# UNIVERSITY OF IDAHO AGRICULTURAL EXPERIMENT STATION Departments of Agricultural Economics and Horticulture

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# Markets and Market Preferences for Idaho Potatoes

By

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# Markets and Market Preferences for Idaho Potatoes

#### By

#### O. L. MIMMS AND GEORGE W. WOODBURY

#### Early History

THE POTATO, one of the world's staple food crops, is one of the most important crops in the State of Idaho. It is also one of the first crops grown by the early pioneers. The beginning of the potato industry in Idaho was probably in 1837 at Lapwai in what is now Nez Perce County. An Indian teacher and interpreter, Spokane Gary, was raising potatoes with some success in 1836 near the present site of Spokane, Washington. Gary supplied Spalding with 15 bushels for seed purposes in March or April of 1837. (4) "Spalding sowed two bushels of peas and planted seven bushels of potatoes on the land cultivated for him. The balance of his seed he gave to the Indians. He also planted a large assortment of garden vegetables and set out a nursery of apple trees. The true beginning of agriculture and horticulture in Idaho was there in Lapwai." (4)

Two thousand bushels of potatoes, valued at 43 cents per bushel, were produced at Lapwai in 1838. (4) From this early beginning, Idaho potatoes have become famous.

In 1937, just a hundred years after her first venture into potato production, Idaho produced the largest potato crop to date. The State produced the first million-bushel crop in 1898 and the first crop of over 9 million bushels in 1920, but since 1920, every crop has been above the 10 million mark. Since 1930, the production has fluctuated between 22.3 million and 29.5 million bushels. (See Table 1).

One of the 18 surplus late potato states, Idaho usually ranks tenth (seventh in 1937) in acreage harvested and second to seventh in production. Since 1929 she has ranked second to Maine in carlot shipments during the crop movement season.

#### Place of Potatoes in Idaho Agriculture

Although the highly commercialized production and marketing of potatoes is concentrated in only 12 counties, some 15,000 to 20,000 growers are distributed among the State's 44 counties. Acreage during the 10-year period, 1927-36, fluctuated between 84,000 acres in 1929 and 124,000 acres in 1934, with an average of 107,000 acres. Responding to the very favorable prices of 1936, 123 million acres were harvested in 1937.

Potatoes are one of the most important cash crops grown in Idaho, second only to wheat. Cash income from this crop has been greater in recent years, on the average, than from any other Idaho crop. During the six years, 1931 to 1934 and 1936 and 1937, the cash income from potatoes averaged over \$8,500,000. Cash income during the calendar years 1936 and 1937 was \$11,100,000 and \$14,800,000, respectively.<sup>1</sup>

<sup>1</sup>Crops and Markets, United States Department of Agriculture.

#### IDAHO AGRICULTURAL EXTENSION DIVISION

While the 10-year (1927-36) average production of Idaho potatoes is 22,685,000 bushels, only 16,314,800 bushels\* are shipped to market. The principal explanation of this difference is evident in Table 1. Almost 4 million bushels of low grade potatoes were available for livestock feed and/or industrial uses in 1937.

			Saved .	Saved	Balance o	f crops <sup>3</sup>
Year	Estimated total production	Unfit for food or seed <sup>2</sup>	for food on farms where grown	for seed in local- ity where grown	Quantity	Per cent of crops
1929	15,792	1,105	486	1,436	12,765	81
1930	25,000	2,000	504	1,665	20,831	83
1931	25,520	2,807	551	1,673	20,489	80
1932	22,800	2,052	555	1,629	18,564	81
1933	25,530	1,277	462	1,718	22,073	86
1934	23,932	1,436	488	1,493	20,515	86
1935	22,360	1,789	570	1,555	18,446	82
1936	22,260	1,558	475	1,767	18,440	.83
1937	29,520	3,838	665	1,816	23,201	79

Table 1.-Estimated Utilization of the Idaho Potato Crop 1929 - 1937 (Thousand bushels)1

<sup>1</sup>Data taken from Preliminary Review 1937-38 Season-Marketing Idaho Potatoes. <sup>2</sup>Includes potatoes fed to livestock to January 1 and lost through shrinkage, decay, dumping, or

culling. Includes potatoes sold to starch factories.

Growers may alleviate many of the complex problems involved in the marketing of Idaho potatoes. The following information pertaining to production may help to emphasize the fundamental importance of producing a high quality product-a product that will tend to sell itself. Information pertaining to the more technical problems of growing and handling potatoes is available in other publications. These publications are usually available in the county agent's office. Otherwise, they may be obtained either from the Idaho Agricultural Experiment Station, Moscow, Idaho, or from the Idaho Agricultural Extension Service, State House, Boise, Idaho.

#### Quality as a Market Factor

Potato marketing is essentially the disposal of a first-class market product. The factors which influence price may be studied at length. Methods of marketing are subject to change over a period of years. The fact remains, however, that the ultimate end, as far as the grower is concerned, is to sell a quality product at the best possible price. Potato quality must, for the most part, be grown into the potato. The preservation of this quality depends upon the grower and all subsequent handlers. Factors which influence quality are variety, soils, cultural practices, harvesting, handling, storage and grading. Space does not permit a complete discussion of these topics here.

#### Varieties of Potatoes in Idaho

The varieties of potatoes grown in Idaho include the Russet Burbank (synonyms: Russet, Idaho Russet, Netted Gem); the Charles Downing (Idaho Rural); Bliss Triumph, Irish Cobbler, Early Ohio, Katahdin, and

<sup>\*</sup>This figure does not include truck shipments. The movement by truck is becoming more and more important. It is estimated that from 6,000 to 9,000 bushels are shipped annually by trucks.

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#### occasionally other varieties that are standard in other parts of the country.

During the earlier years of potato growing in the State, many miscellaneous varieties of potatoes were grown. As recently as 1916 the dominant variety in the irrigated districts was the so-called Idaho Rural with the Netted Gem occupying a minor place. In the northern part of the State a variety called the North Idaho Rural was dominant, with a number of eastern varieties also in common use. This lack of standardization of varieties in that district caused marketing troubles and made the industry generally unsatisfactory. The North Idaho Rural was a good quality potato but susceptible to attacks of virus troubles to an extent that caused it to be abandoned.

Growers also had difficulty in earlier times in growing Netted Gems of desirable type, owing to the tendency of that variety to become pointed, knobby, and off-type in other ways. This variety is particularly sensitive to growing conditions in the way of excessive heat and uneven soil moisture conditions. Later planting and more careful watering has largely overcome this difficulty in Idaho, so that now this factor is not of sufficient importance to offset the difference in selling price of the variety. This trend toward growing the more popular variety has continued until at present the Gem dominates the field to the extent that in the neighborhood of 90 per cent of all the potatoes grown in the State are this variety. The enviable reputation of Idaho potatoes is based almost entirely on this variety, the Netted Gem or Russet Burbank. Other varieties, perhaps equally acceptable, may come to our attention and even fill a distinct place in the State's potato program, but it should be remembered that the consumer associates the characteristics of the Netted Gem with Idaho potatoes and is usually unwilling to accept other types in its place. Climate and soil apparently influence the quality of the Netted Gem. In other potato regions where this variety has been grown, it has not enjoyed the favor of the Idaho-grown Gem. In other words, here is a variety particularly adapted to the irrigated areas of the Northwest. It is difficult to express the exact reasons for its adaptability except that we might say that they are associated with environment-soils and climate.

The Gem is not well adapted to withstand the unfavorable growing conditions of much of the logged-off area of the northern part of Idaho, so that there is a place for some good quality main crop variety for those districts. At present the Katahdin is the most promising variety to fill this place, as it successfully withstands the midsummer droughts and has so far made satisfactory yields of fair quality potatoes.

The Bliss Triumph still dominates the field as an early maturing potato, with Irish Cobbler and Early Ohio being grown to a lesser extent.

Early potato production is on the decline as a result of difficulties in securing disease-free seed, and uncertain markets which result from competition with several districts which put their crops on the market at the same time.

#### Soils and Climate

Most of the Idaho potatoes are grown in soils which are, for the most part, sandy loams. The first acreages which were planted in the State made relatively low yields owing to unfavorable soil conditions—essentially lack of organic matter. Crop rotation and manuring practices have done much toward increasing productivity and quality. Commercial fertilizers have proved beneficial in many instances, although heavy applications such as are practiced in Maine and some other regions are not the rule in Idaho.

The potato prefers a somewhat cool climate. Practically all of the table stock is produced in the lower valleys where the nights are generally cool with moderate to warm day temperatures. The time of tuber-set is probably the most critical period in the growing season. High temperatures at this time usually result in reduced yields of No. 1 potatoes.

Excessive moisture in the late stages of tuber development cause second growth or knobbiness, a condition to which the Gem is especially susceptible, resulting in high percentages of No. 2 and cull potatoes. Regular applications of water during the growing season contribute much to successful potato culture. In Idaho many seed potatoes are grown at higher elevations without irrigation.

#### Digging and Harvesting

Unseasonal frosts may occur to cause considerable damage to the crop. Care should be taken, however, to harvest the crop, where at all possible, before severe freezing occurs. Frost damage to tubers, even though slight, will show up in storage and the storage of doubtful stock is to be discouraged. Cuts, bruises, and other mechanical injuries can be reduced to a minimum by exercising care in harvesting and handling.

Digging machines, for example, are designed to operate even under adverse conditions. With wet, sticky land it is necessary to have eccentric agitators to separate the earth from the potatoes as they are being elevated over the digger chain. This process is a fruitful source of skinning and bruising the potatoes, and such agitators should be removed when their use is unnecessary. Rubber covered chain links are also now being used to some extent. Their use naturally lessens injury. The more modern diggers are being built with lower angle elevation that makes for less tendency for the potatoes to roll back in being carried over the digger.

Growers are coming to recognize the importance of proper handling and greater efforts are being made to eliminate injury. Rubber-dipped or burlap-lined baskets are being used to some extent, and, in general, greater care is being exercised in hauling the potatoes to the storage. The practice of pouring the potatoes through chutes in the roof of the storage is not so common as in years past, and where practiced some system of preventing the stock from falling, such as canvas conveyers, is coming into use.

Harvesting is always an expensive item and, particularly with the main crop, seasonal conditions make it imperative that the work be done in as little time as possible. However, if special care is not exercised in the way of avoiding injury to the stock, the percentage of loss may go a long way toward absorbing any profit that might otherwise be realized.

#### Grades and Grading

Potato grades are established by Federal and State regulations, and bags are usually labelled with the proper grade. Too often, however, de-

cidedly inferior potatoes without grade specifications are offered to local trade. Such a practice frequently works undue hardship on the grower who makes an honest effort to conform to higher standards. If there are advantages to be realized from marketing poor produce, they would seem to be of a decidedly temporary nature, for the industry as a whole must rely on the production and marketing of quality merchandise. In the long run, then, it becomes better for everyone if the higher standards are adhered to.

Potatoes are graded over sorting tables or mechanical graders before being sacked for shipment. The mechanical graders take out only those tubers of undesirable size. Injured, bruised and misshapen tubers, as well as those which are diseased or sunburned, must be removed by hand. Care should also be taken to remove as much dirt as possible while grading. If frost injury is suspected, one should hesitate to ship any great distance. Losses are usually realized from the necessity of re-sorting and sacking at destination points.

#### Cleaning and Washing

Mechanical means of removing dirt by brushes at grading time have been used in Maine for several years. The results have been generally good.

Within the past few years potato washing has been practiced in several of the potato growing sections. Such a practice results in a better looking product, inasmuch as bruised, diseased and injured tubers are more easily detected after washing, and may be removed. While the usual practice is to wash immediately before shipment, it is possible to store washed potatoes. Blue molds and other storage defects may appear, but losses have not been great from these sources. Consumers have a right to expect a clean product when buying potatoes the same as when buying other farm products. Further development of washing machinery will no doubt result in a greater volume of washed potatoes.

#### Sacking and Loading

As brought out elsewhere in this bulletin, most of the potatoes shipped out of Idaho are packed in 100-pound bags. Potatoes in clean, new sacks, properly weighed and so loaded in the car that tags indicating the grade and variety may be easily seen, will bring a premium. Losses from underweight sacks, shy count of sacks in a car and careless loading must be made good at the shipping end. It naturally follows that these losses must revert to the growers themselves.

#### Marketing Idaho Potatoes1

It cost approximately \$1,500,000,000, or 60 per cent of the consumer's dollar spent for fruits and vegetables, to market the fruits and vegetables sold by farmers in 1936. (3) A large part of the consumer's dollar spent for potatoes is used to pay transportation and other distribution costs from the farm to the consumer. While it is not the purpose of this report to discuss methods of reducing these costs, it is evident from studies of the United States Department of Agriculture and other agencies that many

<sup>&</sup>lt;sup>1</sup>Source of data: The production data were taken from Agricultural Statistics, U. S. D. A., 1938. Unless otherwise specified, all other data in the following pages were taken from or calculated from data in reports of the Market News Service, U. S. D. A.

improvements are possible. To the extent that lower costs are reflected in higher p ces paid to farmers, Idaho potato producers would tend to receive pro rtionally greater benefits than would producers located nearer the large usuming markets.

Inter-regional competition, changing methods of marketing, competition for consumers' dollars, and great distances separating producers and consumers give rise to many complex marketing problems. The following information is not presented as a complete market study. It is merely a brief analysis of just a few of the problems that deserve more intense study.

#### Where Are the Markets?

All of the principal markets for Idaho potatoes are hundreds or thousands of miles away. Consequently, the largest single item entering into the costs of producing Idaho potatoes is transportation; in fact, this relatively fixed cost is usually greater than all of the other producing costs combined. Mountains must be crossed before reaching any one of the great consuming areas. High freight costs and other transportation charges become severely burdensome when potato prices are low. After paying freight and handling costs of \$1.00 or more per hundred to Chicago, much more to many important markets, the return to growers is very small in years of low prices. The average price to growers in Idaho Falls for the 1932 crop was only 23 cents for U. S. No. 1 Russets, while the price of No. 2's was only 4 cents. Many potatoes were not sold. Some were fed to livestock, while others were left in the ground.

Shipments of Idaho potatoes are distributed widely over the United States. Eleven cities in four states, however, receive approximately 59 per cent of the unloads. From eight to ten of these cities usually unload more potatoes from Idaho than from any other late crop state. Seven cities (Chicago, Cincinnati, Dallas, Ft. Worth, Milwaukee, Oklahoma City, St. Louis) received more unloads from Idaho than from any other state every year from 1931 to 1934. In 1934 eighteen cities received more potatoes from Idaho than from any other state.

During the 10 years from 1927 to 1936, over 83 per cent of Idaho potato unloads were east and southeast of their origin. Almost 60 per cent of these unloads were in four states (Illinois, Missouri, Texas, and Ohio). California receives over 98 per cent of Idaho unloads in the West. It is well to bear in mind that these figures are averages. The 1936 and 1937 unloads are compared with a 10-year average by states in Figure 1.

#### Market Preferences for Idaho Potatoes

It is difficult for individuals in the far western potato producing areas to visualize the nature and complexity of markets hundreds or thousands of miles away. The average potato grower probably knows very little about the specific desires and peculiar preferences of consumers. The following materials are presented, therefore, to indicate some of these preferences.

#### Price Premiums

Idaho potatoes possess many qualities that consumers want and are willing to pay for. Price differentials for Idaho potatoes are often, though by no means always, above other potatoes. These differentials are largely

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a result of the qualities of Idaho potatoes as related to consumer desires and to relative qualities and quantities of other potatoes and other foods. Potato dealers can afford to pay premiums for a commodity which can be sold for a premium. Retailers often find it necessary to pay a premium for some commodities in order to obtain quantities sufficient to supply their more prosperous customers. Hotels and restaurants pay premium prices in order to obtain a product that meets the particular tastes of their customers.

The following data and discussion are some indication of the competition that Idaho potatoes meet in Chicago, one of the principal central markets. All potatoes, of course, are competing for the consumer's dollar. The two varieties chosen are important competitors under some conditions, and they also indicate something of the competitive position of the Idaho Kusset (Netted Gem) in the market place.

The premium for Idaho potatoes is not constant. It varies widely from one year to another (*Table 2*), and even from week to week (*Fig. 2*). The average annual prices for U. S. No. 1 Idaho Russets in Chicago are consistently above Wisconsin Round Whites. The average premiums above Round Whites during the past 17 years have fluctuated between a high of \$1.23 per hundred in 1924 and \$.12 in 1925 (*Table 2*). Very few times since 1925 have Idaho Russet prices been below Wisconsin Round Whites in Chicago.<sup>1</sup>

<sup>3</sup>However, during 10 weeks of the 1925-26 marketing season Idaho Russet prices ranged from 5 to 37 cents below Wisconsin Round Whites.



Figure 1.—Distribution of Idaho potatoes by states, 1927-36, 1936 and 1937. The figures from top to bottom in the states surrounding Idaho represent the number of carlot unloads of potatoes from Idaho during 1927-36 (10 years av.), 1936 and 1937.

#### IDAHO AGRICULTURAL EXTENSION DIVISION

The price spread between Idaho Russets and Colorado Red McClures has been a different story. Beginning with 1929, Idaho Russets have received an average annual premium above Colorado Red McClures only 4 years out of 9 on the Chicago market (*Table 2*). On a weekly basis, however, Russets were above McClures just a little over one half of the time (*Table 3*). As may be further observed from Table 3, prices for Colorado Red McClures have been as great or greater than Idaho Russets from 4 to 19 weeks per year since 1929. The weekly average price spread between Idaho Russets and Red McClures has ranged from a 47 cent premium for Russets in April, 1930, to a 64 cent premium for McClures in January, 1935.

Year	Wisconsin Round Whites	Year	Wisconsin Round Whites	Colorado Red McClures
1921	36	1929	63	17
1922	40	1930	29	0
1923	96	1931	64	7
1924	123	1932	49	-6
1925	12	1933	32	-2
1926	66	1934	77	-34
1927	15	1935	66	24
1928	83	1936	78	12
		1937	39	-2

Table 2.—Average annual price differentials between Idaho Russets and two other potatoes in Chicago, 1921-1937

The volume of Red McClures is small compared with that of Idaho Russets. However, it probably is large enough to have a substantial influence on the price of high quality potatoes. "According to estimates released by the Bureau of Agricultural Economics, Crop Estimates at Denver, approximately 39 per cent of the total Colorado production in 1937 were Red McClures; however, the San Luis Valley production was approximately 78 per cent Red McClures. For 1936-37 carlot shipments from the valley totaled 9,611, of which 6,594 cars were Red Mc-Clures." (8) These potatoes are becoming increasingly important in the San Luis Valley, largely crowding out the Brown Beauty variety. For example, in 1929-1930, 34 per cent and 57 per cent of the production were McClures and Brown Beauty, respectively. The proportion of McClures has consistently increased. In 1937-38 the production of the Brown Beauty was only 14 per cent of the total as compared to 75 per cent for Red McClures.

The seasonal price spreads between Russets and Round Whites, and between Russets and Red McClures are considerably different (*Fig. 2*). There is some tendency for the Russet-Round White premiums to increase during the marketing season. Russet-Red McClure premiums, on the other hand, tend to decrease during the season. Further study is needed to determine whether there is any significant relation between these differentials and the seasonal movement of prices paid for Idaho potatoes.

Factors affecting the spread between prices for Idaho Russets and other potatoes are probably very numerous. Changes from one year to another, however, depend to a large extent upon two factors: (1) the

#### Table 3.—Price position of U. S. No. 1 Idaho Russets Relative to Colorado Red McClures, by Weeks, in Chicago, 1929-30 to 1937-38

	19	929-	30	19	930-	31	19	031-3	32	19	)32-	33	19	933-3	34	19	934-35		19	35-3	6	19	)36-3	7	1	937-	-38	Т	otal	5
Month	above	same	below	above	same	below	above	same	below	above	same	below	above	same	below	above	same	Delow	above	same	below	above	same	below	above	same	below	above	same	below
September	1			2									2					1				4			2			11		1
October	5			5			1			1			4			1		4	5			3		2	3		2	28		8
November	4			2		2	1	2		2		1	3	1				4	4			4			1		3	21	3	10
December	4		1	3	1		4					4	2		2			4	4			3		1	1		3	20	1	15
January	3	1			3	2	3			1		4		2	3			4	5			4		1	1		4	18	6	18
February	3		1	1		3		3	3			3		1	3			2	4			4					4	12	1	19
March	3		1	2		2		1	1			4	1	1	2				1		3	4					3	11	1	16
April	3					4		•		1						1			1									5		6
May	2					2												-										2		2
TOTALS	29	1	3	15	4	15	9	6	4	5		16	12	5	10	2		19	24		3	26		4	8		19	128	12	95

MARKETS AND MARKET PREFERENCES FOR IDAHO POTATOES

#### IDAHO AGRICULTURAL EXTENSION DIVISION



Figure 2.—Average weekly price differentials for U. S. No. 1 Idaho Russets in Chicago relative to Wisconsin Round Whites and Colorado Red McClures. The zero line represents the price position of both Wisconsin Round Whites and Colorado Red McClures relative to Idaho Russets. In other words, the average prices of Russets were always higher than Round Whites, whereas they were below McClures part of the time during four of the six months from October to March, inclusive.

size of the western potato crop relative to the size of the total United States crop: and (2) the purchasing power of consumers. The data presented in Figure 3 seem to indicate that these two factors have a potent effect on the central market price differences between Idaho Russets and Wisconsin Round Whites. No doubt other factors also affect these differentials. Explanation of the price spreads between Idaho potatoes and other varieties of potatoes probably warrants further study. Unpublished data in the Agricultural Economics Department of the Uni-



Figure 3.—Price differentials for U. S. No. 1 Idaho Russets above Wisconsin Round Whites in Chicago, and potato production in ten western states as a per cent of total U. S. production, 1921-1937. (Prices adjusted to 1910-14 general price level).

versity of Idaho seem to indicate that the price spread between Idaho Russets and Colorado Red McClures, as compared with Russets and Round Whites, are more dependent on other factors that the size of the western potato crop relative to the total United States crop and the purchasing power of consumers.

#### Consumers

Recent studies conducted in Wisconsin, Minnesota, and Michigan reveal information that is significantly important to Idaho potato growers. A questionnaire returned to Michigan State College by 75 Detroit housewives indicates that 70 per cent of the group requested Idaho potatoes for baking purposes, 10 per cent did so part of the time, and the remaining 20 per cent of the women selected the larger potatoes from their regular purchases. "Of 59 who answered the question, 'Do you ask for Michigan, Maine, or Idaho potatoes, or buy regardless of origin?,' 16 stated that they asked for Michigan potatoes, twelve asked for Maine, and 10 asked for Idaho, while 21 bought whatever potatoes they considered preferable at the time of purchase regardless of state of origin." (9)

All consumers undoubtedly prefer superior quality potatoes, but this desire in the smaller income groups can have relatively little positive effect on prices of premium quality potatoes. A limited supply of higher quality potatoes will inevitably sell at higher prices to consumers who can afford to spend more for food. There is a definite tendency for persons with high incomes to purchase potatoes of high quality. Based on a study of 1,356 retail stores in the Twin Cities, L. F. Garey says, "In general, as income increased, the proportion of sales of western russets and southern potatoes increased. . . This was true for both St. Paul and Minneapolis. In Minneapolis the data indicate that as incomes increased, people shifted from Minnesota Russet to western russets, while in St. Paul, the shift was from other Minnesota potatoes to western russets." (6) The study also shows that ". . . the prices received for potatoes by the retailers increased as the incomes of purchasers increased, indicating that the higher income groups demand a higher quality of potatoes than the low income groups." (6) Highest prices were paid by those groups having a per capita income of over \$600.00.

There is also a relationship between consumer incomes and per capita consumption of potatoes. The low income groups do not always lead in potato consumption. The highest per capita consumption in a group of 543 families (1) interviewed in Milwaukee, Chicago, and Madison was in the "\$1,500.00 to \$3,500.00" per family group. With this important exception, however, there is a noticeable tendency for the per capita consumption to decrease from the lower to the higher income groups. The per capita consumption for the other income groups in this 543 family sample was 2.39 bushels in the one receiving "less that \$1,500.00" per family, 2.32 bushels in the "\$3,500.00-\$7,500.00" group, and 2.23 bushels in the "more than \$7,500." group. Another study, involving 259 families in Cleveland, Ohio "... indicated a definite and consistent decrease in potato consumption per capita as income increased." (5)

Demand in Retail Stores. Idaho Russets make up a relatively small proportion of potato sales by 1,356 retail stores in the Twin Cities (Table 4). These stores handled approximately 38 per cent<sup>1</sup> of the annual potato consumption in these cities. While western russets amounted to 26.8 per cent (225,914 bushels) of all potatoes sold by these stores, Idaho Russets amounted to only 1.9 per cent. Washington, on the other hand, supplied 19.8 per cent of total sales. The small volume of Idaho Russets appears to be a result of freight costs rather than to special consumer preferences for other western russets.

**Demand in Eating Places.** The market demands of grocers, hotels, and restaurants for potatoes reflect the preferences of their customers. It may be concluded from Garey's study in the Twin Cities (6) that the demands of hotel customers and retail store customers are significantly different. For example, retail grocers depended on russets for less than one-half of their sales as compared with about three-fourths by hotels.

Western russets are relatively more important than Minnesota Russets in both the hotel and grocer trade. The difference is more striking, however, in the hotel trade. Almost 65 per cent of all potatoes used by 20 hotels were western russets, as compared with 8.6 per cent of Minnesota Russets (*Table 4*).

	1	Retail store	5	Hotels						
Kind	Quan- tity, bushels	Per cent of total	Ave. re- tail price per cwt.	Quan- tity	Per cent of total	Ave. price paid per cwt.				
Russets										
Minnesota Washington Montana Idaho California Other Western Other	177,588 167,119 19,187 15,792 1,760 22,056 439,211	21.1 19.8 2.3 1.9 0.2 2.6	\$1.75 2.28 2.38 2.41 2.30 2.39	2,124 9,507 250 2,133 4,042	8.6 38.6 1.0 8.7 16.4	\$1.026 1.692 1.750 1.400 1.300				
TOTAL OR AVERAGE	842 713	100.0	\$2.25	24.610	20.7					

Table 4.—Kind, quantity, and price of potatoes handled in 1,356 retail stores and in 20 hotels in the Twin Cities

Source: Adapted from Tables 4 and 10, Minnesota Bul. No. 324,

As compared with the 20 hotels, 128 cafeterias and restaurants in the Twin Cities used a smaller proportion of russets from the western states and a larger proportion of russets from Minnesota. (6) For example, only 73.8 per cent of the russets consumed were from the western states as compared with 88.2 per cent in hotels; while Minnesota Russets comprised 26.2 per cent as compared with 11.8 per cent in hotels. Idaho Russets made up 3.24 per cent of the total russets consumed in restaurants and cafeterias as compared with almost 12 per cent in hotels. It is interesting to note that of the total russet potatoes consumed by the three types of eating places, over 49 per cent were from the State of Washington.

<sup>1</sup>Calculated from data listed on p. 5 of Minnesota Bulletin No. 324.

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#### Containers Used in Shipping Idaho Potatoes

The 100-pound bag is the most widely used container in shipping Idaho potatoes. For the fiscal year ending June, 1937, over 94 per cent of carlot shipments were in the 100-pound containers. The 10- and 15-pound bags are the most popular of the small containers (*Table 5*). The two combined, however, made up less than 5 per cent of the total shipments during 1937 and 1938.

	19	937	1938					
Container	No. cars	% of total	No. cars	% of total				
100 lb. bag 50 lb. bag 25 lb. bag 15 lb. bag	23,810 34 31 289	94.16 * 1.14	27,910 39 3 1,015	88.72 * 3.23				
Mixed bags Boxes	410 651 12	1.05 2.58 *	1,863 2	5.92				
Boxes and bags Bulk	24 19	*	31 74	*				
TOTAL	25,286	100.00	31,459	100.00				

Table 5.—Containers used in s	shipping Ida	ho potatoes
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Data supplied by L. G. Schultz, Federal Supervisor of Inspections, Boise, Idaho. \*Less than 1 per cent.

A recent study in Cleveland, Ohio, covering the 1936-37 marketing season shows that in over 90 per cent of 206 independent retail stores the most common unit of sale was less than 15 pounds. (2) The 10-pound bag was the most common unit of sale in 69 per cent of the stores, and the 5-pound bag was most common in 18 per cent. Such facts as these and many other considerations give rise to the often repeated question: "Why don't we ship more potatoes in 10-pound bags?" This question is partially answered by the following factors:

- Retailers prefer larger size packages. For example, 116 out of 200 of the Cleveland stores preferred to purchase their potatoes in 100-pound bags, as compared with only 4 stores, or 2 per cent, preferring 10- and 15-pound bags. Twelve per cent preferred 60-pound bags. "The ease of handling was the most important consideration in the preference for a container in 58 per cent of the stores. This was the principal reason why the 100pound bag was preferred by retailers." (2)
- 2. Consumer reaction to branded packages is also a limiting factor. About one half of the retailers in 204 Cleveland stores reported unfavorable customer-reaction to branded bags. "The unfavorable reaction was much more frequent in the low than in the high rental areas." (2) In other words, price appears to be one of the important factors influencing low income groups in their choice of purchase.
- Predominant nationality also appears to be another factor affecting the popularity of branded packages. In areas with compar-

able incomes, "some customers, notably those of Jewish origin, prefer to select their own produce. Others, especially the native Americans, are much more likely to accept what is offered rather than make their own selection. Apparently, there are other factors than price which may effect the popularity of the branded package." (2)

Available information indicates that some rather fundamental changes must come about before it will be profitable to put up a large proportion of the potato crop in small packages. Responses from medium and low income groups, who make up the bulk of potato consumers, indicate that these groups have not been willing to pay prices that would justify the added expense of small branded packages. It should be pointed out, however, that some growers and shippers find it profitable to package some of their premium quality potatoes in small size branded bags. The most succesful expansion of small bag sales will probably depend largely on retailers in high income areas.

"Consumer size packages have several advantages in that the grade, size, state of origin, and brand carry through to the final consumer. There is usually less bruising in small packages due to their lighter weight and greater care in handling. With consumer size packages it is also possible for retailers to advertise and sell specific grades without loss from shrinkage." (7)

#### Value of the Outlook Service

Outlook reports of the U.S. Department of Agriculture and of state extension services are designed to give producers facts and interpretations of facts that are basic to planning the farm business for the year ahead as well as for longer periods. These reports are vital to potato growers. Outlook information is especially important to the producers who go in and out of production. It is helpful in giving proper weight to hindsight and foresight when organizing and planning the farm business. Prompt and timely adjustments in potato production probably can give rise to larger percentage gains to the producer than any other major crop grown in the State of Idaho. These gains would be possible because the year-toyear fluctuations in potato prices are probably more violent than any other major crop. These wide fluctuations are largely a result of an inelastic demand and rather large shifts in production. The extreme fluctuations of potato prices from years of small crops to years of large crops are shown in Figure 4. Potato farmers as a whole have tended to increase or decrease their plantings in response to favorable or unfavorable incomes from potatoes. Idaho potato prices depend upon various factors, as was pointed out in the preceding paragraphs, but they are very closely related to the total U. S. potato production. This relation is close enough and definite enough to enable many growers to adjust their plantings in such a way as to profit from the wide fluctuations in production and price.

Producers who plant a more or less constant acreage of potatoes in their regular system of rotation can profit also from the use of outlook statements. It is important for either group of producers to know what to expect in the way of prices and costs, so that they can invest more or less in caring for potatoes and other farm enterprises. To the extent that

outlook statements are accurate it may be possible to avoid the often costly mistake of planning and planting on the basis of past prices instead of the present outlook for prices and costs.



Figure 4.—Potato prices (cash to growers) in Idaho Falls for U. S. No. 1 Idaho Russets and potato production in the United States, 1910-1937. (Price data 1910-1917 taken from Idaho Bul. No. 166; 1918-1937 average of midpoints of weekly range of prices at Idaho Falls as reported by the Market News Service).

Outlook statements are accurate enough to merit the producer's confidence. A review of the first six annual outlook reports indicates that they ranged from 84 per cent to as high as 94 per cent correct. (10) Idaho Experiment Station Circular No. 62 indicates that outlook information hits the mark 8 times out of 10. (11) Outlook releases on potatoes were correct 7 years out of 8 from 1924 to 1931. (11) This favorable record has continued up to 1938. Favorable growing conditions in 1924 gave yields much above the average with the result that potato prices were lower than anticipated. Another miss in 1933 was in favor of the grower. Unfavorable weather gave the fifth smallest crop in 25 years, resulting in much improved prices and larger incomes. In other words, potato outlook reports were correct 13 years out of 15 from 1924 to 1938. Idaho Experiment Station Bulletin No. 188 presents valuable detailed information on the use of outlook information in planning the farm business for the year ahead.

Price outlook information may often be very useful during the marketing season as an aid in deciding when to sell. Careful analysis of market information early in 1937 probably would have encouraged many more farmers to sell before the drastic price dive which occurred after the first week in March. Favorable growing and harvesting conditions in 1937 contributed to an early and fast movement of new potatoes from some of the early states, thus depressing the price of old potatoes.

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