

TRIAL SHIPMENTS OF OREGON LATE-CROP POTATOES

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Summary

1. An excessive number of samples of potatoes examined and weighed at the terminal and retail markets were below the minimum net weight stamped on the packages at the shipping point. The greatest number of underweight packages were found in burlap, open mesh, and cotton containers. As many as 40 per cent of the terminal samples and as high as 70 per cent of the retail samples were found to be underweight. It is believed that the high percentage of underweight occurring in burlap, open mesh, and cotton is caused by the fact that these containers are slightly smaller than the paper containers; therefore, less allowance for shrinkage is made than is necessary to maintain the minimum weight until the product is sold to the consumer.

2. The individual samples out-of-grade ranged from 7.9 to 13.4 per cent at the shipping points and 17.3 to 30.9 per cent at the terminal markets. Bruising was the most significant item among the condition defects, and soft rot was next in importance. Each of the defects on an average showed a marked percentage increase between the inspection at the shipping points and the retail stores. Light burn which was highly significant in the 1940-1941 surveys conducted by the Station was hardly noticeable in this study.

3. Rough handling of prepacked potatoes at the shipping points was a contributing factor to deterioration. A substantial part of the rough handling at the shipping point seemed unnecessary and could be corrected if the workers cooperated and the grading belts and sackers were adjusted more carefully. The use of loading pallets with sharp edges should be eliminated. This one correction would save many dollars for potato growers and shippers.

4. Each of the 13 cars of potatoes shipped in the course of this study averaged within grade, and the average weight of all containers was above minimums stamped on the packages. But the difficulty arises with the consumer who buys a package that is underweight and out-of-grade. It only takes a few dissatisfied customers to spoil a good market. Oregon potato growers cannot run this risk!

5. It was definitely determined that consumers prefer pre-packaged potatoes in the open type container. They are not willing to buy in the solid type paper containers when they have an opportunity to do otherwise. The potato industry has a great deal of work to do before it can convince the consumer that potatoes can be bought "sight-unseen." There is no reason why this cannot be

done. It may involve shifting the prepackaging operations from the shipping points to the terminal markets, thereby establishing the grade and quality at a point nearer the consumer. This procedure should be studied thoroughly before it is undertaken, because the cost of such an operation may prove to be in excess of the benefits derived.

6. Merchandising practices in selling potatoes have improved greatly since 1940. Prepackaging is gaining in importance, and there are few cases in which potatoes are displayed on sidewalks or front windows of retail stores. Furthermore, there is a better control of inventories. This is due in part to better buying practices and to a better regulation of the movement of supplies from the shipping points to the terminal and retail markets. Improvements are still possible if added attention is given to limiting the size of the potato display to the amount that can be moved within a day or two.

7. The official inspection records constituted the basis for the facts presented in this study. It is evident that there is a measurable amount of difficulty in obtaining a uniform inspection in the shipping, terminal, and retail markets. The extent of this difficulty was studied in part only during this survey, but defects were sometimes found first at the terminal markets although they existed at the shipping point. They were found later because of the changed appearance of the potatoes. Defects darken with time, and the loss in transit of dirt and moisture makes such imperfection easier to see. Additional facts are needed. They can be obtained and the results used to aid in the administration of the law. Until a complete set of facts is available, a definite improvement can be effected through a better understanding between shipping point and terminal inspectors of the market and grade requirements. Frequent trips to terminal and retail markets by shipping point inspectors would afford an excellent opportunity for these officials to re-examine their work and learn more about the markets for which they are grading.

Trial Shipments of Oregon Late-Crop Potatoes

By D. B. DELOACH and JAMES C. MOORE*

Introduction

THE over-all objective of the study on which this report is based was to determine the extent and causes for the deterioration in the quality of Oregon grown potatoes between the shipping point and the consumer. A secondary objective was to determine the extent of deterioration and weight loss in the several types of consumer packages now being used by shippers as a means of marketing their potatoes.

The growing importance of prepackaging perishable agricultural products, especially potatoes, has given rise to several problems:

- ▶ The suitability of the package as a carrying device.
- ▶ The suitability as a merchandising mechanism.
- ▶ The relative costs of marketing potatoes in prepackaged form compared to open bin displays and packaging in the retail markets.
- ▶ The relative merits of prepackaging the product at the shipping point as compared to the terminal market.

The first two problems were within the scope of this inquiry; the last two were not, but a sufficient number of observations were made in the course of this study to understand their importance and the need for work in that direction.

The members of the Oregon potato industry recognized the need for work of the type indicated. This was true also of the agencies concerned with the administration of the grading laws of two states included in the study. The participation of the Crown-Zellerbach Corporation in supplying perforated paper containers designed to permit an air circulation in the bags enabled the paper company to test its product. It also afforded the Experiment Station an opportunity to observe the effects of marketing potatoes in conventional containers as well as new packages that are being introduced into the marketing channels. The participation of the shippers, receivers, retail dealers, Oregon and California inspectors, and the Crown-

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Zellerbach Corporation provided the natural setting for an experiment and study of the work being done in marketing Oregon potatoes.

Methods and Procedure

Selection of shipping, terminal, and retail markets

The experiments were conducted in the late-crop potato producing areas of central Oregon, Crook, Deschutes, and Jefferson counties, and the Klamath Basin of southern Oregon and Northern California. The potatoes were shipped from central Oregon into Portland and from the Klamath Basin into the markets of Oakland, Sacramento, and San Francisco. The major part of the Oregon shipments of late-crop potatoes originate in the central Oregon and Klamath Basin areas. Likewise, the terminal and retail markets selected were the customary markets and the dispersion points for approximately 90 per cent of the potatoes produced in the two districts.

Under normal conditions more than 80 per cent of the late-crop potatoes from central Oregon and the Klamath Basin are marketed from October through February. It was decided, therefore, to run test shipments for the five-month period October through February. Five cars were shipped out of central Oregon into Portland at the rate of one car each month. Eight cars were sent from Klamath Basin points into the California markets at the rate of two cars each month for October, November, December, and January.

Loading

Insofar as practicable, the size of consumer package customarily sold in the retail markets of the experimental areas was used. On the other hand, an effort was made to send different types of containers into the retail markets even though such containers were not being used. An effort was made to get some check on each of the several different types of consumer packages in at least one of the test markets, regardless of whether it was tested in each of the three areas. With this basic idea in mind, a plan was worked out with the shippers and terminal receivers. This plan would enable them to cooperate in the survey but not disrupt the normal flow of potatoes by imposing a sudden change on the consumers that might cause them to go to other markets for potatoes.

The central Oregon to Portland shipments were made in 25-pound containers only. Since Portland consumers habitually buy a large number of U. S. No. 2 grade potatoes, one-fourth of each car was loaded with that grade and three-fourths with U. S. No. 1 grade.

The types of containers and the number of each shipped from central Oregon and the Klamath Basin were as follows:

<i>Number of packages</i>	<i>Weight of unit-pounds</i>	<i>Type of package</i>
200	25	Burlap
200	25	Open mesh
200	25	Cotton
200	25	Paper-non-perforated
800	25	Paper-perforated

The Klamath Basin carloads included:

CAR No. 1

<i>Number of packages</i>	<i>Weight of unit-pounds</i>	<i>Type of package</i>
100	100	Burlap
200	25	Burlap
500	10	Open mesh
200	25	Paper-perforated
500	15	Paper-perforated
500	15	Paper-perforated in bales

CAR No. 2

<i>Number of packages</i>	<i>Weight of unit-pounds</i>	<i>Type of package</i>
100	100	Burlap
200	25	Burlap
200	25	Paper-non-perforated
281	10	Open mesh
720	10	Open mesh in bales
400	25	Paper-perforated
480	15	Paper-perforated in bales
186	15	Paper-perforated

It was necessary occasionally to vary the number of containers of a given type to meet the requirements of the buyers, but no variation of significance occurred that would affect the results of the study.

Sampling

A random sample of 10 per cent of the packages to be loaded into the refrigerated car was taken at the time the packaged potatoes were removed from the sacker. Each package was weighed by the Experiment Station investigator, the weight recorded on a tag or on the container, and the package was passed on to the shipping-point inspector for official grading. Each potato showing a grade defect was weighed by the inspector and the total weight of potatoes with such defects was recorded for each container. Only one type of defect was recorded for each potato. In other words, the inspector segregated the potatoes according to the major defect, thereby avoiding any duplication. Following the official grading and the recording

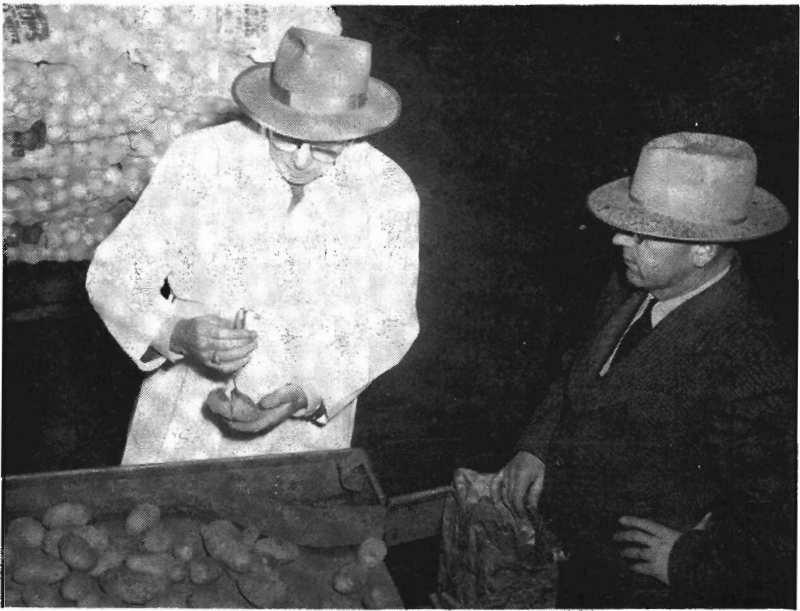


Figure 1. State-Federal inspectors weighing off-grade potatoes in the samples.

of the weight of the package and the amount of each defect in the individual package, it was loaded into the car with the uninspected packages. Care was taken to see that the inspected samples were well distributed throughout the load.

Despite the efforts of the investigators to encourage workers to follow normal procedures in weighing the potatoes placed in the containers, there was every evidence that the workers took extra care in filling the packages to the minimum weight stamped on the container. While this factor of careful weighing eliminated the possibility of checking the normal condition with respect to underweighing, it did not prevent an adequate check on shrinkage.

The terminal market inspection procedure was designed to check the samples taken at the shipping point and to establish thereby the average change in the condition of the samples which were considered representative of the contents of the car. All packages inspected at the shipping point were weighed at the terminal market. The weights were recorded. One half of the shipping-point sample was selected at random and inspected for grade defects. This, obviously, was a sample of the sample. It is justified on the basis that the

experiment sought to check the adequacy of the inspection and grading work being carried on at the shipping points. Since the shipping point samples were indicative of the contents of the cars, it is believed that the terminal inspections were representative of the cars of potatoes inspected, because the samples taken at the shipping point were well distributed throughout the car and the packages inspected at the terminal market were selected at random from the marked containers.

The inspection of the potatoes in the retail markets followed the same procedure as that at the shipping point and terminal markets, except that there were fewer samples to inspect. Inasmuch as no effort was made to delay the flow of potatoes from the producer to the consumer, the retail store inspection was less extensive than that carried on at the shipping point and terminal markets. An effort was made, however, to distribute the sample packages to various areas that were representative of the trade in the particular community. The distribution to the retail stores followed the plan in Table 1.

Table 1. DISTRIBUTION OF INSPECTED PACKAGES OF DESCHUTES POTATOES TO RETAIL STORES IN PORTLAND

Containers (25-pound packages)	Retail store number									
	1	2	3	4	5	6	7	8	9	10
<i>U. S. No. 1</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>	<i>Pack- ages</i>
Burlap	4	....	4	....	4	....	4	....	4	....
Open mesh	3	....	3	....	3	....	3	....	3	....
Conventional paper	3	....	3	....	3	....	3	....	3	....
Cotton .....	....	3	....	3	....	3	....	3	....	3
Ex paper	6	....	6	....	6	....	6	....	6	....
Exx paper .....	....	6	....	6	....	6	....	6	....	6
Bales*	4	....	....	....	....	....	....	....	4	....
<i>U. S. No. 2</i>	....	2	....	2	....	2	....	2	....	2
Burlap .....	....	....	....	5	....	....	....	....	....	....
Open mesh .....	....	....	....	....	5	....	....	....	....	....
Cotton .....	....	....	....	....	5	....	....	....	....	....
Ex paper	2	....	2	....	2	....	2	....	2	....
Exx paper	2	....	2	....	2	....	2	....	2	....
Total number of inspected pack- ages to each retail store	24	11	20	16	25	11	20	11	24	11

* Five 15-pound packages (balers).

The investigators made an effort to follow the usual time schedule for loading potatoes at the shipping point and moving them into the terminal and retail markets. For example, the cars loaded at Redmond on Monday or Tuesday were unloaded in Portland on Friday. These carloads were distributed to the retail stores not later than

Monday of the following week and were inspected on Tuesday and Wednesday. This made a maximum of nine days between loading and retail store inspection. A similar program was followed in the California shipments, with a maximum of twelve days elapsing between the loading and the retail store inspection.

A statistical summary of the official records of inspection that were obtained in the course of this study are included in the appendix.

Results of the Test

Shrinkage

The loss of weight in potatoes between the time the product is packaged at the shipping point and the time it is sold to the consumer has always been a source of controversy in the potato trade. Producers who operate their own cooperative shipping associations have often been reluctant to allow for shrinkage so their product will arrive in the retail markets with a net weight equal to the amount stamped on the package. Where producers sell to shippers, there has been a tendency to scoff at the claims of these buyers that weight loss constitutes an important item in their marketing costs. Since the Oregon Agricultural Experiment Station has found weight loss, as indicated by samples, an important item in the 1940-42 studies, the question was re-examined in its relation to consumer-size packages.

The average weight of all packages weighed at the shipping and terminal markets in this survey was above the net weight stamped on the container (Table 2). This was true also of the total of all samples weighed in the retail markets in San Francisco, Oakland, and Sacramento.

In Portland, however, the retail store samples in burlap, open mesh, and cotton types of containers in the U. S. No. 1 grade potatoes averaged below the designated shipping weight. The burlap, cotton, and the Ex types of paper containers in the U. S. No. 2 grade also averaged below the designated shipping weight. It is significant that a relatively large percentage of the individual packages were below weight even though the average of all samples was above the net weight stamped on the containers. The highest percentage of underweight of individual samples was found in the Portland shipments, which is shown in Table 2.

There is a noticeable tendency among sackers to pack a higher percentage of excess weight in consumer packages than in the 100-pound packages. This is a natural condition that results from the inability of checkers to get exact weights without too much loss of

Table 2. PERCENTAGES OF SAMPLES UNDER WEIGHT, BY TYPE OF CONTAINER

	Consumer-size packages						100-pound sacks
	Burlap	Open mesh	Cotton	Ex	Exx	Regular	Burlap
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
<i>Redmond-Portland</i>							
U. S. No. 1							
Shipping	0	0	1	5	4	4	*
Terminal	21	34	23	5	7	3	*
Retail	40	70	59	17	30	21	*
U. S. No. 2							
Shipping	0	0	0	0	0	0	*
Terminal	23	26	40	4	1	0	*
Retail	60	*	50	33	3	0	*
<i>Klamath Basin-San Francisco</i>							
Shipping	0	2	*	0	0	*	5
Terminal	10	8	*	8	4	*	39
Retail	27	11	*	1	0	*	*
<i>Klamath Basin-Oakland-Sacramento</i>							
Shipping	3	2	*	0	0	0	*
Terminal	19	3	*	4	9	1	*
Retail	12	0	*	1	4	0	*

* Indicates no sample.

time in selecting potatoes of a size to meet the weight requirements. Since the customary type 100-pound burlap containers are not ordinarily sold to consumers but are used to fill open-bin displays from which potatoes are sold in bulk, under weight in these packages at the shipping point is less serious from the consumer's standpoint than under weight in prepackaged consumer-sized units.

The weighted average weight of potatoes in samples by type of container at shipping point, terminal, and retail markets is shown in Tables 3, 4, and 5.

Table 3. WEIGHTED AVERAGE WEIGHT OF POTATOES IN SAMPLES, BY TYPE OF CONTAINER, REDMOND TO PORTLAND SHIPMENTS

Container	U. S. No. 1 grade			U. S. No. 2 grade		
	Shipping point	Terminal market	Retail store	Shipping point	Terminal market	Retail store
	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces
Burlap	25-8	25-5	24-15	25-8	25-3	24-14
Open mesh	25-6	25-2	24-12	25-6	25-2	*
Cotton	25-6	25-3	24-12	25-9	25-0	24-9
Paper Ex	25-11	25-9	25-2	25-10	25-4	24-11
Paper Exx	25-10	25-8	25-0	25-10	25-6	25-3
Regular paper	25-11	25-10	25-6	25-12	25-8	25-6

* Indicates no sample.

Table 4. WEIGHTED AVERAGE WEIGHT OF POTATOES, U. S. NO. 1 GRADE, BY TYPE OF CONTAINER, KLAMATH BASIN TO SAN FRANCISCO

Container	Shipping point	Terminal market	Retail store	Average weight loss or gain between shipping point and retail store
	Pounds-ounces	Pounds-ounces	Pounds-ounces	Ounces
Burlap, 25 pounds	25-6	25-5	25-0	-6
Paper Ex, 25 pounds	25-9	25-7	25-8	-1
Paper Exx, 25 pounds	25-11	25-9	25-11	0
Paper Ex, 15 pounds	15-11	15-9	15-11	0
Paper Exx, 15 pounds	15-9	15-9	15-6	-3
Paper Ex, 15 pounds baled	15-6	16-3	15-11	+5
Paper Exx, 15 pounds baled	15-9	15-8	15-8	-1
Open mesh, 10 pounds	10-3	10-3	10-2	-1

Table 5. WEIGHTED AVERAGE WEIGHT OF POTATOES, U. S. NO. 2 GRADE, BY TYPE OF CONTAINER, KLAMATH BASIN TO OAKLAND AND SACRAMENTO

Container	Shipping point	Terminal market	Retail store	Average weight loss or gain between shipping point and retail store
	Pounds-ounces	Pounds-ounces	Pounds-ounces	Ounces
Burlap, 25 pounds	25-11	25-11	25-5	-6
Paper Ex, 25 pounds	25-11	25-9	25-9	-2
Paper Exx, 25 pounds	25-9	25-9	25-8	-1
Paper regular, 25 pounds	25-9	25-9	25-9	0
Paper Ex, 15 pounds	15-11	15-9	15-8	-3
Paper Exx, 15 pounds	15-11	15-9	15-8	-3
Paper Ex, 15 pounds baled	15-5	15-6	15-5	0
Paper Exx, 15 pounds baled	15-9	15-7	15-8	-1
Open mesh, 10 pounds	10-6	10-8	10-8	+2

Condition defects

Dry rot, soft rot, broken, bruises, cuts, and light burns are defects that will ordinarily develop while the potatoes are enroute from the shipping point to the consumer. These defects can and often do exist at the time the potatoes are packaged at the shipping point. But the extent to which these defects increase during the time the potatoes are being marketed indicates the efficiency of the handling methods and the effectiveness of the package in protecting the potatoes under accepted standards of marketing.

The tabulations from the official inspection records at terminal and retail markets showed that an unusually high percentage of the individual samples had condition defects in excess of the legal tolerance for the grade of potatoes examined (Table 6). The major difficulty seemed to lie in rough handling of the potatoes which caused an exceptionally heavy amount of bruising and was possibly responsible for some of the soft rot. Efforts to establish some statistical

Table 6. PERCENTAGE OF ALL SAMPLES OUT-OF-GRADE BY TYPE OF DEFECTS AND PERCENTAGE OF ALL SAMPLES OUT-OF-GRADE FOR ALL DEFECTS*

	Total samples	Dry rot	Soft rot	Broken	Bruised	Cuts	Samples out-of-grade for all defects
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
<i>Redmond-Portland</i>							
Shipping	794	1.5	4.4	0.5	0.0	1.5	7.9
Terminal	501	0.8	9.3	4.0	6.0	3.8	24.0
Retail	188	1.0	3.7	1.6	0.0	0.0	6.3
<i>Klamath Basin-San Francisco</i>							
Shipping	632	0.0	2.4	0.8	5.4	0.0	8.6
Terminal	310	1.9	3.2	1.9	10.0	0.3	17.3
Retail	241	7.0	3.7	1.2	9.5	0.0	21.4
<i>Klamath Basin-Oakland-Sacramento</i>							
Shipping	555	0.0	0.0	0.2	13.2	0.0	13.4
Terminal	288	1.0	2.1	2.1	25.7	0.0	30.9
Retail	111	0.0	4.5	0.0	5.4	2.7	12.6

* Grade tolerance: 6 per cent by weight of each type of defect or combination of defects, except soft rot for which the tolerance is 1 per cent.

relationship between the amount of condition defects in the individual samples and the type of package yielded nothing.

Based upon the records from the Oregon survey of retail markets in 1940-1942, it was assumed that the length of time elapsing between the shipping point, terminal, and retail store inspection would have had some bearing on the rate of deterioration in the quality of product in the several types of containers. In this experiment there was little opportunity to check the time factor because the demand for potatoes was good; there was a fairly short time between the loading and the time they were sold to the consumer. With minor exceptions, the samples were sold to consumers within 10 or 12 days from the date of packaging at the shipping point. This rapid movement of supplies into the hands of consumers appeared to be related to the buying practices of the wholesale and retail dealers, resulting in very little loss from slow-moving merchandise. An additional factor is that consumer-size packages are not bought for storage and speculation. Especially noticeable was the small amount of light burn caused from improper display of potatoes. This item was of great importance in 1940-1942.

While the practice of displaying consumer-size packages of potatoes in the front windows of retail stores was not found in this study, it was a basic cause of the excessive light burn disclosed in the 1940-41 survey. This change in the method of displaying potatoes and the increase in the rate of turnover of consumer-size packages have done much to improve the quality of the prepackaged product sold to consumers since 1941.

The apparent inconsistency existing in the record of defects at the retail store level as shown in Table 3 are difficult to account for. The logic of the situation is that the defects recorded at the retail level would be in excess of those found at the shipping point or terminal market. This is not the case. This situation arises from the difficulty of obtaining a uniform grading at each point where official inspection is made. This problem of obtaining a uniformity of inspection raises serious questions in this as well as other types of inspection work. It is a subject that should be analyzed thoroughly, and the result should be of real value to administrative officials and members of the industry.

An element of consistency is found in the recorded defects at the shipping points and terminal markets. In this instance the same inspector was used for 9 out of the 13 cars in the experiment. This same consistency is present in the San Francisco retail store records where there was an exceptionally good working arrangement between the shipping point and terminal inspectors. In the latter case, it was possible to adopt certain standardized inspection procedures because of a clear understanding on the part of the shipping point inspector as to the maximum tolerances acceptable in the terminal markets.

Despite the fact that an exceptionally large number of individual packages were out-of-grade for one reason or another, none of the experimental cars fell below grade. This arises from the official grade regulations relating to the entire lot compared to the individual package, namely, "—if, the averages for the entire lot based on sample inspection are within the tolerance specified in the standards, the contents of individual packages in the lot may vary from the specified tolerances subject to the following limitations:

"When the tolerance specified is 10 per cent or more, not over one-tenth of the individual packages in the lot may contain more than one and one-half times the tolerance except that at least one defective specimen shall be permitted in a package; when the tolerance specified is less than 10 per cent, not over one-tenth of the individual packages in any lot may contain more than double the tolerance specified, but no package may contain more than four times the tolerance for soft rot or wet breakdown except that at least one defective specimen shall be permitted in a package."*

Handling

Quality deterioration of potatoes is a normal condition for such a product. The rate of deterioration can be accelerated easily through high temperature and rough handling practices. Each of these factors contribute to the physical breakdown of the potatoes and may make them unmarketable within a relatively few days (Table 6). Ob-

* *Oregon Standards for Potatoes, 1947.* Department of Agriculture, State of Oregon.



Figure 2. Improper loading or handling often results in load shifting and bruised potatoes.

servations made by the investigators during the course of the survey indicate satisfactory temperatures while the potatoes were en route from the shipping points to the terminal markets. Terminal market facilities were well ventilated and adequate. On the other hand, the stocks of potatoes in the retail stores were displayed at room temperatures either in open bins or in closed consumer packages. This condition was not desirable, but practical merchandising considerations make it necessary.

Bruises were an extremely important factor in quality deterioration. This one factor contributed more to the failure of the individual samples to meet the grade tolerances than any other. While a certain amount of the bruising found in the sample packages could be attributed to damage while moving over the grading table, it was mainly caused by handling practices after packaging. Rough handling between the sackers, the carriers, and the reefer by the loaders is the source of much damage to potatoes. The investigators found no other point in the marketing process where the potatoes received as rough handling as that from the crews handling the potatoes at the shipping points.

Special attention was given to the conditions surrounding the October shipment of potatoes into the Sacramento market (Table 21,

Appendix). These potatoes were washed before being run over the grader. The shipping point inspector found an excessive amount of bruised potatoes in the samples, but the re-inspection at the terminal market by the same inspector disclosed an increase of as much as 300 per cent of bruised potatoes. A thorough examination indicated that the bruising most likely did not take place en route from the shipping point to the terminal market but at the shipping point and was not detected during the shipping point inspection.

The importance of the proper handling of potatoes was discussed fully in Oregon Experiment Station bulletins 400 and 410. These two reports have been used widely in the industry, and it is believed they have served to guide certain potato handlers in their program of more effective merchandising.

Trade acceptance of prepackaged consumer-size containers

Approximately 14 per cent of the potatoes shipped from central Oregon were marketed in consumer size packages. The percentage of shipments by size of container follows:

Containers	Weight	Percentage of total quantity shipped
	<i>Pounds</i>	<i>Per cent</i>
Wood crates	100	1
Burlap	100	85
Paper and burlap	50	5
Paper, burlap, and open mesh	25	4
Paper	15	2
Paper and open mesh	10	1
Open mesh	5	1

The available information from Klamath Basin points indicates that approximately 10 per cent of the total potatoes shipped during the 1947-48 season were in consumer-size packages. Eight of the 10 per cent were in 25-pound packages, and the remaining 2 per cent were fairly evenly divided between 10- and 15-pound containers. The continued heavy shipments of potatoes in 100-pound containers is related to the practice of merchandising potatoes in open-bin displays in retail markets in northern California. An additional factor is the growing practice of prepackaging potatoes at terminal and retail markets. This procedure enables the terminal markets both wholesale and retail to size the potatoes to more nearly conform to consumer preferences, and in some instances to avoid losses resulting from the consumers' policy of selecting only the best potatoes when they fill their own containers from open-bin displays.

Observations made at the shipping points, terminal markets, and retail stores with respect to the reactions of the handlers and consumers toward the several types of consumer-size packages were helpful. They reflected basic prejudices and justifiable fears, varying in each of the two general areas in which the experiment was conducted.

The pertinent facts relating to the Redmond-Portland, Klamath Basin-San Francisco, and the Klamath Basin-Oakland-Sacramento shipments follow:

► The disfavor of the consumer-size package among the handlers at the shipping point can be associated directly with the lack of the proper type of equipment to package the potatoes. While the unit of weight handled by the members of the sacking and loading crew is less than the 100-pound container, there is much more weighing and tying of packages, and of squatting and stooping required of the workers. Particular objection to the consumer-size package on the part of the grading and sacking crew was found in the Klamath Basin area where the potatoes are handled by the crews on a contract basis. The disfavor of the workers appear to be against the size of the container rather than the type. Inasmuch as reefers are loaded with 40,000 to 50,000 pounds of potatoes (varying with the season), it is quite apparent that the amount of work involved depends upon whether the car is to be filled with 100, 50, 25, 15, 10, or 5 pound packages. The objections to the consumer-size package were not pronounced. They varied their price in proportion to the container used to fill the order.

► In the terminal market there was no particular objection on the part of workers to the size or type of package used. Wholesalers and brokers frequently objected to the added cost of unloading, but they showed no basic feeling against any particular type of container, except when they were reflecting the attitude of the retail store operators. Since the willingness of retailers to take various type of packages is reflected in their demands at the wholesale level, the situation was cared for easily, namely, the wholesalers handled only that type of package the retailers would buy.

► Each market area showed a preference for the open mesh type container. Consumers demonstrated a willingness to buy potatoes in the open mesh packages rather than the closed type containers, whenever a choice was available. This tendency was less noticeable in the Portland area than in the California markets, but it existed nevertheless. Consumers who were questioned by the investigators gave as a reason for their preference, "I can see what I am buying."

► The unwillingness of many consumers to accept at face value the quality of potatoes as stamped on the closed-type packages led them to turn to open-bin displays or to untie the packages in order to inspect the potatoes prior to purchase. Despite the failure of consumers to accept the closed-type container, retail-store operators favored it. They recognized, however, that the trade had a great deal to overcome before the consumers would buy sight-unseen.



Figure 3. Unloading one of the test cars at the Portland terminal market.

Appendix

Table 7. AVERAGE WEIGHT OF POTATOES AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	Burlap	Open mesh	Cotton	Ex paper	Exx paper	Regular paper
	<i>Pounds-ounces</i>	<i>Pounds-ounces</i>	<i>Pounds-ounces</i>	<i>Pounds-ounces</i>	<i>Pounds-ounces</i>	<i>Pounds-ounces</i>
U. S. No. 1						
<i>October</i>						
Shipping	25-5	25-4	25-4	25-8	25-5	25-5
Terminal	25-0	24-14	24-15	25-7	25-4	25-7
Retail	24-10	24-14	24-7	24-15	24-11	24-9
<i>November</i>						
Shipping	25-10	†	25-7	26-2	26-1	26-3
Terminal	25-2	†	25-3	25-11	25-12	25-14
Retail	25-0	†	24-13	25-6	25-4	25-15
<i>December</i>						
Shipping	25-13	25-11	25-11	25-13	25-12	25-13
Terminal	25-12	25-9	25-10	25-13	25-12	25-14
Retail	25-4	24-15	25-0	25-3	25-1	25-6
<i>January</i>						
Shipping	25-4	25-2	25-3	25-6	25-6	25-7
Terminal	25-8	25-2	25-5	25-8	25-8	25-9
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	25-7	25-5	25-5	25-10	25-10	25-10
Terminal	25-2	24-13	24-15	25-6	25-5	25-4
Retail	25-4	25-1	24-15	25-3	25-4	25-5
U. S. No. 2						
<i>October</i>						
Shipping	25-4	25-5	25-4	25-5	25-5	†
Terminal	25-0	25-1	24-14	25-2	25-3	†
Retail	24-11	†	24-14	24-4	24-3	†
<i>November</i>						
Shipping	26-1	†	25-14	26-2	26-4	26-2
Terminal	25-9	†	25-7	25-10	25-14	25-12
Retail	25-0	†	†	25-7	26-0	†
<i>December</i>						
Shipping	25-12	25-11	25-11	25-13	25-13	25-15
Terminal	25-2	25-4	24-12	25-3	25-5	25-3
Retail	24-13	†	†	†	25-4	25-5
<i>January</i>						
Shipping	25-2	25-3	†	25-7	25-5	25-5
Terminal	25-3	25-3	†	25-9	25-9	25-12
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	25-6	25-6	†	25-8	25-8	25-11
Terminal	24-15	24-15	†	25-4	25-4	25-4
Retail	25-1	†	†	25-2	25-4	24-6

* Shipping point, Redmond, Oregon. Terminal and retail markets: Portland, Oregon.
† Indicates no sample.

Table 8. AVERAGE WEIGHT OF POTATOES AT SHIPPING POINT, TERMINAL AND RETAIL MARKETS, BY TYPE OF CONTAINER*

	Burlap	Ex	Exx	Ex	Exx	Ex baled	Exx baled	Open mesh	Burlap, 100-pound
	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces
U. S. No. 1									
<i>October</i>									
Shipping	25-7	26-2	26-4	16-2	15-15	15-7	15-3	10-5	102-2
Terminal	25-8	25-15	26-1	16-3	15-13	15-5	15-13	10-4	103-12
Retail	25-15	25-9	25-15	15-13	15-13	15-11	15-8	10-2	†
<i>November</i>									
Shipping	25-7	25-6	25-9	15-1	15-1	15-9	15-10	10-6	103-4
Terminal	25-3	25-1	25-8	15-0	15-0	15-2	15-7	10-5	99-8
Retail	24-14	25-0	25-10	15-8	15-7	†	†	10-7	†
<i>December</i>									
Shipping	25-8	25-10	25-10	15-9	15-7	15-7	15-7	10-3	†
Terminal	25-5	25-8	25-8	15-8	15-7	15-7	15-4	10-2	†
Retail	25-3	25-10	25-10	15-7	15-5	†	†	10-2	†
<i>January</i>									
Shipping	25-6	25-7	25-9	15-8	15-8	15-6	15-7	10-2	†
Terminal	25-3	25-6	25-7	15-9	15-8	15-8	15-9	10-2	†
Retail	25-4	25-6	25-10	15-3	15-6	†	†	10-1	†

* Shipping point: Klamath Basin. Terminal and retail markets: San Francisco.

† Indicates no sample.

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Table 9. AVERAGE CONTAINER WEIGHT OF POTATOES AT SHIPPING POINT, TERMINAL AND RETAIL MARKETS, BY TYPE OF CONTAINER*

	Burlap	Ex	Exx	Regular paper	Ex	Exx	Ex baled	Exx baled	Open mesh	Open mesh baled
	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces	Pounds-ounces
U. S. No. 1										
<i>October</i>										
Shipping	26-3	26-2	26-10	†	16-0	16-1	15-3	15-12	†	10-10
Terminal	25-11	26-1	25-13	†	15-12	15-10	15-2	15-9	†	10-7
Retail	25-5	†	25-2	†	15-13	15-12	14-15	15-11	†	10-8
<i>November</i>										
Shipping	25-5	25-3	25-6	25-7	15-8	15-6	15-8	15-5	10-7	10-7
Terminal	26-6	25-2	25-4	25-3	15-6	15-2	15-4	15-0	10-5	10-6
Retail	†	†	†	†	†	†	†	†	†	†
<i>December</i>										
Shipping	25-1	25-11	25-11	25-12	15-8	15-8	15-7	15-9	10-11	10-9
Terminal	25-10	25-9	25-10	25-9	15-7	15-7	15-6	15-7	10-8	10-8
Retail	25-6	25-10	25-9	25-9	15-6	15-8	15-6	15-7	10-8	10-7
<i>January</i>										
Shipping	25-5	25-10	25-9	25-9	†	†	15-3	15-8	10-5	10-5
Terminal	25-5	25-9	25-11	25-9	†	†	15-7	15-7	10-4	10-4
Retail	†	†	†	†	†	†	†	†	†	†

* Shipping point: Klamath Basin. Terminal and retail markets: Sacramento and Oakland, California.

† Indicates no sample.

Table 10. AVERAGE WEIGHT OF DRY ROT PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	Burlap	Open mesh	Cotton	Ex paper	Exx paper	Regular paper
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES						
<i>October</i>						
Shipping	0.0	1.8	0.7	0.0	0.1	0.9
Terminal	0.9	3.3	5.9	4.1	3.0	8.6
Retail	0.6	0.0	3.4	0.3	0.0	0.0
<i>November</i>						
Shipping	6.2	†	7.7	2.6	2.5	0.3
Terminal	8.4	†	4.5	2.6	1.3	1.6
Retail	5.7	†	8.0	0.4	4.5	4.5
<i>December</i>						
Shipping	1.3	2.2	0.3	3.3	2.3	0.9
Terminal	1.8	1.9	0.0	0.2	1.4	0.0
Retail	5.0	0.0	0.0	2.0	8.4	2.5
<i>January</i>						
Shipping	0.9	0.0	0.7	0.3	1.0	0.8
Terminal	3.3	2.5	0.0	1.8	2.4	0.0
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	3.6	1.0	3.9	1.0	2.0	0.0
Terminal	0.0	1.0	0.0	2.0	4.4	2.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0
U. S. No. 2 POTATOES						
<i>October</i>						
Shipping	0.8	0.0	0.0	1.0	3.5	†
Terminal	3.5	6.0	9.0	0.0	1.7	†
Retail	0.0	†	0.0	0.0	0.0	†
<i>November</i>						
Shipping	5.3	†	3.0	0.8	0.0	0.0
Terminal	7.2	†	2.4	0.8	0.0	0.0
Retail	10.0	†	†	0.0	0.0	†
<i>December</i>						
Shipping	4.0	6.8	2.5	0.0	0.0	0.0
Terminal	1.3	9.6	7.3	3.2	0.0	1.0
Retail	10.0	†	†	†	0.0	0.0
<i>January</i>						
Shipping	4.1	3.8	†	2.3	3.7	0.8
Terminal	7.8	0.0	†	2.2	2.4	4.7
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	1.9	6.4	†	4.3	5.7	12.8
Terminal	5.8	0.0	†	0.0	7.0	8.6
Retail	0.0	†	†	0.0	0.0	0.0

* Shipping point: Redmond, Oregon. Terminal and retail markets: Portland, Oregon.
† Indicates no sample.

Table 11. AVERAGE WEIGHT OF DRY ROT PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS, BY TYPE OF CONTAINER*

	25-pound samples			15-pound samples				10-pound samples	100-pound samples
	Burlap	Ex	Exx	Ex	Exx	Ex baled	Exx baled	Open mesh	Burlap
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES									
<i>October</i>									
Shipping	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail	12.5	16.3	11.0	14.7	12.0	0.0	18.0	8.5	†
<i>November</i>									
Shipping	0.7	0.8	3.2	1.1	0.5	0.0	0.0	0.4	1.1
Terminal	13.2	14.2	7.4	8.0	5.3	8.6	7.4	5.6	15.6
Retail	18.0	32.0	44.0	14.8	24.7	†	†	5.5	†
<i>December</i>									
Shipping	0.3	0.3	0.3	0.2	0.2	0.0	0.0	0.2	†
Terminal	0.0	0.0	0.6	0.0	0.3	0.0	0.0	0.0	†
Retail	0.0	0.9	0.3	0.0	0.0	0.0	†	0.0	†
<i>January</i>									
Shipping	0.0	0.0	0.0	1.0	0.4	0.0	0.0	0.0	†
Terminal	0.0	0.0	0.4	0.3	0.2	0.0	0.0	0.0	†
Retail	0.0	0.0	0.0	0.0	0.2	†	†	0.0	†

* Shipping point: Klamath Basin. Terminal and retail markets: San Francisco.

† Indicates no sample.

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Table 12. AVERAGE WEIGHT OF DRY ROT PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples				15-pound samples				10-pound samples	
	Burlap	Ex	Exx	Regular	Ex	Exx	Ex baled	Exx baled	Open mesh baled	Open mesh
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES										
<i>October</i>										
Shipping	0.0	0.0	0.0	†	0.0	0.0	0.0	0.0	0.0	†
Terminal	0.0	0.0	0.0	†	0.0	0.0	0.0	0.0	0.0	†
Retail	0.0	1.0	0.0	†	0.0	0.0	0.0	0.0	0.0	†
<i>November</i>										
Shipping	0.0	0.2	0.3	0.4	1.1	0.0	0.0	0.8	0.0	0.0
Terminal	1.6	1.9	0.0	0.5	2.2	0.0	0.0	0.5	0.7	0.0
Retail	†	†	†	†	†	†	†	†	†	†
<i>December</i>										
Shipping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>January</i>										
Shipping	0.0	0.5	0.5	1.9	†	†	0.0	0.0	0.0	2.4
Terminal	21.0	7.8	9.9	8.6	†	†	8.3	4.6	3.2	11.0
Retail	†	†	†	†	†	†	†	†	†	†

* Shipping point: Klamath Basin. Terminal and retail markets: Oakland and Sacramento, California.

† Indicates no sample.

Table 13. AVERAGE WEIGHT OF SOFT ROT PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples					
	Burlap	Open mesh	Cotton	Ex	Exx	Regular
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES						
<i>October</i>						
Shipping	0.0	0.0	0.0	0.0	0.2	0.0
Terminal	0.4	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0
<i>November</i>						
Shipping	0.3	†	0.0	1.1	0.2	0.0
Terminal	0.3	†	0.0	2.0	0.0	0.0
Retail	0.0	†	0.0	0.8	0.0	0.0
<i>December</i>						
Shipping	0.3	0.3	0.0	0.3	1.6	0.0
Terminal	1.1	0.0	0.0	0.9	2.4	0.0
Retail	1.3	0.0	0.0	4.0	1.1	0.0
<i>January</i>						
Shipping	0.0	0.0	0.0	0.0	0.4	0.0
Terminal	2.3	2.4	0.6	0.0	0.7	0.6
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	0.0	1.0	0.0	0.3	0.0	0.0
Terminal	0.8	0.6	1.8	0.5	0.8	0.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0
U. S. No. 2 POTATOES						
<i>October</i>						
Shipping	0.0	0.0	0.0	0.0	0.5	†
Terminal	0.0	0.0	2.0	0.0	0.0	†
Retail	0.0	0.0	0.0	0.0	0.0	†
<i>November</i>						
Shipping	2.2	†	0.0	0.0	7.2	0.0
Terminal	0.4	†	0.0	0.0	0.0	1.8
Retail	0.0	†	†	0.0	0.0	†
<i>December</i>						
Shipping	3.2	0.0	0.0	1.1	0.0	0.0
Terminal	2.6	0.0	0.0	0.0	0.0	1.8
Retail	0.0	†	†	†	0.0	0.0
<i>January</i>						
Shipping	1.1	0.0	†	1.8	0.7	0.0
Terminal	5.6	1.3	†	4.6	8.4	7.0
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	0.6	0.0	†	0.0	1.6	0.0
Terminal	1.4	0.0	†	0.0	0.0	1.0
Retail	0.0	†	†	0.0	0.0	0.0

* Shipping point: Redmond, Oregon. Terminal and retail markets: Portland, Oregon.
† Indicates no sample.

Table 15. AVERAGE WEIGHT OF SOFT ROT PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS, BY TYPE OF CONTAINER*

	25-pound samples				15-pound samples				10-pound samples	
	Burlap	Ex	Exx	Regular	Ex	Exx	Ex baled	Exx baled	Open mesh baled	Open mesh
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES										
<i>October</i>										
Shipping	0.0	0.0	0.0	†	0.0	0.0	0.0	0.0	0.0	†
Terminal	0.4	0.0	0.0	†	0.0	0.0	0.0	0.0	0.0	†
Retail	0.0	†	0.0	†	0.0	0.0	0.0	0.0	0.0	†
<i>November</i>										
Shipping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	0.7	0.0	0.0	0.0	1.1	0.0	0.5	0.0	0.0	0.0
Retail	†	†	†	†	†	†	†	†	†	†
<i>December</i>										
Shipping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.4
<i>January</i>										
Shipping	0.0	0.0	0.0	0.8	†	†	0.0	0.0	0.3	0.0
Terminal	2.0	0.0	0.0	4.4	†	†	0.0	0.0	0.0	0.0
Retail	†	†	†	†	†	†	†	†	†	†

* Shipping point: Klamath Basin. Terminal and retail: Oakland and Sacramento.

† Indicates no sample.

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Table 14. AVERAGE WEIGHT OF SOFT ROT PER SAMPLE AT SHIPPING POINTS, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples			15-pound samples				10-pound samples	100-pound samples
	Burlap	Ex	Exx	Ex	Exx	Ex baled	Exx baled	Open mesh	Burlap
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES									
<i>October</i>									
Shipping	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	2.2
Terminal	0.0	0.0	2.0	0.0	0.4	0.0	0.0	0.6	0.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	†
<i>November</i>									
Shipping	0.0	0.9	†	0.0	0.0	0.0	0.0	0.0	0.8
Terminal	0.0	0.0	†	0.0	0.0	0.0	0.0	0.0	1.2
Retail	0.0	0.0	†	0.8	0.0	†	†	0.0	†
<i>December</i>									
Shipping	0.0	0.2	0.4	0.4	0.0	0.0	0.0	0.1	†
Terminal	0.0	0.4	0.7	0.0	0.0	0.0	0.0	0.0	†
Retail	6.0	0.2	0.4	0.0	0.0	†	†	0.0	†
<i>January</i>									
Shipping	0.9	0.0	0.0	0.0	0.5	0.0	0.0	0.1	†
Terminal	0.0	0.4	1.5	0.0	0.4	0.0	0.0	0.0	†
Retail	0.0	0.0	2.3	0.0	0.2	†	†	0.0	†

* Shipping point: Klamath Basin. Terminal and retail markets: San Francisco.

† Indicates no sample.

Table 16. AVERAGE WEIGHT BROKEN PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples					
	Burlap	Open mesh	Cotton	Ex	Exx	Regular
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES						
<i>October</i>						
Shipping	1.3	0.0	0.0	3.6	0.8	1.1
Terminal	0.3	0.5	2.0	0.8	0.9	1.2
Retail	0.1	0.0	5.0	1.0	1.0	0.0
<i>November</i>						
Shipping	1.0	†	0.8	0.8	0.5	0.4
Terminal	2.5	†	3.5	0.8	1.3	1.2
Retail	9.7	†	10.0	4.8	5.2	3.2
<i>December</i>						
Shipping	5.9	2.3	1.7	3.2	2.6	3.1
Terminal	8.5	4.6	1.7	2.3	4.5	4.4
Retail	7.0	10.6	4.0	13.0	8.5	12.5
<i>January</i>						
Shipping	3.6	3.3	4.6	2.7	2.7	1.5
Terminal	8.0	5.1	20.7	8.4	8.4	2.6
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	0.8	0.9	2.0	1.2	1.4	2.2
Terminal	7.4	12.0	23.6	8.5	6.7	9.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0
U. S. No. 2 POTATOES						
<i>October</i>						
Shipping	2.0	2.6	0.0	1.7	1.2	†
Terminal	0.0	0.0	0.0	1.3	0.8	†
Retail	4.0	0.0	0.0	2.0	2.0	†
<i>November</i>						
Shipping	0.0	†	0.8	0.0	0.0	2.8
Terminal	2.4	†	5.6	0.0	1.4	0.2
Retail	34.0	†	†	3.0	0.0	†
<i>December</i>						
Shipping	1.6	1.4	1.2	2.0	0.0	0.0
Terminal	11.0	10.0	6.3	12.0	15.4	10.7
Retail	0.0	†	†	†	7.0	0.0
<i>January</i>						
Shipping	3.7	0.6	†	0.9	0.8	2.2
Terminal	19.6	0.0	†	4.8	7.8	11.0
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	3.2	0.0	†	0.8	0.0	0.0
Terminal	18.0	6.0	†	10.0	5.8	5.0
Retail	0.0	†	†	0.0	0.0	0.0

* Shipping point: Redmond, Oregon. Terminal and retail markets: Portland, Oregon.
† Indicates no sample.

Table 17. AVERAGE WEIGHT BROKEN PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples			15-pound samples				10-pound samples	100-pound samples
	Burlap	Ex	Exx	Ex	Exx	Ex baled	Exx baled	Open mesh	Burlap
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES									
<i>October</i>									
Shipping	1.2	1.4	2.1	1.8	3.8	0.0	0.8	0.0	4.4
Terminal	3.4	3.6	3.7	3.1	2.5	0.0	0.5	0.9	13.2
Retail	0.4	10.0	0.0	2.0	3.0	0.0	0.0	0.0	0.0
<i>November</i>									
Shipping	0.6	5.9	4.7	1.5	1.9	10.3	0.5	1.2	15.7
Terminal	6.9	9.4	8.6	3.4	4.0	4.2	2.9	0.3	56.8
Retail	6.6	0.0	0.0	2.3	3.2	†	†	0.0	†
<i>December</i>									
Shipping	1.2	1.5	4.5	2.8	1.2	4.7	4.3	1.1	†
Terminal	2.3	2.4	5.4	3.0	1.8	6.5	4.0	1.2	†
Retail	8.0	3.2	6.7	4.1	4.6	†	†	2.7	†
<i>January</i>									
Shipping	3.0	1.2	0.6	0.1	1.2	0.0	2.0	1.4	†
Terminal	10.7	2.0	1.8	2.1	0.8	1.5	4.0	2.6	†
Retail	0.0	3.3	2.8	12.0	0.0	†	†	1.1	†

* Shipping point: Klamath Basin. Terminal and retail markets: San Francisco.

† Indicates no samples.

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Table 18. AVERAGE WEIGHT BROKEN PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples				15-pound samples				10-pound samples	
	Burlap	Ex	Exx	Regular	Ex	Exx	Ex baled	Exx baled	Open mesh	Open mesh baled
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES										
<i>October</i>										
Shipping	0.9	0.6	1.2	†	1.3	0.0	0.0	2.7	†	0.0
Terminal	0.6	0.0	0.0	†	0.0	0.0	0.0	0.0	†	0.0
Retail	0.0	†	0.0	†	0.0	0.0	0.0	0.0	†	0.0
<i>November</i>										
Shipping	3.4	3.8	4.2	3.0	4.7	1.1	6.3	1.0	1.2	1.7
Terminal	10.5	4.8	5.8	3.0	7.8	4.7	9.3	4.5	3.7	3.0
Retail	†	†	†	†	†	†	†	†	†	†
<i>December</i>										
Shipping	1.0	1.0	0.4	0.5	0.4	0.0	0.0	2.2	0.0	0.0
Terminal	1.0	2.3	0.6	4.0	0.0	0.0	0.0	2.4	0.6	2.9
Retail	5.6	6.4	0.3	2.4	0.6	2.1	5.4	3.7	1.0	3.8
<i>January</i>										
Shipping	0.9	1.1	1.4	2.0	†	†	0.9	0.0	0.5	0.6
Terminal	1.5	2.2	2.0	6.2	†	†	6.6	0.0	2.0	7.6
Retail	†	†	†	†	†	†	†	†	†	†

* Shipping point: Klamath Basin. Terminal and retail markets: Oakland and Sacramento.

† Indicates no samples.

Table 19. AVERAGE WEIGHT BRUISED PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS, BY TYPE OF CONTAINER*

	25-pound samples					
	Burlap	Open mesh	Cotton	Ex	Exx	Regular
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES						
<i>October</i>						
Shipping	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0
<i>November</i>						
Shipping	4.6	0.0	0.0	0.0	0.0	0.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0
<i>December</i>						
Shipping	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	0.0	0.0	0.0	0.0
<i>January</i>						
Shipping	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	25.2	18.5	24.5	16.1	17.3	21.5
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	0.0	0.0	0.0	0.0	0.3	0.3
Terminal	7.5	10.4	12.1	2.4	4.0	1.4
Retail	0.0	0.0	0.0	0.0	0.0	0.0
U. S. No. 2 POTATOES						
<i>October</i>						
Shipping	0.0	0.0	0.0	0.0	0.0	†
Terminal	0.0	0.0	0.0	0.0	0.0	†
Retail	0.0	0.0	0.0	0.0	0.0	†
<i>November</i>						
Shipping	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	†	0.0	0.0	†
<i>December</i>						
Shipping	0.0	0.0	0.0	0.0	0.0	0.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	†	†	†	0.0	0.0
<i>January</i>						
Shipping	0.0	0.0	†	0.0	0.0	0.0
Terminal	23.4	19.0	†	40.2	12.4	6.0
Retail	†	†	†	†	†	†
<i>February</i>						
Shipping	0.0	0.0	†	0.0	0.0	0.0
Terminal	2.8	8.2	†	0.0	6.6	0.8
Retail	0.0	†	†	0.0	0.0	0.0

* Shipping point: Redmond, Oregon. Terminal and retail markets: Portland, Oregon.
† Indicates no samples.

Table 20. AVERAGE WEIGHT BRUISED PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples			15-pound samples				10-pound samples	100-pound samples
	Burlap	Ex	Exx	Ex	Exx	Ex baled	Exx baled	Open mesh	Burlap
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES									
<i>October</i>									
Shipping	4.8	7.8	8.7	4.5	6.5	5.1	5.6	1.7	21.6
Terminal	15.1	12.1	22.7	14.0	18.0	17.0	12.0	12.2	74.7
Retail	2.2	0.0	0.0	0.6	2.0	0.0	0.0	0.0	†
<i>November</i>									
Shipping	9.3	7.8	11.4	14.6	8.8	10.0	4.0	4.9	26.0
Terminal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail	0.0	0.0	0.0	0.0	0.0	†	†	0.0	†
<i>December</i>									
Shipping	18.5	3.4	5.9	7.6	7.2	12.8	8.1	2.1	†
Terminal	25.1	8.1	11.2	16.8	13.9	11.6	8.2	6.4	†
Retail	23.0	4.9	9.6	10.9	8.4	†	†	5.1	†
<i>January</i>									
Shipping	11.7	9.0	8.0	3.4	8.6	4.5	2.8	3.9	†
Terminal	14.6	10.7	23.7	5.8	8.2	10.5	6.0	6.7	†
Retail	25.5	17.1	14.8	23.0	3.5	†	†	2.5	†

* Shipping point: Klamath Basin. Terminal and retail markets: San Francisco.

† Indicates no sample.

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Table 21. AVERAGE WEIGHT BRUISED PER SAMPLE AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS, BY TYPE OF CONTAINER*

	25-pound samples				15-pound samples				10-pound samples	
	Burlap	Ex	Exx	Regular	Ex	Exx	Ex baled	Exx baled	Open mesh baled	Open mesh
	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
U. S. No. 1 POTATOES										
<i>October</i>										
Shipping	22.3	18.2	26.7	†	28.3	22.3	26.9	17.1	19.3	†
Terminal	88.0	88.2	92.0	†	56.4	43.6	41.3	50.6	49.1	†
Retail	0.0	†	0.0	†	0.0	0.0	0.0	0.0	0.0	†
<i>November</i>										
Shipping	7.1	5.3	6.7	7.5	4.7	5.1	3.3	6.6	2.6	3.5
Terminal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail	†	†	†	†	†	†	†	†	†	†
<i>December</i>										
Shipping	8.6	4.6	1.7	7.0	6.0	3.1	8.3	4.3	2.9	3.5
Terminal	21.5	18.6	16.0	10.6	17.0	10.0	14.0	9.0	8.4	12.6
Retail	11.7	27.1	14.0	10.2	4.0	4.1	8.4	7.3	7.7	8.0
<i>January</i>										
Shipping	14.7	15.6	14.3	12.4	†	†	10.3	15.7	6.7	4.9
Terminal	0.0	0.0	0.0	0.0	†	†	0.0	0.0	0.0	0.0
Retail	†	†	†	†	†	†	†	†	†	†

* Shipping point: Klamath Basin. Terminal and retail markets: Oakland and Sacramento.

† Indicates no sample.

Table 22. TOTAL SAMPLES AND NUMBER UNDER WEIGHT AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER²

	Burlap		Open mesh		Cotton		Regular paper		Ex paper		Exx paper	
	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight
U. S. No. 1 POTATOES												
<i>October</i>												
Shipping	15	0	15	0	15	0	15	3	30	7	30	6
Terminal	15	6	15	10	15	4	11	1	29	7	28	7
Retail	7	5	7	6	7	6	3	2	15	6	18	11
<i>November</i>												
Shipping	30	0	†	†	15	1	15	0	30	0	30	0
Terminal	26	8	†	†	14	4	15	0	29	0	22	0
Retail	6	2	†	†	4	2	4	1	10	0	11	1
<i>December</i>												
Shipping	15	0	15	0	15	0	15	0	30	0	30	0
Terminal	15	0	15	0	14	0	14	0	28	0	20	0
Retail	4	0	3	2	4	1	4	0	6	0	7	3
<i>January</i>												
Shipping	15	0	15	0	15	0	15	0	30	0	29	0
Terminal	15	0	14	2	13	1	12	1	29	0	29	2
Retail	†	†	†	†	†	†	†	†	†	†	†	†
<i>February</i>												
Shipping	14	0	15	0	15	0	15	0	26	0	30	0
Terminal	14	4	15	8	15	7	15	0	24	0	30	0
Retail	3	1	4	2	7	4	3	0	5	0	10	1
U. S. No. 2 POTATOES												
<i>October</i>												
Shipping	10	0	5	0	5	0	†	†	10	0	11	0
Terminal	10	3	5	1	5	2	†	†	10	0	11	0
Retail	4	3	†	†	2	1	†	†	3	3	3	2
<i>November</i>												
Shipping	10	0	†	†	5	0	5	0	10	0	10	0
Terminal	10	0	†	†	5	0	5	0	10	0	10	0
Retail	1	0	†	†	†	†	†	†	2	0	1	0
<i>December</i>												
Shipping	5	0	5	0	5	0	5	0	9	0	10	0
Terminal	5	2	4	1	5	4	4	0	7	2	10	1
Retail	2	2	†	†	†	†	1	0	†	†	2	0
<i>January</i>												
Shipping	10	0	5	0	†	†	5	0	10	0	10	0
Terminal	9	0	5	0	†	†	5	0	10	0	10	0
Retail	†	†	†	†	†	†	†	†	†	†	†	†
<i>February</i>												
Shipping	10	0	5	0	†	†	5	0	10	0	10	0
Terminal	9	5	5	3	†	†	5	0	10	0	10	0
Retail	3	1	†	†	†	†	2	0	5	0	5	1

* Shipping point: Redmond, Oregon. Terminal and retail markets: Portland, Oregon.

† Indicates no sample.

Table 23. TOTAL SAMPLES AND NUMBER UNDER WEIGHT AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS BY TYPE OF CONTAINER*

	25-pound samples							
	Burlap		Ex		Exx		Ex	
	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight
U. S. No. 1 POTATOES								
<i>October</i>								
Shipping	20	0	10	0	7	0	18	0
Terminal	10	1	6	0	5	0	13	0
Retail	10	6	3	0	2	0	9	0
<i>November</i>								
Shipping	20	0	10	0	10	0	25	0
Terminal	18	3	10	3	10	1	25	0
Retail	5	4	2	0	1	0	6	0
<i>December</i>								
Shipping	20	0	20	0	20	0	25	0
Terminal	20	0	20	2	20	0	25	0
Retail	14	2	17	1	19	0	22	0
<i>January</i>								
Shipping	20	0	10	0	10	0	25	0
Terminal	20	2	10	0	10	0	25	1
Retail	14	0	7	0	6	0	11	0

	15-pound samples									
	Exx		Ex baled		Exx baled		10-pound samples Open mesh		100-pound samples Burlap	
	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight
U. S. No. 1 POTATOES										
<i>October</i>										
Shipping	19	0	10	0	10	0	43	0	9	1
Terminal	13	0	4	0	4	0	20	0	9	1
Retail	11	0	1	0	1	0	12	3	†	†
<i>November</i>										
Shipping	25	0	6	0	6	0	50	1	10	0
Terminal	24	1	5	0	5	0	50	3	9	6
Retail	4	0	†	†	†	†	4	0	†	†
<i>December</i>										
Shipping	25	0	6	0	6	0	50	0	†	†
Terminal	24	0	5	0	5	0	49	10	†	†
Retail	23	0	†	†	†	†	20	2	†	†
<i>January</i>										
Shipping	25	0	6	0	6	0	50	3	†	†
Terminal	25	0	6	0	6	0	48	1	†	†
Retail	16	0	†	†	†	†	9	0	†	†

* Shipping point: Klamath Basin. Terminal and retail markets: San Francisco, Cal.

† Indicates no sample.

Table 24. TOTAL SAMPLES AND NUMBER UNDER WEIGHT AT SHIPPING POINT, TERMINAL, AND RETAIL MARKETS, BY TYPE OF CONTAINER*

	25-pound samples							
	Burlap		Ex		Exx		Regular paper	
	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight
U. S. No. 1 POTATOES								
<i>October</i>								
Shipping	40	0	20	0	15	0	†	†
Terminal	20	0	10	0	9	0	†	†
Retail	7	2	†	†	3	1	†	†
<i>November</i>								
Shipping	17	3	20	0	20	0	20	0
Terminal	12	11	16	2	18	1	10	1
Retail	†	†	†	†	†	†	†	†
<i>December</i>								
Shipping	20	0	20	0	20	0	20	0
Terminal	20	0	20	0	20	0	20	0
Retail	10	0	8	0	8	0	8	0
<i>January</i>								
Shipping	20	0	20	0	20	0	20	0
Terminal	5	0	5	0	5	0	5	0
Retail	†	†	†	†	†	†	†	†

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	15-pound samples								10-pound samples			
	Ex		Exx		Ex baled		Exx baled		Open mesh		Open mesh baled	
	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight	Number of samples	Number under weight
U. S. No. 1 POTATOES												
<i>October</i>												
Shipping	9	0	9	0	9	0	†	†	20	0	†	†
Terminal	5	0	5	0	3	0	†	†	†	†	9	0
Retail	3	0	1	0	1	1	2	0	†	†	8	0
<i>November</i>												
Shipping	9	0	9	0	6	0	6	0	28	2	14	0
Terminal	9	1	9	1	6	0	6	1	26	†	11	1
Retail	†	†	†	†	†	†	†	†	†	†	†	†
<i>December</i>												
Shipping	9	0	8	0	6	0	6	0	19	0	12	0
Terminal	9	0	8	0	5	0	6	0	19	0	12	0
Retail	8	0	7	0	5	0	6	0	16	0	10	0
<i>January</i>												
Shipping	†	†	†	†	6	0	6	0	28	0	15	0
Terminal	†	†	†	†	3	1	3	0	10	0	6	1
Retail	†	†	†	†	†	†	†	†	†	†	†	†

* Shipping point: Klamath Basin. Terminal and retail markets: Sacramento and Oakland.

† Indicates no sample.

Table 25. PERCENTAGE OF ALL SAMPLES OUT-OF-GRADE BY TYPE OF DEFECT AND PERCENTAGE OF OUT-OF-GRADE FOR ALL DEFECTS*

	Total samples	Dry rot	Soft rot	Broken	Bruised	Cuts	Samples out-of-grade for all defects
		<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
<i>Redmond-Portland</i>							
Shipping	794	1.5	4.4	0.5	0.0	1.5	7.9
Terminal	501	0.8	9.3	4.0	6.0	3.8	24.0
Retail	188	1.0	3.7	1.6	0.0	0.0	6.3
<i>Klamath Basin-San Francisco</i>							
Shipping	632	0.0	2.4	0.8	5.4	0.0	8.6
Terminal	310	1.9	3.2	1.9	10.0	0.3	17.3
Retail	241	7.0	3.7	1.2	9.5	0.0	21.4
<i>Klamath Basin-Oakland-Sacramento</i>							
Shipping	555	0.0	0.0	0.2	13.2	0.0	13.4
Terminal	288	1.0	2.1	2.1	25.7	0.0	30.9
Retail	111	0.0	4.5	0.0	5.4	2.7	12.6

* Grade tolerance: 6 per cent by weight of each type of defect or combination of defects, except soft rot for which the tolerance is 1 per cent.