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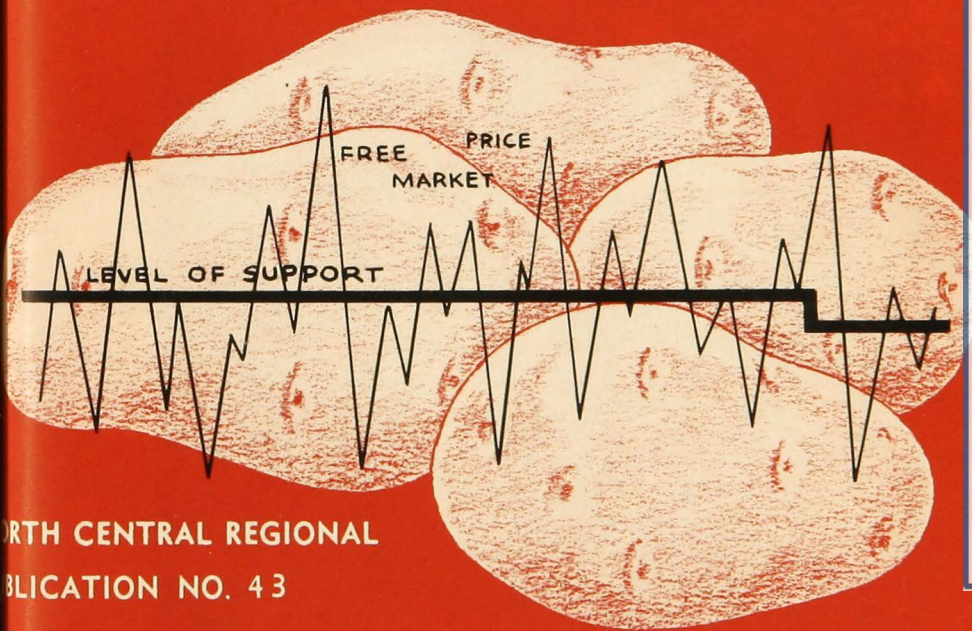
RICE SUPPORTS and the potato industry

GER W. GRAY, VERNON L. SORENSON, and WILLARD W. COCHRAN



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FOREWORD

A study of the potato price support program and marketing agreements was approved by the North Central Regional Technical Potato Marketing Committee at its October meeting in 1949. Research leadership was placed in the hands of Warren C. Waite of the Minnesota Agricultural Experiment Station. Following Professor Waite's death in November 1950, the work was continued by Roger W. Gray. In August 1951 Vernon L. Sorenson joined in the work at Minnesota, and in September 1951 Willard W. Cochrane undertook supervision of the project.

The entire technical committee has assisted with the project. The survey, which was conducted to test certain hypotheses arising in the research, was designed by the committee. Schedules were collected under supervision of the following persons: M. E. Cravens, Jr., Michigan; Henry H. Bakken, Wisconsin; Perry V. Hemphill, Minnesota-North Dakota; C. J. Miller, Nebraska; and C. H. Merchant, Maine.

The members of the North Central Regional Technical Committee on Potato Marketing Research are:

Illinois	R. A. Kelly
Indiana	Earl W. Kehrberg
Iowa	E. S. Haber, Chairman[1]
Kansas	Wm. F. Pickett
Michigan	M. E. Cravens, Jr.[2]
Minnesota	Willard W. Cochrane[3]
Missouri	R. A. Schroeder
Nebraska	C. J. Miller[4]
North Dakota	Perry V. Hemphill
Ohio	R. C. Scott[5]
Wisconsin	Henry H. Bakken

Others associated with this project include:

Minnesota Research Fellow	Roger W. Gray[6]
Minnesota Research Fellow	Vernon L. Sorenson[7]
Bureau of Agricultural Economics	Loyd Martin
Production and Marketing Administration	V. H. Nicholson
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The authors acknowledge with thanks the assistance given them by various federal agencies, particularly the Bureau of Agricultural Economics and the Production and Marketing Administration, in furnishing statistical and other information. The authors assume sole responsibility for the text of the bulletin including the conclusions and recommendations.

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[1] Chairman since 1952. Previous chairman was R. A. Kelly.
[2] Served until 1953.
[3] Appointed 1951. Previous representatives from Minnesota were Warren C. Waite, F. A. Krantz, and Roger W. Gray.
[4] Appointed 1951. Previous representative from Nebraska was H. O. Werner.
[5] Served until 1952, not replaced.
[6] Served until May 1953.
[7] Served until July 1953.
[8] Served until July 1953, replaced by W. V. Lambert.

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PRICE SUPPORTS
And the Potato Industry

Roger W. Gray, Vernon L. Sorenson, and Willard W. Cochrane

THE RECENT PRICE SUPPORT program on potatoes produced some dramatic and spectacular results. More potatoes were produced than people were willing to buy. Large amounts acquired by the government could not be disposed of in useful outlets; many potatoes were dumped and allowed to rot. The federal government spent more money buying potatoes from 1942 through 1950 than it spent for any other farm commodity from 1933 through 1950. Many of the major problems encountered in supporting potato prices were never solved; they ended only when Congress withdrew all direct price support after the 1950 crop.

To answer some questions about this experience with potatoes, Agricultural Experiment Stations in the North Central Region made a thorough study. The results are reported in *summary* form in this bulletin.[1] Such important questions as the following are considered:

1. Why did farmers increase production when price supports were in effect?
2. What influence did the program have on production methods?
3. Did the average farmer benefit from the program?
4. Did the program cost consumers money through higher potato prices?
5. Did the program create inefficiencies by inducing high cost producers to enter into production?
6. What are the policy implications of the experience with potatoes that should be kept in mind by farmers, farm leaders, and legislators in the future development of farm programs?

But these questions cannot be answered without a clear picture of the program—its features, operations, and problems. This picture is presented in the next few pages.

The Potato Program

HOW PRICES WERE SUPPORTED

THERE ARE three principal ways by which Government action can influence the price of a farm commodity: (1) the market can be expanded through purchases of the commodity or through the subsidization of its use

[1] For a complete discussion of any points included here refer to Gray, Roger W., Sorenson, Vernon L., and Cochrane, Willard W. *An Economic Analysis of the Impact of the Government Programs on the Potato Industry of the United States.* Minn. Agr. Expt. Sta. Tech. Bul. 211. 1954.

in outlets where it could not be used profitably at prevailing prices, (2) action can be taken to reduce production and thereby increase price, and (3) action can be taken to restrict the sale of a product that has already been produced.

Before 1942 these methods were used intermittently to exert an upward pressure on potato prices without there being a specific price goal in any year. From 1942 through 1950 prices were supported at a given level in relation to parity. Each of these methods was used as a tool for accomplishing this.

Under the first method potatoes were bought and disposed of by: (1) distribution without cost for welfare and school lunch utilization; (2) sale to processing plants for manufacture into flour, starch, glucose, alcohol, and processed foods; (3) shipment to food deficient foreign countries; (4) sale for livestock feed; and (5) destruction. These outlets all required disposal at less than cost. Losses to the government in each case depended on how much potatoes were worth in each outlet. Losses were equal to the complete cost of acquisition and handling only when potatoes were distributed for welfare and school lunch use, or when they were destroyed or allowed to spoil.

In addition to buying, the government expanded markets through diversion programs. This was accomplished by arrangement with processors or feeders who could use potatoes at a price below the support level. The following hypothetical example illustrates how diversion worked.

Support price at the farm	$1.00 per bushel
Cost of moving potatoes from farm to plant	$ .50 per bushel
Total cost of potatoes to processor	$1.50 per bushel
Value of potatoes for manufacture	$ .75 per bushel
Government payment to processor	$ .75 per bushel
Total	$1.50 per bushel

In this example the processor would pay the farmer or shipper $1.50 per bushel for the potatoes. But since he could afford to pay only 75 cents and still sell his product competitively, the government would pay him the difference between this amount and the support price. When potatoes were used as livestock feed, the value of nutrients was calculated and the government absorbed a loss equal to the difference between the support price and the nutritive value of potatoes as livestock feed.

Government actions to raise prices through reducing the amount produced centered around soil conservation payments from 1938 through 1942. Production of soil depleting crops was adjusted to market requirements *purportedly* to lessen the exploitive use of land. But where market requirements were defined as the amount that would maintain prices at a given per cent of parity, acreage goals could be, and in fact were, used as price raising devices. After 1942 acreage control became a part of the price support program. Farmers were asked to expand or restrict acreage in return for an assured price.

Efforts were also made to influence potato prices by withholding quantities already produced through marketing agreement and order programs. Agreements and orders required inspection by a federal, state, or other authorized inspection agency of all potatoes shipped from areas covered by the regulation. Potatoes, typically of lower grades and qualities not meeting the grade specifications of various orders, were prohibited from interstate shipment.

THE DEVELOPMENT OF PROGRAMS, 1942 THROUGH 1950

The first full scale price support program for potatoes was undertaken in 1942. The government announced that

it would buy surplus potatoes at 75 per cent of parity. But supplies were short and very few purchases were made.

Due to increased wartime requirements the Department of Agriculture helped obtain potatoes for hospital and other uses in some areas where no potatoes were available. Fearing that further shortages would develop as the war effort increased, the Secretary of Agriculture asked farmers to increase their potato acreage in 1943. This request was accompanied by incentive payments under the soil conservation program totaling more than $25,000,000. The request for increased acreages also obligated the government to support the price of potatoes at not less than 90 per cent of parity for the duration of the war and for two years thereafter. In 1942 Congress passed legislation (the Steagall amendment) which included this requirement.

In 1943 potato prices were supported at 92 per cent of parity. From 1944 through 1948 prices were supported at 90 per cent of parity, and in 1949 and 1950 at 60 per cent of parity. Support under the Steagall amendment lasted through December 1948. In 1949 and 1950 support operations were authorized by the agricultural acts of 1948 and 1949. After 1950, government purchases could be made only if marketing quotas were adopted to regulate the amount which came to the market. Since no legislation existed whereby marketing quotas could be established, support operations were discontinued after the 1950 crop.

WHO PARTICIPATED IN THE PROGRAM?

Not all producers and not all potatoes were eligible to participate in the program. Producers were required to pay small service charges and to comply with acreage and marketing restrictions to be eligible for participation.

Eligible potatoes were defined as those produced by eligible growers and of quality or grade U.S. No. 2, 1⅞ inches minimum size; U.S. No. 1, size B; and U.S. No. 1, 1⅞ inches and larger. Potatoes affected by disease, insect, frost, or other injury rendering them unfit for normal consumption or unable to stand normal shipment or storage, were not eligible for price support regardless of whether they met minimum U.S. grade requirements. Other potatoes which were not eligible for price support included those that were objectionable because of odor, flavor, internal discoloration, and other visible damage which seriously affected their marketability.

HOW WERE SUPPORT OPERATIONS EFFECTED?

Although several different methods were employed to support potato prices, each eligible grower did not get to choose the method of support to be used in his case. Potatoes grown in different sections of the country are called early, intermediate, or late crop potatoes depending on the time of harvest. There are differences in these potatoes that were recognized in setting up support operations. Early and intermediate potatoes—the "new" potatoes that can be bought in the spring—tend to spoil if placed in storage. Late crop potatoes, on the other hand, are stored to provide adequate supplies during the late fall and winter. The Department of Agriculture, therefore, adopted the following program for potatoes from the different crops:

Loan Operations

Late crop potatoes were supported through loans from 1943 through 1947. Potatoes were placed under loan in

approved storage at loan rates which varied from year to year but generally were about 75 per cent of the September support price. If stored potatoes did not sell commercially during the marketing season, they were sold to the government under its purchase operation. In this event the producer was paid the difference between the support price and the loan rate. If the potatoes sold commercially, the loan was repaid.

Loan operations supplemented the purchase operation and served to assure storage of potatoes which should not move into market immediately after harvest. From 1947 through 1949 the farmer could either place late crop potatoes in storage under the loan program or make direct sale to the government. In 1950 no loans were made; late potatoes were supported only through direct purchase operations.

The quantities handled in the loan operations are shown in table 1.

Table 1. Late Crop Potatoes Placed in Storage Under Government Loan Operations, 1943-49

Year	Thousands of hundredweight
1943	4,367
1944	5,949
1945	33,958
1946	68,981
1947	8,669
1948	21,722
1949	12,529
Total	156,175

Purchase Operations

Though supplemented with other programs, purchase represented the basic method of supporting potato prices. Through 1947 the purchase operation for late potatoes consisted entirely of absorbing collateral released by growers under loan operations. In addition, early and intermediate crop potatoes were purchased. After 1947 purchases were continuous through the year, including direct purchase of late crop potatoes. The quantities acquired from all crops each year 1943 through 1950 are shown in table 2.

Table 2. Price Support Purchases of Early, Intermediate, and Late Crop Potatoes, 1943-50

Year	Thousands of hundredweight
1943	10,194
1944	2,062
1945	7,138
1946	43,754
1947	19,079
1948	81,624
1949	45,193
1950	60,715*
Total	269,759

* A late revision indicates that this figure has increased to 60,776,000 cwt.

Diversions

Potatoes were diverted into uses in which they were noncompetitive at support prices. Diversion activities took several forms. In areas where plants for making potato alcohol, starch, or processed food existed, the government contracted with these plants to buy and process potatoes. In areas where farmers were willing to use potatoes as livestock feed, they were diverted to this use. Some potatoes were diverted to foreign consumption by means of export differential payments. The quantities that were diverted each year are shown in table 3.

Other Programs

Special programs were developed from time to time as the need arose. At the direction of the Commodity Credit Corporation, government subsidies were paid to dealers who facalitated the movement of potatoes. Transportation subsidies were paid to move potatoes out of Maine by ocean freight when less expensive rail shipment was

Table 3. Quantity of Potatoes Diverted into Noncommercial Channels, 1943-47

Year	Thousands of hundredweight
1943	3,821
1944	105
1945	5,661
1946	5,439
1947	1,439
Total	16,465

not available. Field storage loan programs were used when permanent storage was inadequate to handle the large surpluses. Potatoes stored in fields deteriorated rapidly and were charged off as a loss. The quantities involved in these special programs are shown in table 4.

Table 4. Quantities of Potatoes Involved in Special Programs, 1943-46

Year and program	Thousands of hundredweight
1943	
Dealers agreements	6,464
Ocean freight payments	1,360
1944	
Ocean freight payments	405
1945	
Field storage loans	1,600
1946	
Field storage loans	15,593
Total	25,422

Disposal of Surpluses

Because excessive surpluses developed during some years, administrators were faced with a difficult problem of finding outlets for the potatoes that were acquired. Table 5 summarizes the quantities that were disposed of and the net losses to the government in different outlets.

Two widely divergent goals were considered in developing disposal policy. These were: (1) to obtain the fullest utilization of the potatoes, and (2) to dispose of potatoes at the least possible cost. A compromise policy was first adopted wherein useful outlets for potatoes acquired under the program were developed only if these outlets could be obtained without excessive additional cost to the government. Under this policy considerable quantities from the 1946 crop were destroyed or permitted to spoil. This was the first heavy surplus year.

Table 5. Quantities and Net Losses of Potatoes in Each Disposal Outlet, 1943-50

Outlet	Quantity in thousands of hundredweight	Net losses in thousands of dollars
School lunch, institutions, and relief	16,628	44,164
Livestock feed	93,376	153,256
Starch, flour, and glucose	63,410	127,619
Alcohol	52,386	116,466
Processed food	3,814	4,477
Export—fresh	23,867	42,720
Losses through spoilage	5,425	8,889
Sales in commercial channels	418	399
Dumped	27,992	32,113
Total	287,316	530,103

Pressure was brought to bear by the Department of State and by the Congress to prevent a recurrence of the 1946 losses. The Department of State's interest arose from the fact that photographs of dumped and rotting potatoes were used by the Communist governments for propaganda purposes with apparent success. In response to these pressures, the Department of Agriculture made every effort to obtain useful outlets for the potatoes acquired from the 1947 and 1948 crops. The heavy costs involved in disposing of the 1948 purchases prompted a revision of this policy. In 1949 and 1950 disposal policy was dominated by the criterion of least-cost-disposal regardless of physical losses.

Summary of Losses

A summary of net losses from 1943 through 1950 is given in table 6. Only one deficiency exists which prevents this from being a complete accounting of expenditures made to support potato prices. The cost of administering government programs is not available on a commodity basis. Exclusive of this item approximately $652,000,000 was spent. Recoveries approximated $100,000,000 and net losses were approximately $552,000,000. These funds were distributed among producers and among marketing, transportation, storage, and other agencies. Although it is impossible to determine how each group shared in these expenditures, it seems safe to assume that a major portion of the money went to producers.

Table 6. Net Losses to Government on All Price Support Operations for Potatoes, 1942-50

Operation	Thousands of dollars
Purchases	516,545
Subsidy to dealers	4,342
Subsidy on transportation	352
Losses on loan operations	21,064
Diversion to domestic and foreign use	11,357
Other	124
Less: miscellaneous income	(1,363)
Total net losses through June 30, 1951	552,421

SOME IMPORTANT FEATURES OF THE PROGRAM

A surplus of potatoes was produced each year after 1942, but the surpluses became greater after 1945. The program operated in two major phases both with respect to the amount of purchases made by government and the restrictions placed on producers. During the period 1942-45 farmers were asked to meet acreage goals. These were minimum acreages which could be exceeded without penalty. After 1946, acreage allotments were issued. These represented maximum acreages which farmers could not exceed and retain their eligibility for participation in the program.

When allotments became restrictive many farmers operated outside of the program. More and more farmers failed to comply with allotments, hence could not place their potatoes under loan or sell to the government. But they could sell in a market in which price was maintained by government purchases. These noncooperators as well as cooperators sold in a price-protected market.

Acreage restrictions did not maintain production within desirable limits. Rapid yield increases maintained production at a high level even though severe acreage restrictions were imposed upon complying farmers. Beginning in 1947 the government tried to further reduce market supplies by urging farmers to adopt marketing orders. In 1950 the requirement was added that support operations would not be available in certain areas which rejected an order. But in spite of this requirement seven order proposals were rejected in 1950.

To gain some insight into the problems created by the program it is necessary to know what adjustments were taking place in the potato industry both prior to and during the price support period. These changes were influenced by two principal factors: (1) the level and nature of demand for potatoes and (2) the organization of potato production. Consideration will first be given to characteristics of demand for potatoes that are important to an analysis of the price support program.

The Market for Potatoes

FACTORS WHICH AFFECT TOTAL POTATO CONSUMPTION

THE AMOUNT of potatoes consumed depends on several factors which are listed here in a suggested order of importance: (1) the size of the population, (2) the quantity and variety of other foods (that is, the preference for potatoes considered in light of the variety of foods available), (3) the amount of income available to the average family, and (4) the price of potatoes relative to other foods.

Three of these factors influenced the level of potato consumption importantly from 1870 through 1950. Population increased from 40 million in 1870 to 151 million in 1950. This brought about an increase in total potato requirements.

However, two important factors tended to reduce total requirements through their influence on per capita consumption levels. Because the United States is a large country which extends into both temperate and subtropical climatic zones, it is possible to produce most major food commodities on a year-round basis. Further, steady progress toward industrialization has improved levels of income and living. Hence American consumers have been increasingly able to include a wider variety of foods in their diets.

With many other foods available, potatoes are eaten only to the extent that consumers want them and not because they provide a cheap source of nutrients. The movement toward a more varied diet in the United States has created a persistent pressure toward less potato consumption.

The price of potatoes relative to the price of other foods, on the other hand, appears to have influenced consumption very little. The housewife is much more sensitive to tastes than to price in deciding how many potatoes to buy.

It is the relationship between (1) population and (2) the individual's desire for potatoes in his diet which largely explains historical changes in potato requirements. Population increased steadily from 1870 through 1950. Per capita consumption, on the other hand, increased during part of this period in spite of a continuous movement of the American economy toward one where fewer potatoes are eaten. An important factor was at work from about 1870 to 1910 which caused per capita consumption to increase, and in consequence to decrease, more rapidly from 1910 through 1950 than might otherwise have been the case.

THE INFLUENCE OF IMMIGRATION ON POTATO CONSUMPTION

Between 1870 and 1910 large numbers of immigrants from northern European countries arrived in this country. These people were in the habit of eating two and three times as many potatoes as were native-born Americans. The average native-born American ate two to three bushels of potatoes each year, whereas many of these immigrants ate six to eight bushels in their native country. They apparently did not change their eating habits the day they arrived in America. After 1910, immigration from northern European countries decreased and at the same time per capita consumption of potatoes began to decline.

From figure 1 it can be seen that each person in the United States ate about 180 pounds of potatoes in 1910. Consumption had declined to about 100

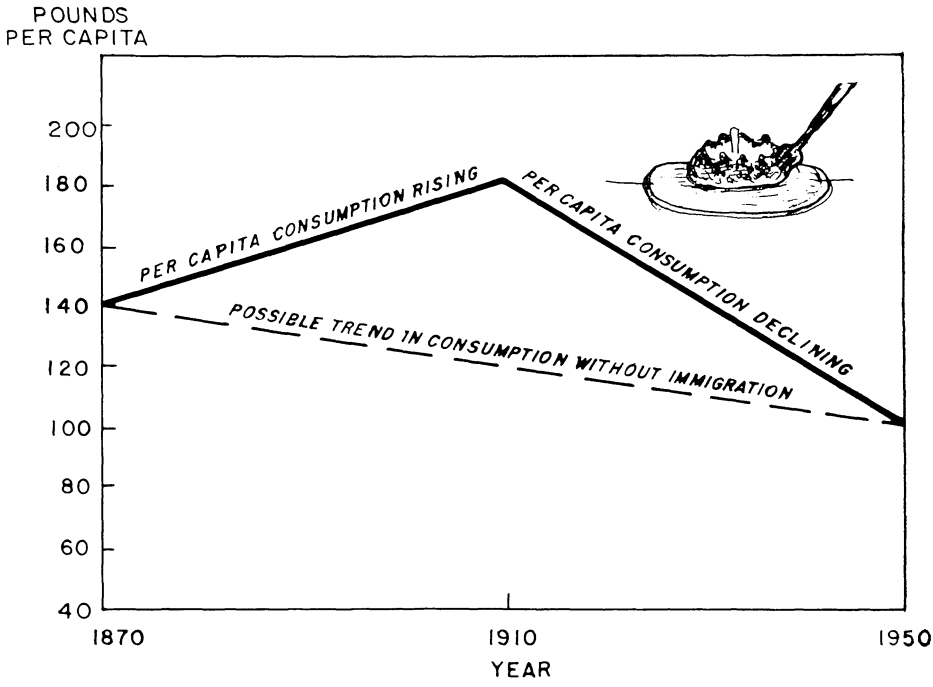


Fig. 1. Trends in per capita potato consumption, 1870-1950.

pounds by 1950. Had there been no heavy influx of north European immigrants between 1870 and 1910, annual per capita consumption in 1910 might have been well below 180 pounds. But there is no reason to believe that this wave of immigration altered the level of consumption in 1950. *It is important to note, however, that the decline in per capita consumption after 1910 was greater than would have been the case had this special situation not existed.* The adjustment in eating habits by these immigrants was superimposed on a developing economic system which already was exerting a downward pressure on potato consumption. These two factors resulted in a decrease in per capita consumption which more than offset the effect of population increases from 1910 through 1950.

WHAT MARKET CHANGES MEAN TO PRODUCERS

Why are these historical characteristics of potato consumption important in explaining the consequences of the price support program? Largely because consumption patterns tended to prevent desirable changes in the organization of the potato industry from 1910 through 1941. Production adjustments to satisfy an expanding market can be made with ease. But the type of adjustment called for by a contracting market is difficult to make. From 1910 through 1941 potato producers faced a market which contracted slightly, and one in which price was very unstable.

When the government began to buy potatoes in 1942 this situation was

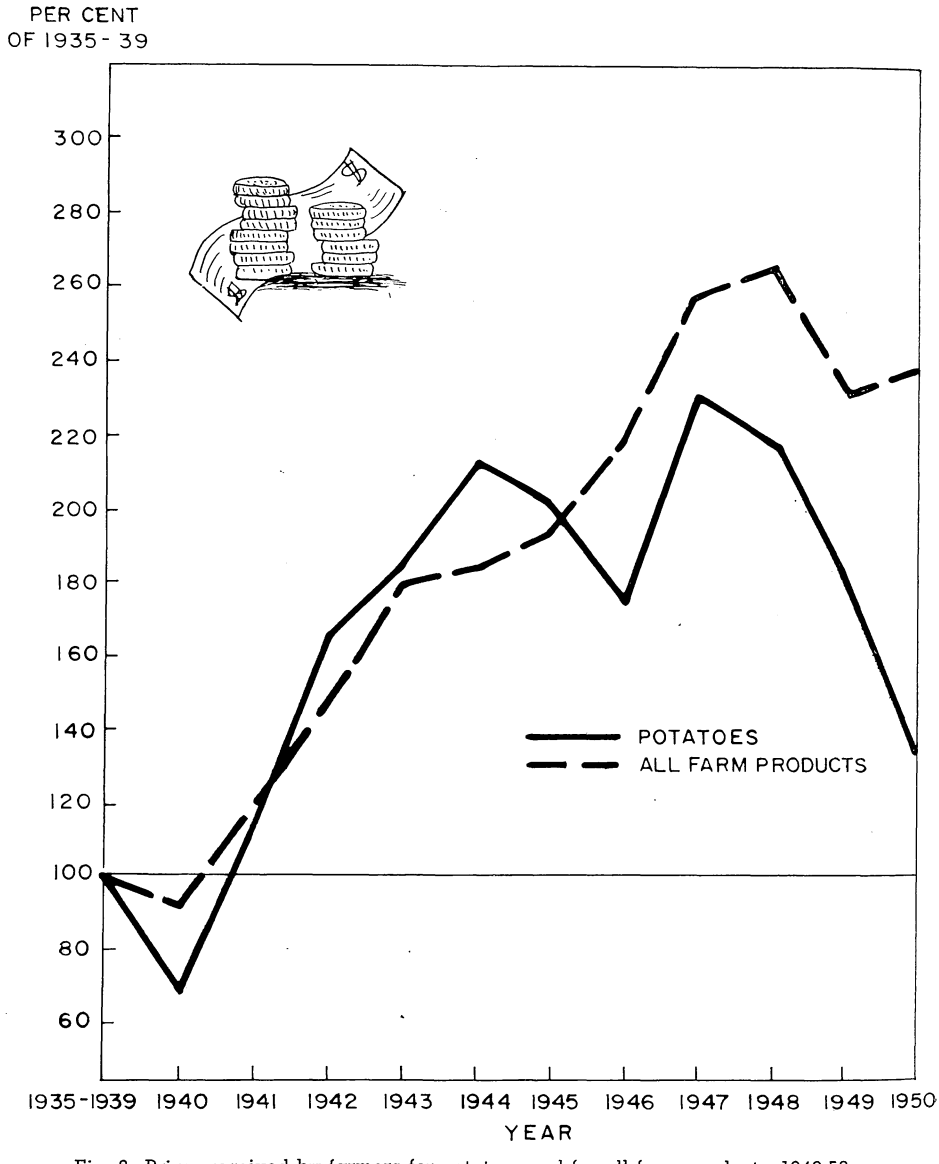


Fig. 2. Prices received by farmers for potatoes and for all farm products, 1940-50, expressed as a percentage of 1935-39.

changed in two respects: (1) *the market for potatoes became unlimited,* and (2) *price was stabilized.* With a government outlet available, farmers knew that they could sell all they produced at a price equal to 90 per cent of parity, providing that all the requirements of the program were satisfied. With this assurance those farmers who felt they could produce potatoes more successfully than any other crop expanded production.

Although some potato farmers are to be found in most sections of the United States the largest numbers tend to be concentrated in such areas as Maine.

Idaho, Colorado, California, and the Red River Valley of Minnesota and North Dakota. In these areas farmers produce potatoes on a highly commercial basis. They plant large acreages and invest heavily in their crop. But the lack of an expanding market and the extreme price uncertainty that existed from 1910 through 1941, prevented them from expanding production as much as they would have liked. When stable prices and an unlimited market became a reality in 1943, however, these commercial growers expanded rapidly.

Another group of producers—those who grew 10 acres or less of potatoes as a cash crop sideline—tended to go out of production during the price support period. The combination of these two responses—on the one hand specialists who were expanding and on the other nonpecialists who were going out—resulted in major geographical shifts in production. Along with this geographical shift, changes in yield and acreage levels kept administrators of the program constantly off balance in their attempts to regulate production.

THE LEVEL OF POTATO SUPPORT PRICES

It was stated earlier that the price support program did two things (1) it created an unlimited market for potatoes, and (2) it stabilized price. Nothing was said about its effect on price levels, but *the program does not appear to have raised potato prices.*

This can be seen by noting: (1) potato prices relative to other farm commodities, and (2) potato prices relative to historical levels. Although potato prices rose somewhat more rapidly than other farm prices between 1940 and 1945, other farm prices averaged higher than potato prices from 1945 through 1950 (see figure 2). It is also clear that support prices on potatoes were not high in terms of the historical record. The average price received by farmers for 32 years before price supports (1910-41) was 93 per cent of parity. Potato prices were never supported at this high a level.

The important difference between the support and presupport periods is that during the support period prices were stable, whereas before farmers didn't know whether price for any year would be 50 or 150 per cent of parity. It was the reduction in price variability, not a high price level, that appears to have been primarily responsible for the production response that took place under price supports. The striking thing about the support period, therefore, is not that potato prices were out of line, but rather that producers responded to price in a different way than they ever had before.

Price Supports and the Organization of the Potato Industry

THE CONDITION of the market for potatoes is important in determining how farmers adjust production. There are also some important characteristics of potato production which influence the location and make-up of the industry.

Potatoes are bulky, perishable, susceptible to shipping damage, and can be produced in practically all areas of the United States. Before railroads were extended to most parts of the country, they were produced close to the centers of population. Farmers in

nearby areas supplied each town and city. Farmers in outlying areas raised only enough potatoes for family use.

When transportation was no longer a major barrier, production began to move away from the population toward more efficient producing areas. In addition, production has at one time or another moved away from diseased soils, from warmer climates, and from areas where other crop systems proved more profitable. It has moved toward irrigation, toward early producing areas, and toward areas needing intertilled crops. But only those aspects of the changing locational pattern which contribute to an understanding of the surplus problem under price supports will be discussed here.

THE DEVELOPMENT OF SPECIALIZATION

Because increasing specialization in production was largely responsible for potato surpluses, the major historical aspects of that development will be presented. In general the movement toward specialization has been associated with locational shifts in production.

The First Shift

The first important change occurred around the turn of the century. Potato production which had been centered in more populous areas in a group of states including Illinois, Indiana, Iowa, Missouri, and Kansas moved northward into Michigan, Wisconsin, and Minnesota (figure 3). Between 1890 and 1895 production in the northern areas expanded rapidly, and production in the corn belt began to decline.

Expansion of production in the northern areas was facilitated by an expanding market. Also rail facilities became generally available. Potatoes were shipped from the sparsely populated northern areas for consumption in more

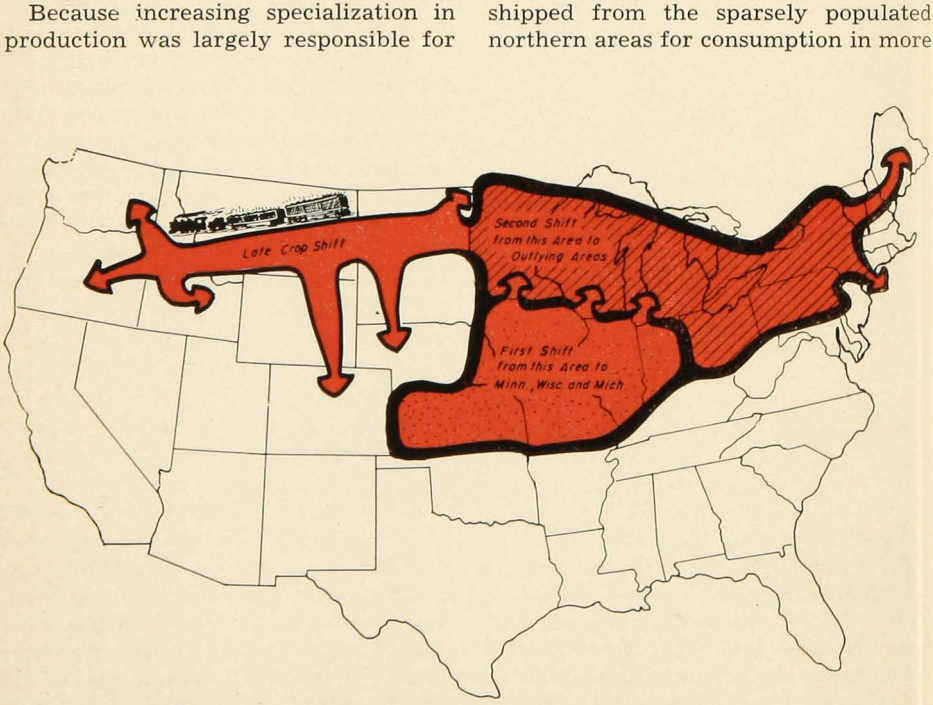


Fig. 3. Major locational shifts in potato production.

heavily populated eastern and southern locations.

The decline of production in the corn belt states was associated with a continued gradual expansion in the northern areas and with a change in the market situation from one of expansion prior to 1910 to a declining market after 1910. Farmers in the southern areas found corn production more profitable, and in the face of increasing competition from producers in the northern areas they gradually moved out of potato production.

The Second Shift

No sooner was this shift completed than another shift began which has continued to the present time (figure 3). It is this latter shift which provides some insights into the reason for the large surpluses under the price support program.

Just as Minnesota, Wisconsin, and Michigan had an advantage over the corn belt states, so another group of states of which Maine and Idaho are outstanding examples, had an advantage in producing potatoes over the group of states which included Minnesota, Wisconsin, Michigan, Ohio, Pennsylvania, and New York (hereafter referred to as the lake states).

Hypothetical data will illustrate the nature of this advantage. Where a farmer in Maine, for example, might have net earnings of $50 per acre from growing potatoes he may not be able to earn more than $25 per acre on any other crop. The lake state farmer might also be able to earn $50 per acre on the average from potatoes, but he might be able to earn $80 per acre by keeping dairy cows. Under these circumstances Maine farmers would tend to produce potatoes and the lake state farmers would keep dairy cows. This would be true even though potatoes are just as profitable in the lake states as in Maine. In response to this situation potato production began to move from the lake states to these outlying producing areas around 1910.

This is comparable to the earlier situation in which three of the lake states had an advantage over the corn belt states. But the latter shift occurred much more slowly than the earlier one.

Why was this second shift slow in occurring? First, as previously indicated people were eating fewer potatoes. For this reason the total market declined slightly in spite of a fairly rapid growth in population. This meant that if farmers in Maine and other specialist areas were going to expand production without driving prices down, farmers in some other area had to reduce production.

Second, as the average income level rises, people tend to be guided less by price and more by taste in the quantity of potatoes eaten. At the present time it is probable, for instance, that a 10 per cent change in price will on the average result in a change of not more than 2 per cent in the quantity of potatoes taken by consumers. Thus if farmers overproduce in any given year by even a small amount, prices fall greatly. On the other hand, if production is below average, prices will be high. And with thousands of producers each of whom adjusts his own level of production—usually up or down depending on whether the previous year's price was high or low—it is unlikely that production will be adjusted to normal requirements for any given year.

Because of the relative lack of flexibility in consumption habits and the inability of numerous producers located in all parts of the country to keep production adjusted exactly to normal requirements, *potato prices fluctuate widely under free market conditions.* The magnitude and frequency of these price fluctuations in terms of constant

dollars from 1910 through 1942 are illustrated in figure 4.

The individual grower has no idea how much will be produced by all other growers. Consequently he is without a basis for estimating the price he will receive for his crop. He can only wait until his potatoes are marketed and see. Though this is true for all farm crops, the very wide year-to-year variations in potato prices—and the fact that a large per acre investment is required to grow potatoes—makes it a problem of more than usual importance to potato growers.

It is a problem of price risk. Evidence of its importance was obtained from a survey of growers in several states. This survey was taken to get producers' opinions of the program and to find out if their production practices had changed during the program period. Nearly every producer made reference to the risk associated with potato production before being asked specifically about risk in his enterprise.

In a series of questions designed to determine their outlook toward price risk, farmers were asked whether they would rather have a guaranteed price at a reasonable level or take an equal chance of getting a higher or lower price at marketing time. Most farmers responded by stating they would rather have the assured price. This means that farmers as a rule don't like to take a

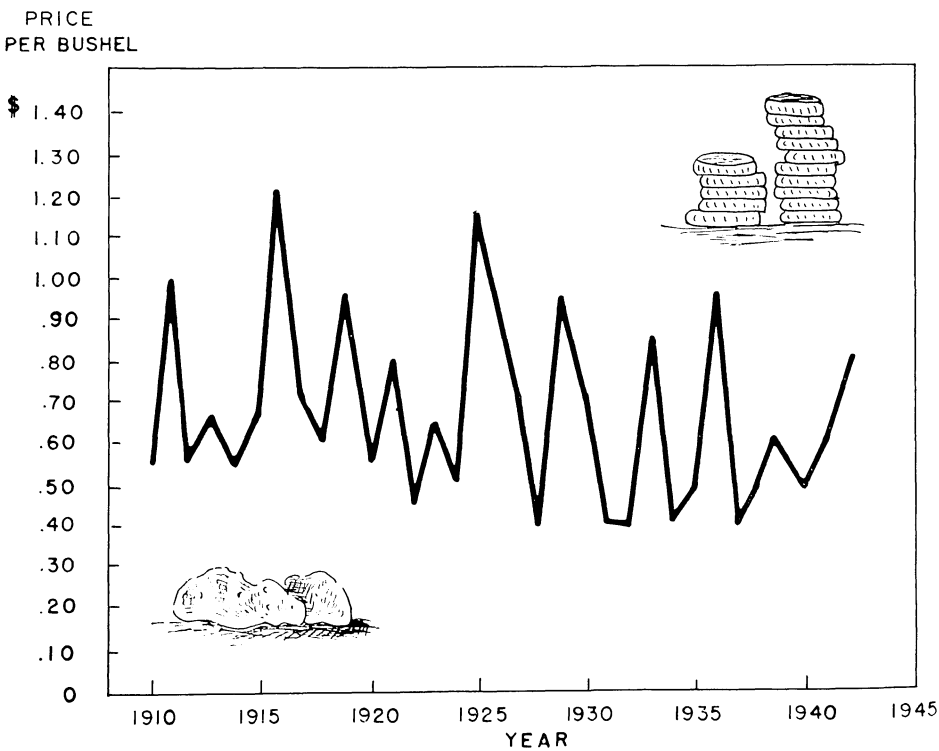


Fig. 4. Variations in potato prices, 1910-42, in constant 1910-14 dollars. (Price variations in terms of constant 1910-14 dollars are obtained by dividing the season average price of potatoes by the all commodities index of wholesale prices [1910-14 = 100]; source, *Agricultural Statistics.*)

chance on price even if they have a 50-50 chance of getting a good return. The fact *that they had to take this risk* when raising potatoes under a free market was of itself an important deterrent to expanded production.

There are three ways for a farmer to expand production. First, he can increase his acreage; second, he can use more fertilizer, irrigate, use certified seed of adapted varieties, and by other means increase yield; and third, he can do a combination of both. Whichever course he follows costs money.

Suppose a farmer has 100 acres of potatoes. Suppose further that he can get 100 bushels per acre if he invests $50 per acre in seed, fertilizer, labor, etc. to produce the crop. His total expenses are $5,000. He may know that if he invests another $20 per acre he can increase his yield to 150 bushels per acre and if price is right increase total profit. But, if he is afraid that prices may be low and that he will lose money, he may not spend the extra $20 per acre. With a smaller investment per acre the producer "protects" himself from both large profits and large losses. And it would seem that producers on the average were willing to forego the possibility of large profits in order to avoid the possibility of large losses.

Beginning in 1942 this changed. When price was supported the specialist producer no longer worried about losses due to disastrously low prices. He knew that his price would not be below the support level. Specialists responded to price guarantees by increasing acreage 33 per cent in 1943. After 1943 they maintained the larger acreage until reductions were forced upon them by the allotment program. They also began to use more fertilizer, more and better seed, and otherwise adopt farm practices that tended to increase production.

The other side of the picture is illustrated by such midwest states as Michigan, Wisconsin, and Minnesota exclusive of the Red River Valley. In these areas potatoes were produced as a sideline. Many farmers planted a few acres of potatoes, while dairying or some other enterprise provided the bulk of their farm income. They didn't invest heavily in potato production. Very little fertilizer was used. The crop was cared for and dug largely with family labor for which no cash wage was required. In years of low price, cash losses were small, but in years of high price the cash return was good. This was particularly important in periods when farm prices were generally low. Consequently most of these farmers continued to produce a few acres of potatoes during the 1920's and 1930's even though in the long run they may have been able to earn larger returns on some other farm enterprise.

The question is—What did these farmers do when the price support program came along? In general, they probably paid very little attention to it. They were affected by factors which were not directly related to the potato program. With farm prices going up, a few acres of potatoes were no longer needed as a source of cash income. Furthermore, during the war, labor was in short supply. Five or ten acres of potatoes could not support the mechanical planting, digging, and other equipment that is standard on farms with large potato acreages. Without this equipment a large amount of labor is required to care for even a few acres. Sons were going to war, daughters were leaving home for readily available jobs, and the housewife probably decided to eliminate this form of outdoor exercise when the family income reached a comfortable level.

With labor in short supply these farmers faced the alternative of expanding to a point where mechanical equipment could be used or of going out of potato production. Producing potatoes on a big scale would have re-

quired substantial expenditures for machinery and equipment. On the other hand 2 to 10 acres could easily be shifted to some other crop for which machinery and equipment were already available. Alternatives began to appear more desirable, and many of these small growers went out of potato production.

The situation that developed then is one in which:

1. Prior to the support period, farmers whose main farm enterprise was potatoes hesitated to increase production due to the risk of losing money on any given crop.
2. Prior to the war farmers who produced a few potatoes as a sideline enterprise continued to do so to obtain the cash return.
3. The price support program eliminated price risk. This stimulated large producers to increase acreages and yields.
4. For the sideline producers, the need for immediate cash incomes was largely eliminated by high farm prices. In response to better incomes and disproportionate increases in the cost of raising a few acres of potatoes many growers in this group went out of production.

THE SHIFT BETWEEN TWO STATE GROUPINGS

The extent of the shift between specialist and nonspecialist producers can best be illustrated in terms of the change in the amount produced by each of two state groupings (figure 5). Minnesota, Wisconsin, Michigan, New York, Pennsylvania, and Ohio are a group of

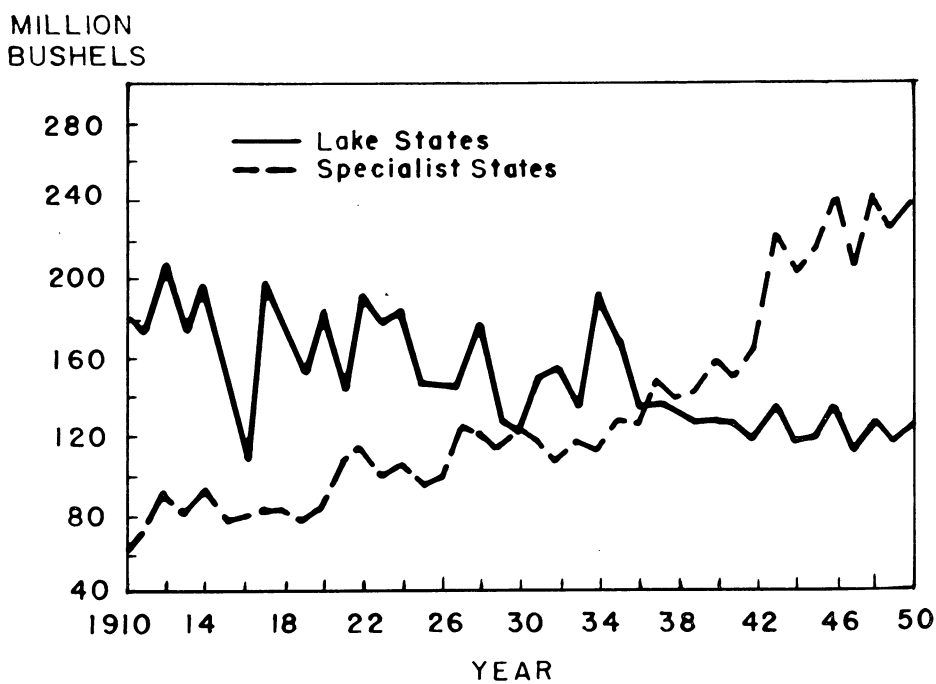


Fig. 5. Production in lake states and specialist states, 1910-50.

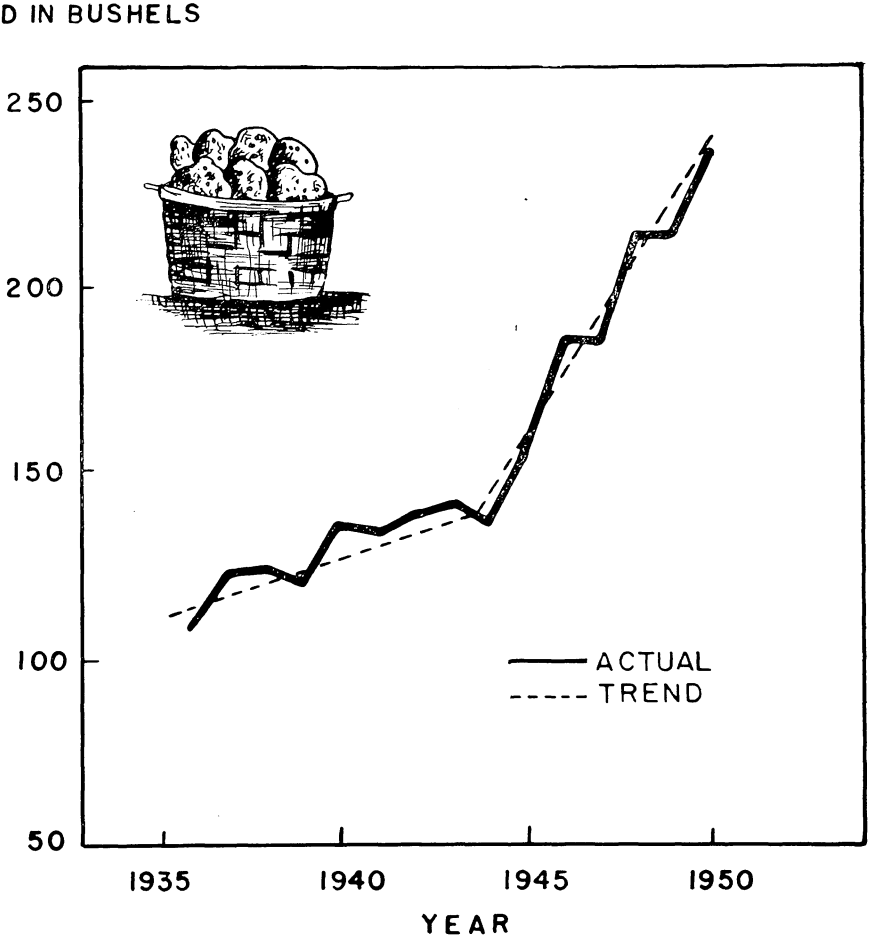


Fig. 6. Average yield of potatoes, per acre, United States, 1936-50.

states which contained large numbers of nonspecialist producers who were going out of production. Maine, Idaho, North Dakota, Colorado, Washington, and Oregon contained mostly specialist producers who were increasing production.

Production in the lake states decreased steadily between 1910 and 1950. Production in the specialist states increased gradually until about 1942. When it was announced that prices would be supported at not less than 90 per cent of parity, production in the specialist states increased rapidly and stayed high through 1950. And it was the increased production by specialist groups that created the surpluses during the price support period.

CHANGES IN YIELD, ACREAGE, AND PRODUCTION

How did the shift between specialist and nonspecialist producers affect average yield, acreage, and production levels? Average yields for the United States increased rapidly (figure 6).

This increase was brought about through two separate effects: (1) the shift in production from low yielding to high yielding farms, and (2) increases in yields on farms that stayed in production.

The effect of a shift from low yielding to high yielding acreage can be illustrated by a hypothetical case. Suppose there is a county which has only three farmers producing potatoes. Suppose further that one farmer, whom we shall call Jones is an efficient high yield producer who produces 80 per cent of the potatoes raised. Because he takes good care of his crop his yield is 200 bushels per acre. The other farmers, Smith and Brown, each produce 10 per cent of the crop and get yields of 100 bushels per acre. The following data might describe the situation in that county:

	Jones	Smith	Brown
Acres planted	40	10	10
Yield (bushels per acre)	200	100	100
Per cent of crop produced	80	10	10
Total production (bushels)	8,000	1,000	1,000

Under these circumstances the average yield for this county is 167 bushels per acre. But now suppose that Smith and Brown go out of production and Jones increases his production enough to maintain output in the county at 10,000 bushels. Then the situation will be as follows:

	Jones
Acres planted	50
Yield (bushels per acre)	200
Per cent of crop produced	100
Production	10,000

Because Jones had to increase acreage only 10 acres in order to produce as much as Smith and Brown did on 20 acres, total acreage in the county has declined from 60 to 50 acres. *The average yield has increased from 167 to 200 bushels per acre.*

A shifting of production from low yielding acreage as illustrated here was the most important factor contributing to the increase in yields during the price support period. And it came with a rush following 1942 after being held in abeyance by an unfavorable market situation for about 30 years.

In addition, yields increased on individual farms where potatoes were grown throughout the support period. This increase came about as specialists used more fertilizers, adopted new spraying practices, and so on. If, for instance, Jones had increased his yield to 250 bushels per acre, total production could have been maintained with 40 acres.

Except in 1943 acreage declined every year of the program and was below prewar levels after 1945 (figure 7). Between 1940 and 1950 total acreage declined by about one-third. During this same period, however, yield nearly doubled. Production increased from 368 to 458 million bushels between 1942 and 1943; this increase resulted in large measure from an expansion in acreage planted of 22 per cent. Thereafter yield increases approximately offset acreage reductions with the result that production was maintained at a high level.

Production which averaged 357 million bushels annually from 1936 through 1942, increased to an average of 430 million bushels annually over the period 1943-50. Consumers were not willing to buy this many potatoes at support prices. Hence the government had to step in and purchase the surplus.

THE EFFECT OF PRICES AND ACREAGE ALLOTMENTS

An important question, which should be answered, is—Did the way in which the support program was administered have any effect on this shift? Two factors need to be considered: (1) the pat-

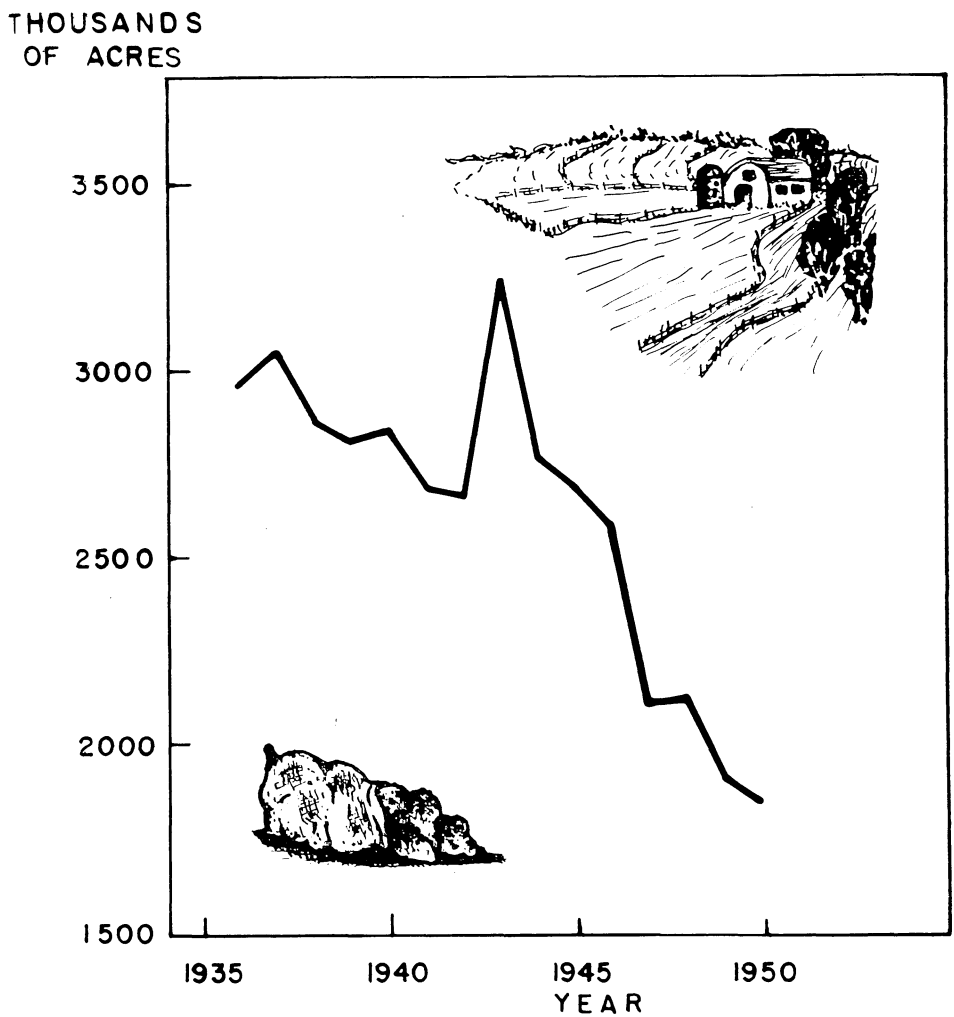


Fig. 7. Harvested acreage of potatoes, United States, 1936-50.

tern of support prices and (2) acreage allotments.

The problem of establishing support prices is complex. Ninety per cent of parity in one part of the country is a different price from 90 per cent of parity in another. Potatoes can be produced at a lower cost in some areas than in others and transportation costs vary greatly among regions. The Steagall amendment required that prices be maintained at 90 per cent of parity for all producers. But since potato prices varied by production areas during the base period, many different support prices were needed. In practice a support price was established for each state. The goal in establishing these prices was to provide an average United States price equal to 90 per cent

of parity and at the same time provide a set of prices which would represent 90 per cent of parity in each state.

Although the involved mechanics of calculating the equivalent of 90 per cent of parity for each state in 1943 cannot be described here, the method in broad outline was as follows: the schedule of support prices for each state was developed by adjusting the U. S. price at 90 per cent of parity by the differential existing between prices in each state and the U. S. average farm price during the period 1937-41. After 1943, judgment based on previous experience played a dominant role in price determination.

Administrators tried to maintain each state's price at a level where its potatoes would not be priced out of the commercial market. Even though there may have been some tendency to penalize states which sold large quantities to the government, there seems to be no basis for concluding that the price relationships which existed between states in the period immediately preceding the support program were seriously altered. In spite of this, however, some states expanded production and others went out.

For example, when Maine expanded production relative to Wisconsin, it did not do so because of a favorable support price relative to that in Wisconsin. This again indicates that the level at which prices were supported was not the most important consideration to farmers.

The program, however, imposed another restriction which could have influenced the shift in potato production. This was acreage allotments. As previously indicated, prior to 1946 goals were established and any farmer who wanted to produce more potatoes could do so without restriction. In 1946 and thereafter restrictive acreage allotments were imposed. When the government asked for more potatoes it was the specialist producers who responded by increasing acreages. Conversely, when restrictions were imposed, it was the specialists who were affected most.

Total acres devoted to potatoes in the lake state group continued to decline throughout the support period. For the specialist group, on the other hand, acreage increased throughout the nonrestrictive phase of the program and then declined after 1946. This latter decline resulted almost entirely from the restrictive effect of acreage allotments.

It can be seen then that this shift in production between specialist and nonspecialist producers (figure 5) occurred in spite of the fact that the group of states which increased production had no relative price advantage and in spite of the fact that acreage allotments appear to have been more restrictive in areas where specialized production predominated. In other words, this shift took place not with the aid of administrative determinations of price supports and allotments but in spite of them.

Farmers' Attitudes

OBTAINING FARMERS' attitudes toward the program represented one major goal of the survey in which 744 growers in Maine, Michigan, Wisconsin, Minnesota, North Dakota, and Nebraska were interviewed. The answers given to several key questions will provide some insight into what they were thinking in the spring and summer of 1952.

Producers included in this survey can be classified into two groups: (1) those

to whom potato production is important because no good alternatives were available (typically the specialists) and (2) those who continued to raise potatoes throughout the support period even though reasonably good alternatives were available (typically the non-specialists).

The first group includes farmers in Maine, the Red River Valley, and northern Michigan. Potato production is the principal source of income for farmers in Maine and northern Michigan, whereas, in the Red River Valley, potatoes serve as a land cleaner in a predominantly small grain rotation. In each of these areas they play an important part in farm production for which no good alternative is available.

In Wisconsin, southern Michigan, and Nebraska potato production is found along with good alternatives. In Wisconsin and southern Michigan potatoes were grown in large quantities as a cash crop supplement to dairy and livestock farming.

Nebraska represents still another situation. Here potatoes serve a dual purpose. They are one of several high return specialty crops that can be grown, and they also serve as a land cleaner in a rotation involving small grains. For either purpose good alternatives exist.

The questions enumerated here were designed for two purposes: (1) to determine specific attitudes toward the past program, and (2) to determine what producers believe represents a workable approach for future programs. In evaluating these responses keep in mind that potato prices were high when the interviews were made. Further, the unfavorable publicity received by the program was still fresh in the minds of producers.

QUESTION I — *Was the government price support program a good or bad thing for you?*

	Maine, Red River Valley, northern Michigan	Wisconsin, southern Michigan, Nebraska
	per cent	per cent
Good	48	29
Bad	36	54
Don't know	15	15
No opinion	1	2

QUESTION II—*If there had been no price support program, do you think your income from potatoes would have been higher, lower, or about the same?*

	Maine, Red River Valley, northern Michigan	Wisconsin, southern Michigan, Nebraska
	per cent	per cent
Higher	29	33
Lower	33	25
About the same	31	36
No opinion	7	6

QUESTION III—*If farm prices are to be supported in periods of low prices, do you think some restrictions are necessary?*

	Maine, Red River Valley, northern Michigan	Wisconsin, southern Michigan, Nebraska
	per cent	per cent
Yes	85	82
No	9	11
Don't know	5	7
No opinion	1	0

Those who felt that some controls were necessary were asked what type of restriction they preferred. A total of 792 answers were given by 630 respondents. (The large number of responses results because some of the farmers specified more than one type of control.) The responses indicated the following preferences:

	Maine, Red River Valley, northern Michigan	Wisconsin, southern Michigan, Nebraska
	per cent	per cent
Acreage allotments	50	60
Grade restrictions	24	15
Marketing quotas	16	11
Other and no opinion	10	14

QUESTION IV — *Would you favor a program which took the form of direct income payments to potato growers instead of price supports?*

	Maine, Red River Valley, northern Michigan	Wisconsin, southern Michigan, Nebraska
	per cent	per cent
Yes	31	24
No	41	55
Don't know	27	20
No opinion	1	1

When those who answered "yes" were asked why they favored income payments, the answers given most often included: easier to administer, would work better, would avoid wasting potatoes, fairer to consumer, and would end discrimination. Those who answered "no" gave a variety of reasons, but only one opinion was presented with any degree of consistency—that being "don't like subsidy, controls, etc." Undoubtedly many of this latter group were not comparing the desirability of price supports and income payments but were expressing their opinion on whether there should be a program of any kind.

In general these questions do not show a consistent attitude among growers toward the old program, nor are clear-cut guides provided for the future. Differences between the two groups are not marked.

In Wisconsin, southern Michigan, and Nebraska approximately 30 per cent believed that the program had been good for them, while in Maine, northern Michigan, and the Red River Valley approximately half of those interviewed believed that it had been good for them.

On the other hand, about 30 per cent in each group believed that their income from potatoes has been improved by the program. There seems to have been a general belief among all producers that fewer potatoes would have been produced in the absence of the program and that these smaller supplies would have increased prices.

Most producers recognize that if prices are to be supported in the future, there must be accompanying controls. Further it seems that a majority are as yet unwilling to venture away from price supports in the direction of income payments or from acreage allotments to other controls.

Costs and Benefits of the Program

IN ASSESSING the costs and benefits of government programs there are two kinds of situations that must be considered. First, there are those costs and benefits which add to or subtract from the welfare of society as a whole. Second, there are those which affect individual groups within society.

COSTS AND BENEFITS TO SOCIETY AS A WHOLE

When farmers produce surplus food that must be destroyed or channeled into a lower grade use on a subsidy basis, resources are not being employed in the most efficient manner possible. Some of the resources used in production of the surplus commodity should have been used elsewhere. In 1948 alone 135 million bushels of potatoes were bought by the government. These potatoes were not needed. With 1948 yields of 215.5 bushels per acre, this meant that 626,000 acres were devoted to raising unwanted potatoes. This acreage and all of the labor, fertilizer, etc. applied to it should have been used

to produce something that consumers wanted.

However, society appears to have benefited from the program in another respect. Because the shift in production patterns was accelerated, potatoes are probably being produced more efficiently now than would be the case if the program had not existed. In other words, the consumer may currently be able to buy potatoes cheaper than if there had been no program. Just how much saving this adds up to cannot be estimated. Society, however, always is benefited when production becomes more efficient.

COSTS AND BENEFITS TO GROUPS WITHIN SOCIETY

In supporting potato prices the government used money collected from taxpayers and paid it to potato producers, marketing agencies, railroads, truckers, storage firms, etc. The $552,000,000 paid out in this way, however, does not represent the complete cost of the program. Taxpayers are also consumers. If the program influenced prices, consumers paid either a smaller or larger bill for potatoes than they would have with a free market. If they paid more, it is necessary to add this amount to government expenditures to get at the net cost of the program. If they paid less, this difference must be subtracted from the amount that government spent to arrive at the net cost to consumers and taxpayers.

The program appears to have held the average price of potatoes below free market levels. This conclusion rests on the following line of reasoning. Before the program became effective farmers responded to price in making planting decisions. If potato prices were high relative to other farm crops for one or two years, acreage increased. Conversely, low price years were followed by acreage reductions. Also, as is shown in figure 6, yield was increasing fairly rapidly during the late 1930's and early 1940's.

Thereafter yield increased even more rapidly largely as a result of the program. If, however, yield had continued to increase at the rate which it did in the 1930's and early 1940's, and if farmers had continued to expand or contract acreage on the basis of previous years' price, a different quantity of potatoes would have been produced from 1942 through 1950 than actually was produced.

Estimates of potato production and price for each year 1942-50 based on the assumption that presupport conditions existed are compared with actual quantities and prices in table 7.

These data show that actual production over the period 1942-50 was greater than it would have been under a free market and that average price was lower. The *weighted* average price actually received by farmers over the period 1942-50 was $1.32 per bushel. With this price production averaged 423,200,000 bushels per year. Without price supports it is estimated that 383,400,000 bushels would have been produced each year at a *weighted* average price of $1.44 per bushel. A comparison of the actual price-production data with the estimated data suggests that the removal of price risk brought about an important production response.

Table 7. Estimated and Actual Potato Production and Price, 1942-50

Year	Estimated production	Actual production	Estimated price	Actual price
	millions of bushels		dollars per bushel	
1942	345.6	368.9	1.68	1.16
1943	382.3	458.9	2.54	1.30
1944	465.6	383.4	.70	1.47
1945	500.5	418.8	.68	1.41
1946	415.6	484.2	1.06	1.22
1947	358.9	389.1	1.51	1.60
1948	329.2	454.7	2.15	1.53
1949	329.5	411.6	1.41	1.27
1950	323.5	439.5	1.73	.92

Further calculation based on these estimates provide some interesting results. It is the case, for instance, that the total value of the crops actually produced during this period exceeds the estimated value by about $82,000,000. In other words, a sufficiently larger quantity of potatoes was produced at the lower average price to maintain the total value of all crops over the period 1942-50 above the probable total value in a free market situation.

Sales in commercial channels, on the other hand, would have been $367,000,000 greater in a free market than with price supports. Commercial sales under price supports from 1942 through 1950 were $3,270,000,000, whereas, estimated free market sales would have been $3,637,000,000.

With price supports in effect producers had two places to sell potatoes: (1) in the commercial market and (2) to the government. Without supports fewer potatoes would have been produced, but a larger share would have sold commercially.

Removing price supports would have caused farmers to lose the income they received from sales to the government. This loss, however, would have been largely offset by $367,000,000 of additional sales in the commercial market.

What do the above results mean to the potato farmer? They mean first, that without the program his potatoes would have brought a higher price in the market. *If then farmers' incomes were increased at all by the program, it was only because enough extra bushels were produced to offset the lower prices received for potatoes.*

But the consequences to producers may be considered from a different angle. Farmers used land, fertilizer, labor, machinery, etc. to produce these extra potatoes. By reducing potato production they may have been able to produce more of other things that also would have added to their gross incomes. It would seem, therefore, that as long as farmers got a lower price for their potatoes, they gained very little if any additional income as a result of the program. Also, society failed to obtain the goods and services that these surplus resources could have been producing.

From the above estimates the money cost of the program to consumers and taxpayers may be computed as follows:

	Millions of dollars	
Government expenditures on support operations exclusive of administrative costs		$552
Estimated value of potatoes bought by consumers under a free market	$3,637	
Value of potatoes bought by consumers with price support	3,270	
Difference		367
Net money costs to consumers and taxpayers		155

What does this mean to consumers? *It means that consumers paid less for potatoes than they would have under a free market.* The program, therefore, cost individuals less than the amount of net government losses. The amount they gained as consumers ($367,000,000) must be deducted from the amount lost as taxpayers ($552,000,000) to arrive at the net money costs of the program to consumers and taxpayers ($155,000,000).

Marketing Restrictions

PRICE SUPPORTS represented the mainspring of government activity related to the potato industry. Marketing restrictions, however, were of some importance from 1947 through 1950. Restrictions were adopted largely to

supplement the much broader price support activity.

Most potatoes that were withheld from the market by quality regulations were eligible for sale to the government under its price support operations. This prevents the discernment of any separate effect that these regulations may have had on the potato industry. On logical grounds, however, it appears that incomes of potato growers cannot be raised appreciably by marketing restrictions.

One major stumbling block to effective regulation is the fact that coordinated action by a large part of the potato industry would be required to obtain even an initial increase in price sufficient to increase total returns to producers. This can best be illustrated by indicating what might happen if a single producer group withdraws part of its crop in a given market where this group competes with producers from other areas. For example, let us assume that the New York City market is supplied with potatoes as follows before and after a restriction of 20 per cent by Maine producers:

	Sales before restriction (millions of bushels)	Sales after restriction (millions of bushels)
Maine	10	8
Other areas	40	40
Total	50	48

Where Maine reduces sales by 20 per cent, total sales in the market are reduced by only 4 per cent. The question then is—How much will a decrease of 4 per cent in the quantity available increase market price. The value of Maine's sales will increase only if the 20 per cent decrease in its sales is accompanied by an increase in price of more than 20 per cent. This is unlikely to happen where Maine supplies only 10 million bushels. If on the other hand Maine supplied 25 million bushels, where total market supplies are 50 million bushels, its ability to influence price by restricting sales would be increased. The situation before and after Maine restricts sales by 20 per cent in this case would be as follows:

	Sales before restriction (millions of bushels)	Sales after restriction (millions of bushels)
Maine	25	20
Other areas	25	25
Total	50	45

Maine's action has reduced market supplies by 10 per cent. A decrease of 10 per cent in market supplies is more likely to cause an increase of 20 per cent or more in market price than is a decrease of 4 per cent. Where Maine supplies a larger share of the market, its action to reduce supplies will have a greater influence on price. But in each case Maine farmers reduce their sales by 20 per cent. From this the conclusion follows that the larger the share of the market supplied by a restricting group the more effective will its action be in increasing market price.

For practical purposes the United States represents a single market for potatoes. Because of extensive interregional movements, direct competition between potatoes from all sections exists in most important consumption areas (see page 32). No single section supplies enough of the total United States market to increase the incomes of its producers by restricting sales. Maine, for example, produces only about 10 per cent of the total crop. If Maine acted alone to restrict sales, it would find that the price increases resulting from this action were proportionately less than the quantity restrictions involved, hence that incomes to Maine producers were reduced.

Cooperation would be required from other areas. Adequate interregional cooperation would be difficult to obtain with major producing areas located in

such divergent places as Maine, California, Idaho, and the Red River Valley.

The complexity of administrative problems alone would appear to rule out the use of marketing agreement and order programs as an income-raising device in the potato industry. But even if methods could be found to coordinate the action of a sufficient number of growers, the benefit from initial price increases could not be held unless production were effectively regulated. If prices were raised or stabilized, this would call forth additional production in subsequent years, and prices would tend to fall.

Although no single group produces a sufficient proportion of the crop to increase returns by *quantity* restrictions, this does not mean that any group is acting irrationally by adopting *quality* restrictions on potatoes. Areas which have become distinctive for producing low quality potatoes—or potatoes with a highly variable quality—might be able to strengthen consumer confidence in their product through quality restrictions. The gain that results from selling better quality potatoes over the years might more than offset any loss in revenue resulting from a reduction in total quantity sold.

Some Policy Implications

PRICE SUPPORTS on potatoes were adopted to increase production to meet expanded wartime requirements. The response by producers was immediate and dramatic. Potato production averaged 63 million bushels more per year during the period 1943-51 than during the period 1936-42. From the viewpoint of policy the relationship between production and price, first under supports and then without supports, is the most important lesson to be derived from this experience. Potato production expanded without price increases. Support prices for potatoes were not high relative to other farm prices nor relative to their historical relationship to parity.

Free market prices for potatoes have historically fluctuated over a wide range. The farmer could not predict in any given year whether he would get 50, 100, or 150 per cent of parity for his crop. Price variability, not price level, appears to have been the more important problem confronting potato producers. The response to price stability was of such magnitude that acreage controls could not adequately hold production within reasonable bounds.

If a method could be devised to reduce price variability without at the same time introducing complete price rigidity, as under fixed price supports, supplies to consumers and incomes to producers could certainly be evened out through time. And it is not impossible that the level of stabilized prices would be below the level of fluctuating free market prices, yet yield a steady flow of supplies adequate to satisfy the needs of consumers and a steady flow of income satisfactory to potato producers. It needs to be pointed out, however, that a program designed to reduce price variability would not at the same time solve an income problem growing out of a long-run low average *level* of income. The reduction of price variability has as its purpose the stabilization of the flow of income through time by the elimination of alternately high and low price years and the corresponding fluctuations in income. If the *level* of income is or becomes a problem, it would need to be dealt with

by measures other than those designed to reduce price variability.

A solution to the price variability problem must begin with an examination of its source. There are two distinct phenomena which explain this price characteristic in potatoes. These are: (1) the inflexibility of consumer eating habits, and (2) the tendency for many widely scattered producers to use price in the previous one to three years as a guide for making planting decisions. They tend to expand production following high price years, and to contract production following low price years. But if in making these adjustments each of many producers overadjusts by only a moderate amount either too many or too few potatoes will be produced.

Where individuals are unwilling to change the amount they consume to any important degree, even a modest overadjustment will give rise to an extreme price change. For example, take two equal sized groups each of which eats 20 bushels of potatoes in a year when price is $1 per bushel. But in order to get group *A* to eat 22 bushels a year price must be reduced to 64 cents. Conversely, if price increases to $1.67 per bushel, they will decrease consumption modestly to 18 bushels. This is illustrated by section *A* of figure 8. In contrast, group *B*, which also consumes 20 bushels a year at a price of $1.00, will consume 22 bushels if price is reduced to 83 cents per bushel and will reduce their consumption to 18 bushels if price is raised to $1.23 per bushel. This is illustrated in section *B* of figure 8.

If producers face a situation like that illustrated by group *A*, small misjudg-

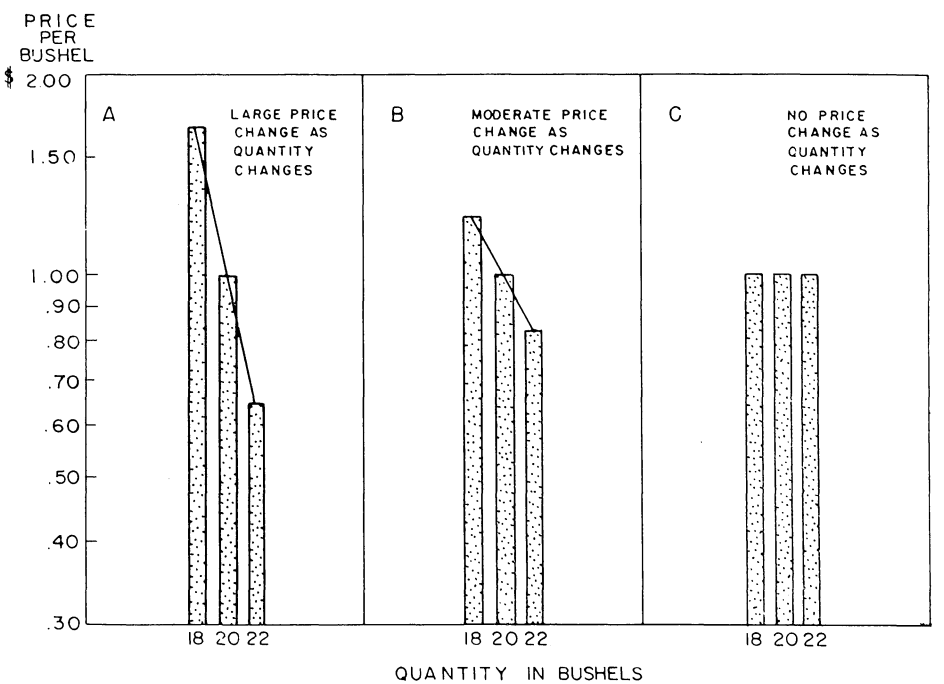


Fig. 8. Potato price-quantity relationships.

ments in the quantity produced result in wide price swings, whereas, if they face a situation like that illustrated by *B*, the price consequences of misjudgment are not nearly so great. But the hard facts are that the demand confronting potato producers in the United States is similar to that illustrated in section *A* of figure 8. Hence, any small change in total production results in an important price change.

If these wide price swings could be eliminated, one important price problem facing potato producers would be solved. This might be achieved through an income payments plan where the size of the payment is adjusted so as to partially, but never fully, offset the price depressing effect of surplus production.

Such a plan might work as follows: A production goal would be announced each year before planting got under way. The goal would be based on estimates of consumers' requirements at an equilibrium price. An equilibrium price is one which is just high enough to make the quantity which farmers are willing to supply equal to the quantity demanded at that price.[2] In other words producers would be supplied with a working guide to production requirements— a guide developed in terms of quantities needed and an estimate of the price at which these supplies would sell. This estimated price would not, however, be a guaranteed price.

If farmers produced less than is required, price would be above the equilibrium level and returns from potato production would be high. If production were excessive, prices under a completely free market would tend to fall greatly and returns from potato production would be low. Some protection could be provided against these sharp price declines through an *income payments schedule.*

To illustrate the working of this plan assume that estimates of demand indicate that consumers are willing to take 300 million bushels at $2.00 per bushel. If farmers produced that amount, they would receive $600,000,000 for the crop. If larger quantities were produced total income would be *assured* for different quantities in accordance with the following schedule:

For 300 million bushels producers would be assured $600,000,000.

For 350 million bushels producers would be assured $550,000,000.

For 400 million bushels producers would be assured $500,000,000.

For 450 million bushels producers would be assured $450,000,000.

Assume further that these quantities would actually sell in the free market as follows:

300 million bushels would sell for $600,000,000.

350 million bushels would sell for $540,000,000.

400 million bushels would sell for $450,000,000.

450 million bushels would sell for $375,000,000.

Payments in this case would range from zero where growers produced as much as the market required (300 million bushels for $600,000,000) to $75,000,000 where producers raised 450 million bushels for sale (or 150 million bushels of surplus potatoes).

The example given above is for illustrative purposes and does not represent a series of values on which to base a payments plan. In practice, the point at which payments would start would depend on the estimate of equilibrium requirements *for each year.* The income

[2] The equilibrium idea may be illustrated as follows: Suppose consumers will take 350 million bushels if price is $1.50 per bushel. Then for $1.50 to be an equilibrium price, producers should also be willing to produce 350 million bushels at that price. If farmers are willing to produce either more or less than 350 million bushels then $1.50 per bushel is not an equilibrium price. In this case some other production and price goal should be sought where price is such that the market will absorb the quantity farmers are willing to produce.

payments schedule—that is, the schedule of values which would be guaranteed for different levels of excess production—would in the first year of operation be established at some plausible level and thereafter be adjusted from year to year on the basis of previous experience. The kind of schedule ultimately developed would depend upon the nature of the compromise between two conflicting goals: (1) that of reducing risk to producers and (2) that of avoiding excess costs to government.

The payment to each producer would be made in accordance with his share of the total value of commercial sales. The relationship between the national goal and the payment to an individual farmer is illustrated below, where the assured income for a 450 million bushel crop is $75,000,000 more than the crop will bring in the market.

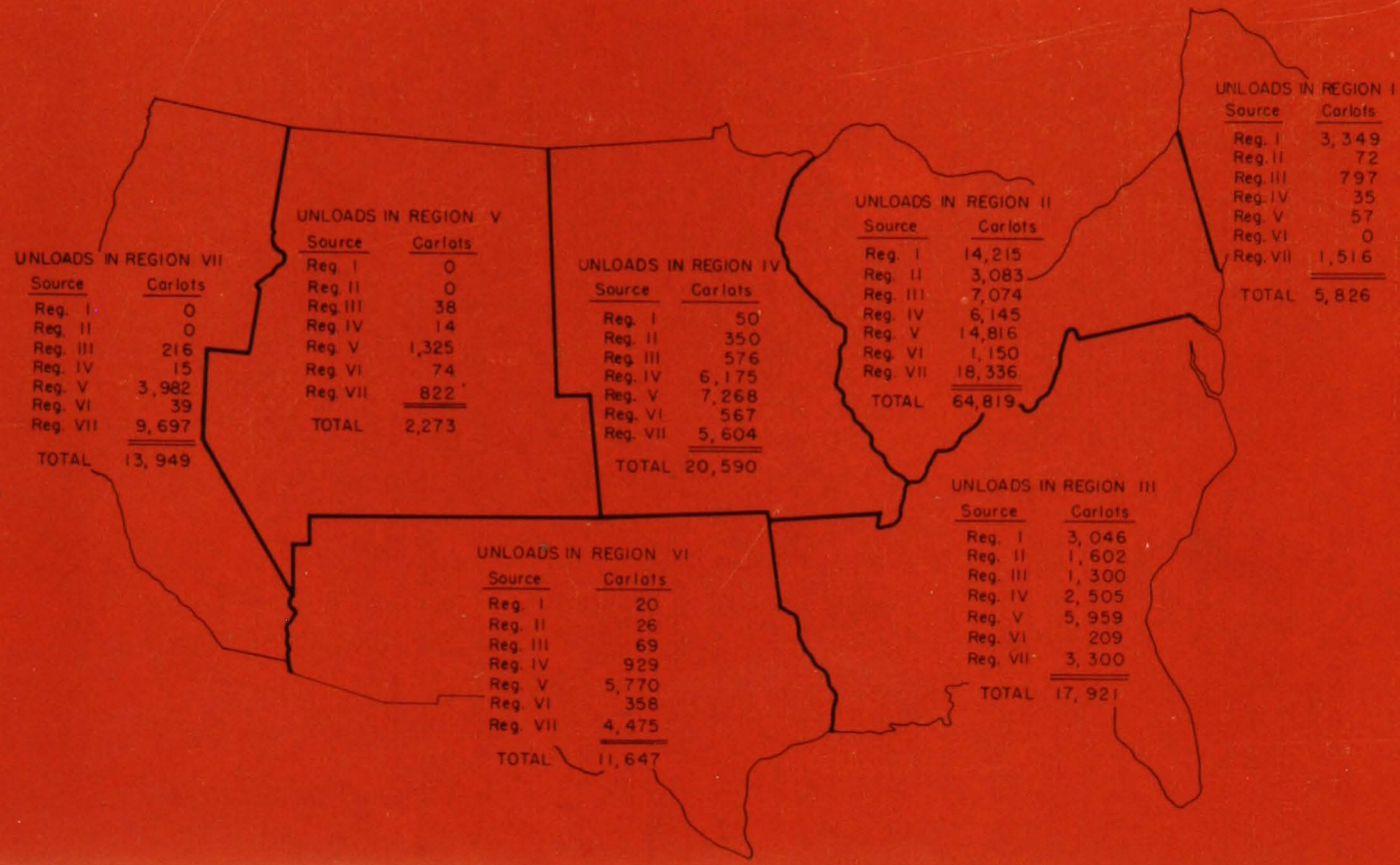
	Total crop	Individual
Commercial sales	$375,000,000	$3,750
Government payment	75,000,000	750
Assured value	450,000,000	4,500
Government payment as per cent of assured value	17	17

The industry received 83 per cent of its total return from the market and 17 per cent through government income payment. This same relationship would be maintained for each producer. Upon furnishing proof of the value of his sales each farmer would receive a government payment which in this case would equal 17 per cent of his total return.

It should be noted from the income schedule presented above, that income guarantees would never be such that farmers would benefit from overproducing. The proposal is designed to prevent growers from losing as heavily from overproduction as under free market conditions, but not to eliminate losses. The government payment increases as the size of the crop increases, but the crop loses value in the free market faster than government payments increase at all levels of surplus production. Hence, each additional bushel of potatoes continues to reduce the total value of the crop, but by a lesser amount than under a free market.

The free market is characterized by violent price gyrations in response to relatively small changes in quantity. This is illustrated in section *A* of figure 8. Fixed support levels prevent all price variations as illustrated by section *C* of figure 8. The ideas outlined here are designed to reduce price variations, and in the long run could eliminate completely those price variations arising out of overadjustments in production by growers. Hence, success on the part of the income payments proposal would reduce the size of the program involved and the costs to government.

The purpose of this proposal is to lessen the impact of bad price years—not to influence the level of potato prices through time. Because this approach aims at the reduction of the price risk—without, at the same time, imposing any restrictive measures on production—it would seem to fit the needs of the potato industry.



Carlot unloads of potatoes in 100 cities, 1948, showing source of potatoes by region and destination by region.