of this ten per cent tolerance shall be allowed for any one defect.

Colorado No. 2.

Colorado No. 2 shall consist of pears of one variety which are not badly misshapen and which are hard or firm, mature, free from dirt, scale, skin breaks, except those necessarily caused in proper packing and handling, worm holes, and from serious damage caused by sun scale, spray burn, freezing, disease, insects, hail or mechanical or other means, but stings shall be permitted in this grade.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the pears in any lot may be below the requirements of this grade, but not to exceed one-half of this ten per cent tolerance shall be allowed for any one defect.

Colorado No. 3.

Colorado No. 3 shall consist of pears which do not meet the requirements of the foregoing grades.

Colorado Combination Grade.

When Colorado No. 1 and No. 2 pears are packed together, the package must be marked "Colorado Combination No. 1 and 2". The combination grade must contain at least 25 per cent of pears which meet the requirements of Colorado No. 1. It shall be unlawful to remove any of the higher grade pears of any lot and then pack the remainder as "Colorado Combination No. 1 and 2."

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the pears in any lot may be below the requirements of Colorado No. 2, but not to exceed one-half of this 10 per cent tolerance shall be allowed for any one defect.

Colorado Orchard Run.

When Colorado No. 1, 2 and 3 pears are packed together, the package must be marked "Colorado Orchard Run","Colorado Combination No. 1, 2 and 3", or "Ungraded". In case the packages are marked "Colorado Combination No. 1, 2 and 3", they must contain at least 25 per cent of Colorado No. 1 pears, and it shall be unlawful to remove any of the higher grade pears of any lot and then pack the remainder as "Colorado Orchard Run", "Colorado Combination No. 1, 2 and 3", or "Ungraded", except that the large sizes of all grades may be removed and

the rest marked "Jumble" in addition to the grade mark.

Unclassified.

All lots of pears which do not conform to any of the foregoing specifications of grade shall be classed and marked as "Unclassified".

Marking Requirements for Size.

The minimum size, or numerical count of the pears in any package shall be plainly labeled, stenciled or otherwise marked on the package.

"Minimum size" refers to the diameter of the smallest pear, and shall be stated in terms of whole and quarter inches, as 2 in. min., $2\frac{1}{4}$ in. min., or $2\frac{1}{2}$ in. min., and so on, in accordance with the facts.

In order to allow for variations incident to proper grading and sizing, not more than 10 per cent, by count, of the pears in any package may be below the minimum size specified.

Worm Injury.

In order to secure the most uniform interpretation of these grades, the following distinctions are drawn between"healed stings", "Stings" and "worm holes". All are caused by the work or larva of the codling moth. Injury by this worm varies from the slight damage caused when the worm only punctures the skin, to that caused when it goes to the core and out again. The middle stages between these extremes are those which cause the trouble.

Definition of Terms.

As used in these grades:

"Healed sting" means a small, thoroughly healed over blemish which is only skin deep and does not extend into the flesh.

"Sting" means either a healed sting or the damage caused by the entry of the worm into the flesh a short distance before it dies. Such an injury is usually surrounded by a corky area; it must be well healed and shall not extend more than ½ of an inch into the flesh of the pear, including all discoloration.

"Worm hole" means any codling moth worm injury other than that covered by the term"sting"

"One defect" means any one specific injury, as limb rubs, hail, spray burn, etc. All codling moth or worm injury of any extent barred by the grade, whether stings or worm holes, shall be considered one defect, and limited to five per cent tolerance in any grade.

"Mature" means having reached the state of maturity which will insure proper completion of the ripening process.

"Hard" means mature, ready for long distance shipment or long period storage for the variety, but not fit for immediate consumption. Ground color usually green or slightly turning.

"Firm" means fully matured, ground color turning, sufficiently hard for shipment to reasonably distant markets, or for short storage period for the variety, yet suitable for early consumption.

"Ripe" means ready for immediate consumption but not soft or mellow. Ground color fully developed. Usually not suitable for storage or long distance shipment.

"Well formed" means having the shape characteristic of the variety.

"Free from damage" means that the pear shall not be injured to an extent apparent in the process of proper grading and handling.

"Serious damage" means an injury so serious as to cause a loss of over 20 per cent in the ordinary process of preparation for use, or bruises affecting more than 10 per cent of the surface of the pear.

"Diameter" means the greatest transverse diameter, measured at right angles to a line running from the stem to blossom end.

Terms Used in Certificates.

In order to promote uniformity, the following terms have been specifically defined by the U. S. Bureau of Markets and Crop Estimates. Altho some of these definitions are more or less arbitrary, they have been adopted by the Federal Bureau, and by a number of different State inspection services, with like meaning, and will so be used in all certificates issued on Colorado products.

Amounts.

Practically none	less than 1%
Occasional	1 or 2 per cent.
Few or Some	2 to 10 per cent.
Many	10 to 50 per cent.
Most	more than 50 per cent.
Practically all	at least 95 per cent.

Location in Car.

Layer: A course or stratum of the load in a car, one package in height, shall be known as a layer. It is parallel to the floor and ceiling of the car.

Stack: A pile of packages extending from one side of the car to the other, one package in length, shall be known as a stack. It is parallel to the end of a car.

Row: A pile of packages extending lengthwise of the car, one package in width, shall be known as a row. It is parallel to the side of the car.

Condition of Pack.

Tight: Meaning that the package is sufficiently filled to prevent any movement of the product within and to furnish the proper bulge with products and packages requiring a bulge.

Very tight: Meaning the very extreme of the condition described under Tight. That is, too tight for best results, and too much bulge for the good of the product.

Fairly tight: Meaning the step between Tight and Slack. That is, tight enough to prevent the specimens from moving within the package sufficiently to cause injury under ordinary handling conditions, but not as nearly ideal as a Tight pack.

Slack: Meaning that the pack is not sufficiently full or tight to prevent movement of the product within the package, which may or may not result in injury.

Very slack: May be used, meaning that the package is not full and a free movement of the product is permitted. The number of inches slack should be stated.

Immature: Meaning not fully matured. In some cases it would be desirable to use in connection with this term, the words "green" or "shriveled". The term "immature" should be used to indicate that the product was picked too green; it should not be used in connection with summer apples or green pears commonly marketed in a green condition, unless they are too green for useful purposes.

Hard: Meaning mature, ready for long distance shipment or long period storage for the variety, but not fit for immediate consumption. Ground color usually green or slightly turning.

Firm: Meaning fully matured, ground color turning, sufficiently hard for shipment to reasonably distant markets or for short storage for the variety, yet suitable for early consumption.

Ripe: Meaning ready for immediate consumption but not soft or mellow. Ground color fully developed. Usually not suitable for storage or shipment. The term "ripe" should never be used without a qualifying term or statement, as "firm ripe", "ripe but somewhat firm", "ripe but not dead ripe".

Dead ripe: Meaning mellow or becoming soft, and must go into immediate consumption.

Soft: Meaning the last step before decay sets in, and usually accompanied by more or less decay.

Condition: When fruits are removed from storage, scald and decay are defined as applying to condition rather than to grade, provided that satisfactory evidence be presented to show that these defects were not noticeable at the time of packing.

Pests Affecting Grades.

Diseases: Pear blight is far the most serious disease affecting this fruit. The disease itself is on the twigs of the trees, but wherever a tree is affected, the fruit is stunted, shriveled and flabby.

A disease which develops in the field but does not become very apparent until in transit or storage, is what is commonly called "hard spot". There is no true name for it as yet, and the cause is unknown. The disease leaves a sunken brown spot somewhat similar to"bitter"pit in apples, only often much larger.

Insects: San Jose scale is found to a limited extent in some orchards, but it has not become serious in this district as yet.

REPORT OF PEAR INSPECTIONS FOR SEASON 1922-23

District	% Cars First Grade	% Cars Under	% Cars loaded with Containers	% Cars Loaded Bulk	No.Cars First Grade	No.Cars Under	No.Cars loaded with Containers	No.Cars Loaded Bulk	Total No. Cars Inspected
Delta	0	100	100	0	0	8	8	0	8
Grand Junction	13	87	99.8	.2	98	642	739	1	740
Totals and Averages	16	84	99.9	.1	98	650	747	1	748

Total Cars First Grade.....98
Total Cars Under.. 650
Total Cars Loaded with containers..747
Total Cars Loaded bulk.....1
Total Cars Inspected.....748

Percentage Cars First Grade.....16
Percentage Cars Under.....84
Percentage Cars Loaded With Conatiners...99.9
Percentage Cars Loaded Bulk.. 1

Tabulation of Figures.

Tabulation of the inspection data for the season of 1922 shows that 748 cars of pears were inspected. Of these, 98 cars, or 16% met the requirements of Colorado No. 1 Grade. 650 cars, or 84% failed to meet these requirements, and were placed in lower grades. A good many cars shipped out were loaded part Colorado No. 1 and part Colorado No. 2. The cars placed in first grade were only those whose contents consisted entirely of No. 1 products. If an accurate check could be made of the mixed cars, the percentage of No. 1 grade would run much higher.

The disease described as "hard spot" was quite serious during the 1922 season. It probably affected the higher grades more than any other item.

POTATOES.

The potato industry in Colorado is the largest of any of the fruit and vegetable industries of the State. Potatoes are grown in practically every part of the State, both in the high and low altitudes. The potato shipping season extends thru twelve months of the year, and Colorado potatoes are found on practically all the southern, mid-west and south-eastern markets of the United States.

San Luis Valley District.

The San Luis Valley district is the largest shipping district in the State. It is located in the southern part of the State, along the La Jara, Conejos and Ril Grande rivers. It extends from Antonito to Del Norte, including Alamosa, Monte Vista and points along the San Luis Valley central railway.

Varieties: Both early and late varieties of potatoes are produced extensively in this district. However, the earlier varieties are in the minority.

The early crop consists chiefly of the following varieties, named in the order of their importance. Bliss Triumph and Irish Cobbler. The late crop consists of the following varieties, named in the order of their importance: Brown Beauty, Red McClure, (Peach Blow) Russett Burbank, and to a limited extent, Rural New Yorker.

Shipping season: The shipping season of this district begins approximately the middle of August and extends more or less irregularly until April or May. This long shipping season is possible because of a rather extensive storage system which has been developed by the growers and buyers. The dealers' storage houses, as a rule, are located on track side.

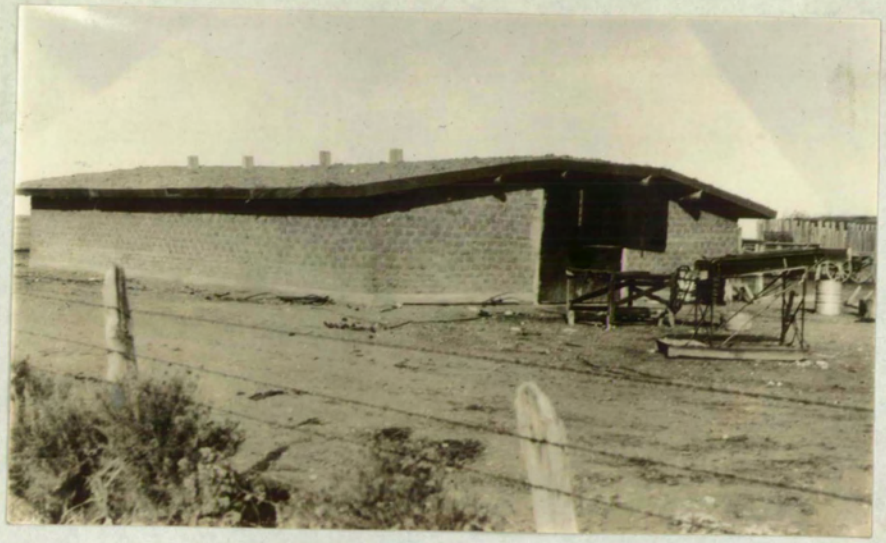
Greeley District.

The Greeley district is located in the north central part of the State, and is the second largest potato district. It extends along the main line of the Union Pacific Railway from Gilcrest to Pierce, and from La Salle to Kuner, and along the branches of the Union Pacific from Cloverly north to Purcell, and east to Barnesville, from La Salle to Dent, and along the Colorado and Southern from Greeley to Windsor, and all points on the Great Western from Eaton to Lory.

Important loading points: The important loading points for this district are, in order of their importance: Eaton, Ault, Greeley, Galeton, Gill, Lucerne, Windsor, Kersey, Severance, La Salle and Gilcrest.

Varieties: Large acreages of both early and late varieties are produced in this district. The important early varieties consist of Early Ohios, Bliss Triumph and Charles Downing. The important late varieties are Rural New Yorker, Pearl, Russet Rural and King.

Shipping Season: The shipping season for the Greeley district begins early in September and continues thru to the following May or June. This district is considered to have



An Adobe Storage Cellar. In the Foreground is a Thompson Sorter.

Potatoes Stored in a Straw Pile.

the longest shipping season of any potato district in the State. The long shipping season has been accomplished thru an extensive storage system, located on the various farms and at track side .

Grand Junction District.

The Grand Junction district is comparatively small, covering only a few loading points. The most important of these are Grand Junction and Fruita.

Varieties: This district is considered the only early district of the State, and the varieties grown are only early varieties, of which the Irish Cobbler is the most important.

Shipping Season: The shipping season of the Grand Junction district is short, beginning about the middle of July and lasting only a month or so. On account of the lack of storage facilities only a few cars are shipped after the first of November.

Delta District.

The Delta district is located in the western part of the State. The town of Delta is the geographical center of the district.

Important loading points: The important loading points of the Delta District, named in the order of their importance are: Montrose, Olathe, Delta and Austin.

Varieties: Both early and late varieties are grown in this district. The early varieties consist of the following, maned in the order of their importance: Charles Downing and Irish Cobbler.

The following are the late varieties named in the order of their importance: Peoples, Rural New Yorker and Russet Burbank.

Shipping Season: The shipping season of this district begins near the first of August and extends thru to the following April or May. Occasionally a few cars are shipped in June, but this is the exception rather than the rule.

Julesburg District.

The Julesburg district is located in the extreme northeastern part of the State, and comprises only a few loading points, of which Ovid and Julesburg are the most important.

Varieties: The potatoes produced in this district consist chiefly of early varieties, of which the following are the most important: Bliss Triumph, Rurals, Pearls and Early Ohios.

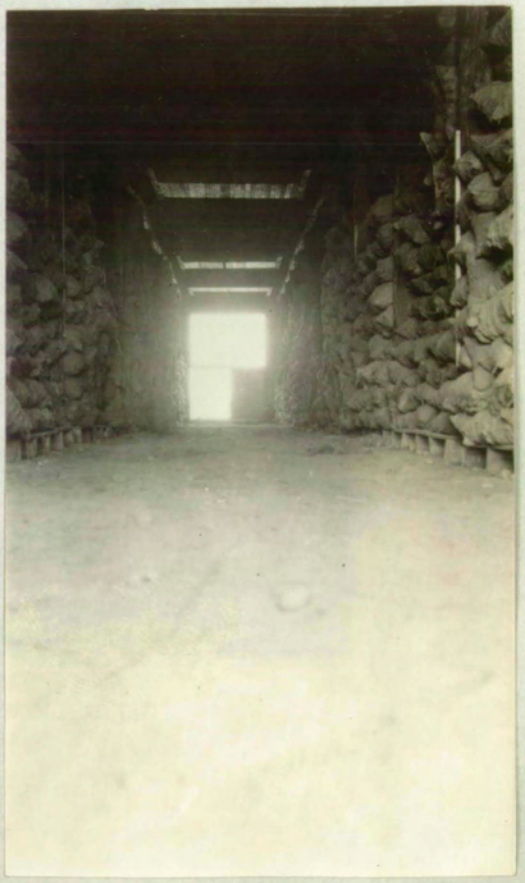
Shipping Season: The shipping season begins near the middle of September and continues quite heavily for a month, after which time it rapidly decreases.

Carbondale District.

The Carbondale district is located along the Colorado and Roaring Fork Rivers. It extends from Minturn to Debeque, and From Aspen to Glenwood Springs. It is a widely scattered district, and contains many small loading points. For convemience of discussion, it has been divided into three sub-districts, which are, in order of their importance: Carbondale, Eagle and Rifle. Each of these sub-districts comprise many loading points.

A Large Commercial Storage House at Center, Colorado

(Right) Interior View of A Commercial storage House at Center, Colorado



The Carbondale district is usually considered a late producing district.

Varieties: Early varieties are grown only in small quantities. The late varieties constitute by far the greatest acreage. The important late varieties are Russet Burbank, Red McClure and Peoples.

Shipping Season: The shipping season for this district begins in September and extends thru to the following April or May. An extensive storage system has been developed by the growers on their ranches. This enables the district to prolong their shipping season.

Fort Morgan District.

The Fort Morgan district is located in Morgan County, and is comparatively small. It extends along the Burlington railway from Bijou to Brush, and along the Union Pacific railway from Orchard to Snyder. The heaviest loading points are Fort Morgan and nearby stations. The stations located near the extreme boundaries of the district ship only a few cars.

During the 1921 season, this district shipped only a few scattered cars. The 1922 season witnessed a decided increase in acreage planted. This acreage was planted largely to early potatoes, and as a result, most of the shipments were made during the months of August and September. A few cars were shipped later, whenever the prices were such that the growers could load at a profit.

Varieties: Both early and late varieties are planted, but the earlier varieties are produced far in excess of the

late varieties. The early varieties, in order of their importance are: Irish Cobbler, Bliss Triumph and Early Ohios. The late varieties are, in order of their importance: Rural New Yorkers and Russet Rurals.

Harvesting.

The harvesting season begins with the Grand Junction district early in July, and is continued by the later districts of the State into October or until freezing occurs, to such an extent as to injure the tubers in the soil. Often the early districts are practically through before the late districts begin to harvest.

The methods employed in harvesting in the State are practically the same as those employed in other late producing sections of the United States. The digging is conducted by means of an ordinary potato digger which lifts the tubers from the soil and passes them over a linked chain and deposits them on top of the ground back of the digger. The purpose of the elevator or linked chain is to clean the potatoes somewhat and separate them from the dirt and trash. After a few rows have been dug, it is customary to follow with a crew of pickers and a sorting machine. The sorting machine in most cases, is the Thompson type, mounted on skids or runners, and is drawn back and forth in the field by means of horse power.

The pickers gather the tubers above a certain size into wire baskets. These baskets, when filled, are emptied on to the sorter, where an effort is made to eliminate the off-grade and cull tubers.

Removing Potatoes from Straw Pile Storage.

Unloading Potatoes from Farm Wagon Into Car.

The potatoes pass over a square mesh screen down into sacks. The sacks when full, are set on the ground. Immediately following the sorting machine is a man who sews the tops of the sacks. An effort is made to sew the market potatoes in such a way that they can be distinguished from the cull stuff. Sometimes the cull sacks are sewed crosswise, or the sewer when he finishes sewing a cull sack, tips that sack over so that it will lay on its side. This is not always practical, because at times other sacks tip over, and become mixed with the culls.

Whenever it is desired to store potatoes in farm storage after harvesting, it is customary to place only 60 or 75 pounds of potatoes to a sack. These sacks are not sewed.

Disposition of Product.

After the potatoes are harvested, they are either stored on the farm in farm storage, or hauled to track side storage, or loaded directly into cars for shipment.

If farm storage is used, the sacks are hauled to the potato cellar and dumped thru chutes down inwo bins into the cellar. This method of placing the tubers into the cellar often causes a large amount of damage thru bruising. In nearly every instance, farm storage is bulk storage.

Whenever potatoes are stored in track side storage, it is usually customary to store them in well filled sewed sacks. Track side storage houses are either owned by companies or individuals who lease or rent the places at so much per month per sack, or this storage may be owned and controlled by shippers who are storing potatoes for speculative reasons.

If potatoes are to be loaded directly into cars, they are placed into sacks and the sacks well filled. These sacks are hauled directly from the field and loaded into the car for shipment. This hauling and transporting of potatoes from the field to the cars is done largely by motor trucks.

Packages.

All potatoes shipped from this State are shipped in sacks. In most instances, second hand sacks are used. Whenever a shipper has a special brand of potatoes which he wishes to protect or is shipping potatoes in even weight sacks, it is customary to use new sacks. However, the percentage of new sacks used in handling the crop is much less than the percentage of second hand sacks.

The sacks vary in weight according to the district and time of season. The early crop is shipped in bags which hold approximately 100 to 105 pounds. The later crop is shipped in bags, and the begs are so filled that they contain from 110 to 120 pounds.

Grading and Sorting.

As stated above, some grading and sorting takes place in the field at the time the crop is harvested. If the crop is to be shipped directly from the field, more careful grading is conducted than if the crop is to be stored for later shipment. If the crop is to be stored for later shipment, it is customary to remove only undersized, decayed stock and trash. The real grading and sorting of the later crop in Colorado takes place in the farm storage or

Resorting Potatoes At Trackside.

sorting Potatoes At Warehouse.

track side storage. In most every instance, especially on the farms, the Thompson sorter is used. There are a few power Bogg's graders in use in the State. These are owned and controlled by shippers and are used for grading their products. Grading and sorting on the farms is a rather long drawn out process. During the winter months, when the price is especially good, or when the farmer has spare time, he will devote time to grading and sorting. It is customary to grade and sort a lot of potatoes just before they are transported to the car for shipment. This is desirable because potatoes are subject to rapid change of condition, and potatoes carefully sorted one month may fail to meet the requirements of the grade for which they were sorted next month, on account of the presence of various forms of decay.

Arrangement of Product in Car.

As stated heretofore, potatoes are shipped entirely in sacks. Bulk loading is not practiced at all. The arrangement of the sacks within the car is entirely dependent upon the time of season. During the summer and early fall season, sacks are arranged as follows: The lower layer is loaded six wide, three rows on each side of the car, and arranged in such a way as to form an aisle thru the center of the car. On top of this first layer is placed two layers flat, two rows wide, one row against each side of the car.

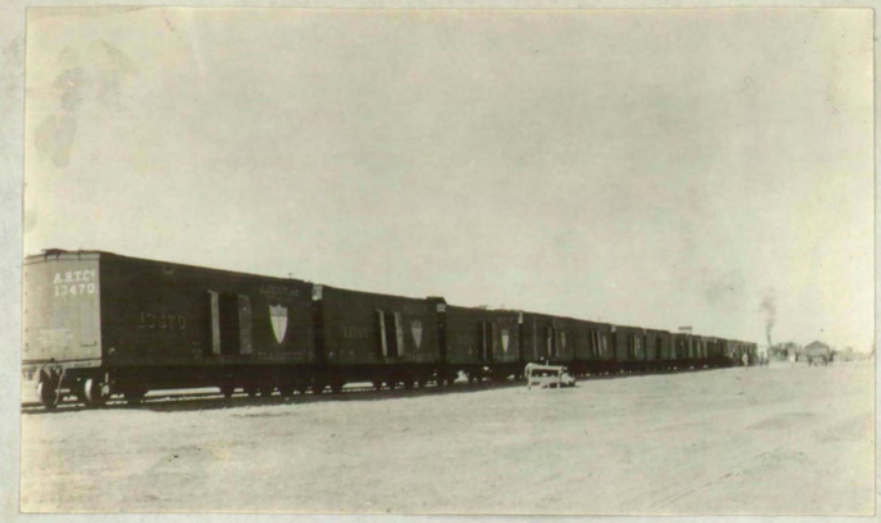
The above arrangement provides for very complete circulation of air, thus keeping the potatoes cool while in transit. (See photograph "Summer & Early Fall Method of Loading")

For fall loading, the bottom layer of sacks is loaded on end and is five wide. Each row of sacks in this layer is so arranged as to permit circulation of air between the rows. On top of this first layer is placed either two or three layers of sacks, three wide. This arrangement does not permit the free circulation of air that the summer and early fall method of loading permits, but it is ample for shipments at this time of the season.

As the weather becomes colder, the shippers are confronted with the risk of having cars caught in cold weather on the various mountain passes over which the railroads traverse. Thus, during this season, a different arrangement of loading is conducted. (See photograph "Late Fall and Early Winter Loading") In this arrangement, as you will note by the picture, the sacks are loaded flat, three wide on the bottom and four or five layers high. It is customary that the top and fourth layers be one and two rows wide respectively. The sacks are so arranged in order to prevent shifting while in transit. It will be noted that this arrangement does not provide for any ventilation. Further, it will be noted that it does permit the sacks to touch the walls of the car.

During the extremely cold weather, it is customary in many of the districts, to practice a method of loading which will prevent the sacks from coming into contact with the walls. (See photograph "Midwinter Method of Loading") In this picture, it will be noted, a pyramid form of loading is practiced. The car floor and walls are heavily papered

94a



A String of Refrigerators Waiting To Be Loaded With Potatoes.

Transferring the Contents of A Narrow Gauge Car to a Standard Gauge Car.

and a large amount of straw is placed on the floor. The bottom three or four layers of sacks are loaded two and one-half rows wide. The next to the top layer is two wide, and the top layer is one wide. The two upper layers are arranged so as to tie the load and prevent shifting of the load in transit.

During the late fall and winter months, it is customary to heat the cars before they are loaded. This heating is usually done by means of an oil heater placed within the car. When the car is loaded, the heater is removed and the door closed and sealed. Likewise, all of the ventilators and drain pipes are closed or plugged. During the winter season, it is customary to place an oil heater in each bunker of the car as they are being loaded. These oil heaters are fastened in the bunkers in such a way that they will not be shifted or moved while in transit. They are shipped with the car and kept burning until the car reaches a climate such that it will not be subject to freezing.

Grades.

The grades in use during the past two years are those which are recommended by the U.S.Department of Agriculture with the exception of Colorado Grade Standard. This grade was established after numerous hearings thruout the State. It was determined that an intermediate grade between U.S. No. 1 and U.S.No. 2 was practicable. The following are the grades which are in use:

U.S.No. 1.

U.S.No. 1 shall consist of potatoes of similar varietal characteristics which are not badly misshapen, which are free from freezing injury and soft rot, and from damage caused by dirt or other foreign matter, sunburn, second growth, growth cracks, hollow heart, cuts, scab, blight, dry rot, disease, insects or mechanical or other means.

The diameter of potatoes of round varieties shall not be less than 1 7/8 inches, and of potatoes of long varieties 1¾ inches.

In order to allow for variations incident to proper grading and handling, not more than 5 per cent, by weight, of any lot may be below the prescribed size, and, in addition, not more than 6 per cent, by weight, may be below the remaining requirements of this grade but not to exceed one-third of this 6 per cent tolerance shall be allowed for potatoes affected by soft rot.

U.S.No. 1 Small.

U.S.No. 1 small shall consist of potatoes ranging in s ize from 1½ inches to 1 7/8 inches in diameter but meeting all the other requirements of U.S.No. 1.

In order to allow for variations incident to proper grading and handling, not more than 25%, by count, of any lot may vary from the prescribed size, but not to exceed one-fifth of this tolerance shall be allowed for potatoes under 1½ inches in diameter. In addition, not more than 6 per cent, by weight,

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The Common Method Used When Loading Potatoes During the Summer and Early Fall.

The Method Sometimes Used When Loading Potatoes During the Summer and Early Fall.

may be below the remaining requirements of this grade, but not to exceed one-third of this 6 per cent tolerance shall be allowed for potatoes affected by soft rot.

Colorado Grade Standard.

Two thirds of the potatoes of this grade shall meet all requirements of U.S.No. 1. The remaining one-third shall meet the size requirements of U.S.No. 1 and shall meet the quality requirements of U.S.No. 2, except that no dry rot shall be permitted, aside from the tolerance.

In order to allow for variations incident to proper grading and handling, not more than five per cent, by weight, of the entire lot may be under the prescribed size, and in addition, not more than six per cent, by weight, of the entire lot may be below the quality requirements of U.S.No. 2, but not to exceed one-third of this 6 per cent tolerance shall be allowed for potatoes affected by soft rot.

Since there is not any tolerance allowed in the two-thirds which shall meet the requirements of U.S.No. 1. the entire tolerance shall be included in the remaining one-third of the lot.

U.S.No. 2.

U.S.No. 2 shall consist of potatoes of similar varietal characteristics which are free from freezing injury and soft rot and from serious damage caused by sunburn, cuts, scab, blight, dry rot, disease, insects or mechanical or other means.

The diameter of potatoes of this grade shall not be less than 1½ inches.

In order to allow for variations incident to proper grading and handling, not more than 5 per cent, by weight, of any lot may be below the prescribed size, and in addition, not more than 6 per cent, by weight, may be below the remaining requirements of this grade but not to exceed one-third of this 6 per cent tolerance shall be allowed for potatoes affected by soft rot.

U.S.Fancy No. 1.

U.S.Fancy No. 1 shall consist of potatoes of one variety which are mature, bright, well shaped, free from freezing injury, soft rot, dirt or other foreign matter, sunburn, second growth, growth cracks, hollow heart, cuts, scab, blight, dry rot, disease, insects or mechanical injury and other defects. The range in size shall be stated in terms of minimum and maximum diameters or weight following the grade name, but in no case shall the diameter be less than 2 inches.*

In order to allow for variations incident to proper grading and handling, not more than 5 per cent, by weight, of any lot may vary from the range in size stated, and, in addition, not more than 6 per cent, by weight, of any lot

* Such statements as the following will be considered as meeting the requirements: "U.S.Fancy No. 1,2 to 3¼ inches", "U.S. Fancy No. 1. 10 oz. to 16 oz.", "U.S. Fancy No. 1, 2 inches and larger", U.S. Fancy No. 1, 10 oz. and larger."

The Early Fall Method of Loading Potatoes In Cars.

Late Fall and Winter Method of Loading Cars.

may be below the remaining requirements of this grade, but not to exceed one-third of this 6 per cent tolerance shall be allowed for potatoes affected by soft rot.

Definition of Terms

As used in these grades:

"Mature" means that the outer skin (epidermis) does not loosen or "feather" readily during the ordinary methods of handling.

"Bright" means free from dirt or other foreign matter, damage or discoloration from any cause, so that the outer skin (epidermis) has the attractive color normal for the variety.

"Well shaped" means the normal, typical shape for the variety in the district where grown, and free from pointed, dumbell shaped, excessively elongated, and other ill-formed potatoes.

"Diameter" means the greatest dimension at right angles to the longitudinal axis.

"Free **** from damage" means that the appearance shall not be injured to an extent readily apparent upon casual examination of the lot, and that any damage from the causes mentioned can be removed in the ordinary process of preparation for use without appreciable waste in addition to that which would occur if the potato were perfect. Loss of the outer skin (epidermis) shall not be considered as an injury to the appearance.

"Badly misshapen" means of such shape as to cause a waste in the ordinary process of preparation for use of 10 per cent, or more, by weight, in addition to that which would occur if the potato were perfect.

"Free from serious damage" means that any damage from the causes mentioned can be removed in the ordinary process of preparation for use without a waste of 10 per cent, or more, by weight, in addition to that which would occur if the potato were perfect.

Factors Affecting Grade.

The factors which affect grades can be traced directly to cultural methods, seeds, insects and diseases. The chief factors which can be traced to improper cultural methods and poor seed are small size, misshapen and off-type tubers. The chief insects affecting grades are flea beetle larva, wire worm, and Colorado potato beetle. Of the four, the first is by far the most important. The chief diseases which affect grades are fusarium, rhizoctonia and scab.

100a

(25) Mid-Winter Method of Loading Cars. Note Amount of Straw on Floor; Papered Walls And Arrangement of Sacks So That They Will Not Touch The Walls.

(26) An Inspector of The Colorado Division of Marketing Inspecting A Car After It Has Been Fully Loaded.

REPORT OF POTATO INSPECTIONS FOR SEASON 1921-22

District	Percentage Cars U.S.No.1	Percentage Cars Under	No.Cars U.S.No.1	No.Cars Under	Total Cars Inspected	
San Luis	93	7	5724	410	6134	
Greeley	59	41	2823	1933	4756	
Carbondale	79	21	2113	556	2669	
Delta	88	12	2257	317	2574	
Grand Junction	89	11	232	29	261	
Julesburg	83	17	60	12	72	
Salida	87	13	36	5	41	
Miscellaneous	75	25	6	2	8	
Averages and Totals	80	20	13251	3264	16515	

Percentage U.S.No. 1.....80
Percentage Under.....20

Total Cars U.S.No.1.....13251
Total Cars Under.....3264
Total Cars inspected.....16515

REPORT OF POTATO INSPECTION FOR SEASON 1922-23.

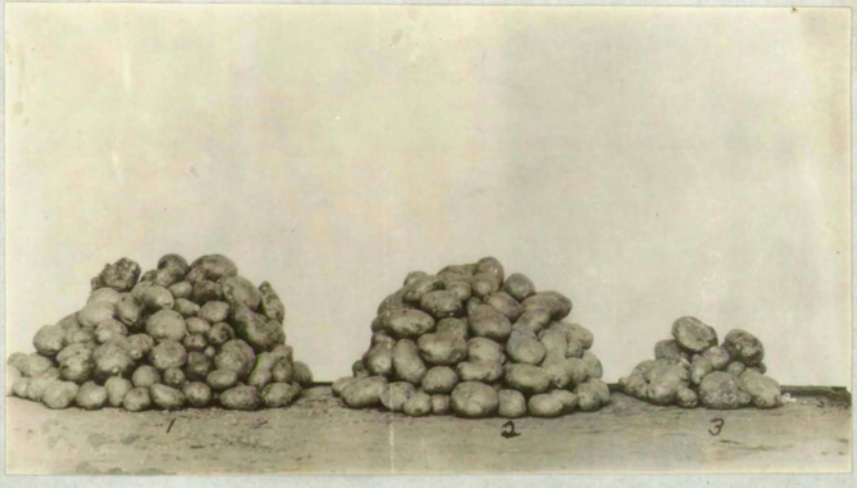
District	%Cars 1st Grade	% Cars Under	No.Cars 1st Grade	No.Cars Under	Total Cars Inspected
Delta	94	6	2096	145	2241
Grand Junction	73	27	402	151	553
Upper G.Valley	77	23	1736	510	2246
Greeley	64	36	2177	1200	3377
Monte Vista	92	8	5049	467	5516
Denver	41	59	23	33	56
Averages and totals	82	18	11483	2506	13989

Total Cars U.S.No. 1.....11483
Total Cars Under.....2506
Total Cars Inspected.....13989

Percentage Cars U.S.No. 1.....82
Percentage Cars Under.....18

102a

Common Blemishes Which Affect The Grade of Potatoes. (1) Dry Rot. (2) Second Growth and Pheasant Injury: (3) Fusarium Decay. (4) Second Growth. (5) Growth Cracks. (6) Cuts. (7) Decay. (8) Misshapen.



(1) An Ungraded Lot of Potatoes. (2) Carefully Graded Potatoes. (3) Culls.

CABBAGE.

The cabbage industry is restricted largely to the northern part of Colorado. Cabbage is produced in small quantities in several parts of the State, but the acreage is usually small, and can not be counted as a commercial proposition. For convenience of discussion, the cabbage district will be divided into sub-districts.

Brighton District.

The Brighton district is the heaviest cabbage producing district of the State. It extends from Hazeltine to Houston, and includes some points along the Burlington and Union Pacific railways, west of Brighton.

Shipping season: The district is one of the earliest producing districts of the State. The shipping season begins in July and continues quite heavily until the first of October. After this date, there are only a few scattered cars shipped.

Greeley District.

The Greeley district is second in order of importance in the cabbage industry. This district extends along the main line of the Union Pacific from Gilcrest to Pierce, from La Salle to Kuner, and along the branches of the Union Pacific Railway from La Salle to Dent, and from Greeley

north to Galeton and east to Matthews, along the Colorado and southern railway from Greeley to Windsor, and along the Great Western railway from Eaton to Windsor.

Shipping season: The shipping season of the Greeley district is somewhat later than any of the other commercial cabbage districts. Shipments usually begin about the first of August and continue quite heavy until the middle of October. After that date, shipments are somewhat scattered, depending very largely upon the price which can be obtained. Some of the 1922 crop was shipped as late as March 1923. Of course, this stock had been in storage.

Denver District.

The Denver district includes the territory located in and adjacent to Denver. Much of the cabbage shipped from this district is loaded at the loading platforms in Denver, and is produced on the river bottoms within a few miles of the city.

Shipping season: This district is the earliest producing district of the State. However, the early shipments are comparatively light. The season is practically the same as the Brighton district. That is, beginning the latter part of July and extending thru to the first of October. The Denver district is peculiar to other districts, because of the fact that much of the cabbage is shipped in mixed car lots with other vegetables. Comparatively few straight car loads are shipped each season.

Packages.

Crates: Cabbage, whenever packed in crates, is packed in a more or less standardized crate which has the following measurements: 22 x 21 x 24 inches. The approximate weight of these crates when packed with cabbage is 170 pounds. The number of heads per package depends entirely on the size of the heads packed. It is customary, however, not to pack heads weighing more than four pounds.

Sacks: Sacks are used only to a limited extent, as containers of cabbage. It is customary at times whenever only a small amount of cabbage is shipped in mixed cars, to place these heads in ordinary burlap sacks. Only on rare occasions are straight cars of cabbage shipped in sacks. It is customary to use the largest sacks obtainable whenever necessary to ship cabbage in sacks.

Methods of Loading Cars.

Aside from the loading platforms in Denver, the usual method of loading cars is direct from the wagon into the car. However, whenever cabbage is stored for late shipment, it is customary to store it as near the track side as possible. Sometimes, in this case, the cabbage is loaded directly from the point of storage into the cars.

Arrangement of Load in Car.

Crates: Whenever crates are used, they are loaded four wide and two or three layers high. Each layer is stripped

in order to prevent the crates from shifting in transit, thereby permitting free circulation of air within the car.

Sacks: On account of the limited use of this container, there is no standard method of arranging these packages within the car.

Bulk: The greater majority of the cars of cabbage loaded within the State are loaded bulk. It is customary, before a car is loaded, to place a ventilator the full length of the car. This is usually an A shaped board structure. This rack, as it is called, measures approximately three feet at the bottom and three feet from the floor to the apex. Whenever the A shaped structure is not used, it is customary to place a row of crates thru the center of the car. The purpose of the A shaped ventilator or row of crates thru the center of the car is to increase the circulation of air,and thereby keep the cabbage in better condition during the period of transit. It is customary, as stated above, to load the cars direct from the wagon. It requires three men to properly load a car; one to throw the cabbage from the wagon to the car, one located in the doorway to catch it as it is thrown from the wagon, and in turn, to throw it to the man located in the end of the car. There it is placed in position.

Amount Shipper Per Car.

On account of most of the cabbage being shipped during the summer season, it is customary to load approximately 25,000 pounds of cabbage to the car. This is the minimum

A Common Method Of Loading Bulk Cabbage Into Cars.

Some of the Effects of Rough Handling of Cabbage.

weight required by railroads during the warm months. This weight applies to shipments both in containers and in bulk. Whenever cabbage is shipped in bulk, it is customary to load it to a depth of three or four feet in the car.

Grades in Use.

The grades recommended by the United States Department of Agriculture are the grades which have been used thru the last two seasons in the packing and inspection of cabbage.

U.S.No.1.

U.S.No. 1 shall consist of heads of cabbage which are of one type, fairly firm and well trimmed, which are not soft, withered, puffy or burst; which are free from soft rot, seed stems and from damage caused by discoloration, freezing, disease, insects, or mechanical or other means.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by weight, of any lot may be below the requirements of this grade.

Any lot of cabbage consisting of heads of more than one type but which meet all other requirements of U.S.No.1 may be designated as U.S.No. 1 mixed.

U.S.No. 2

U.S. No. 2 shall consist of heads of cabbage which do not meet the requirements of the foregoing grade.

Size.

In addition to the statement of Grade, any lot shall

be classified as Small, Medium, Large, Small to Medium, or Medium to Large, if 75% by weight, of the heads conform to the following requirements for such sizes:

	Small	Medium	Large
Pointed	under 2 lbs.	2 to 4 pounds, incl.	over 4 lbs.
Other types	under 4 lbs.	4 to 6 pounds. incl.,	over 6 lbs.

Definition of Terms

As used in these grades:

"One Type" means that all the lot is pointed, Danish, Domestic, Savoy or Red, as the case may be. Pointed type includes such varieties as Early Jersey Wakefield, Charleston Wakefield, Early York, Winningstadt, and others which normally develop oblong, conical or pointed shaped heads. Danish type includes such late maturing varieties as Danish Ballhead or Hollander, Danish Roundheads, etc., and such early maturing varieties as Cannonball, Danish Summer Ballhead, etc., which normally develop hard, tight leaved, compactly formed heads. A head of any such variety even after trimming, will appear tight and smooth leaved around the basal portion and when viewed from the stem end, circular and regular in outline. Domestic type includes such varieties as Succession, All Head Early, Flat Dutch and others that are commonly termed Domestic, and which normally develop heads flat in shape and less compactly formed than those of the Danish type. The term also includes such varieties as Copenhagen, Glory of Enkhuizen and others that develop round heads, but which in solidity of head and storage qualities, are similar to the Flat Domestic type.

"Fairly firm" means that the heads yield slightly to pressure but are not soft.

"Well trimmed" means that ethe head shall have not more than four wrapper leaves attached and any portion of these leaves appreciably injured by worms or other means shall be removed, and the stem shall not be longer than one-half inch.

"Soft" means loosely formed or lacking compactness.

"Puffy" means that the heads are very light in weight in comparison to size and have air spaces in the central portion. They normally feel firm at time of harvesting but soften quickly. They are known as "Baloon heads" in certain sections.

"Burst" means any deep rupturing of the crown or any other portion of the head.

"Seed stems" means those heads which have seed stalks showing or in which the formation of seed stalks has plainly begun.

"Free from damage" means that the head shall not be injured to an extent readily apparent upon examination.

"Freezing injury" means a soft watery condition resulting from the formation of ice crystals in the tissues of any portion of the head. Usually the affected tissues have a glassy yellowish appearance and in severe cases may have a sour offensive odor. When severely injured in the central portion, such heads are variously termed "redhearts;" " blackhearts", "waterlogged", etc.

Factors Affecting Grade.

The factors affecting grade can usually be attributed tp diseases, close or careless trimming, insects and mechanical injury.

110a

A Car Half Loaded With Bulk Cabbage. Note A Shaped Ventilator and the Arrangement of the Sacks of Turnips. The Turnips Take the Place of Bulkheads.

Sacked Cabbage. A Method Seldom Used in Shipping Cabbage in Large Quantities.

REPORT OF CABBAGE INSPECTIONS FOR SEASON 1921-22

District	No.Cars U.S.No.1	No. Cars Under	Total No. Cars	% U.s.No. 1	% Under	
Brighton	845	8	853	99	1	
Greeley	712	4	712	99	1	
Denver	169		169	100		
Miscellaneous	35		35	100		
Averages and Totals	1761	12	1773	99 plus		

REPORT OF CABBAGE INSPECTION FOR SEASON 1922-23

District	% Cars 1st Grade	% Cars Under	No.Cars 1st Grade	No.Cars Under	Total Inspected
Delta	90	10	77	8	85
Canon City	50	50	1	1	2
Greeley	91	9	703	65	768
Denver	89	11	728	85	813
Monte Vista	100	0	2	0	2
Averages and totals	94	6	1511	159	1610

Total No. Cars U.S.No. 1.....1511 % Cars U.S.No.1.....84
Total Cars Under.....159 % Cars Under.....16
Total Cars Inspected.....1610

During the 1921 season, the Division of Marketing inspected 1,761 cars of cabbage, as shown by the preceding report. Of this amount, only 12 cars failed to meet the requirements of the U.S.No. 1 grade, thereby making the percentage of U.S.No.1 amount to over 99%. This very high percentage of No. 1's was accounted for by the fact that the season was especially favorable to the production of cabbage, and the shippers were desirous of shipping only the best quality.

The report on the preceding page shows that there were 1,610 cars of cabbage inspected during the 1922-23 season. Of this amount, 159 cars failed to meet the requirements of U.S.No. 1 grade, thereby making the percentage of U.S.No. 1 grade amount to 94% of the total. It will be noticed by comparison of the 1921 and 1922 crops that there was a larger percentage of under grade cabbage shipped during the latter season. This can be accounted for by the fact that the cabbage districts were visited by an exceedingly heavy hail after the heads had been formed. Then, too, the low prices offered for cabbage during the ordinary shipping season, caused many of the shippers and producers to stora a large quantity of stock, hoping for an increase in the market later in the season. During the months of December, January and February the price of cabbage increased somewhat and much of the stock was removed from storage. However, on account of the poor storage facilities it was necessary to trim much of this cabbage very closely. Further, some of the stock showed a decided amount of freezing injury. The freezing injury occurred either before it was harvested or after the stock was placed in storage. It can, therefore, be

ONIONS.

There are two districts in the State of Colorado which produce onions on a commercial basis. These districts are located adjacent to Delta and Greeley.

Delta District.

The Delta district is the larger of the two mentioned above, and includes Montrose and Olathe.

Varieties: The chief commercial varietys produced in this district are the Red and Yellow Danvers.

The harvesting season begins early in September and continues thru until the crop is harvested or heavy frosts occur.

The shipping season continues from the time the product is harvested until March or April of the following year.

Greeley District.

In comparison with the Delta district, the Greeley district is rather small. Most of the onions are grown in the fertile river bottoms of the Cache La Poudre and Platte rivers.

The varieties in this district are chiefly Red and Yellow Danvers.

The harvesting season begins in September and continues for a month or so until the crop is harvested.

The shipping season begins shortly after the product is harvested and continues thru to March or April of the

following year.

Harvesting.

The harvesting season for the State begins in September and continues as stated above, until the crop is harvested or until heavy freezing of the ground occurs.

The maturity of the onion or the time to harvest the onion is determined largely by the condition of the top. When the tops begin to dry and have a tendency to shrivel near the neck of the onion, and fall to the ground, it is an indication that the bulb has matured. It is not always necessary to harvest at this time.

The bulbs are harvested by pulling and piling in windrows in the fields. After placing the onions in the windrows, they are permitted to lay in the sun for some time in order to cure. This curing process has a tendency to increase the keeping quality of the product. After the onions are cured, they are topped by twisting or cutting the tops from the bulbs, after which they are sacked. The product is then loaded into cars for shipment or taken to the warehouse where it is stored.

Storage.

Onions are commonly stored either in common storage houses or in potato cellars. In either case, it is preferable that the storage house be dry and well ventilated. In most cases, the onions are stored in bags.

Packages.

It is customary to ship onions either in saxline or

burlap bags. In most instances, new bags are used. Of the two mentioned, the saxline bag is preferable, because it permits better ventilation and it shows off the product to an advantage. If, however, it is necessary to store the product in a moist place, it is preferable to use burlap bags because moisture has a tendency to rapidly break down the saxline bags. Usually 100 to 110 pounds are placed in each bag.

Arrangement of Product in Cars.

The onion shipping season coincides very closely with thw potato shipping season, and the arrangement of the sacks within the car is practically the same as the arrangement of potato sacks.

Early in the season, when the weather is warm, the sacks are so arranged as to permit ventilation. As the season becomes colder, the arrangement is such as to prevent freezing of the product while in transit. For further information, see arrangement of product within car for potatoes.

Grades.

The grades in use during the past seasons have been those which are recommended by the U.S.Department of Agriculture, and are as follows:

U.S.Grade for Northern Grown Onions.

Including all varieties grown in the United States, except Bermudas, Denias and Creoles.

U.S.No.1

U.S.No. 1 shall consist of onions of similar varietal characteristics which are free from doubles, scullions, and sprouted onions and practically free from dirt, tops or other foreign matter, and damage caused by disease, insects or mechanical or other means.

The diameter shall not be less than 1¼ inches.

In order to allow for variations incident to proper grading and handling, not more than 5 per cent, by weight, of any lot may be under the prescribed size, and in addition, not more than 5 per cent, by weight, of any such lot may be below the remaining requirements of this grade.

If any lot which meets the requirements of this grade contains more than 25 per cent, by weight, of onions with diameters from 1¼ inches to 1¾ inches, inclusive, the grade name shall be U.S.No. 1 Medium.

If any lot which meets the requirements of this grade contains more than 90 per cent, by weight, of onions with diameters greater than 2¼ inches, the grade name shall be U.S.No. 1 large.

U.S.Boilers.

U.S.Boilers shall consist of onions of similar varietal characteristics which are free from doubles, scullions and sprouted onions and practically free from dirt, tops or other foreign matter, and damage caused by disease, insects, or mechanical or other means.

The diameter shall not be less than three-quarters of an inch, or more than 1 3/8 inches.

In order to allow for variations incident to proper grading and handling, not more than five per cent, by weight, of any lot may vary from the prescribed size, and, in addition, not more than 5 per cent, by weight, of any such lot may be below the remaining requirements of this grade.

U.S.No.2

U.S.No. 2 shall consist of onions which do not meet the requirements of any of the foregoing grades.

Definition of Terms.

As used in these grades:

"Double" means an onion which, by splitting in two parts, has broken the outer skin.

"Scullion" means an onion which has a thick neck and a relatively small and poorly developed bulb.

"Practically free" means that the appearance shall not be injured to an extent readily apparent on casual examination of the lot.

"Diameter" means the greatest dimension at right angles to a straight line running from the stem to the root.

Factors Affecting Grade.

The factors affecting grade can be traced directley to weather and cultural conditions and to insects and diseases. Of the former, the factors most outstanding are size, doubles,

scullions and splits. The insects which cause the most damage are thrips and flea beetle.

The table on page No. 121 shows that there were 375 cars of onions inspected during the 1921-22 season. Of this amount, 61 failed to meet the requirements of the U.S. No. 1 grade.

The table on page No. 122 shows that during the 1922-23 season, 618 cars of onions were inspected. Of this amount, 16 failed to meet the requirements of the U.S.No. 1 grade.

In comparing the two shipping seasons, it will be noticed that the 1922-23 season witnessed the shipping of nearly 250 more cars of onions than the 1921-22 season. Further, there was a much higher percentage of U.S.No. 1 onions shipped during the latter season.

The two reports are not fair indications of the total amount of onions shipped from each district. Since onions and potatoes are grown in approximately the same districts, it is customary to ship mixed cars of onions and potatoes. Onions shipped in mixed cars are not included in the following reports.

REPORT OF ONION INSPECTIONS FOR SEASON 1921-22

District	% Cars U.S.No. 1	% Cars Under	No. Cars U.S.No.1	No. Cars Under	Total Cars Inspected
Delta	84	16	282	55	337
Greeley	85	15	29	5	34
Miscellaneous	75	25	3	1	4
Average and totals	84	16	314	61	375

Percentage U.S.No. 1.....84
Percentage Under.....16

Total Cars U.s.No.1.....314
Total Cars Under.....61
Total Cars Inspected.....375

REPORT OF ONION INSPECTIONS FOR SEASON 1922-23

District	% Cars U.S.No. 1	% Cars Under	No.Cars U/S.No. 1	No. Cars Under	Total Cars Inspected
Delta	98	2	556	10	556
Greeley	88	12	38	5	43
Denver	89	11	8	1	9
Averages and totals	97	3	602	16	618

Total No. Cars U.S.No. 1.....602
Total Under.....16
Total Cars Inspected.....618

Percentage Cars U.S.No.1 97
Percentage Cars Under.....3

MIXED VEGETABLES.

The development of the mixed vegetable industry in Colorado has been rapid. Thruout the State, wherever vegetables of any kind are shipped, there are found mixed vegetable cars. However, the important mixed vegetable shipping section is Denver and vicinity, and this discussion will refer mainly to this district.

District.

The Denver mixed vegetable district is located within a radius of ten miles of the center of Denver, chiefly along the fertile river bottom of the South Platte. This section produces many different vegetables, and it will not be advisable to describe each in detail, as to varieties, diseases, etc. The important vegetables, however, are cabbage, celery, cucumbers, carrots, turnips, rutabagas, onions, beets, tomatoes, etc.

Shipping Season.

The shipping season of these vegetables begins early in July and extends thru, more or less irregularly, until the middle of October. After this date, the shipments consist only of the hardier root vegetables, such as turnips, rutabagas, etc.

Preparation of Products for Shipment.

The preparation for shipment of mixed vegetables depends entirely upon the vegetable and the time of season that it is to be shipped. Bunched and bulb vegetables are carefully washed and tied in bundles. The mature root or bulb vegetables are shipped in an unwashed state in sacks or in other containers. Leaf vegetables, such as lettuce, spinack, parsley, etc., are loosely packed in containers, sometimes with ice. In the early season, celery is washed, trimmed and tied in bundles of twelve stalks to the bundle. Late celery is shipped in a more or less rough condition. The stalks are not trimmed, and many of the roots are left adhering to the stalks. Pod vegetables, such as beans, peas, etc., are sorted for trash, decay and badly formed pods. These are packed in crates or sacks. Other vegetables such as tomatoes, cucumbers and peppers are shipped in very much the same condition in which they are harvested.

Containers.

Root and bulb vegetables, especially during the late season are shipped in sacks. Leaf vegetables are shipped in crates, usually the California lettuce crate. It is customary to pack ice with these products in order to insure their keeping until they reach destination. Pod vegetables are shipped in crates or sacks. If crates are used, it is customary to use the California lettuce crate, to which additional slats have been added, in order to prevent the pods from falling thru the sides.

The other vegetables are shipped in various containers, depending entirely upon the containers which the shipper has available.

Arrangement of Products Within the Car.

There are three general methods of loading cars of mixed vegetables. They are: in containers, in bulk and in decks. Very often all three methods are employed in the loading of one car. The following is a brief description of each method.

When cars are loaded with crates, the containers are so arranged as to permit the maximum amount of ventilation. Ordinarily the containers are stacked in such a way that there is a space between each stack. Each layer or every second layer of crates is stripped with a narrow board crosswise of the car. This strip adds to the ventilation system, and also prevents the load from shifting while in transit. When a complete car is loaded with containers, it is necessary to brace the packages in the doorway, or by building bulkheads. Whenever cars are loaded with sacks the arrangement is much the same as is used for shipping potatoes. (See potato report).

Bulk loading in mixed cars is used for cabbage only. (See cabbage report)

The decking system of loading is used for all bunched vegetables such as bunched carrots, celery, onions, parsley, etc. The arrangement is as follows: Three rows of 2 x 4's are placed in the car, two against the wall and one thru the center of the car. To these 2 x 4 's are spiked cross pieces,

and upon these cross pieces are placed shelves or decks of inch material. The shelves or decks are usually twelve or fourteen inches apart. Upon the lower decks are placed the vegetables in a more or less upright position. Upon the top decks are placed large lumps of ice. The purpose of this ice is to melt and run down among the vegetables, keeping them in a cool condition while in transit. This system has proved to be very efficient, and is practiced by all of the mixed vegetable growers in the State. A straight car of vegetables is seldom shipped in this way. Usually either two or three of the above methods are used.

Grades.

The grades used during the past two seasons were practically all Colorado grades, as the United States Department of Agriculture. have very few recommended grades for mixed vegetables. The grades were as follows:

Colorado Grades for Bunched Vegetables.

Carrots, Beets,Turnips,Parsnips,Radishes and Green Onions.

Colorado No.1

Colorado No. 1 shall consist of vegetables of similar varietal characteristics, which are fresh, firm, with full green tops,and practically free from damage caused by disease, insects, or mechanical or other means.

Carrots, beets, butnips, parsnips, radishes and green onions shall be tied with reasonably uniform vegetables or merchantable size in each bunch.

addition, not more than 10 per centy, by weight, of any such lot may be below the remaining requirements of this grade, but not to exceed one half of this tolerance shall be allowed for any defect.

Colorado No. 2.

Colorado No. 2 shall consist of vegetables which do not meet the requirements of Colorado No. 1.

The report of page No. 129 shows that the Denver district shipped 1,054 cars of mixed products,with an average of 6.7 products per car. The Greeley district shipped 522 cars, with an average of 2.4 products per car. The mixed vegetable cars from the Greeley district were usually loaded with cabbage and potatoes, or with cabbage, potatoes and onions.

The report of page No. 130 is somewhat different from the 1921-22 report. It will be seen that the Denver district shipped 1,184 cars, an increase of 100 cars over the 1921-22 season. The Greeley and Delta district s shipped quite heavily. The cars shipped from Greeley, Delta and Canon City districts contained only two or three products per car.

MIXED VEGETABLE CARS INSPECTED DURING THE 1921-22 SEASON.

District	Number of Cars	Number of Products	Average Number of Products per car
Denver	1055	7075	6.7
Greeley	532	1263	2.4
Miscellaneous	143	345	2.1
Averages and totals	1729	8683	5.0

Total Number of cars inspected.....1729
Total Number of Products inspected.8683
Average number of products per car....5

The Decking System Within Cars. Commonly Used For Shipping Bunched Vegetables.

REPORT OF MIXED VEGETABLE INSPECTION FOR SEASON 1922-23

District	% Cars 1st Grade	% Cars Under	No.Cars 1st Grade	No. Cars Under	Total Cars Inspected
Delta	94	6	394	24	418
G.Junction	50	50	1	1	2
Upper Gr. Valley	14	86	1	6	7
Canon City	25	75	40	119	159
Fort Collins	65	35	817	445	1262
Monte Vista	664	46	7	4	11
Denver	52	48	1861	1182	3043

Total No. Cars U.S.No.1.....1861
Total No. Cars Under.....1182
Total No. Cars Inspected.....3043

% Cars U.S.No.1.....52
% Cars Under.....48

HEAD LETTUCE.

The head lettuce industry in the State of Colorado can be divided into two classes, namely that which is grown in and adjacent to Denver, and that which can be properly called Mountain Head Lettuce. The lettuce grown in the Denver district is of an inferior type, and is an early and late crop. It is used to fill in between the seasons when other districts are shipping comparatively light. Practically all of the lettuce of the Denver district moves out in mixed car lots. Only an occasional straight car is shipped. Therefore, this discussion will treat mainly upon mountain grown head lettuce.

The production of mountain grown head lettuce was comparatively new in 1921, and therefore, was restricted to only a few localities. The result of this crop could hardly be called a success. However, a few of the producers obtained large returns on a few acres, and on account of the extensive advertising which these few growers received, the industry was greatly increased in 1922. On account of this large increase in acreage, it will be necessary to discuss under some of the headings, the 1921 and 1922 crops separately.

1921 Season.

The production of mountain head lettuce during this season was restricted to four main districts, which are, in order of their importance: Buena Vista, Florence, Avon-Allenton and Westcliffe. On account of head lettuce re-

quiring a cool temperature, plenty of moisture and fertile soil, it is grown largely in small mountain valleys in the higher altitudes. Therefore, the above named districts are, in reality, packing and billing points. The crop is grown in the surrounding mountains, often times as far away as thirty miles or more. Comparatively small amounts are grown close to the loading points.

1922 Season.

The 1922 season witnessed an extensive increase in lettuce acreage in the State. As a result, it was necessary to establish many more packing and billing points. The districts in which they are located are, in order of their importance: Buena Vista-Salida, Glenwood-Minturn, Canon City-Pueblo, Moffat, Creed-San Luis Valley, Westcliffe and Divide. As in 1921, the crop was produced in the mountain valleys surrounding the loading and billing points.

Varieties.

Only one variety is grown on a commercial scale in the State, and this is the Los Angeles markets, or sometimes called New York Wonderful. In a few instances, the variety of Big Boston was grown. However, the trade soon demonstrated that there was no demand for this particular variety.

Shipping Season.

The shipping season on head lettuce begins just as soon as there are enough marketable heads within a district tp meet the requirements of the trade. It is customary

to ship the first few crates in small lots, usually by express or parcel post. The time varies somewhat with the district. The past two seasons has witnessed the shipments of small lots soon after the 20th of July. Shipments in car load quantities are made, in most districts, during the last days of July or the first days of August. Shipments during the first of the season are very light, gradually growing heavier, until the peak is reached, which is in the latter part of August. Shipments then decline somewhat until the close of the season, which is after the first few heavy freezes. These freezes usually take place in most mountain districts about the first of September.

Packages.

Head lettuce is shipped in crates. Dueing the 1921 season, no two shippers used the same type of crate. They were similar in many respects, but varied in dimensions. During the 1922 season, the lettuce crate was more or less standardized. The California lettuce crate was almost universally adopted. These crates measure 13" x 18" x 23 " (inside measurements) and weigh on an average, when properly packed, 75 pounds. The number of heads which these crates will hold varies considerably with the size of the head. This variation is from 2½ dozens to 6 dozens or more. The average is 3½ to 4½ dozens. It is seldom possible to obtain any quantity of heads which will pack less than 2½ dozens to the crate, and heads which will pack more than 6 dizens, are seldom desired by the market.

Method of Packing.

The following method of packing lettuce is used by practically all of the shippers. The crates are lined with paper, preferably waxed paper, which is water-proof, and does not become softened thru contact with water. A layer of lettuce is packed butts up on the bottom of the crate, the heads being packed as closely together as possible without injury to the heads. On top of this layer of lettuce is packed a shovelful or more of finely crushed ice. On top of this layer is placed another layer of lettuce, butts up, and the process continued until a crate is filled. Then on top is placed a large quantity of crushed ice. Then the whole is covered with paper, and forced down until the slats can be nailed.

Method of Loading Cars.

On account of it being necessary to pack ice within the crates of lettuce, all packing is done entirely in the packing sheds. These packing sheds are located adjacent to the railroad, in such a position that the cars can be loaded directly from the packing shed platform.

Arrangement of Load Within the Car.

Refrigerator cars are used universally for the shipments of lettuce. The iced crates are arranged in stacks in the car, usually five wide and four high. These crates are so spaced that the individual rows do not touch one another, thus providing for better circulation of air.

Each end of the car is loaded in the above manner. When the gangway is reached, this method of loading is continued if possible. If the space does not permit this arrangement, the crates are loaded in a more or less irregular manner. Sometimes, gates are placed in the gang-way to prevent jostling or shifting while in transit. After the car has been loaded in this manner, it is customary to place chunks of ice, varying from fifteen to forty pounds on top of the top layer of crates. It is considered that this ice will gradually melt while in transit, and the cool water will run down over the crates, and in this way will aid in keeping the products cool. Cars loaded in the above manner usually contain 316 crates. The weight of the contents will vary somewhat, but it is usually considered to be 25,000 pounds.

Grades in Use.

The grades used in the inspection of head lettuce during the past season are those which are recommended by the United States Department of Agriculture, and are as follows:

U.S. No. 1.

U.S.No. 1 shall consist of heads of lettuce of similar varietal characteristics which are fresh, well trimmed and fairly firm; which are not wilted, decayed or burst, and which are free from seed stems and doubles and from damage caused by freezing, tip burn, disease, insects or mechanical or other means.

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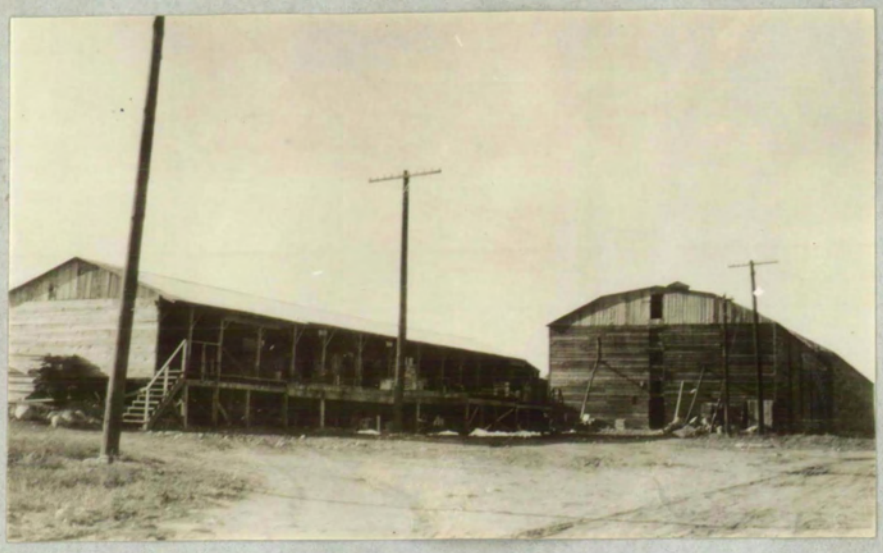

(34) The Type of Lettuce Packing Shed In Common Use in Colorado.

(35) A Well Packed Crate of Lettuce Ready for Final Icing and Nailing.

Each head of lettuce shall weigh not less than $\frac{3}{4}$ of a pound.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of any lot may be below the requirements of this grade, but not to exceed one-half of this tolerance shall be allowed for any one defect.

U.S.No. 2.

U.S. No. 2 shall consist of heads of lettuce of similar varietal characteristics which are fresh, well trimmed, and which are free from seed stems and from damage caused by freezing injury, tip burn, diseases, insects or mechanical or other means.

Each head of lettuce shall be of merchantable size.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of any lot may be below the requirements of this grade but not to exceed one-half of this tolerance shall be allowed for any one defect.

U.S. No. 3.

U.S.No. 3 shall consist of heads of lettuce whidh do not meet the requirements of any of the foregoing grades.

U.S.Fancy No. 1.

U.S.Fancy No. 1 shall consist of heads of lettuce of similar varietal characteristics which are fresh, well trimmed and firm; which are not wilted, decayed or burst, and which are free from seed stems and doubles and damage caused by

freezing, tip burn, diseases, insects, or mechanical or otherwise.

Each head of lettuce shall weigh not less than one pound.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of any lot may be below the requirement of this grade but not to exceed one-half of this tolerance shall be allowed for any one defect.

Definition of Terms.

As used in these grades:

"Similar varietal characteristics" means that the heads in any container have the same color and characteristic leaf growth. For example, lettuce of Iceberg and Big Boston types must not be mixed.

"Fresh" means crisp and green.

"Well trimmed" means that the head is protected by green wrapper leaves, but excessive wrapper leaves and those which have been noticeably injured by decay, worms, tip burn or other means have been removed.

"Firm" means that the head is compact and feels solid.

"Seed Stems" means those heads which have seed stems showing or in which the formation of seed stems has plainly begun.

"Fairly Firm" means that the head yields readily to pressure but is not soft or spongy.

Diseases Affecting Grade.

The most important disease affecting lettuce in the State is "tip burn", which is a physiological disease caused by

weather or soil conditions or both. This disease is usually followed by a bacterial disease commonly known as "slime". Since tip burn affects the leaves within the head as well as those on the exterior, it is often times very difficult to identify which heads of lettuce are affected with the disease, and for that reason, it is necessary in many cases, to eliminate heads of lettuce in the packing sheds, after they have been carefully gathered from the field and transported long distances.

Other diseases affecting head lettuce are of little or no consequence in this State.

Insects: To date, there has been practically no complaint of insects affecting or injuring head lettuce.

REPORT OF INSPECTIONS OF MOUNTAIN GROWN HEAD LETTUCE FOR SEASON 1 9 2 1 .

District	No.Cars U.S.No.1	No.Cars Under	Total No.Cars	% Cars U.S.No. 1	% Cars Under
Buena Vista	46	37	83	55	45
Florence	32	4	36	89	11
Avon-Allenton	4	16	20	20	80
Westcliffe	4	11	15	27	73
Total	86	68	154	58	44

Total Cars U.S.No.1.....86
Total Cars Under.....68
Total Cars Inspected....154

% Cars U.S.No.1.....65
% Cars Under.....44

REPORT OF MOUNTAIN GROWN HEAD LETTUCE FOR SEASON 1922.

District	No.Cars U.S.No.1	No.Cars Under	% Cars U.S.No.1	% Cars Under	Total No. of Cars
Buena Vista Salida	43	38	53	47	81
Glenwood Minturn	7	139	5	95	146
Canon City Pueblo	60	34	64	36	94
Moffat	33	44	43	57	77
Creed-San Luis Valley	33	33	50	50	66
Westcliffe	9	34	21	79	43
Divide	30	0	100	0	30
Averages and Totals	215	322	60	40	537

Tabulation of the inspection data of the 1921 season shows that there were 154 cars of head lettuce inspected. Of these, 86 or 56% met the requirements of the U.S.No.1 grade, and 68 cars, or 44% failed to meet these requirements, and were, therefore, placed in a lower grade. This does not necessarily mean that all of the lettuce in the cars of the lower grade was of inferior quality. It does mean, however, that there was enough lettuce of inferior quality in each car to cause it to be graded lower than U.S.No.1. Often times the cars of a lower grade contained as much as 90% of good U.S.No. 1 heads, but on account of the presence of a small percentage of inferior heads, it was necessary to place the car in a lower grade. In many casea, a little more careful sorting and grading would have resulted in the discarding of only a few heads in order that the car grade U.S.No.1.

Tabulation of the inspection data of the 1922 season shows that there were 537 cars of head lettuce inspected. Of this number, 215 or 40% met the requirements of the U.S. No. 1 grade, and 322 cars or 80% failed to meet the requirements of this grade. The same is true of the 1922 crop as with the 1921 crop. That is, many of the cars which failed to meet the U.S.No. 1 requirements contained a large percentage of inferior heads, but on account of the presence of only a few inferior heads, it was necessary to give these cars a lower grade.

A comparison of the data of the 1921 and 1922 seasons shows that shipments of lettuce increased approximately 400 per cent in 1922. Along with this increase, it will be noted

that the percentage of cars which graded U.S.No. 1 dropped from 56% to 40%. This drop in percentage of U.S.No. 1 cars can be attributed to two main causes. First, the production of head lettuce under unfavorable conditions such as points of low elevation in valleys where there was practically no rainfall and it was impossible to get sufficient water for irrigation, and second, the 1922 season witnessed the organization of several Farmers Co-Operative Shipping Associations, and on account of those being controlled by the producers, it was necessary for the management to handle practically all of the products which were brought to the platforms, thereby resulting in the shipment of a considerable amount of lettuce of inferior quality.

Markets.

On account of mountain head lettuce maturing during the late months of the summer at the time when comparatively small amounts are being shipped from other markets, it controls a very wide market. A few of the cars shipped to Denver were broken up and again shipped in mixed cars olots of vegetables. The majority of cars of lettuce, however, moved to points on the Missouri River, and east as far as Chicago and Cincinnati. In a few instances, cars have gone to Boston, New York, Washington and Pittsburgh. However, it can be said that the Central States is the true market for Colorado grown lettuce.

CELERY

The Celery industry of the State is comparatively unimportant when compared with the production of other vegetables within the State. However, on account of the time when the early celery is ready for market, and because of the superior quality of the late celery, there is a very ready market for all of the celery that is produced, and indications are that a larger acreage could be grown at a profit. The two important producing and shipping districts in the State are Denver and Brighton.

Districts.

The Denver district is the most important because of the fact that it produces both early and late varieties. The crop in this district is grown in the fertile river valley of the South Platte.

Varieties: The most important early variety in this district is the Golden Self-blanching. The most important late variety is the Giant Pascal. The harvesting season in this district begins about the first of August and continues more or less irregularly to the time of heavy freezing, and in some cases, after this date. However, celery harvested after this date is usually that which has been heavily covered with straw and dirt.

Brighton District.

The Brighton district is located approximately twenty miles north of Denver. The celery of this district, like the Denver district, is produced in the rich fertile bottom lands of the South Platte.

Varieties: This district differs from the Denver district in the fact that it is a late producing district. The Giant Pascal is the important variety grown.

Harvesting

The harvesting, as stated before, begins about the first of August and continues up to the time of heavy freezing, and in a few instances, it extends after this date. The condition which determines the time to harvest depends largely upon the length of the stalk and the demand. This pertains especially to the early varieties. The later varieties are seldom harvested before the stalks have reached a suitable length, and if it is a blanched product, when the stalks have reached a certain degree of whiteness and when the leaf stems have reached a proper stage of maturity. The harvesting methods are practically the same as those which are employed by any other producing section in the United States. The stalks are harvested either by hand or by means of machinery. The machine used in this case, is often an ordinary walking plow.

Preparations for Market

The methods of preparing celery for market varies, and depends upon the demand of the market. The market usually

wants celery washed and bunched, or in a rough state. When washed and bunched, the celery roots are trimmed closely. The broken discolored stems are removed, thus leaving a compact bleached stalk. It is customary to tie twelve uniform sized stalks into one bunch or bundle. Often broad blue cord is used in tying the celery, thus giving the bendle an attractive appearance. Celery prepared in this way is seldom crated, but is shipped in decked cars.

Rough celery is packed and shipped very much in the condition it is found when growing. A part of the roots are left adhering to the stalks. The stalks themselves are composed of a large majority of the leaf stems. Rough celery is ordinarily shipped in a crate commonly known as the Colorado Celery crate. These crates measure approximately 12" x 18" x 24" (inside measurements) and weigh on an average of fifty pounds per crate. As the season advances, celery which has been in storage is often times trimmed more closely than that described above. The close trimming is necessary in order to remove the decaying parts and discolored leaf stems.

Storage.

Only a comparatively small amount of celery is stored. The majority of that which is stored is stored in stores in the Denver district and there is no standardized method for storing.

Arrangement of Product Within Package.

The package or crate referred to above, is commonly used for celery shipments. The celery stalks are placed in

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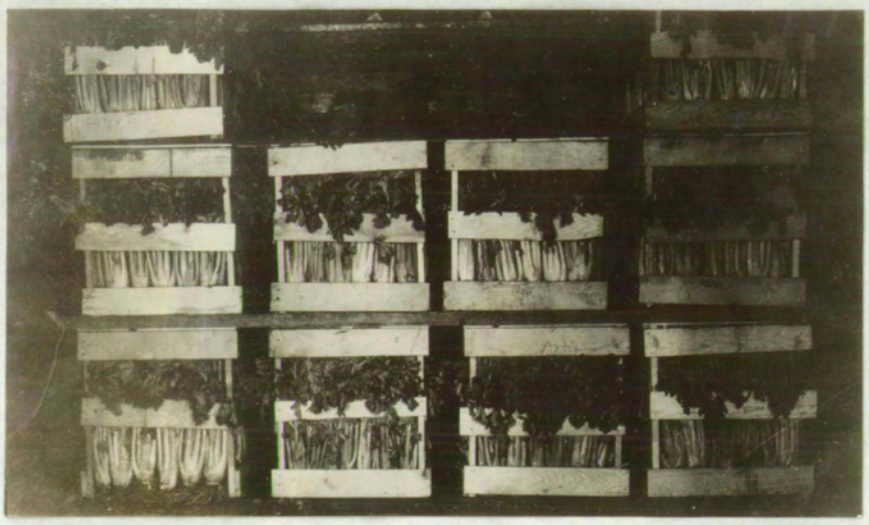

The Common Method of Loading Crated Celery in Cars. Note Roots Left on Stalks, Lower Left-hand Corner of Picture.

an upright position, the number of stalks to the crate varying with the size of the stalks from three to six dozens per crate.

Arrangement of Packages Within Car.

The crates are arranged within the car in order to permit a maximum amount of ventilation, and to prevent shifting while in transit. See photograph No. In this photograph you will notice that the packages are loaded four wide and two and three high, and that each individual layer is stripped. This photograph shows a load of rough, unwashed celery. The crate in the lower left-hand corner of the picture shows the amount of roots attached to the stalks.

Grades

The grades in use are those which are recommended by the United States Department of Agriculture, and are as follows:

U. S. Grades for Rough Celery

U.S.No. 1

U.S.No. 1 shall consist of well trimmed stalks of celery of similar varietal characteristics which are not pithy or wilted and which are free from damage caused by seed stems, freezing, disease, insects or mechanical or other means.

The diameter of each stalk shall be not less than 1 3-4 inches, measured 2 inches from the butt end of the stalk, and the length of each stalk shall not be less than 18 inches.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the stalks in any lot may be below the requirements of

this grade, but not to exceed one-half of this tolerance shall be allowed for any one defect.

U.S. NO. 2

U.S.No. 2 shall consist of stalks of celery which do not meet the requirements of U.S.NO. 1.

Color

Any lot of celery may be termed "blanched" if 90 per cent of the stalks show a whitish color throughout a distance of 6 inches from the butt end of the stalk. Lots not meeting requirements for blanched celery may be termed "green."

Definition of Terms.

As used in these grades:

"Well trimmed" means that the outside coarse and damaged branches have been removed and the portion of the root remaining attached to the stalks is not more than 3 inches in length.

"Stalk" means an individual plant.

"Similar varietal characteristics" means that the stalks in any container have the same color and character of growth For example, celery of the Giant Pascal and Golden Self Blanching types must not be mixed.

"Pithy" means that the branches have an open texture with air spaces in the central portion.

"Free from damage" means that the celery shall not be injured to an extent readily apparent upon examination,

"Seed stems" means those stalks which have seed stems showing or in which the formation of seed stems has plainly begun.

U.S. Grades for Unwashed Celery.

U.S.No. 1

U.S.No. 1. shall consist of neatly trimmed stalks of celery of similar varietal characteristics which are clean; which are not pithy, wilted or showing seed stems, and which are free from damage caused by freezing, disease, insects or mechanical or other means.

The diameter of each stalk shall not be less than 1½ inches measured 2 inches from the butt end of the stalk, and the length of each stalk shall be not less than 15 inches.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of the stalks in any lot may be below the requirements of this grade, but not to exceed one-half of this tolerance shall be allowed for any one defect.

U.S.No. 2

U.S.No. 2 shall consist of stalks of celery which do not meet the requirements of U. S. No. 1.

Color

Any lot of celery may be termed "blanched" if 75% of the stalks show a whitish color thruout a distance of 6 inches from the butt end of the stalk. Lots not meeting the requirements for blanched celery may be termed "green."

Definition of Terms

As used in these grades:

"Neatly trimmed" means that all outside coarse and damaged branches have been removed and the portion of the stem remaining attached to the stalks is not more than 2 inches in length.

"Stalk" means an individual plant.

"Similar varietal characteristics" means that the stalks in any container or bunch have the same color and character of growth. For example, celery of Giant Pascal and Golden Self Blanching types must not be mixed.

"Pithy" means that the branches have an open texture with air spaces in the central portion.

"Free from damage" means that the celery shall not be injured to an extent readily apparent upon examination.

"Seed stems" means those stalks which have seed stems showing or in which the formation of seed stems has plainly begun.

Factors Affecting Grades.

The chief factors affecting grades are the length of the product, turgidity of the product and the various insect and disease damages. Of the latter, celery blight is most important.

As will be noted by the report on page No. 150, the Colorado Division of Marketing inspected 121 cars of celery in 1921 and 190 cars in 1922. These figures are not indicitive of the total amount of celery shipped for each year, because large quantities are shipped with other vegetables in mixed cars. The foregoing figures do not include celery which was shipped in mixed cars.

REPORT OF CELERY INSPECTION FOR SEASON 1 9 2 2.

District	% 1st Grade	% Under	No. Cars 1st Grade	No. Cars Under	Inspected
Denver	93	7	170	14	184
Brighton	100	0	6	0	6
Average & totals	96	4	176	14	190

Total No. cars U. S. No. 1.....176 Percentage of Cars U. S. No. 1.....96
Total No. Cars Under..... 14 Percentage of cars under..... 4
Total No. Cars Inspected.....190

CAULIFLOWER.

The production of cauliflower is very closely associated with the production of head lettuce, and it has been demonstrated that wherever head lettuce develops well, that cauliflower can be grown at a profit.

Cauliflower has been grown in the Denver district for several years, but it has been grown successfully in the mountain districts only during the past two seasons.

On account of the different methods employed in handling cauliflower, in the Denver and in the Mountain districts, it will be necessary to discuss these districts separately.

Denver District.

Cauliflower is grown in the Denver district by the small truck farmers within driving distance of the city. It is seldom grown in large quantities by any one grower. However, because of the methods of assembling the products peculiar to the Denver district, it is usually possible for every shipper to obtain comparatively large quantities whenever he wishes it.

Shipping Season: Cauliflower is found on the market in this district early in July, and continues in marketable quantities until the middle of August.

Packages: There is no standard package in use in the Denver district for cauliflower. It is often customary to use head lettuce crates or crates of similar construction and

shape. In packing these crates, each head of cauliflower is carefully wrapped in paper and placed in layers. Heads are seldom forced into place by pressure, but are packed rather loosely. This is to prevent bruising or crushing. There are no standard number of heads packed to the crate.

Method of Loading Cars: Since cauliflower is never shipped in car load lots from this district, the crates are packed in cars containing other vegetables in the best possible manner to facilitate space and ventilation.

Mountain Districts.

Cauliflower is grown and shipped from practically all of the head lettuce districts. It is customary to combine the growing of head lettuce and cauliflower, and as a rule, they are packed and shipped from the same platforms.

Shipping season: Cauliflower is shipped in small quantities as early as the 10th of August, and continued more or less irregularly until after the heavy frosts, which come in these districts about the first of September.

Packages: Like the Denver district, the mountain districts have no standard crates, but use lettuce crates. Observations during the past seasons have shown that the mountain districts do not use the care in packing cauliflower that the Denver district does. Seldom, if ever, are the heads wrapped in paper, and they are more or less roughly handled.

Methods of loading cars: Cauliflower crates are usually stacked five wide and four high in each end of the car, and so arranged that each particular row does not touch

the others. It is also customary to strip each layer of crates in a stack in order to prevent the shifting of the crates while in transit. This particular loading arrangement is used in order that better ventilation may be provided for the product. Straight car loads of cauliflower are seldom shipped. It is customary to load cauliflower in with other products, such as lettuce and peas.

Grades used.

The grades used in inspecting cauliflower are those recommended by the United States Department of Agriculture, and are as follows:

U.S.No.1

U.S.No. 1 shall consist of neatly trimmed compact heads of cauliflower which are not discolored, ricey, fuzzy or overmature; which are free from damage caused by dirt or other foreign matter, bruises, disease, insects, mechanical or other means. Attached leaves shall be fresh and green.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, of any lot may be below the requirements of this grade but not to exceed one-half of this tolerance shall be allowed for any one defect.

U.S.NO. 2

U.S.No. 2 shall consist of heads of cauliflower which are free from serious damage caused by overmaturity, discoloration, dirt or other foreign matter, bruises, disease, insects, or mechanical or other means.

In order to allow for variations incident to proper grading and handling, not more than 10 per cent, by count, or any lot may be below the requirements of this grade, but not to exceed one-half of this tolerance shall be allowed for any one defect.

U. S. No. 3

U.S.No. 3 shall consist of heads of cauliflower which do not meet the requirements of the foregoing grades.

Definition of Terms:

As used in these grades:

"Compact" means that the flower clusters are closely united and the heads feel solid.

"Discoloration" means that the head is of some abnormal color.

"Ricey" means that the stems of the flower clusters have started to elongate, causing the clusters to separate and give the head a loose or open and sometimes a granular appearance.

"Fuzzy" means that the stems of the individual flower buds thruout the head have begun to elongate, giving the surface of the head a velvety or hairy appearance.

"Overmature" means a stage of growth which is beyond that of a compact, properly developed head. An overmature head usually is loose, ricey or fuzzy.

"Free from damage" means that the head is not injured to an extent readily apparent upon examination.

"Free from serious damage" means that the head is not injured to an extent readily apparent upon examination.

"Free from serious damage" means that any injury from the causes mentioned does not affect the edible quality of the head.

Factors Affecting Grade.

The principal factors affecting grade of cauliflower are: Overmaturity, Discoloration, Insects, and Mechanical damage. Of all the factors affecting grade, it is believed that the practice of permitting cauliflower to stand too long before it is cut is the most important.

The writer of this report is indebted to the Colorado Division of Marketing, the Department of Entomology and the Department of Horticulture of the Colorado Agricultural College for the information contained in this report.