UNIVERSITY OF IDAHO
AGRICULTURAL EXPERIMENT STATION

Department of Agricultural Economics

IDAHO AGRICULTURE

The POTATO SITUATION IN IDAHO

being Part III of

A Tentative Report of the Agricultural Situation Based on an Economic Survey of the Production and Marketing of Idaho Farm Products

by

C. F. WELLS AND H. C. DALE

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* In cooperation with U. S. Department of Agriculture.

LETTER OF SUBMITTAL

UNIVERSITY OF IDAHO
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3 March 1927

Sir:

The following pages embody the results of that part of Purnell Act Project, Number 1, entitled "Primary Markets for Idaho Potatoes, Cheese, Eggs, Beef, and Mutton, and the Extent of Competition in These Markets Represented by the Products of Other States, 1914-1924," which deals with the Potato Situation. To Mr. C. F. Wells, formerly of the School of Business Administration and now of the Experiment Station Staff, is due the credit for having undertaken and executed the major portion of this study.*

H. C. DALE,
Economist

E. J. IDDINGS, Director
Agricultural Experiment Station

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*Acknowledgement is made of the assistance rendered by the federal bureau of agricultural economics in drafting the charts and maps used in this report.

The investigations reported in this bulletin are a part of the general economic survey of Idaho agriculture and its relation to the national situation, conducted by the Idaho Agricultural Experiment Station in cooperation wth the Bureau of Agricultural Economics of the United States Department of Agriculture, the Idaho State Department of Agriculture, and other Idaho agencies.

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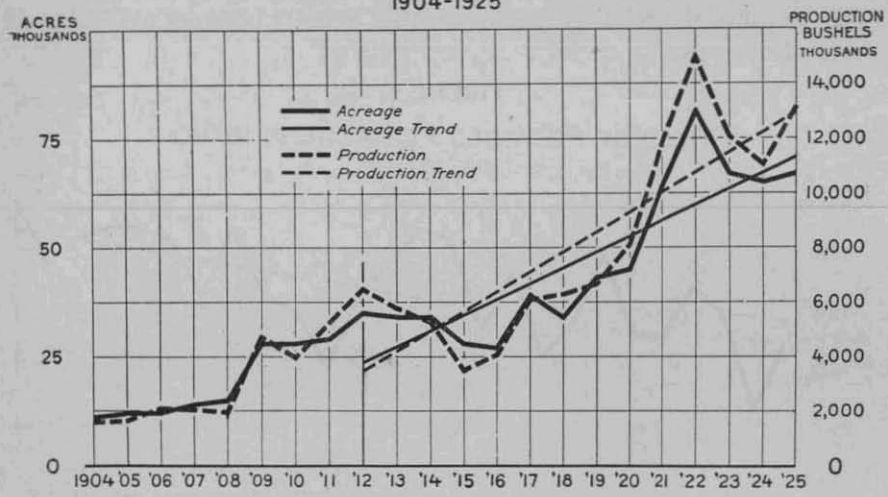
INTRODUCTION

Importance of the Crop

During the 10-year period 1916-1925, potatoes have furnished on the average 15.4 percent of the total gross cash income from all cash crops, fruits, and vegetables in Idaho. This percentage has varied from 11.5 percent in 1920 to 26.6 percent in 1925. The cash crops referred to include wheat, sugar beets, alfalfa seed, peas, potatoes, clover seed, beans, timothy seed, and sugar beet seed. The fruits and vegetables referred to are: onions, apples, prunes, watermelons, lettuce, peaches, pears.

FIGURE 1.

ACREAGE AND PRODUCTION OF POTATOES IN IDAHO
1904-1925



The trends of both acreage and production during the same period as shown in Figure 1, have been upward. This increase in acreage and production, however, has taken place principally on irrigated land. According to the federal census, there were 32,044 acres of potatoes grown under irrigation in 1919, which is three-fourths of the total state acreage of potatoes. The production on irrigated land in that year was 5,409,108 bushels, or 85.8 percent of the state's total production.

Table 1 shows that potatoes are to a slight degree replacing other crops, occupying 2.4 percent of the total cropped acreage in 1924 as compared with 1.5 percent in 1919. Of the total irrigated cropped acreage in

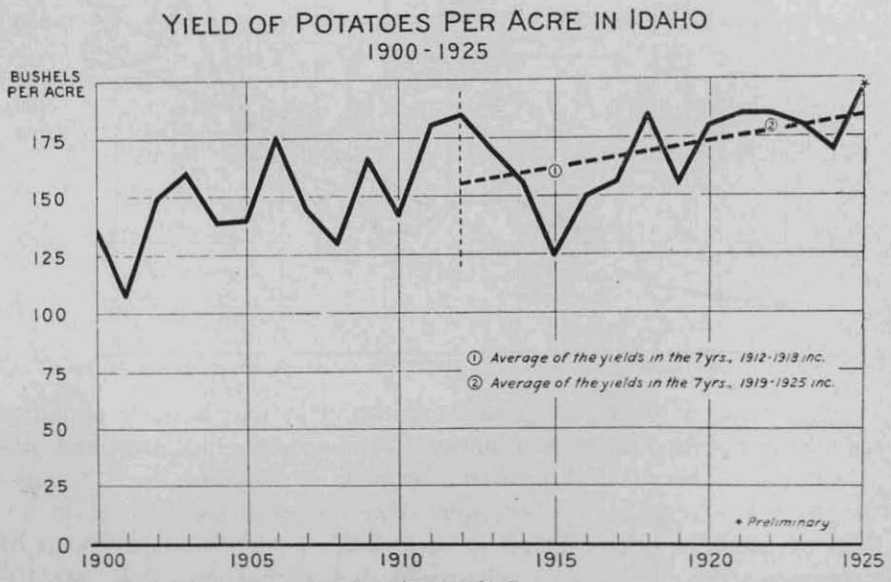
TABLE 1.—Potato acreage compared with total cropped acreage—census years, 1899 to 1924

(1) Census year	(2) Idaho total cropped acreage	(3) Idaho total potato acreage	(4) Column (3) as a percentage of column (2)
1899	936,159	9,313	1.0
1909	1,690,800	28,341	1.7
1919	2,787,836	43,196	1.5
1924	2,581,567	61,267	2.4

1919, potatoes occupied 2.7 percent in contrast with 1.5 percent of the total cropping.

In 1924 potatoes on 2.4 percent of the cropped acreage produced 14.5 percent of the total gross income from cash crops, fruits and vegetables. This indicates the relatively high value per acre of potatoes as compared with other crops.

FIGURE 2.



See Appendix I.

Yields

Potato yields for the state as a whole are determined quite largely by the irrigated crop. For 1919 the federal census places the average yield per acre at 145.9 bushels for the state, 80 bushels per acre on non-irrigated

land, and 168.8 bushels per acre on irrigated land. Later discussion will bear out this point further. Yield per acre has shown an upward trend for the state as a whole as indicated in Figure 2.

Table 2 indicates that only one state, Maine, has had higher average yields than Idaho. Idaho ranks fourth in relative increase of yield between the two periods, Maine, Michigan and Pennsylvania leading in this respect. Idaho has not increased its yield as much relatively as have Maine, Michigan and Pennsylvania in the period under consideration.

TABLE 2. Potato yields, Idaho and other states, 1914-1925.

(1) State	(2) Average yield per acre 1914-1920 (bu.)	(3) State	(4) Average yield per acre 1921-1925 (bu.)	(5) State	(6) Relative change in yields for period 1921-1925 over 1914-1920. (Column (4) as a percent of Col. (2)
Maine	196	Maine	261	Maine	133
Idaho	158	Idaho	182	Mich.	125
Calif.	138	Calif.	146	Penn.	119
Wash.	138	Wash.	143	Idaho	115
Colo.	137	Colo.	134	N. Y.	111
N. J.	117	N. J.	125	Wisc.	108
N. Y.	101	N. Y.	112	N. J.	107
Minn.	98	Penn.	108	Calif.	106
Wisc.	98	Mich.	107	Kan.	106
Penn.	91	Wisc.	106	N. D.	105
S. D.	87	Minn.	99	Wash.	104
Mich.	86	N. D.	86	Minn.	101
Nebr.	83	Nebr.	81	Colo.	98
N. D.	82	S. D.	75	Nebr.	98
Kan.	70	Kan.	74	S. D.	86
U. S. Early and Late	97.9		107		

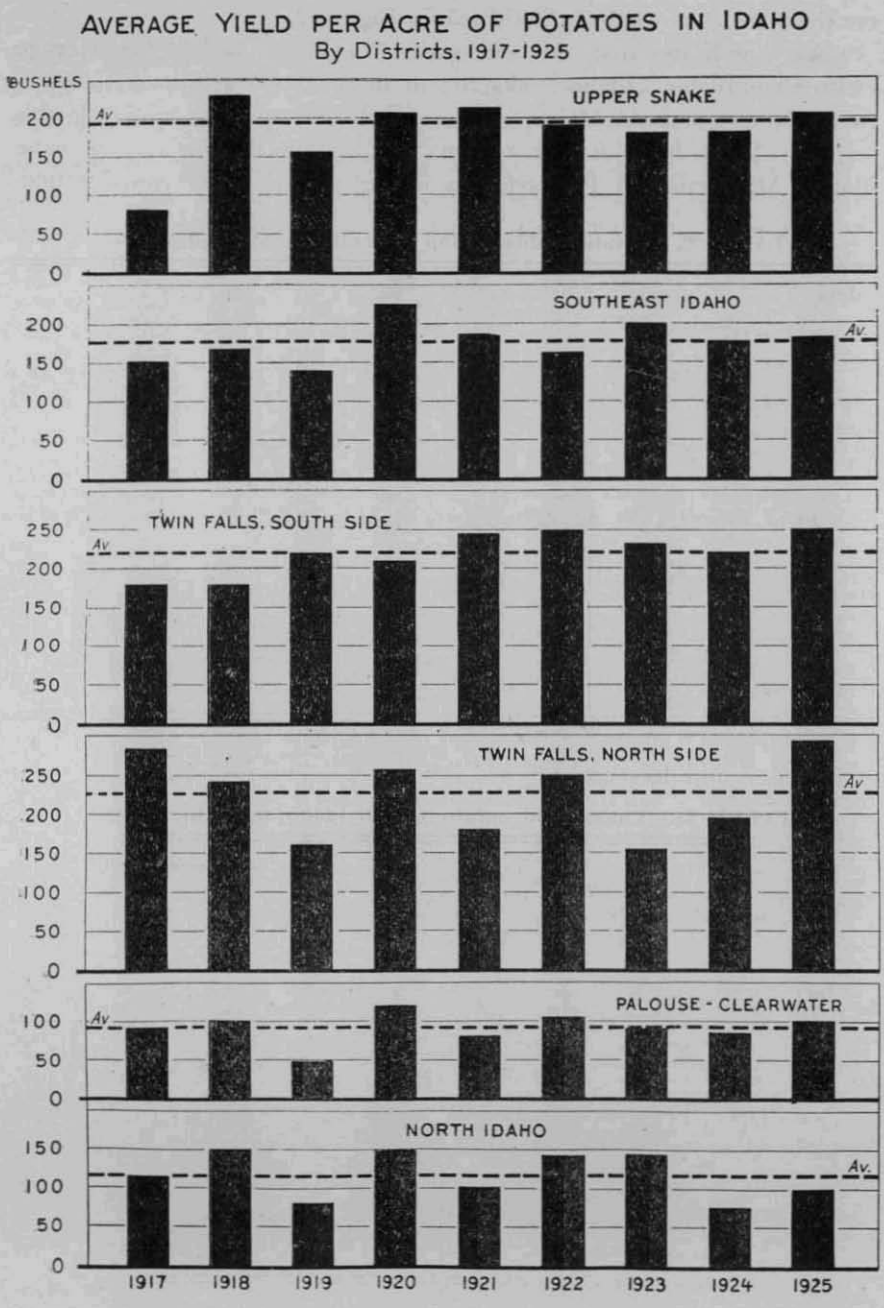
* 1924 Yearbook U. S. D. A., p. 707.

Increases and decreases in yield per acre are shown in Table 2a.

TABLE 2a. Changes in potato yields, Idaho and other states.

State	Bushels increase or decrease per acre. 1921-1925 period over 1914-1920 period
Maine	65 Increase
Idaho	24 "
Michigan	21 "
Pennsylvania	17 "
New York	11 "
New Jersey	8 "
California	8 "
Wisconsin	8 "
Washington	5 "
North Dakota	4 "
Kansas	4 "
Minnesota	1 "
Nebraska	2 Decrease
Colorado	3 "
South Dakota	12 "
Average	9.1 Increase

FIGURE 2a.


AVERAGE YIELD PER ACRE OF POTATOES IN IDAHO
By Districts, 1917-1925
BUSHELS
UPPER SNAKE
SOUTHEAST IDAHO
TWIN FALLS, SOUTH SIDE
TWIN FALLS, NORTH SIDE
PALOUSE - CLEARWATER
NORTH IDAHO
Av.
0
50
100
150
200
250
1917
1918
1919
1920
1921
1922
1923
1924
1925

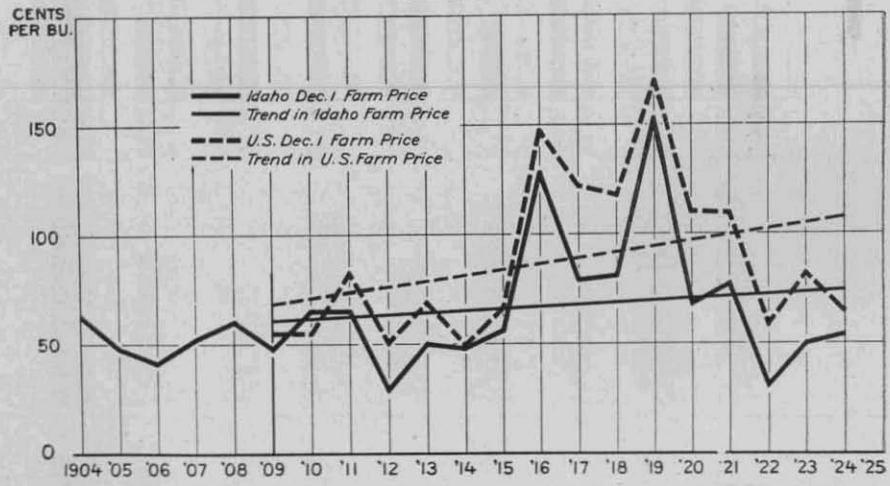
The increase in yield per acre of potatoes can not be attributed to any one factor. Undoubtedly the greatest single item is the increased use of comparatively disease-free seed, and of high yielding strains. In other words seed is a highly important determining factor in the production of a profitable crop of potatoes.

The growers of potato stocks to be used expressly for seed have increased rapidly in the past few years, and the use of this seed and the education of growers to the necessity for seed that is free from the devitalizing diseases could not do other than be reflected in the upward tendency in production.

Improved cultural methods also enter into the contributive causes of increased yield. These changes in cultural methods involve such things as better rotations of crops, cleaner culture and more intelligent use of irrigation water.

FIGURE 3.

FARM PRICES OF POTATOES IN IDAHO AND UNITED STATES
1904-1924



Prices

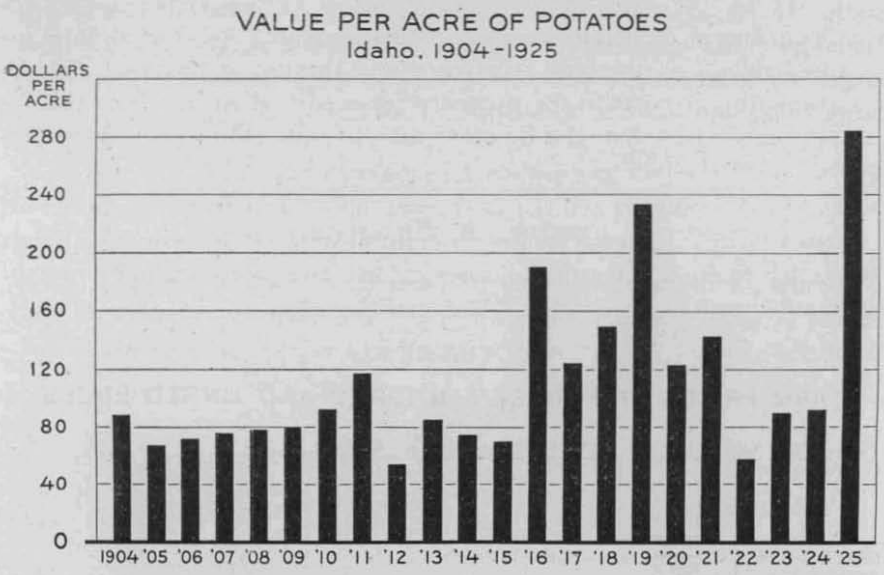
Figure 3 shows that farm prices of potatoes in Idaho generally parallel United States farm prices of potatoes. It is evident, then, that national conditions of supply and demand, rather than local conditions, determine Idaho prices.

The difference in trends is slight and of doubtful significance.

The fact that United States farm prices are usually higher may be due to the fact that United States prices reflect conditions in the large areas

closer to consuming centers. Since Idaho pays more freight on its potatoes than these areas the farm price in Idaho is lower than the average United States farm price.

FIGURE 4.



Value Per Acre

Figure 4 shows that the value per acre of all potatoes in Idaho has been increasing. This reflects the upward trend in yield per acre shown in Figure 2 and the upward trend in price per bushel shown in Figure 3. The increased value per acre, however, has been due more to larger yields than to higher prices, since yields have shown a greater relative increase than have prices.

Values per acre have fluctuated more violently since 1911 than prior to that year. This is due for the most part to the extreme fluctuations in prices during the war years rather than to the more marked variation in yield per acre.

Values per acre may be expected to come back to a degree of stability more comparable to that experienced in pre-war years, thereby eliminating some of the hazards hitherto characteristic of the industry.

Idaho compared with the United States and Important States as to Production and Shipment: Altho Idaho as a state usually has had the second highest yield per acre, the average yearly production of potatoes over the period 1917-1925, (10,032 bushels) was only the ninth largest in the United States. (See Appendix I).

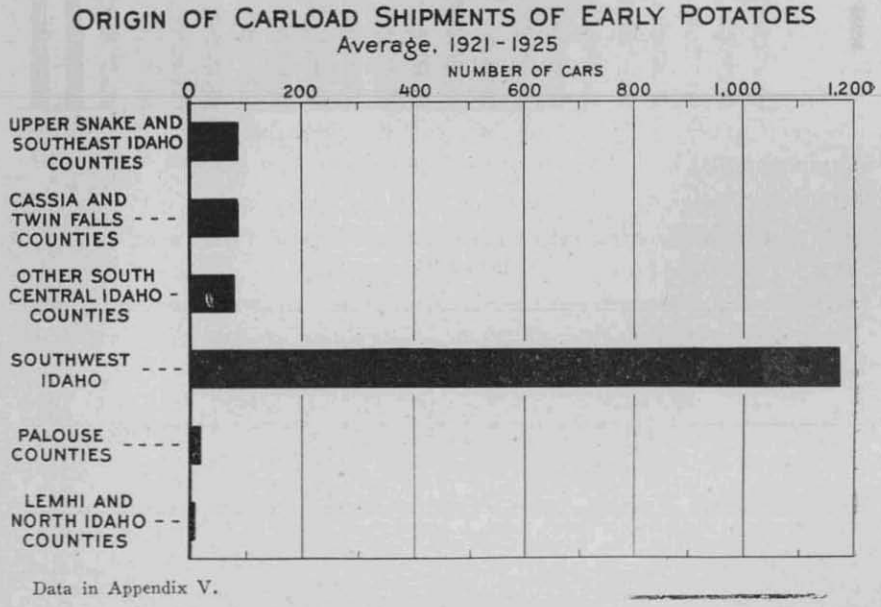
Figures for carlot shipments are a more accurate index than production figures of Idaho's importance in the commercial production of potatoes. Appendix II shows that over the period 1917-1918 thru 1923-1924 Idaho ranked eighth in seasonal carlot shipments. In 1923-1924 Idaho was sixth. If the shipments of the last two seasons could have been included Idaho might have ranked even higher, the reason being that Idaho ships a larger percentage of its production than do great producing states with large consuming centers within their borders.

EARLY POTATOES

Production Situation

Figure 5 indicates the shipments from the various sections of Idaho. It was assumed in compiling the data for this chart that potatoes shipped during the months of July and August of each year are early potatoes.

FIGURE 5



Data in Appendix V.

It will be observed that Southwestern Idaho (Boise Valley), mainly Canyon County, strongly leads all other sections. A study of figures in Appendix V, however, indicates some falling off in shipments from this district and some increase in shipments from the upper Snake and the Palouse sections (Bingham and Nezperce Counties).

Yields

The estimated average yield for the Boise Valley area for the period 1917-1920 was 202 bushels per acre. The average yield for the period 1922-1925 was 193 bushels. (See Table 3).

TABLE 3. Yield per acre, early potatoes, Boise Valley area: bushels

	1917 (3)	1918 (3)	1919 (census)	1920 (3)	1921 (3)	1922 (3)	1923 (3)	1924 (census)	1925 (3)	Average
Ada	118	135	158	200	250	200	190	134	75	163
Canyon	190	188	206	254	200	275	159	163	169	200
Owyhee	143	159	104	(4)	150	(4)	(4)	235	(4)	158
Payette	53	171	57	(4)	200	200	(4)	177	175	147
Weighted average yield (1)	181	184	191	254	194	273	159	171	169	
Boise project yield (2)	162	180	192	212	260	290	190	147*	217	

* Subject to correction.
Sources of Data:
(1) Weights used are based on 1921-1925 average shipments for given county over average total shipments for all four counties. Weights are: Ada—1, Payette—5, Owyhee—29, Canyon—215.
(2) Reclamation records. The Boise Project covers parts of Ada and Canyon Counties.
(3) Records of state statistician.
(4) Data not available.

Prices

Prices of early potatoes by county are available only for the census years 1919 and 1924. Prices are available for all years since 1919 for the Boise Project and these prices are used. Table 4 shows that the price has shown a very decided downward trend over the period 1919-1925. Reasons for this will be developed in the section on the marketing of the early potato crop.

TABLE 4. Farm prices, early potatoes—Boise Valley area 1919-1925
Price per bushel

	1919 (2)	1920	1921	1922	1923	1924 (2)
Ada County	$1.55	(3)	(3)	(3)	(3)	
Canyon County	1.44					$1.46
Owyhee County	1.45					
Payette County	1.25					1.50
Weighted average above (1)	1.43					1.46
Boise Project (4)	$1.23	$1.15	$1.00	$ .10	$ .50	$ .40

(1) Same weights as used in Table 3.
(2) Price of potatoes for given counties from state statistician's records.
(3) Not available.
(4) Records, Boise Reclamation Project.

Values Per Acre

Values per acre of early potatoes in the Boise Valley area, the principal producing section, are shown by Table 5 to have had a downward trend, the average for the years 1923-1925 being only about half as high as the 1919-1922 average. This is due to the downward trend in price per bushel combined with decreased yields per acre.

TABLE 5. Values per acre, 1919-1925, Boise Valley area

Year	Value per acre (1)
1919	$234.93
1920	292.10
1921	194.00
1922	27.30
Average 1919-1922	187.08
1923	79.50
1924	68.40
1925	130.13
Average 1923-1925	$ 92.67

(1) Weighted average yield from Table 3 and Boise Project price from Table 4.

In only one year out of the past four have values per acre been above $80.00. In 1925 the values were around $130.00 per acre, according to estimated yield and prices based on the reclamation project reports. The high price in 1925 resulted in values per acre considerably above the average values for the years 1923, 1924, and 1925.

Expenses of Production

The usual expense involved in production of early potatoes where the work is hired or where the operations are computed at prevailing rates are estimated by the University of Idaho extension horticulturist to be about as follows:

TABLE 5a. Estimated expenses of production, Idaho

Expense items of	Expense per acre
Plowing	$ 4.00
Cultivating	4.00
Irrigating	5.00
Seed	20.00
Planting	2.00
Digging	22.50
Sacks	15.00
Hauling	5.00
Estimated expense to produce (per acre)	$77.00

This expense total of around $75.00 to $80.00 per acre allows the farmer going rates of wages for himself and his motive power. With the values per acre that prevailed in 1922, 1923, and 1924, averaging under $60.00 per acre, it is evident that early potato growers, on the whole, did not receive the going rates for their own efforts, nor did they receive anything for the use of their land. On the other hand, farmers who were handling a few acres of early potatoes with their own family labor, and were able to fit in the work when there was no conflict with major farm enterprises undoubtedly added to their farm incomes by growing some potatoes.

Marketing of Early Potatoes

Principal Markets

The list of states receiving shipments of Idaho early potatoes varies considerably from year to year. In the season of 1921 Idaho shipped to 21 different states; in 1922 to 22 states; in 1923 to 29 states, and in 1924 to 24 states. There were only 13 states that received shipments in every one of the four seasons. On the other hand the 13 states which, in the four-season period took the largest number of cars, also took a fairly constant percentage of total shipments. This latter list is given in Column 1 of Table 6. To be still more specific, the five states of Texas, Illinois, Kansas, Missouri, and Oklahoma took, on the average, 72.7 percent of total shipments whose destinations are known during the four years 1921 to 1924.

TABLE 6. Early potatoes. Destinations of shipments from Idaho by seasons. 1921-1924 (a)

State of Destination	Total Cars Received				
	Totals during the four seasons	1921 Aug. 5-Sept. 2	1922 July 1-Sept. 15	1923 July 15-Sept. 30	1924 July 21-Sept. 16
Texas	2242	174	500	850	718
Illinois (c)	1741	849	220	578	94
Kansas	773	158	167	346	102
Missouri	648	103	223	269	53
Oklahoma	607	78	163	217	149
Colorado (b)	374	98	7	149	120
California	341	0	7	245	89
Oregon	263	0	87	2	174
Nebraska	180	46	47	87	0
Louisiana	176	4	19	125	28
Wyoming	166	41	47	55	23
Ohio	133	9	0	122	2
Idaho	122	20	6	53	43
(I) Total of above	7766	1580	1493	3098	1595
(II) Total early potatoes, all destinations		1705	1564	3481	1726
(I) as a percent of (II)		92.6	96.1	89	92.5
Total number of states receiving one or more cars		21	22	29	24

(a) Idaho Early Potato Deals. U. S. D. A. Division of Fruits and Vegetables.
(b) Largely for diversion.
(c) Over 90 per cent to Chicago.

The fact that the list of states to which Idaho ships varies as to both content and length from year to year might lead one to conclude that the state has no market area—that is, no especial geographical district that can be depended upon to take early potatoes. This conclusion, however, would be incorrect. As a matter of fact, the 13 states which in the four-season period took the largest number of cars constitute, as a group, a decidedly stable market.

For convenience, these 13 states are classified into three geographical districts: the Mountain and Pacific, the Middlewestern and the Southwestern. The states included in each district are shown in Table 7.

TABLE 7. States in Idaho market districts

Mountain and Pacific District	*Middlewestern District*	*Southwestern District*
California	Kansas	Louisiana
Colorado	Nebraska	Oklahoma
Idaho	Missouri	Texas
Oregon	Ohio	
Wyoming		

An examination of Table 8 will show that Idaho shipments to the Middlewestern states have tended to become a smaller percentage of total yearly shipments, and that the shipments to the Southwestern and the Mountain and Pacific districts have shown a precentage increase.

TABLE 8. District destinations of early potatoes as a percentage of total known destinations, from Idaho. 1921-1924.

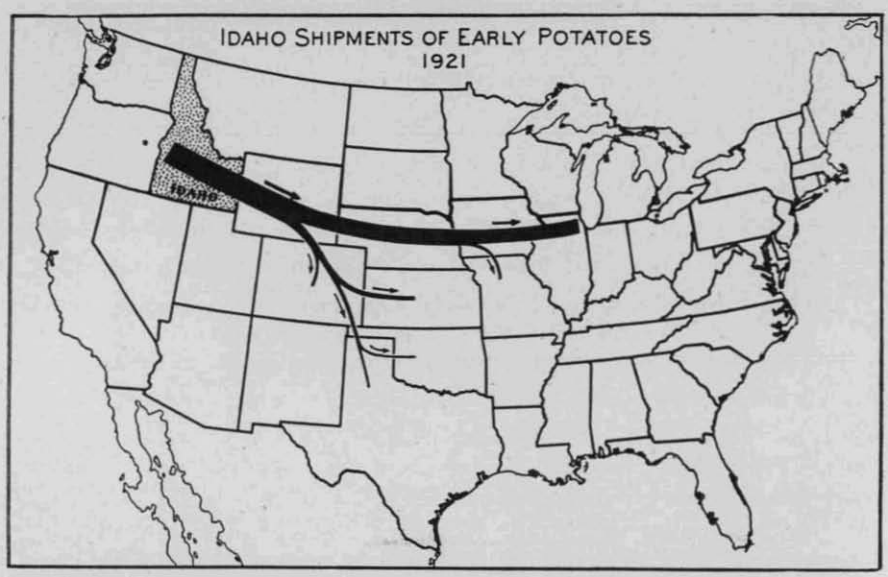
Year	Grand Total	DISTRICTS			
	Percent	Mountain and Pacific Percent	Middle-Western Percent	South Western Percent	Others Percent
1921	100	9.3	68.3	15.0	7.7
1922	100	9.8	43.6	43.6	4.6
1923	100	14.5	40	34.2	11.3
1924	100	26.1	14.5	51.9	7.5
Average	100	14.9	41.2	36.0	7.7
Trend		up	down	up	

Texas is the most important single state in the Southwestern district, and Illinois is most important in the Middlewestern district. Table 6 shows that changes in the shipments to these two states account for much of the change above mentioned in the relative shipments to the Middlewestern and Southwestern districts. Part of the increase in the shipments to the Mountain and Pacific district is due to an increase in shipments to Denver. Since many of these are diverted to points in the Middlewest and Southwest, the increase indicated in the Mountain and Pacific district is to that extent too large. A graphic illustration of a shift in our market for early potatoes from the Middlewestern district to the Southwestern district is given in Figures 6 and 7. Figure 6 shows that in 1921 about 30 percent of our early crop went to Illinois (mostly to Chicago.) The Middlewestern district as a whole took 68.3 percent. The Southwestern district took only 15 percent in this year. Figure 7, on the other hand, shows that in 1924 the Middlewestern district took only 14.5 percent and the Southwestern district took 51.9 percent, most of which went to Texas.

This indicates that the distribution of Idaho early potatoes within the 13 states fluctuates from year to year.

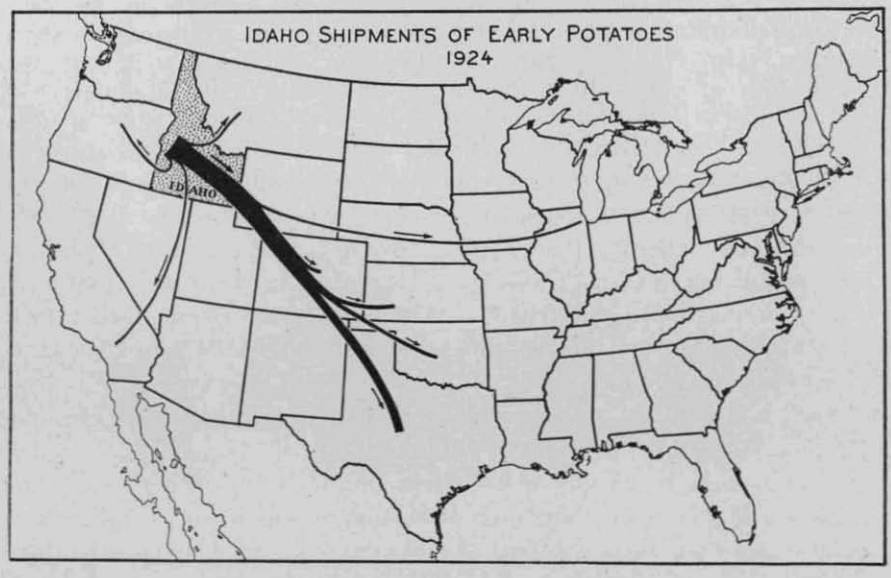
In both years Idaho shipments sought and, for the most part, found the relatively higher price zones. In 1921 Illinois was in the 4 to 5-cent-a-pound zone (retail) as was part of Texas and all of Oklahoma, the three

FIGURE 6



areas taking 64.5 percent of Idaho shipments to total known destinations. In both years Idaho has been in a relatively low price zone, which reflects the fact that in the weeks during which the early crop is being harvested the state is in surplus area. Idaho early potatoes, therefore,

FIGURE 7



typically seek the deficit areas where the higher prices prevail.

Why did this decided shift in markets take place between the years 1921 and 1924?

It must have been due to one of two things—either to a change in conditions of competition, or to a change in relative freight rates, or both.

Conditions of Competition

Early potatoes must be marketed quickly because of perishability and market conditions, by which is meant that if they are held too long they will have to be sold when heavy shipments of late potatoes are coming on the market.

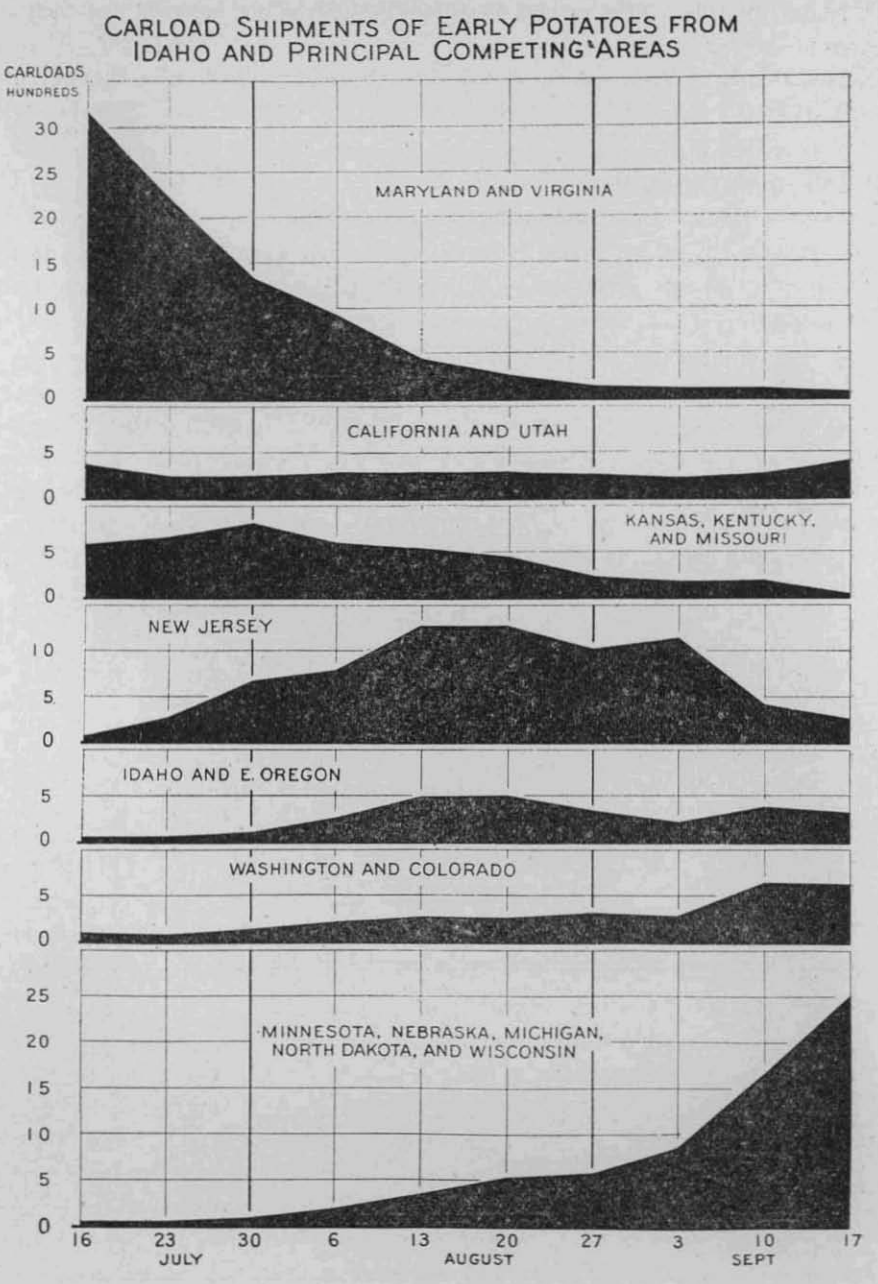
The states that are shipping in the same weeks that Idaho ships are the potential competitors of Idaho early potato sections. Figure 8 shows graphically the states that ordinarily ship during the period that Idaho's early crop is moving. Virginia and the eastern shore of Maryland ship most heavily prior to Idaho's normal peak movement, which comes during the week of August 13 to 20. Kansas, Missouri and New Jersey ship most heavily about the time that Idaho does. Other western states as a group have their heaviest peak movement a week or two after Idaho's peak and the first part of the late crop starts to move in large volume out of Michigan, Minnesota, Nebraska and Wisconsin about September 10. Thus it may be seen that if Idaho's early crop were moved earlier it would encounter more competition from Maryland and Virginia than it now does. If moved two weeks later it would get into trouble with the beginnings of the late crop. As it is now the most important competitors, measured by volume of shipments moving during the same weeks as Idaho's heaviest shipments, are New Jersey, Maryland and Virginia, the Kaw River Valley in Kansas, and the Orrick section of Missouri.

TABLE 9. Unloads of potatoes by states of origin in Fort Worth, August, 1924 (a)

State of Origin	Cars Unloaded	Percent of total
Arkansas	1	1.7
California	1	1.7
Colorado	1	1.7
Idaho	16	28.1
Kansas	30	52.6
Missouri	1	1.7
Oklahoma	1	1.7
Oregon	2	3.4
Utah	4	6.8
Total	57	100.0

(a) Basic data in Appendix VII.

FIGURE 8.


CARLOAD SHIPMENTS OF EARLY POTATOES FROM IDAHO AND PRINCIPAL COMPETING AREAS
CARLOADS HUNDREDS
MARYLAND AND VIRGINIA
CALIFORNIA AND UTAH
KANSAS, KENTUCKY, AND MISSOURI
NEW JERSEY
IDAHO AND E. OREGON
WASHINGTON AND COLORADO
MINNESOTA, NEBRASKA, MICHIGAN, NORTH DAKOTA, AND WISCONSIN
16 23 30 6 13 20 27 3 10 17
JULY
AUGUST
SEPT

These states may be said to be main potential competitors. In order to determine whether they are also direct competitors in the markets to which Idaho growers ship, it is necessary to analyze unloads of potatoes by state of origin in those markets during August. Such information is available only for August, 1924. Consider unloads in the Fort Worth market as indicated in Table 9.

It will be noted that Kansas was the main source of supply, furnishing about one-half of the total cars unloaded in August and that Idaho ranked second, furnishing about one-fourth of the supply.

In the Chicago market, 1924, Idaho furnished only 0.9 percent of the total unloads of early potatoes, and in the Los Angeles market, 1924, approximately 4 percent, the remainder coming chiefly from California, with a small quota from Utah.

Since unload figures are available for but one year (1924), in order to obtain more comparable data on competitive factors, shipment figures may be employed. Since we are dealing with the early potato situation we may confine ourselves to potatoes available for the market between July 13 and September 20. Figures for the period July 15 to September 15 are available.

Figure 8a comparing 1924 with 1921, shows that in 1924 the early potato shipments of Virginia, Maryland, Kansas, Kentucky, Missouri, and the North Central states were larger than in 1921. The figure also shows that the 1924 early shipments from Idaho, other western states, and from New Jersey were smaller than in 1921. But the increase more than offset the decreases, so that the total 1924 movement of 38,001 cars exceeded the 1921 movement by 7,828 cars, or 26 percent. Figure 9 covering a longer period indicates that certain early potato regions have increased and that other regions have decreased their shipments. Taking all the states as a whole, the trend has been about constant. The decrease in shipments from New Jersey is striking. Altho Idaho has shown a downward trend since 1921, over the entire eight years the trend has been slightly upward.

Our most important direct competitors, namely, Kansas, Kentucky, and Missouri, have, as a group, shown a marked upward trend. The shipments from this group have increased, on the average, 430 cars a year. This producing area, furthermore, enjoys a freight rate differential under Idaho in reaching the principal early potato markets, and while freight charges are a somewhat passive factor in determining marketing shifts, nevertheless, taken in conjunction with the fact that the differential is greater to the Chicago market than to Texas, they mean a ten-

FIGURE 8a

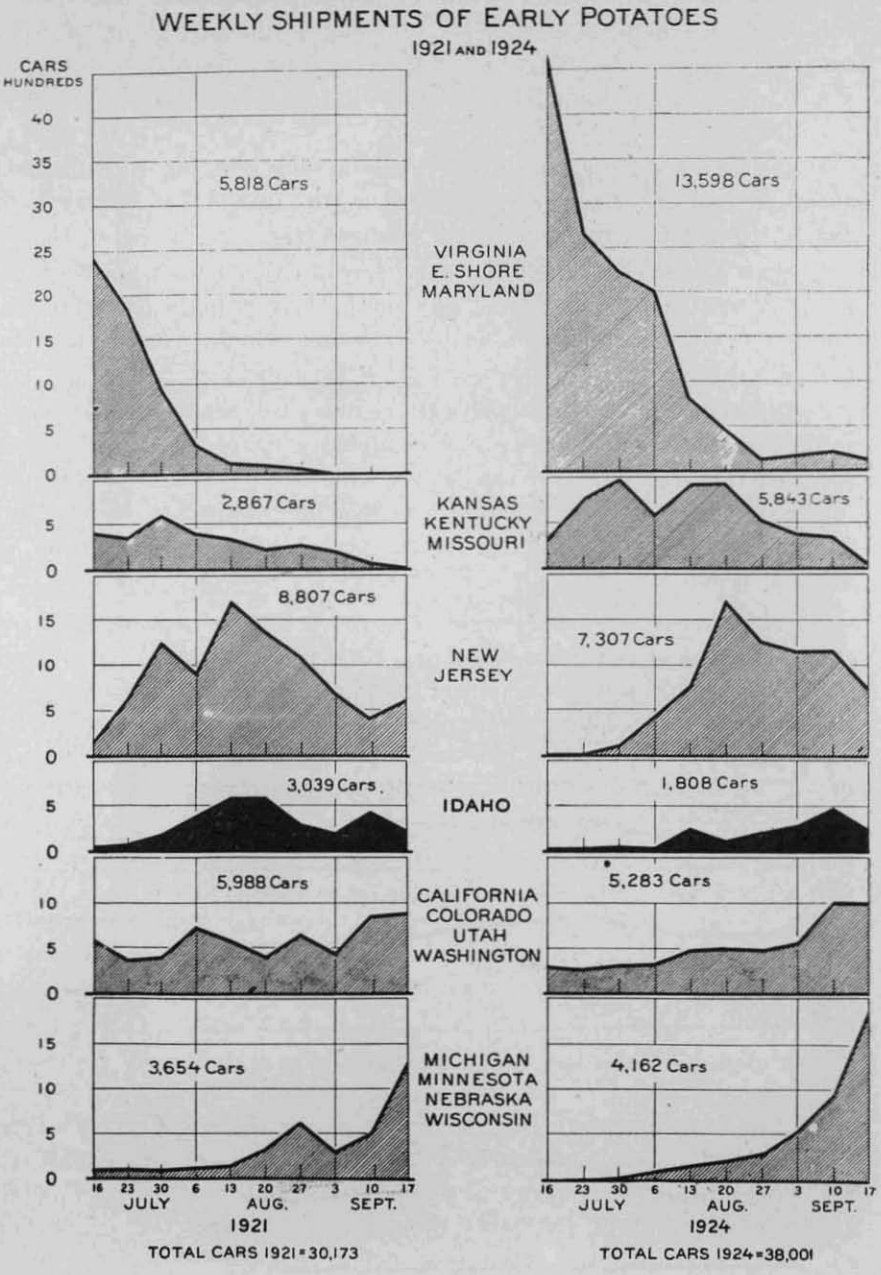
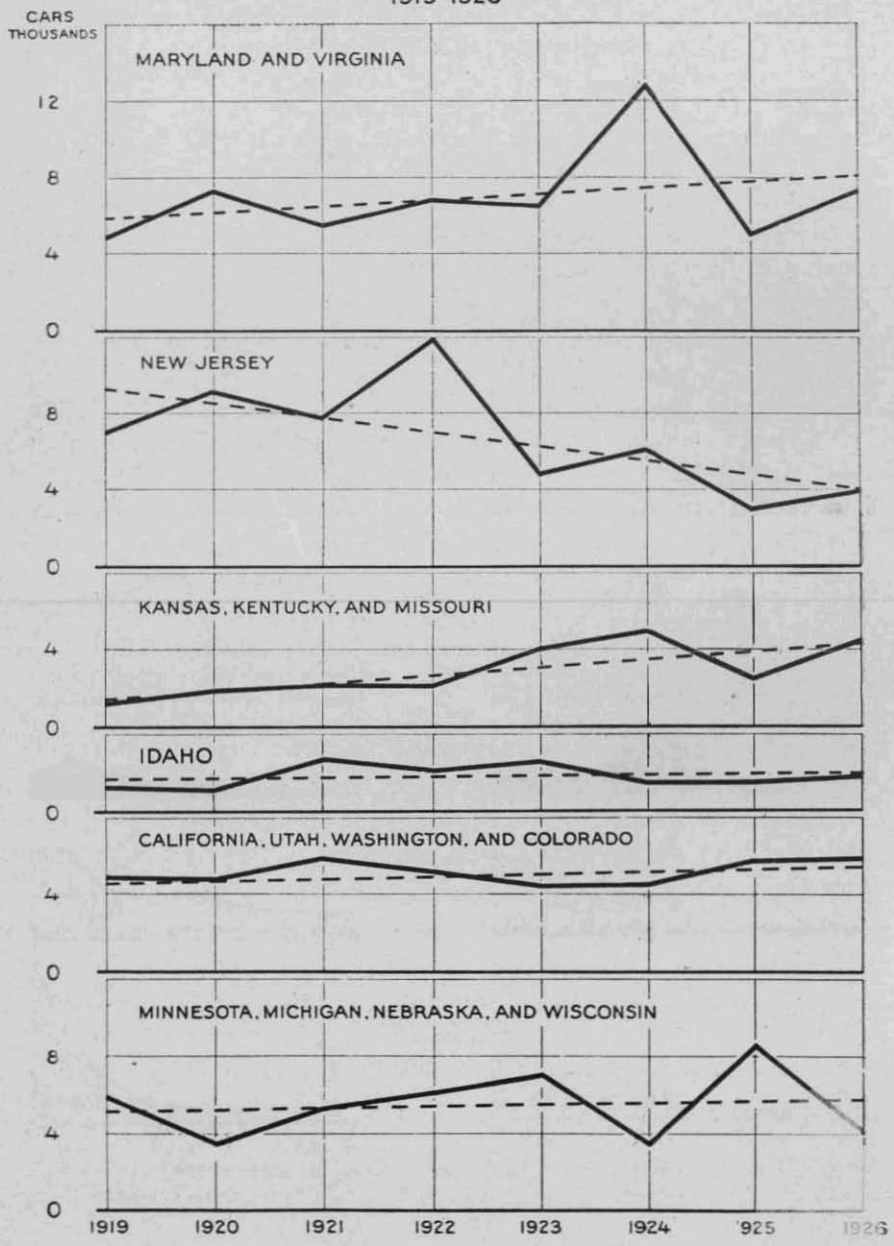

WEEKLY SHIPMENTS OF EARLY POTATOES
1921 AND 1924
CARS HUNDREDS
40
35
30
25
20
15
10
5
0
5,818 Cars
13,598 Cars
VIRGINIA
E. SHORE
MARYLAND
2,867 Cars
5,843 Cars
KANSAS
KENTUCKY
MISSOURI
8,807 Cars
7,307 Cars
NEW
JERSEY
3,039 Cars
1,808 Cars
IDAHO
5,988 Cars
5,283 Cars
CALIFORNIA
COLORADO
UTAH
WASHINGTON
3,654 Cars
4,162 Cars
MICHIGAN
MINNESOTA
NEBRASKA
WISCONSIN
16 23 30 6 13 20 27 3 10 17
JULY AUG. SEPT.
1921
1924
TOTAL CARS 1921 = 30,173
TOTAL CARS 1924 = 38,001

FIGURE 9

YEARLY CARLOAD SHIPMENTS OF EARLY POTATOES FROM IDAHO AND COMPETING STATES

1919-1926



dency on the part of the midwest producers to exploit the price market in preference to the latter, thereby giving Texas points a market superiority from the standpoint of Idaho shippers.

Summary: Early Potatoes

Production

1—Climatic hazards are a limiting factor in the early potato industry in Idaho. Spring frost occasionally reduces the crop and retards harvest. Excessive heat at harvest time is the greatest hazard. After the water is taken off to induce ripening, the soil is likely to become heated to an extent that the potatoes are affected with heat necrosis. This has caused serious losses in Canyon County and in the King Hill district.

2—Scab tends to appear when thin-skinned varieties are grown continuously on a piece of land and the percentage of scab increases with the number of successive crops.

3—Use of the same ground for potatoes more than one year in succession seems to result in unfavorable physical condition of the soil and is not recommended, even if this last factor is eliminated.

4—Variable yields of early potatoes, low prices to growers in Idaho in normal years, and the uncertainty of net returns above cash expense, make the early potato industry unfavorable except as a minor enterprise.

5—The varieties of early potato that have been produced—Idaho Rural, Charles Downing, and Irish Cobbler—are not high quality potatoes. As a result, the difference in quality between Idaho early potatoes and those produced in competing states close to the markets is not sufficient to induce the consumer to take them at an increased cost.

This condition might be remedied and possibly will be in the future by a change to a better quality early variety as the Bliss Triumph, or the Early Ohio.

Marketing

1—Idaho has never shipped many early potatoes east of Chicago.

2—The trend in shipments to the Middlewest has been downward from 68 percent in 1921 to 14 percent in 1924. The trend in shipments to the Southwest has been up, ending with 62 percent in 1924. The trend to the Mountain and Pacific states has been up, ending with 26 percent in 1924.

3—Idaho's main direct competitors in the Middlewest and Southwest have been the Kaw River Valley section in Kansas and the Orrick section in Missouri.

California has been the principal direct competitor in the western states. The total United States supply coming on the market in the weeks Idaho ships is clearly the force that influences the price received by Idaho producers, rather than the supply of only the directly competing sections. New Jersey is the most important state shipping during the weeks of Idaho's peak movement. If Idaho shipped earlier the shipments would come into competition with those of Maryland and the east short of Virginia, if later, with the late crop in Minnesota, Nebraska, Michigan, and North Dakota.

4—Kansas, Kentucky and Missouri; Virginia and Maryland have been increasing their production faster than has Idaho. Since 1921 Idaho has shown a downward trend.

5—Idaho's average length of haul to market is about three times that of Kansas or New Jersey. Kansas has a greater differential freight advantage over Idaho in the Chicago market than in the Southwest market. Kansas' increased production has therefore sought the Chicago market and has lowered the price there more than it has in the southwest area. This has probably caused the shift in Idaho's outlet mentioned (in 2) above..

6—Since freight charges constitute a larger proportion of the delivered price of Idaho early potatoes than of Kansas early potatoes and since freight charges are in the nature of a fixed charge, it follows that a given percentage decrease in delivered prices will cause a larger percentage decrease in farm price in Idaho than it will in Kansas.

7—Whether or not the shift in Idaho's early potato market from the Middlewest to the Southwest is permanent will depend upon whether or not Kansas and New Jersey maintain their production sufficiently to supply the natural increase in demand in Middlewest markets at present or lower prices. If these states can do this it is doubtful whether Idaho can regain much of the Middlewest business. No data are at hand to justify an opinion regarding the future of early potato production in Kansas and New Jersey.

THE LATE POTATO INDUSTRY

Production Situation

Acreage and Production

The acreage and production of late potatoes has been increasing in Idaho as shown in Table 10.

TABLE 10. Acreage and production of Idaho late potatoes, census years

Year	Acreage (1)	Production in bushels (2)
1899	7,860	823,326
1909	25,210	4,276,216
1917	33,182	2,453,578
1918	27,870	3,173,348
1919	38,204	5,430,286
1924	52,466	8,789,839

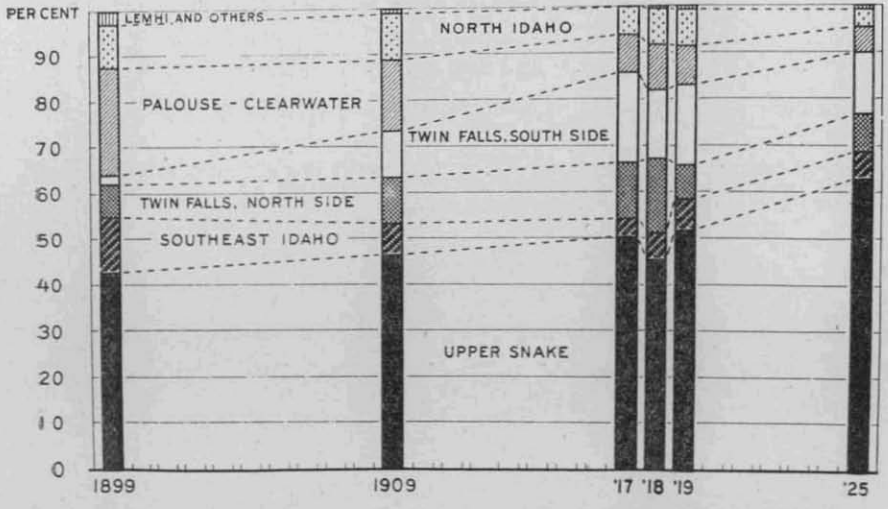
(1) Based on Appendix XII.
(2) Based on Appendix XIII.

Principal Producing Sections

Figure 10 shows that the Upper Snake and south central sections of the state have increased their acreage of potatoes faster than the state as a whole. Other sections of the state have not, as Figure 10 might lead one to think, actually decreased their acreage of late potatoes, but they have failed to increase their acreage as fast as has the state as a whole.

FIGURE 10.

LATE POTATO PRODUCING SECTIONS OF IDAHO



Yields

Figure 2a shows that over the period 1917-1925 the Twin Falls North Side district (Jerome and Minidoka Counties) has had the highest average yield per acre, 227 bushels. The Twin Falls South Side district (Twin Falls and Cassia Counties) is a close second with 221 bushels. The Upper Snake district (Bingham and Bonneville Counties) is third

TABLE 11. Trends in values per acre of Idaho late potatoes by districts (a)

District	Counties	Year				Average
		1918	1919	1920	1921	1922-1925
Upper Snake	Bingham Bonneville	$ 59.21	$ 90.00	$ 97.74	$295.80	$135.69
Southeast Idaho	Bannock	50.22	100.00	95.58	263.90	127.42
Twin Falls South Side	Twin Falls Cassia	77.50	116.00	119.34	363.95	169.20
Twin Falls North Side	Jerome Minidoka	77.50	77.50	105.84	426.30	171.78
Palouse Clearwater	Idaho Nezperce Latah	32.55	45.50	46.44	146.45	67.73
North Idaho	Bonner, Kootenai Boundary	44.33	73.00	41.04	145.00	75.84

District	Counties	Year				Average
		1918	1919	1920	1921	1918-1921
Upper Snake	Bingham Bonneville	$186.30	$237.07	$140.76	$164.81	$182.03
Southeast Idaho	Bannock	135.27	209.89	153.00	143.99	160.54
Twin Falls South Side	Twin Falls Cassia	144.99	332.20	142.80	189.42	202.35
Twin Falls North Side	Jerome Minidoka	196.83	243.11	175.44	138.60	188.49
Palouse-Clearwater	Idaho, Nezperce Latah	81.81	72.48	81.60	62.37	74.56
North Idaho	Bonner, Kootenai Boundary	121.50	122.31	101.32	78.54	105.92

(a) State December 1 prices from Appendix II, district yields from Appendix XI.

with 194 bushels, while the southeast district ranks fourth with 177 bushels. The North Idaho district (as represented by Bonner, Boundary, and Kootenai Counties) is fifth with 118 bushels and the rainfall area in the Palouse and Clearwater district (Idaho, Latah and Nezperce Counties) is sixth with 92 bushels.

Though the nine-year average yield per acre is higher in the Twin Falls North Side district than in the Twin Falls South Side district, the yield per acre varies much more from year to year in the former than in the latter. The trend in yield per acre over the nine-year period is slightly up in the Twin Falls South Side, the Southeast Idaho and the Palouse-Clearwater districts. It has been slightly downward in the Upper Snake, Twin Falls North Side and North Idaho districts.

Prices

The December 1 farm price of potatoes may be used as a representative farm price of late potatoes. This price is given in Appendix III over the period 1904-1924. In computing values per acre for the various districts of the state the December 1 Idaho farm price will be used since farm prices in the different districts within the state are not available.

District Values Per Acre

Table 11 shows the trend in value per acre over the period 1918-1925 has been downward in all districts. This is true in spite of the increase in yield per acre shown for certain districts in Figure 2a. The reason is that the state December 1 farm price has shown a downward trend over the period. Those districts shown to have had an upward trend in yields show the smaller relative decreases in value per acre.

Quality

The uniformly high quality of the Idaho late potato is the result of (1) a comparatively cool climate, (2) abundant sunlight during the growing season and (3) a soil rich in the mineral salts of fertility, as compared with acid and deficient soils of the humid districts.

Expenses Per Acre and Per Bushel

Table 12 shows the net cost per bushel of producing potatoes in Twin Falls County in three years, 1919, 1920 and 1921, and also the seasonal average price per bushel, net profit or loss per bushel and net profit or loss per acre.

There are three fundamental factors whose variations cause net profit per bushel and net profit per acre to change. These are yield per acre, total net cost per acre, and price per bushel. Yield per acre in this area showed a variation of 18 percent of average yield per acre, total net cost

TABLE 12. Average cost of producing late potatoes in Twin Falls County in 1919, 1920, and 1921. ..(a)

	1919	1920	1921	Average of 3 Yrs.
Yield per acre-bushels	233.5	279.8	251	254.8
Operating Costs per Acre—				
Labor—				
Direct man labor	$ 29.24	$ 30.89	$ 18.42	$ 26.18
Direct horse labor	16.46	16.35	6.16	12.99
Contract labor	11.19	23.64	16.19	17.01
Total labor	56.89	70.88	40.77	56.18
Material Costs per Acre—				
Water	3.22	3.22	2.12	2.85
Seed	14.93	48.10	12.19	25.07
Sacks and twine	18.55	22.32	11.89	17.59
Manure	.30	.69		.33
Total materials	37.00	74.33	26.20	45.84
Other Operating Costs—				
Use of machinery	4.59	6.56	6.00	5.72
Taxes and insurance	4.69	5.01	6.46	5.39
Overhead	13.97	18.14	11.98	14.70
Storage and miscellaneous	.81	3.96	3.42	2.73
Total other costs	24.06	33.67	27.86	28.53
Total Operating Costs—	117.95	178.88	94.83	130.55
Credits—		1.78	.79	.86
Net operating costs per acre	117.95	177.10	94.04	129.69
Net operating unit cost per bu.	.50	.63	.37	.50
Total Net Acre Cost—				
Net operating acre cost	117.95	117.10	94.04	126.69
Interest per acre on land and machinery	30.59	31.53	22.66	28.26
Total net acre cost	148.54	208.63	116.70	157.95
Total net unit cost per bu.	.63	.74	.46	.61

(a) Costs from an unpublished bulletin by Byron Hunter.

(1) Average of the Idaho farm price per bushel September to April.

per acre showed a variation of 58 percent of its average, and price per bushel showed a variation 96 percent of its average.

An analysis shows that of the average total net cost per acre of $157.95 for that period 43 percent, or $69.91, were cash expenses. These average cash expenses per acre were: Contract labor, $17.01; water, $2.85; seed, $25.07; sacks, $17.59; taxes and insurance, $5.39. In this computation seed is given a cash value based upon prevailing seed prices.

Marketing of Late Potatoes

Destinations by States

As in the case of early potatoes, the list of states receiving Idaho late potatoes changes from year to year as to both content and length. During the season of 1920-1921 Idaho shipped to 28 states, in 1922-1923 to 37 states, in the next season to 34 states, in 1924-1925 to 32 states, and in 1925-1926 to 37 states. Shipments went to 25 states in every one of the

four seasons. Six states, as listed in column 1 of Table 13 took, on the average, 63.8 percent of the total known destinations. This is a more concentrated market than that for early potaotes. Probably these states actually received more than 63.8 percent of our average seasonal shipments because many shipments billed to such diversion points as Denver, Ogden, Pocatello, Laramie and Idaho Falls likely found their way to the six states. It is estimated that this would bring the receipts of these states up to about 80 percent of total known destinations. California is the largest market with receipts of 21.2 percent of total known destinations in 1920-1921; 14.9 percent in 1922-1923; 39.1 percent in 1923-1924; 47.2 percent in 1924-1925, and 12.6 percent in 1925-1926.

TABLE 13. State destinations of Idaho late potatoes (1)
By Seasons 1920-21; 1925-26
Total Cars Received

State of destination	Average receipts per season	Carlot 1920-1921 Sept. 11-Apr. 15	1922-1923 Sept. 15-Apr. 30	1923-24 Oct. 1-Apr.15	1924-25 Sept.17-Apr.14	1925-26 Oct.1-Apr.30
California	2637	1196	1825	4040	4451	1673
Texas	1093.8	1101	1688	1356	1183	141
Illinois	876	350	1429	773	827	1001
Missouri	812.2	386	1846	683	265	881
Kansas	641.4	649	1319	758	358	123
Oklahoma	447.8	654	690	401	335	159
I. Total of above	6508	4336	8797	8011	7419	3978
II. Total known destinations	10194	5655	12201	10358	9421	13334
III. I as percent of II	63.8	76.8	72.0	77.4	78.8	29.9

(1) Idaho Late Potato Deal Summaries. United States Department of Agriculture, Division of Fruits and Vegetables.

Destinations by Districts

It is difficult to secure accurate figures on the destinations of Idaho late potatoes by district due to the fact that large numbers of cars are billed to diversion points in the mountain states from which they may be diverted. Taking the average of the last five seasons we have shipped about 45.8 percent to the mountain and Pacific states, 33 percent to the Middlewest and 21.3 percent to the Southwest, as indicated by Table 14.

Changes in Markets

Table 14 shows that as Idaho increases her shipments of late potatoes the Mountain and Pacific states take a larger proportion of the increased shipments (and therefore a larger number of cars); the Middlewest takes a constant proportion (and, therefore, a larger number of cars)

and the Southwest a smaller proportion (and, in fact a smaller number of cars). (See Appendix XII.)

TABLE 14. Percentage distribution of Idaho late potatoes by districts (1)

Season	Total Known Final Destinations		Districts		
			Mountain and Pacific	Middle-west	South-west
	Carlots (2)	Percent	Percent	Percent	Percent
1920-21, Sept. 11-April 15	5334	100	34.6	30.2	35.3
1922-23, Sept. 15-April 30	10500	100	27.2	47.5	25.3
1923-24, Oct. 1-April 15	9258	100	53.0	25.6	21.3
1924-25, Sept. 17-April 14	8588	100	64.2	17.6	18.3
1925-26. Oct. 1-April 30	5269	100	49.8	44.4	6.4
Trend			Up	No Trend	Down

(1) Based on data in Appendix XII.
(2) These figures are not total known destinations.

California is the largest single consuming state in the Mountain and Pacific district, absorbing about two-thirds of the shipments to that area. Illinois is the most important state in the Middlewest and takes about one-third of the shipments to that district. Texas has taken about five-eighths of the shipments to the Southwest.

Competitive Factors

In studying competitive factors that bear on the profitability of the late potato industry in Idaho the following points must be given consideration: (1) States competing with Idaho in the production of late potatoes, and (2) Secular trends in seasonal carlot shipments of late potatoes from Idaho and principal competing states.

States Competing With Idaho

It would be possible to arrive at an estimate of the relative importance of the various late potato producing states as direct competitors of Idaho. This could be done by computing the percent of total potatoes unloaded in Idaho's potato markets by Idaho and competing states. It is believed, however, that it is not direct competition but indirect competition which sets the price of Idaho potatoes; in other words, that the Idaho potato price is set by the total production of all late producing states whether shipping to markets to which Idaho potatoes are shipped or not, rather than by the volume of potatoes actually unloaded in Idaho's markets.

In order to check the validity of this assumption two studies were made, covering the years 1902 to 1924. In one study the degree of relationship existing in the past between the price of Idaho potatoes and the total United States production of potatoes, was measured. In the second study the same thing was done except that the production of each state

was weighted by amounts directly proportional to the percentage of total Idaho potato shipments which each state's production met in the markets of the country. The relation between Idaho potato price and unweighted total production was found to be practically as close as the relation between Idaho potato price and weighted production. It may be concluded, therefore, that it is the total production of all late potato producing states, whether they ship west of the Alleghenies or not, which sets the price of Idaho potatoes.

In order to determine which regions compete with Idaho in late potatoes it is necessary to find out what states are the most important producers or shippers of late potatoes. Table 15 shows that over the five-year period, 1921-22 to 1925-26, Maine has shipped the largest average number of cars per season, that Minnesota has shipped the second largest number, and that Michigan has been third, Wisconsin fourth, New York fifth, Idaho sixth, and Colorado seventh. The table also shows that in the four seasons prior to 1921-22 Colorado shipped a larger average number of cars per season than Idaho, but that Idaho has increased her shipments faster than Colorado has during the last five seasons.

TABLE 15. Average seasonal carload shipments of late potatoes from Idaho and other important states. (1)

State	Oct. 1— — — — — —June 30	
	Average of four seasons 1917-18 to 1920-21	Average of five seasons 1921-22 to 1925-26
Maine	16669	31695
Minnesota	15540	23386
Michigan	11942	15537
Wisconsin	16776	14648
New York	10756	14452
Idaho	6250	11895
Colorado	8790	11472

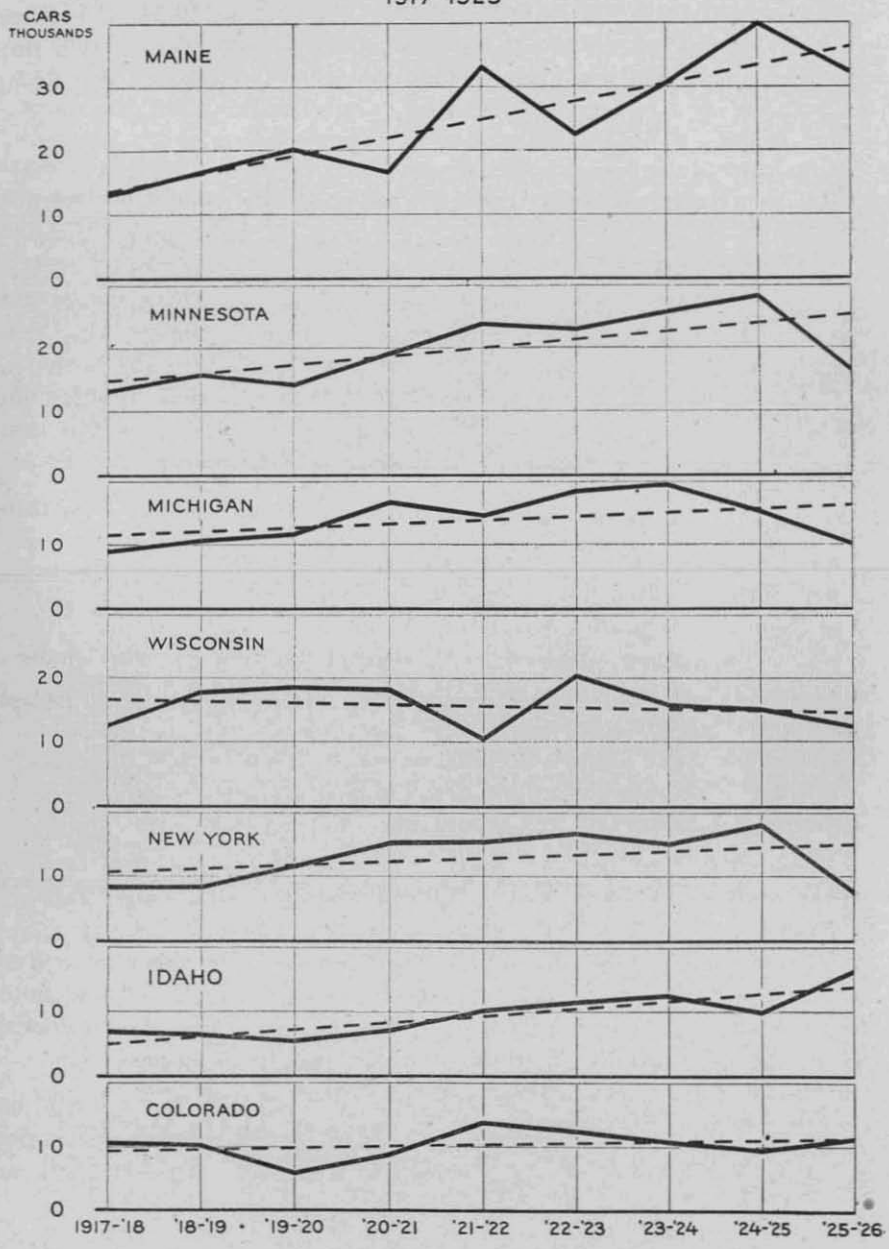
(1) Based on data in Appendix XIII.

The figures in Appendix XVI show that in normal seasons the seven states listed in Table 15 ship between 75 and 80 percent of total United States shipments of late potatoes. These states, then, are the most important competitors of Idaho in the late potato business.

Have these states been increasing their production faster than has Idaho? If so, will they continue to do so? These questions are important in any discussion of the probable future trend of the price of late potatoes in Idaho and elsewhere.

FIGURE 11.

TRENDS IN SEASONAL CARLOAD SHIPMENTS OF LATE POTATOES FROM IDAHO AND PRINCIPAL COMPETING STATES
1917-1925



Secular Trends

Table 16 shows that only two of the seven states have increased their seasonal shipments faster than Idaho. These are Maine and Minnesota. If, however, we express each state's absolute increase, given in Column 2 of Table 16, as a percentage of that state's average seasonal shipments, given in Column 1 of Table 16, we find that Idaho's relative increase in seasonal shipments is greater than that of any of the other six states. (See Column 3, Table 16.)

TABLE 16. Average seasonal increase in number of cars shipped per season

State	Average seasonal shipments (cars) (1)	Average seasonal increase in shipments (cars) (1)	Relative increase Col. 2 as a percent of Col. 1
Maine	24950	2868	14.8%
Minnesota	19899	1286	6.5
Idaho	9386	1111	18.5
Michigan	13939	597	4.3
New York	12809	573	4.5
Colorado	10280	241	2.3
Wisconsin	15593	(-) 221 (2)	

(1) Based on Figure 12.
(2) Decrease.

Not only have most of the important late states increased their production during the last nine years, but the total shipments of the United States have also increased. Reference to Appendix XIII will show that over the four seasons 1917-18 through 1920-21 the average total United States seasonal shipment was 111,755 cars, whereas over the following five seasons the average was 159,938 cars.

What, then, is the outlook for the late potato industry in Idaho? This is dependent fundamentally upon two kinds of factors which we may call internal and external.

The important internal factors are two in number. The first is the yield per acre. The second is the net cost per acre of producing potatoes when net cost includes a land charge reflecting the value of the land for computing crops, and credits all contributions to the net income of the farm other than cash. By the latter contribution is meant soil improvement, more complete utilization of land, labor and capital resources, and so on. In the discussion which follows, it will be necessary to disregard the latter item, namely, contributions to the net income of the farm other than cash, not because they are unimportant, but because there are no data available for detailed analysis. Furthermore, the land charge used probably does not truly reflect the economic rent.

The most important external factor is the farm price per bushel. This

price is, as we have seen, largely determined by the total production of all states producing late potatoes. We have seen that these states are increasing their production. Will they continue to do so? The answer depends on whether their net profits per farm will be higher from raising potatoes than the net profits that could be realized from competing crops and enterprises. Thus, in order to forecast the future of the late potato business in Idaho, it would be necessary to forecast the future of all important crops and enterprises, not only in Idaho but in each of the states producing late potatoes. This is obviously impossible although we may safely undertake to examine several of the internal and external factors peculiar to the Idaho situation.

Yield Per Acre

Assuming that two states have the same cost for growing an acre of potatoes, the thing that will determine the cost per bushel of those potatoes will be the yield per acre. Table 17 shows that Idaho had the second highest average yield per acre over the past seven years, Maine having the highest. Maine's average yield has been 66 bushels, or 37 percent greater than Idaho's average yield. Idaho's average yield has been 61 bushels—52 percent—greater than the average yield of the 19 surplus late-producing states. Clearly this is to the advantage of Idaho.

TABLE 17. Yield per acre in principal late-producing states (1)

	Yield Per Acre———(Bu.)							
	1919	1920	1921	1922	1923	1924	1925 (2)	Average
Maine	230	177	298	187	258	305	255	244
New York	109	125	103	110	123	140	186	114
Wisconsin	94	108	68	124	96	130	112	105
Michigan	90	105	80	106	114	131	103	104
Minnesota ..	87	99	75	90	102	132	97	97
Aver. above	122	123	125	123	139	168	151	133
Idaho	155	180	185	185	180	165	196	178
19 Surplus Late States (3)		117	102	112	116	139	119	117

(1) U. S. D. A. 1924 Yearbook.

(2) Preliminary.

(3) U. S. D. A. Mimeo deal report "Idaho Potatoes." p. 7.

Farm Prices Per Bushel

Table 18 shows that in each of the nine years except 1919 and 1924 the farm price in Idaho was lower than the average farm price in the five important competing states.

TABLE 18. Farm prices on December 1 of late potatoes in Idaho compared to same in important late producing states 1917-1925 (1)

State	Dollars Per Bushel									Average
	1917	1918	1919	1920	1921	1922	1923	1924	1925	1917-25
Maine	1.30	1.20	1.40	1.25	.85	.45	.70	.43	2.00	1.06
New York	1.30	1.22	1.45	1.18	1.08	.60	.95	.57	2.15	1.17
Michigan	1.05	.89	1.35	.92	.95	.34	.44	.35	1.62	.88
Wisconsin	.90	.80	1.40	.86	.95	.33	.47	.36	1.70	.86
Minnesota	.91	.75	1.53	.80	.90	.35	.39	.27	1.54	.83
Average	1.09	.97	1.43	1.00	.95	.41	.59	.40	1.80	.96
Idaho	.79	.81	1.51	.68	.77	.31	.50	.54	1.45	.82

(1) 1925 U. S. D. A. Yearbook, p. 926.

This reflects in part the freight differentials summarized in Table 19.

TABLE 19. Freight rates per 100 lbs. on potatoes (1). Aug. 1, 1923-Aug. 1, 1925

From	To	Rate
Idaho Falls, Idaho	Chicago, Ill.	.77
	Los Angeles, Calif.	.55 (2)
	Houston, Texas	1.00
	Average	.77
Caribou, Maine	Boston, Mass.	.395
	Portland, Me.	.365
	New York, N. Y.	.555
	Average	.438
Greenville, Mich.	Detroit, Mich.	.225
	Pittsburgh, Penn.	.34
	Average	.282
Barnesville, Minnesota	Chicago	.415
Gainesville, N. Y.	New York City	.285
	Philadelphia	.285
	Pittsburgh	.27
	Average	.280
Waupaca, Wisconsin	Chicago	.205
Average of averages of 5 eastern states		.324

(1) Bureau of Railway Economics, Bulletin No. 12, "Potatoes."
(2) Prior to Jan. 25, 1924 the rate was .565.

If we add to Idaho's average farm price of 82c per bushel the average freight differential of 26.8c found in Table 19 the total is $1.09 a bushel.

Cost Per Bushel at the Farm

The only detailed data available at this time regarding farm cost of production in Idaho and competitive areas is as of the year 1919. In that year a study was made of the cost of producing potatoes and other

crops in Twin Falls County, Idaho and the results published in University of Idaho Agricultural Experiment Station Research Bulletin No. 2. In the same year studies were made in certain counties in Minnesota, Wisconsin, Michigan, New York, and Maine. After adjusting certain of these figures to make them comparable, the data contained in Table 20 were obtained.

TABLE 20. Net profit per bushel and per acre in Idaho and important late producing states in 1919

	Minnesota	Wisconsin	Michigan	N. Y.	Maine	Ave. of 5 Eastern States	Idaho
Yield Per Acre, State Figure, Bu.	87	84	90	109	230	122	155
Net cost per acre	$ 77.02	91.09	82.95	99.85	205.15	111.21	136.65
Net cost per bushel	.89	.97	.92	.92	.89	.92	.88
Farm Price Dec. 1 (2) (State Fig.) Bu.	1.53	1.40	1.35	1.45	1.40	1.42	1.51
Net Profit per bu.	.64	.43	.43	.53	.51	.51	.63
Net Profit per acre	55.68	40.42	38.70	57.77	117.30	61.97	97.65

(1) Based on Appendix XVII.

(2) From Table 26.

Table 20 shows that the net cost per acre in Idaho was second only to that in Maine. The latter state has an acre cost of $79.90 for fertilizer, while the other states including Idaho used practically no fertilizer. Idaho's relatively high acre cost is partly due to a high man-labor charge of $42.51 per acre, ($41.88 in Maine.) The man labor in the other four states ranges from $20.47 in Minnesota to $27.34 in Wisconsin. This high man labor cost in Idaho is due primarily to the labor involved in irrigating, to the additional labor needed to harvest the larger yields, and to the higher wages paid for farm labor. Idaho's cost per acre on sacks, twine and barrels is above the average. In Idaho, moreover, the land used to produce potatoes was valued considerably higher than in other states, resulting in a land charge per acre of $28.42 in Idaho as against about $9 an acre for the other states. Idaho's water charge of $3.22 per acre is more than offset by a charge of $2.00 for spraying and seed treatment and of $10.00 for manure in the other states.

In spite of a relatively high cost per acre in 1919, Idaho showed for that year the lowest net cost per bushel.

It appears likely that net cost per bushel is more closely related to a state's ability to compete with other states in the production of a given product than is either net profit per bushel or net profit per acre. The basis for this assumption is presented in Table 21.

Table 21 shows that the states that have increased their seasonal shipments by the greatest percentage have had the lowest net cost per bushel and vice versa. The relationship between increased shipments and net

profit per bushel and net profit per acre are not nearly so great. As for the period since 1919, it appears from Table 22 that the net cost of producing a bushel of potatoes in Idaho has continued to be lower than in the eastern states.

TABLE 21. Relation existing in 1919 between net cost per bushel and percent of increase in seasonal shipments of late potatoes from important states.

State	Ability to compete as indicated by relative annual increase in seasonal shipments.	Net cost per bushel (2)
Idaho	18.5%	$ .88
Maine	14.8%	.89
Minnesota	6.5%	.89
New York	4.5%	.92
Michigan	4.3%	.92
Wisconsin	(Decrease)	.97

(1) Column (3) Table 16.
(2) Table 20.

TABLE 22—Net cost per bushel of producing late potatoes, 1919, 1923, 1925

	1919 (1)	1923 (2)	1924 (2)	1925 (2)
I. Idaho	$ .88	$ .45	$ .40	$ .56
II. Average of five eastern states used (3)	.92	.45	.44	.60
I. As a percent of II.	95.6	86.5	90.9	93.3

(1) Table 21.
(2) Unpublished data from U. S. D. A., division of farm management and costs.
(3) Maine, Minnesota, Michigan, New York, Wisconsin.

A summary of the data on competitive factors is contained in Table 23.

TABLE 23. Changes in the relation of Idaho to important eastern late producing states in respect to net profit per acre on potatoes, percents

	1919	1920	1921	1922	1923	1924	1925
Ratio of Idaho's yield per acre to the average yield per acre of the five eastern states (1)	127	146	148	150	130	98	130
Ratio of Idaho's net cost per acre to the average net cost per acre in the five eastern states	123 (2)				101 (3)	100 (3)	90 (3)
Ratio of Idaho's net cost per bushel to the average net cost per bushel in the five eastern states. (4)	96				87	91	93
Ratio of Idaho's December 1 farm price per bushel to the average December 1 farm price in the five eastern states. (5)	106	68	81	76	85	135	81
Ratio of Idaho's net profit per bushel to the net profit per bushel in the five eastern states. (6)	123				71		74
Ratio of Idaho's net profit per acre to the net profit per acre in the five eastern states.	158				112	87	121

(1) Based on Table 17.
(2) Based on Table 20.
(3) Unpublished data from U. S. D. A., division of farm management and costs.
(4) From Table 22.
(5) From Table 18.
(6) Prices from Table 18. Costs from U. S. D. A., division of farm management and costs.

Table 23 indicates that Idaho apparently is maintaining her advantage in net cost per bushel as well as in yield per acre, with the exception of Maine in one year (1924). It appears also that Idaho's farm price per bushel is tending to catch up with the farm price in the five eastern states.

On the basis of the above facts, no confident forecast may be made concerning the future profitableness of growing potatoes in Idaho. So far our yields, prices and costs per bushel have apparently been tending to put us in a better position to compete with the five most important eastern late potato states, a conclusion further supported by the fact that we have apparently increased our seasonal shipments faster than any of the five states. So far our higher yield per acre has more than offset our lower farm price per bushel. As indicated above, this lower farm price per bushel is due to the fact that we have higher freight rates than competing states to main markets. This disadvantage in freight rates is based on a geographical fact which can not be greatly altered, so long as we ship largely to eastern markets. However, the disadvantage can be materially reduced, though probably not entirely eliminated by moving a larger proportion of our potatoes to Mountain and Pacific markets. It has already been shown (Table 14) that this is precisely what Idaho is doing. To the extent that this continues, it is a hopeful sign for Idaho growers. The process of shifting the market, however, is a slow one and depends fundamentally upon the growth of population in the west.

There is another possible way to offset the disadvantage due to freight rates. This is betterment of the product by standardization and a better pack. Great advances have already been made in this direction by the federal-state inspection service. There is a general belief among those connected with the late potato business that Idaho potatoes bring a better price on eastern markets than do potatoes from the competing states. No facts are at hand to show the amount of this price advantage, and to what extent it tends to offset our freight disadvantage. There is probably further room for considerable perfection in Idaho's methods of grading and packing potatoes.

Summary—Late Potatoes

Production

1. The trend in late potato production in Idaho has been decidedly upward during the past eight or ten years. This increase has been especially pronounced in the upper Snake and south central districts of the state.

2. Yields have been highest in the south central district, next highest in the upper Snake district, third highest in the southeast district, fourth in the north Idaho district, and lowest in the Palouse-Clearwater district.

Marketing

1. The states to which Idaho late potatoes are shipped vary from year to year, but there are several states which take a considerable por-

tion of the crop each year. California is Idaho's largest single market, having taken on the average 27 percent of the crop in the past five years. Other states of importance are Texas, Illinois, Missouri, Kansas and Oklahoma.

When shipments are expressed by important districts in the United States the average of the past five years shows that 45.8 percent of Idaho's late potato crop went to the Mountain and Pacific states, 33 percent to the Middlewest, and 21.3 percent to the Southwest.

Comparison of Competing Factors

1. The imporant factor in setting the price of Idaho late potatoes is the production of all late producing states, whether they ship to markets where Idaho's potatoes go or not.

2. Between 75 and 80 percent of total United States shipments of late potatoes come from seven states, namely, Maine, Minnesota, Michigan, Wisconsin, New York, Idaho and Colorado.

Maine and Minnesota are the only states that have increased their total shipments faster than Idaho. However, Idaho's *relative* increase is greater than that of any of the other six states. Shipments from Idaho increased nearly 20 percent during the past five years.

3. Idaho has had the second highest average yield per acre of any state in the United States over the past seven years, being exceeded only by Maine.

4. Because price is largely determined by the total production of all late producing states, the question that arises is whether the states competing with Idaho will continue to increase their production or not. This in turn will depend upon whether their net profits per farm will be higher from raising potatoes than from competing crops and enterprises. There are many difficulties involved in an analysis of this sort, due to a lack of data and also to the error possible in attempting to project any noticeable trends into the future.

5. The farm price per bushel in Idaho was lower than the farm price in the five important competing states in seven years out of nine, but there seems to be some tendency for Idaho farm price to catch up with that of the latter. Higher transportation costs have been responsible for the lower farm price, but to the extent that Idaho potatoes are of better quality the influence of higher transportation costs is largely offset.

6. Cost-of-production studies show that even tho net cost per acre of producing potatoes in Idaho has been as high or higher than in the important late producing states, the net cost per bushel has been lower.

7. The states that have increased their seasonal shipments by the greatest percentage have had the lowest net cost per bushel, and vice versa. There is not so close a relationship between increase in shipments and other measures of efficiency such as net profit per bushel or per acre.

8. Altho no definite forecast can be made concerning the future profitableness of growing potatoes in Idaho, nevertheless the prospects

appear good. Idaho's yields, prices, costs per acre and costs per bushel have apparently been tending to place Idaho in a better position to compete with the five most important eastern late potato states. Of course this is not the same thing as saying that potato production will or should be increased in any districts in Idaho. This will depend upon the future trends in the relative profitableness of competing Idaho crops and enterprises and on this subject no data have been analyzed in this report.

THE SEED POTATO SITUATION

There has been a marked increase in the Idaho acreage of potatoes eligible for "certification" or "approval" as seed potatoes.

TABLE 24. Seed potato acreage by variety, 1923-1926 (1)

	1923	1924	1925	1926
Netted Gem	471	650	1187	1944
Idaho Rural	227	122	225	90
Irish Cobbler	10	33	86	152
Bliss Triumph	22	11	63	77
Early Ohios	26	23	93	36
State Total	756	839	1654	2299

(1) Records of State Pure Seed Commissioner.

The total state acreage increased from 756 in 1923 to 2299 in 1926, or it has been more than tripled during the four years.

The netted gem variety has always been more extensively grown for seed than any of the other varieties. The Irish cobbler has shown the largest percentage of increase but represents still only a small part of total seed potato acreage.

TABLE 25. Netted gem seed potato eligible acreage. Percentage distribution of acreage by district 1923-1926

	1923	1924	1925	1926
Upper Snake	49.0	62.5	59.0	56.8
Palouse-Clearwater	26.8	20.4	27.4	34.4
Other	24.2	17.1	13.6	8.8
State	100.0	100.0	100.0	100.0

Table 25 shows that the netted gem acreage has increased in the Upper Snake and in the Palouse-Clearwater Counties faster than has the total state acreage of seed potatoes. This is not true of this variety in other parts of the state.

APPENDIX I—Acreage, Production and Yield, All Potatoes, Idaho 1904-1925 (1)

Year	Acreage (000) omitted	Production Bu. (000) omitted	Average yield per acre (bushels)
1900	——	——	136
1901	——	——	108
1902	——	——	149
1903	——	——	160
1904	11	1590	139
1905	12	1649	140
1906	12	2083	175
1907	14	2030	145
1908	15	1950	130
1909	28	4710	166
1910	28	3976	142
1911	29	5220	180
1912	35	6475	185
1913	34	5780	170
1914	34	5270	155
1915	28	3500	125
1916	27	4050	150
1917	39	6084	156
1918	34	6290	185
1919	43	6665	155
1920	45	8100	180
1921	64	11840	185
1922	81	14985	185
1923	67	12060	180
1924	65	11050	170
1925	67 (1)	13132 (2)	196 (2)

(1) State statistician's report.
(2) Preliminary.

APPENDIX II—Farm Prices of All Potatoes, Idaho and United States, and Value Per Acre, Idaho, 1904-1925 (3).

Year	(1) Idaho farm price Dec. 1 (cents per bu.)	(2) U. S. farm price Dec. 15 (Cents per bu.)	Value per acre, Idaho
1904	63	——	$ 87.57
1905	48	——	67.20
1906	41	——	71.75
1907	52	——	75.40
1908	60	——	78.00
1909	48	55.0	79.68
1910	65	54.9	92.30
1911	65	82.2	117.00
1912	29	50.6	53.65
1913	50	68.6	85.00
1914	48	49.2	74.40
1915	56	66.2	70.00
1916	127	146.7	190.50
1917	79	121.9	123.24
1918	81	117.7	149.85
1919	151	169.0	234.05
1920	68	110.0	122.40
1921	77	109.4	142.45
1922	31	58.8	57.35
1923	50	81.5	90.00
1924	54	64.1	91.80
1925	145	201.5	284.20
Average 1904-1914			$ 80.17
Average 1915-1925			$141.44

(1) Reports of State Statistician.
(2) 1925 Year Book, U. S. D. A., p. 925.
(3) Based on Appendix I.

APPENDIX III—Production of Potatoes by State for the 15 Highest Late Crop (1) States 1917-1925.

Rank in average Production	State	(Thousands of bushels									Average 1917-1925
		1917	1918	1919	1920	1921	1922	1923	1924	1925	
1	New York	38,000	37,240	33,790	40,625	33,990	37,400	39,729	43,400	23,994	36,462
2	Minnesota	33,600	32,760	28,884	31,581	32,250	43,740	40,698	44,880	26,772	35,017
3	Michigan	35,910	28,560	27,000	36,225	27,200	37,842	35,796	33,800	24,411	31,860
4	Wisconsin	34,998	33,440	28,388	33,264	21,420	40,672	26,112	31,460	23,632	30,376
5	Maine	18,750	22,400	25,530	21,771	38,442	25,245	31,992	44,100	34,170	29,155
6	Pennsylvania	29,532	22,000	23,400	28,290	21,586	27,432	26,145	25,370	25,461	25,468
7	Colorado	12,800	15,840	8,855	9,490	14,916	18,460	13,530	13,200	14,190	13,475
8	New Jersey	11,172	10,764	7,968	14,040	9,025	16,435	7,790	10,050	6,042	10,364
9	IDAHO	6,084	6,290	6,665	8,100	11,840	14,985	12,060	11,050	13,132	10,023
10	California	15,225	12,870	8,580	9,800	10,360	9,880	7,800	7,360	6,510	9,820
11	North Dakota	3,870	9,108	5,229	6,557	11,904	18,900	13,114	11,500	6,160	9,593
12	Nebraska	12,495	10,406	5,720	8,415	8,160	11,676	8,880	7,743	6,300	8,866
13	Washington	9,875	8,316	6,875	8,215	8,100	9,425	8,060	7,650	7,830	8,260
14	South Dakota	7,200	8,645	4,050	7,950	5,490	8,580	7,744	5,740	3,965	6,596
15	Kansas	4,446	4,240	5,168	5,100	4,160	4,160	4,730	5,130	3,618	4,528
Total above		273,957	262,879	226,102	269,423	258,843	324,832	284,180	302,433	226,187	
27 Late crop states (2)		357,854	334,717	261,967	330,951	302,510	381,902	347,665	353,741	271,028	
U. S. early and late (3)		442,108	411,860	322,867	403,295	361,659	453,396	416,105	425,283	323,243	

(1) By the late crop is meant those shipping over half their shipments after Sept. 1 in the average year.

(2) The 27 late crop states as above defined are:

Maine	Rhode Island	Pennsylvania	Illinois	Iowa	Montana	Washington
New Hampshire	Connecticut	West Virginia	Michigan	North Dakota	Wyoming	Oregon
Vermont	New York	Ohio	Wisconsin	South Dakota	Colorado	California
Massachusetts	New Jersey	Indiana	Minnesota	Nebraska	Idaho	

(3) Yearbooks of the United States Department of Agriculture, and monthly Supplements to Crops and Markets.

APPENDIX IV—Carlot Shipments of All Potatoes by Season From the 15 Highest Late Crop (1) States, (2) 1917-18 to 1923-24.

(Season is from April 1 of one year thru July of following year.)

Rank in average shipments	State	1917—1918	1918—1919	1919—1920	1920—1921	1921—1922	1922—1923	1923—1924	Average 1917-1924
1	Minnesota	16477	23515	22058	23214	29568	28931	33584	25335
2	Maine	14794	19026	23444	17817	38037	24401	34721	24605
3	Wisconsin	13952	20655	21975	18661	11045	21766	17008	17851
4	New York	10110	10089	12817	16502	18988	19291	18625	15203
5	Michigan	9431	11062	12237	17119	15222	19836	20405	15044
6	Colorado	12462	13647	8810	11345	17844	15468	13867	13349
7	New Jersey	11709	5889	10409	17147	10476	18335	6352	11473
8	IDAHO	7120	7727	6853	8143	14670	16213	15616	10906
9	California	7864	10351	8487	10090	9241	7765	5727	8503
10	North Dakota	353	2530	2229	1846	10522	8351	10383	5173
11	Washington	2630	2924	3098	3765	6194	5061	6173	4263
12	Pennsylvania	3727	2119	3742	6489	3564	5751	4092	4212
13	Nebraska	2126	3823	1661	3071	5331	5564	4821	3756
14	South Dakota	963	1291	689	1926	3345	2702	3858	2110
15	Kansas	844	827	1132	1982	2380	2433	3565	1880
Total above		114462	135472	139641	159117	196427	201868	198797	
Total U. S. Early and Late		161596	176552	167870	199165	238546	254177	241747	

(1) By late crop states is meant those shipping over half of their shipments after Sept. 1.

(2) 1924 Yearbook, page 712.

APPENDIX V—Carlot Shipments of Early Potatoes, by Counties and Districts Idaho, July and August 1921-1925.

District	County	1921 (1)	1922 (1)	1923 (1)	1924 (2)	1925 (2)	Average 1921-25
Upper Snake	Bingham	44	33	99	47	156	
	Bonneville	7	2	2		6	
	Fremont			1			
	Jefferson	1	1				
Total		52	36	102	47	162	79.8
South East Idaho	Bannock			5	2	9	
	Franklin	3				2	
	Power			3		1	
Total		3		8	2	12	6.25
Cassia and Twin Falls	Cassia	41	25	22	3	29	
	Twin Falls	74	8	163	5	63	
Total		115	33	185	8	92	86.6
Other South Central	Elmore	45	111	82	29	37	
	Gooding	10		7	1		
	Jerome	16		12			
	Lincoln	1		1			
	Minidoka	16	1	13	1	16	
Total		88	112	115	31	53	79.8
Boise Valley	Ada	3	1	15	3	2	
	Canyon	1750	967	1190	574	543	
	Gem		3			1	
	Owyhee	52	231	181	113	98	
	Washington		1	6	3	4	
	Payette	18	61	31	2	20	
Total		1823	1264	1423	695	668	1174.6
Palouse and Clearwater	Latah					1	
	Nezperce	1		2	10	55	
Total		1		2	10	56	17.25
North Idaho	Bonner	1					
Total		1					
Lemhi	Lemhi	21	9	4	2	3	7.8
Total		21	9	4	2	3	7.8
State Total		2104	1454	1839	795	1046	

(1) From southwestern Idaho and Eastern Oregon early potato deal season 1923, p. 12-13.

(2) Photostatic material from U. S. D. A.—B. A. E.

APPENDIX VI—Weekly Carlot Shipments of Early Potatoes Important States in 1921 and in 1924.

District	1921										1924									
	July			August				September			July			August				September		
	13-19	20-26	27-2	3-9	10-16	17-23	24-30	31-6	7-13	14-20	13-19	20-26	27-2	3-9	10-16	17-23	24-30	31-6	7-13	14-20
1. Virginia	1982	1318	593	180	68	74	44	0	0	2	4070	2287	1928	1672	653	381	118	159	193	110
2. E. S. Maryland	450	527	347	137	51	25	20	0	0	0	618	374	314	371	164	89	31	21	22	23
Total	2432	1845	940	317	119	99	64	0	0	2	4688	2661	2242	2043	817	470	149	180	215	133
3. Kansas	301	261	453	296	218	178	233	178	49	17	204	656	649	369	532	519	252	109	164	22
4. Kentucky	83	75	92	72	78	23	13	3	3	1	98	82	150	172	244	213	200	162	100	15
5. Missouri	27	23	46	25	38	37	14	16	12	2	32	30	185	48	156	207	83	102	75	13
Total	411	359	591	393	334	238	260	197	64	20	334	768	984	589	932	939	535	373	339	50
6. New Jersey	90	635	1256	926	1707	1376	1106	682	414	615	4	5	92	429	751	1712	1262	1157	1170	725
7. Idaho	50	75	172	385	588	587	298	207	442	235	30	45	56	42	248	125	223	291	488	260
8. California	479	232	132	213	222	188	184	170	211	264	153	158	171	136	189	230	213	170	226	275
9. Colorado	32	41	90	330	259	137	435	239	539	518	66	57	68	93	148	161	168	257	591	553
10. Utah	52	64	144	161	98	63	15	34	47	31	19	19	36	48	85	45	56	55	78	32
11. Washington	32	37	53	26	27	28	24	11	62	69	67	35	37	52	63	72	62	79	119	141
Total	595	369	419	730	606	416	658	454	859	882	305	269	312	329	485	508	499	561	1014	1001
12. Michigan	5	1	1	0	0	1	1	12	42	186	0	0	0	0	0	2	35	154	320	584
13. Minnesota	0	2	0	1	25	232	542	229	324	850	0	8	31	89	124	128	219	318	397	939
14. Nebraska	109	116	99	118	117	92	41	42	76	81	2	2	4	6	37	90	40	27	88	72
15. Wisconsin	0	0	0	1	3	11	41	29	62	162	0	0	0	0	1	0	1	35	142	267
Total	114	119	100	120	145	336	625	312	504	1279	2	10	35	95	162	220	295	534	947	1862
Grand total above	3692	3402	3478	2871	3499	3052	3011	1852	2283	3033	5363	3758	3721	3527	3395	3974	2963	3096	4173	4031

1, 2, 3, 4, 13, 14, 15, 1921 figures from Source A. and 1924 figures from Source B.
5 and 11, 1921 figures obtained by using monthly totals given in Statistical bulletin 7 and applying a weekly variation obtained from an average of 1923 and 1924 weekly shipments. 1924 figures from Source B.
6, 1921 figures from Source C. 1924 figures from Source B.
7, 1921 and 1924 figures from Source D.
8, 1921 figures from Source E. 1924 figures from Source B.
9, 1921 figures from Source E. 1924 figures from Source B.
10, 1921 figures from Source E. 1924 figures from Source B.
12, 1921 figures from Michigan Potato Deal. 1924 figures from Source B.

SOURCES

(A) New Jersey 1922 Early White Potato Season, p. 8.
(B) Southwestern Idaho and Eastern Oregon Early 1924 Deal, p. 6.
(C) East Shore Virginia Potato Deal Review. Season 1921, p. 4.
(D) Idaho Late Potato Deal, Season 1924-1925.
(E) Caldwell, Idaho, Early Potato Deal, 1921.

APPENDIX VII—Unloads of Potatoes by State of Origin in Selected Markets, August 1924 and 1925.

State of Origin	Southwest Fort Worth				Dallas		Middlewest Chicago, Kansas City						Mountain and Pacific Los Angeles			
	1924 (1)		1925 (2)		1925 (6)		1924 (1)		1924 (5)		1925 (5)		1924 (3)		1925 (4)	
	Cars	Per cent	Cars	Per cent	Cars	Per cent	Cars	Per cent	Cars	Per cent	Cars	Per cent	Cars	Per cent	Cars	Per cent
Arkansas	1	1.7	10	21.3	24	31.6										
California	1	1.7	9	19.1	12	14.8							452	93.6	581	97.7
Colorado	1	1.7	9	19.1	12	15.8			2	5	6	8.3				
Delaware							3	.2								
Kentucky							92	6.2								
Iowa							6	.4			2	2.8				
Illinois							32	2.1								
Idaho	16	28.1	15	31.9	25	33	13	.9			5	6.9	19	3.9	10	1.7
Kansas	30	52.6	2	4.3	2	2.6	292	19.7	31	77.5	15	20.8				
Minnesota							189	12.6			24	33.3				
Indiana							45	3								
Missouri	1	1.7					339	22.7	7	17.5	2	2.8				
North Carolina							11	.7								
New Jersey							73	4.7								
Nebraska							59	3.9			11	15.3				
Oklahoma	1	1.7					1	.1								
Oregon	2	3.4	4	8.5	1	1.3	3	.2								
North Dakota											2	2.8				
Utah	4	6.8	6	12.8	12	15.8	4	.3					12	2.5	4	.7
Virginia							333	22.3								
Wyoming											5	6.9				
Others			1	2.1												
Total	57	100	47	100	76	100	1495	100	40	100	72	100	483	100	595	100

(1) Summary of the Minnesota Potato Deal Season 1924-1925.
(2) Summary of Carlot Diversions and Unloads of Fruit and Vegetables at Ft. Worth in 1925.
(3) Summary of Carlot Unloads of Fruit and Vegetables in Los Angeles in 1924.
(4) Unloads of Fruits and Vegetables in Los Angeles in 1925.
(5) Unloads of Fruits and Vegetables in Kansas City in 1924 and 1925.
(6) Unloads of Fruits and Vegetables in Dallas in 1925.

APPENDIX VIII—Yearly Carlot Shipments of Early Potatoes From Idaho and Competing States (9).

	1919	1920	1921	1922	1923	1924	1925	1926
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maryland	800	1361	1038	1595	1295	1563	747	1100
Virginia	3996	5947	4483	5188	5219	11158	4211	6218
Total	4796	7308	5521	6783	6514	12721	4958	7318
New Jersey	6926	9166	7724	11882	4765	6051	2964	3925
Kansas	653	1274	1647	1607	2623	3105	1523	2852
Kentucky	460	435	316	244	830	1067	457	343
Missouri	63	140	190	263	565	736	507	1228
Total	1176	1849	2153	2114	4018	4908	2487	4423
Idaho	1231	1139	2728	2087	2566	1417	1436	1799
California	2669	2639	2169	1791	1422	1690	1959	1694
Utah	158	256	645	984	570	389	446	509
Washington	239	279	427	399	318	638	972	1094
Colorado	1805	1619	2609	2007	2087	1741	2327	2538
Total	4871	4793	5850	5181	4397	4458	5704	5835
Minnesota	4150	2729	3398	3769	4840	1900	4386	2133
Michigan	247	340	397	684	488	861	1809	693
Nebraska	91	321	1049	942	1040	332	560	386
Wisconsin	1401	243	453	688	647	386	1753	898
Total	5889	3533	5297	6083	7015	3479	8508	4110
Grand Total	24889	27788	29273	34130	29269	33034	26057	27410

(1) Market Reporter, Aug., Sept., Oct., 1920.

(2) Market Reporter, Aug., Sept., Oct., 1921.

(3) Weather Crops and Markets, Aug., Sept., Oct., 1922.

(4) Supplement to Crops and Markets, Sept., Oct., Nov., 1924.

(5) Monthly Supplement to Crops and Markets, August, September, October, 1924.

(6) Monthly Supplement to Crops and Markets, August, September, Ocober, 1925.

(7) Monthly Supplement to Crops and Markets, August, Sept., 1926. Sept. from 1925 Supplements in preliminary.

(8) Monthly Supplement to Crops and Markets, August, Sept., 1926. September from B. A. E. Portland Market News. Reports on Potatoes for September, 1926.

(9) One half of total July shipments, plus August shipments, plus one half of September shipments.

APPENDIX IX—Late Potatoes. Acreage by County and District. Census years, and 1917 and 1918.

Counties by districts	1899 (Census)	1909 (Census)	1917 (Assessors)	1918 (Assessors)	1919 (Census)	1924 (Census)
District 1						
Bingham	2231	8942	6434	5445	7397	12756
Bonneville			6518	4693	7988	12368
Butte			137	142	226	130
Clark					180	24
Fremont	1145	2768	399	646	536	2567
Jefferson			2395	1057	2797	3566
Madison			723	594	540	1346
Teton			72	77	159	276
Total	3376	11710	16678	12654	19823	33033
Percent of total	42.9	46.6	50.4	45.5	51.9	63.0
District 2.						
Bannock	265	607	481	628	1321	2121
Bear Lake	323	469	303	306	313	147
Caribou					48	10
Franklin			190	279	419	397
Oneida	362	612	266	361	172	110
Power			27	26	235	174
Total	950	1688	1267	1600	2508	2959
Percent of total	12.1	6.7	3.8	5.7	6.6	5.6
District 3.						
Cassia	158	418	1204	1115	3442	3624
Twin Falls		2102	5260	3020	3151	3227
Total	158	2520	6464	4135	6593	6851
Percent of total	2	10	19.5	14.9	17.3	13.1
District 4.						
Blaine	233	443	208	123	203	78
Camas			31	31	62	27
Elmore	84	319	97	104	216	177
Gooding			342	1099	319	347
Jerome					330	788
Lincoln	124	1637	1295	977	212	179
Minidoka			1951	1970	1300	2639
Custer	107	153	117	134	150	73
Total	548	2552	4041	4438	2792	4308
Percent of total	7	10.0	12.2	15.9	7.3	8.2
District 6.						
Idaho	507	825	271	296	790	682
Latah	655	1564	1586	1813	1315	746
Lewis			262	208	253	517
Clearwater			195	145	253	274
Nezperce	688	1465	361	263	599	661
Total	1850	3854	2675	2735	3210	2880
Percent of total	23.5	15.3	8.1	9.8	8.3	5.5
District 7.						
Benewah			825	900	425	308
Bonner		512	146	165	791	457
Boundary			241	245	209	205
Kootenai	618	2011	704	654	1420	976
Shoshone	120	86	141	180	127	58
Total	738	2609	2057	2144	2972	2004
Percent of total	9.4	10.3	6.2	7.7	7.8	3.8
District 8.						
Lemhi	133	277		174	306	431
Percent of total	1.7	1.1		0.6	0.8	0.8
Indian Res.	107					
Percent of total	1.4					
STATE	7860	25210	33182	27870	38204	52466
State	100%					

APPENDIX X—Late Potato Production by County and Districts, Census Years, and 1917 and 1918.*

Counties by districts	(BUSHELS)					
	1899 (Census)	1909 (Census)	1917 (Assessor's)	1918 (Assessor's)	1919 (Census)	1924 (Census)
District 1						
Bingham	164,380	1,835,155	532,361	753,787	1,140,252	2,337,752
Bonneville			363,027	388,042	1,276,613	2,218,192
Butte			2,240	2,750	22,106	8,104
Clark					11,681	2,134
Fremont	133,495	571,450	17,723	28,030	58,059	417,666
Jefferson			122,925	190,650	294,813	435,191
Madison			24,065	73,073	45,113	176,225
Teton			793	1,150	16,259	40,590
Total	297,875	2,406,605	1,063,134	1,437,482	2,864,896	5,635,854
Per cent of total	36.2	56.3	43.3	45.3	52.8	64.1
District 2						
Bannock	17,862	91,393	14,252	37,394	183,120	376,565
Bear Lake	24,676	64,634	6,309	14,668	28,635	10,646
Caribou					4,499	488
Franklin			13,495	25,185	37,800	45,564
Oneida	26,787	92,251	14,121	25,112	19,045	9,259
Power			680	810	13,644	23,259
Total	69,325	248,278	48,857	103,169	286,743	465,781
Per cent of total	8.4	5.8	2.0	3.6	5.3	5.3
District 3						
Cassia	21,597	60,313	164,538	189,166	744,373	726,124
Twin Falls		300,658	495,280	436,960	705,977	781,251
Total	21,597	360,971	659,818	626,126	1,450,350	1,507,375
Per cent of total	2.6	8.4	26.9	19.7	26.7	17.1
District 4						
Blaine	20,120	69,043	2,376		11,246	4,104
Camas					3,866	1,303
Elmore	9,118	34,745	5,455	4,138	17,347	13,138
Gooding			56,915	116,010	26,096	32,897
Jerome					42,366	178,566
Lincoln	8,890	189,053	62,156	100,402	30,701	34,489
Minidoka			244,744	322,455	252,253	438,603
Custer	11,767	26,782	3,060	4,180	18,257	9,274
Total	49,895	319,623	374,736	547,185	402,132	712,374
Per cent of total	6.1	7.5	15.3	17.2	7.4	8.1
*District 6**						
Idaho	67,860	144,550	6,186	8,800	21,682	48,421
Latah	96,046	243,531	26,386	52,077	71,725	78,761
Lewis			8,915	9,445	8,665	34,561
Clearwater			5,558	5,651	13,730	25,491
Nezperce	102,536	244,802	6,065	5,345	40,035	54,760
Total	266,442	602,883	53,110	81,318	155,837	241,994
Per cent of total	32.4	14.1	2.3	2.6	2.9	2.8
District 7						
Benewah			10,100		31,557	25,027
Bonner		61,389	4,090	5,240	55,632	37,358
Boundary			212 038	321,380	21,755	16,502
Kootenai	70,646	218,130	12,695	16,448	97,504	65,808
Shoshone	16,545	14,077	15,000	35,000	14,926	3,253
Total	87,191	293,596	253,923	378,068	221,374	147,948
Per cent of total	10.6	6.9	10.6	11.9	4.1	1.7
District 8						
Lemhi	20,480	44,260			48,954	78,513
Per cent of total	2.3	1.0			0.9	9.9
Indian reservations	10,521					
Per cent of total	1.3					
100 per cent—state	832,326	4,276,216	2,453,578	3,173,348	5,430,286	8,789.839

* District 5, comprising Ada, Boise, Canyon, Gem, Adams, Owyhee, Valley, Washington and Payette counties omitted on the theory that these counties grow mostly early potatoes.

APPENDIX XI—Late Potatoes—Yield Per Acre—Late Potatoes by District 1917-1925.

(BUSHELS)

		1917	1918	1919	1920	1921	1922	1923	1924	1925	
District	Counties	Assessor records	Assessor records	U. S. census	State statistics	State statistics	State statistics	State statistics	U. S. census	State statistics	Average
Upper Snake	Bonneville, Bingham	181	230	157	207	213	191	180	181	204	194
S. E. Idaho	Bannock	152	167	139	225	187	162	200	177	182	177
Twin Falls S. Side	Twin Falls, Cassia	180	179	220	210	246	250	232	221	251	221
Twin Falls N. Side	Jerome, Minidoka	285	243	161	258	180	250	155	196	294	227
Palouse-Clearwater	Idaho, Latah, Nezperce	92	101	48	120	81	105	91	86	101	92
North Idaho	Bonner, Boundary, Kootenai	114	150	81	149	102	143	146	76	100	118

APPENDIX XII—State and District Destinations of Idaho Late Potatoes by Season (1), 1920-1925.

(CARLOTS)

	Mountain and Pacific							
	California	Idaho (2)	Colorado (3)	Utah (4)	Wyoming (5)	Montana	Others (6)	Total Mountain and Pacific
1920-21 (8)	1,196	197	121	107	97	86	39	1,843
1922-23 (9)	1,825	283	234	52	392	3	64	2,853
1923-24 (10)	4.040	406	282	51	62	13	50	4,904
1924-25 (11)	4,451	401	25	161	92	203	173	5,506
1925-26 (12)	1,673	501	183	133	67	21	42	2,620
Total	13,185	1,788	845	504	710	326	368	17,726

	Middlewest					
	Kansas	Missouri	Illinois	Nebraska	Others (7)	Total Middlewest
1920-21	649	386	350	163	63	1,611
1922-23	1,319	1,846	1,429	277	123	4,994
1923-24	758	683	773	71	91	2,375
1924-25	358	265	827	30	32	1,512
1925-26	123	881	1.001	177	149	2,331
	3.207	4,061	4.380	718	458	12,824

	Southwest				
	Texas	Oklahoma	Louisiana	Arkansas	Total Southwest
1920-21	1,101	654	88	37	1,880
1922-23	1,688	690	186	89	2,653
1923-24	1,356	401	188	33	1,978
1924-25	1,183	335	30	22	1,570
1925-26	141	159	5	13	318
	5,469	2.239	497	194	8,399

(1) Idaho Late Potato Deal Summaries, U. S. D. A.
(2) Not including cars billed to Pocatello and Idaho Falls.
(3) Not including cars billed to Denver.
(4) Not including cars billed to Ogden.
(5) Not including cars billed to Laramie.
(6) Arizona, New Mexico, Nevada, Oregon, Washington.
(7) Indiana, Iowa, Minnesota, Ohio, Michigan, Wisconsin.
(8) Sept. 11-April 15.
(9) Sept. 15-April 30.
(10) October 1-April 15.
(11) Sept. 17-April 14.
(12) October 1-April 30.

APPENDIX XIII—Carlot Shipments of Late Potatoes from Idaho and other Important States. Oct 1 Through June 30th 1917-1926 (1).

	1917-1918	1918-1919	1919-1920	1920-1921	Average 1917-1921	1921-1922	1922-1923	1923-1924	1924-1925 (2)	1925-1926 (3)	Average 1921-1926
Maine	13,008	16,799	20,286	16,582	16,669	32,950	22,382	30,468	39,926	32,150	31,695
Minnesota	13,216	15,741	14,177	19,027	15,540	2 ,739	22,803	25,654	28,363	16,371	23,386
Michigan	9,023	10,684	11,586	16,475	11,942	14,427	18,395	19,471	15,254	10,139	15,537
Wisconsin	12 566	17,752	18,595	18,191	16,776	10,212	20,126	15,517	15,034	12,349	14,648
New York	8,289	8,225	11,399	15,111	10,756	15,303	16,610	14,972	17,913	7,462	14,452
Idaho (4)	6 733	6,206	5,215	6,847	6,250	10,032	11,317	12,247	9,774	16,103	11,895
Colorado	10,466	10,114	5,831	8,748	8,790	13,632	12,240	10,792	9,525	11,173	11,472
I. total above	73,301	85,521	87,089	100,981		120 295	123,873	129,121	135,789	106,347	
II. total U. S.	99,576	108,531	105,581	133,332	111.755	156,566	163,517	163,233	190,528	125,844	159,938
I. as a percent of II	74 per ct.	79 per ct.	82 per ct.	75 per ct.		77 per ct.	76 per ct.	79 per ct.	71 per ct.	84 per ct.	

(1) U. S. D. Yearbook.
(2) U. S. D. A. Bur. A. E. Mimeo sheets showing carload shipments.
(3) Supplements to crops and markets.
(4) "Idaho-Potatoes" 1925-1926 U. S. D. A. deal report.