THE IMPORTANCE AND IMPACT OF THE 1955 AND 1956 GOVERNMENT POTATO DIVERSION PROGRAM ON THE POTATO INDUSTRY

Thesis for the Degree of M. S.
MICHIGAN STATE UNIVERSITY
James Harold Cothern
1957

THE IMPORTANCE AND IMPACT OF THE 1955 AND 1956 GOVERNMENT POTATO DIVERSION PROGRAM ON THE POTATO INDUSTRY

By

James Harold Cothern

A THESIS

Submitted to the College of Agriculture, Michigan State University of Agriculture and Applied Sciences in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Department of Agricultural Economics

1957

ACKNOWLEDGMENTS

The author wishes to express his sincere appreciation to all those who assisted in the development of this study.

Special thanks are especially extended to Dr. Dale Hathaway for his guidance in developing the framework for this study and for his constructive criticisms during its progress.

The author is grateful to Dr. L. L. Boger, Head of the Department of Agricultural Economics, for financial aid in the form of a research assistantship.

Credit is due the members of the statistical pool of the Department of Agricultural Economics who assisted in the computational work. Thanks is also expressed to Mrs. Jill Fronek and Miss Joyce Arts for typing the original manuscript.

Also, to C. J. Borum and other personnel of the Office of the State Agricultural Statistician, the author wishes to express his thanks for their aid in the collection of some of the essential data. Special thanks is also extended to Mr. J. L. Buntin, Officer in Charge of Transportation Reports, United States Department of Agriculture, for the loan of some of the necessary transportation reports.

Finally, the author is indebted to his wife for her constant aid and encouragement throughout the study and for her painstaking effort in typing the final manuscript.

The author assumes full responsibility for any errors that may appear in the manuscript.

James Harold Cothern

THE IMPORTANCE AND IMPACT OF THE 1955 AND 1956 GOVERNMENT POTATO DIVERSION PROGRAM ON THE POTATO INDUSTRY

By

James Harold Cothern

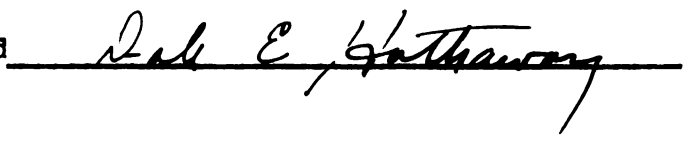
AN ABSTRACT

Submitted to the College of Agriculture, Michigan State University of Agriculture and Applied Sciences in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Department of Agricultural Economics

Year 1957

Approved 

AN ABSTRACT

The main purpose of this study was to determine the effectiveness of the United States Department of Agriculture's Irish Potato Diversion Program XMD 3A. This program was first introduced in 1955 and has been in operation during parts of 1956 and 1957. The program was placed into effect to "aid in the successful marketing of 1955 and 1956 crop potatoes and to assure growers that the Department of Agriculture stood ready to assist in the development of a sound approach in meeting marketing problems created by surplus problems". The implicit assumption present was that price could be increased by diverting sufficient quantities of lower grade potatoes from the market. A main objective of this study was to determine if the government program in operation during 1955 and 1956 succeeded in diverting a sufficient quantity of Specification A potatoes from the market to alter seasonal marketings and, hence, price in these two years.

After determining the feasibility of their use, indexes of seasonal variation for the years 1929-1955 were computed to obtain an estimate of the actual monthly marketings for the states participating in the program in 1955 and 1956. These indexes were computed from carlot shipments data by two alternative methods, but results from only one of the methods were used in the study.

The normal seasonal marketing pattern of the states taking part in the program in 1955 and 1956 was then tested against the actual seasonal marketing pattern in these states during 1955 and 1956. Relatively little change in the marketing pattern of these states was

observed during this time.

The magnitude of the diversion program during 1955 and 1956 was also analyzed. Diversion states succeeded in diverting four and one-half per cent of total United States production in 1955 and slightly over seven and one-half per cent in 1956. Total cost of the program was slightly over three million dollars in 1955 and almost five million dollars in 1956. The diversion program was much more widely utilized in Maine than in any of the other states. Maine producers diverted 20 and 30 per cent of total Maine production in 1955 and 1956 respectively.

Shifts in the timing of the diversion program and possible reasons for these shifts were analyzed. It appears that the graduated payment plan adopted by the United States Department of Agriculture which was designed to divert a large quantity of potatoes early in the marketing year did not accomplish this objective during the 1956 marketing year. Thus, it appears that the program became a means to supplement income on lower grades of potatoes during the large 1956 crop marketing year. The reason for this was that generally the diversion payment was higher than the market price for these potatoes during the spring of 1956. As the volume of diversions was not great in 1955 and no overall changes due to the operation of the diversion program were noticed, it was also concluded that the United States Department of Agriculture diversion program did not contribute to the record prices for potatoes in the spring of 1956. It also appears that the graduated payment plan, as it exists today, will not be able to accomplish a sufficient volume of diversions to improve price in a year in which the crop is large.

TABLE OF CONTENTS

TABLE OF CONTENTS - Continued

LIST OF TABLES

CHAPTER I

INTRODUCTION

Background Information

The price support programs for potatoes, especially those of the post war era, have been a subject of much controversy. The post war support programs for potatoes were annually the most expensive crop support program for the government to operate through 1956. It has been argued that by reducing the element of risk, the support programs have encouraged the adoption of intensive farming practices in raising potatoes that might not otherwise be undertaken. It has also been argued that the government has paid for this decrease in risk. By 1951 opposition to a government program in potatoes had become so strong that Congress directed that no further price support should be provided in potatoes unless marketing quotas were in effect.[1] It was argued that acreage had declined but yield per acre had more than offset the reduction in acreage. The main feeling was that reduction in risk was the key factor in causing these increased yields.

Before discussing the most recent of the U.S.D.A. purchase programs relating to potatoes it is necessary to review some of the programs and situations existing in the post war period leading up to Potato Diversion Program XMD 3A, the most recent government effort

---

[1]Public Law 471, 81st Congress, 2nd Session.

to buoy up the price of the commodity.

As Benedict and Stine point out, the potato industry is a highly speculative business in the absence of price supports.[2] Both income and price elasticity of demand for the product are low and production varies substantially from year to year.[3] Consequently there are wide year to year fluctuations in prices. Per capita consumption has also declined during the last few decades. Population in the United States has increased by more than 50 per cent in the last 40 years, but the total consumption of potatoes for food is approximately the same as it was in 1910. Cochrane, Sorenson, and Gray caution, however, that the steep decline in per capita consumption should not be extrapolated beyond 1950 for two reasons. First, the impact of declining immigration has about leveled off; and secondly, a natural adjustment in the consumption level may have run its course.[4] Keeping this word of caution in mind it is still safe to assume that growth in yield has surpassed an increase in consumption potential through population growth. The government first took steps to alleviate this situation by bolstering

---

[2]Murray R. Benedict and Oscar C. Stine, The Agricultural Commodity Programs: Two Decades of Experience (New York: The Twentieth Century Fund, 1956), p. 416.

[3]D. Milton Shuffett has estimated the price elasticity of potatoes at the farm level to be -.47 for the early commercial crop, -.25 for the late surplus crop, and a .46 and .35 income elasticity respectively for these two crops. See D. Milton Shuffett, The Demand and Price Structure for Selected Vegetables (U.S. Department of Agriculture Technical Bulletin 1105), p. 133.

[4]Roger W. Gray, Vernon L. Sorenson, and Willard Cochrane, An Economic Analysis of the Impact of Government Programs on the Potato Industry in the U.S. (University of Minnesota Experiment Station: North Central Regional Publication No. 42, June, 1954), p. 19.

the price of potatoes along with other commodities during the depression. Potato price supports at this time had no great effect, except, perhaps, a slight addition to aggregate income. Since they had no great effect on price prior to 1942, they will not be discussed here.[5]

The expanded demand for agricultural commodities during the war years brought an end to the problem of surplus production, and instead, emphasis was placed on expanding and stimulating agricultural production. Thus the key effect on production, that of the elimination of uncertainty via price supports, was overlooked for the time being. Knowing that there was and would continue to be a heavy wartime demand for agricultural products, Congress passed the Steagall Amendment in 1942. This act gave the Secretary of Agriculture certain powers in periods of wartime emergency. If he found it necessary to encourage production of non-basic agriculture commodities, he could, by making a public announcement of such needs, thus procure funds to support the needed commodity at at least 85 per cent of parity. These conditions were altered by the Stabilization Act of 1942 which raised the minimum support level to 90 per cent of parity until two years after the cessation of hostilities, which turned out to be December 31, 1948.

These two items were of utmost importance in potato legislation. In return for the needed production during wartime the government had guaranteed to alleviate or remove the price uncertainty during and two years after the war. No one knew how long the war would last, so the difficulties the government would have in the post war administration of such a measure could not be foreseen. The commodity was sufficiently

---

[5]Benedict and Stine, Cochrane, Gray and Sorenson both give interesting accounts of the programs during the 1930's. See Benedict and Stine, op. cit., pp. 418-422, Cochrane, Gray and Sorenson, op. cit., pp. 34-39.

different from other commodities in the Steagall legislation to require special legislation in a very short time; hence, it could possibly have been thought out better with longer term planning. The parity base chosen for potatoes may have been too high. A lower rate of payment might still have induced needed production for wartime.

The Steagall legislation which was instituted to induce needed production was replaced by a more restrictive type of legislation in 1949. The Commodity Credit Corporation in 1948 had bought about 30 per cent of the 1948 crop (81.6 million hundred weight) and so much public indignation surrounded the governments' activities in this field that the entire support program was threatened. Public and congressional opposition became so great that a reduction in the percentage of parity at which potatoes were supported was included in the 1949 Act. Subsequently, potatoes were to be supported from 60 to 90 per cent of parity as the Secretary of Agriculture might determine to be needed or appropriate. The reduction in support levels for the 1949 and 1950 crops tended to discourage production in some areas, but higher yields per acre resulted in continuing over-all surpluses. The last government modification of this legislation came with the enactment of Public Law 471 in 1950 which placed a further restriction on supports in that no portion of the 1951 crop would be supported unless marketing quotas were in effect (Public Law 471, 81st Congress, 2nd section). Since there was no legislation providing for marketing quotas on potatoes, this meant there could be no price supports unless new legislation was passed.[6]

---

[6]For a detailed treatment of the support laws enacted in this period see Benedict and Stine, op. cit., pp. 422-435, or Cochrane, Sorenson, and Gray, op. cit., Appendix A, pp. 185-226.

Table 1 illustrates some of the changes occurring during the potato price support programs.

TABLE 1.-Potatoes, United States: Acreage planted, 1942-1957; acreage harvested, yield per acre, season average price per hundred weight, 1942-1957*

	Acreage planted 1000 A.	Acreage harvested 1000 A.	Yield per harvested acre (cwt.)	Production 1000 cwt.	Sold 1000 cwt.	Season average price per cwt. received by farmers weighted by: Sales	Production
1942	2755.1	2670.8	82.8	221,339	154,060	1.90	1.90
1943	3354.7	3239.0	85.0	275,332	197,410.8	2.10	2.13
1944	2878.2	2779.8	82.9	230,355	174,531	2.40	2.45
1945	2728.7	2664.3	94.4	251,639	194,181	2.30	2.33
1946	2570.6	2526.6	115.7	292,389	235,768.8	2.01	2.03
1947	2033.6	2001.3	116.6	233,391	188,893.8	2.67	2.68
1948	2007.3	1980.7	136.2	269,937	225,633	2.53	2.55
1949	1775.1	1755.3	137.3	240,950	198,565	2.10	2.13
1950	1713.4	1697.9	152.6	259,112	216,733	1.50	
1951	1373.2	1348.5	145.2	195,761	161,902	2.68	
1952	1416.8	1397.4	151.1	211,095	177,258	3.21	
1953	1562.6	1536.4	150.8	231,679	192,396	1.31	
1954	1431.2	1412.6	155.4	219,547	183,440	2.15	
1955	1460.5	1413.6	160.6	227,046	191,802	1.77	1.79
1956	1406.3	1385.5	175.9	243,716	206,872	2.02	2.01

*Statistical Bulletin No. 122, Potatoes (Washington, D.C.: U. S. Department of Agriculture, Bureau of Agricultural Economics, March, 1953); Statistical Bulletin No. 190, Potatoes-Sweetpotatoes (Washington, D.C.: U. S. Department of Agriculture, Agricultural Marketing Service, August, 1956); and Potatoes and Sweetpotatoes (Washington, D.C.: U. S. Department of Agriculture, Agricultural Marketing Service, August, 1957).

Yield per acre has increased steadily from 1942 through the record 1956 crop year. Acreage planted and harvested evidenced a downward trend from 1943 until 1952. This trend was reversed in 1952 but since has been downward. Among the reasons for this change in 1952 were: (1) production was at a very low level in 1951 due to the withdrawal of price supports; and (2) the Korean War broke out between the 1950

and 1951 crops causing potato prices to rise in 1951 and to reach a record level in 1952.

Acreage planted and harvested declined slowly in the first post war years of the support programs as the parity base was adjusted downward. Production, however, remained well above 200 million hundredweight per year until 1950, the last year of a formal support program. Increased yield per acre accounted in part for this stability.

The record price level in 1952 encouraged increased plantings in 1953. As a result the seasonal average price per hundredweight received by farmers for the 1953 crop dropped to $1.31, which was the lowest seasonal average price received since 1941. High production and low prices were predicted by some sources for 1954.

After the removal of price supports uncertainty returned to future potato prices, and concern was expressed publicly by a group of industry representatives which met in Washington in February, 1954. A provision of the Agricultural Adjustment Act of 1954 amended the act of 1949 and allowed the Secretary of Agriculture to use Section 32 funds for limited assistance to the potato industry if he chose to take such action.[7] Although the Secretary of Agriculture had used Section 32 funds for this purpose before, ($25.5 million on the 1946 crop alone) Secretary Benson declined to use them in 1954 as "too little and too late". This set the

---

[7]Section 32 of Public Law 320, 74th Congress, 1935, amended the AAA of 1933 by allocating 30 per cent of collections from tariffs on all dutiable imports to the Secretary of Agriculture for his use to "(1) encourage the exportation of agricultural commodities.... (2) encourage domestic consumption of such commodities.... by diverting them.... from their utilization.... among persons in lower income groups...., and (3) re-establish farmers' purchasing power by making payments in connection with the normal production of any agricultural commodity for domestic account." See Rainier Schickele, Agricultural Policy (New York: McGraw Hill, 1954), p. 227.

stage for the 1955 program, however, which went into effect in the fall of 1955.

Indicated total production in 1955 appeared to be 230 million hundred weight which was around 8 per cent higher than 1954 and about the same as in 1953 when prices were quite low. Representatives of the potato industry met in Chicago in August, 1955, to tighten regulations in areas operating under marketing agreements. Representatives of the states that attended agreed to withhold all culls plus 20 per cent of remaining potatoes from the market, despite the absence of a visible means of enforcement. With these reassuring signs of co-operation from the producing areas, the Agricultural Marketing Service, late in August of 1955, announced a program to stimulate diversion of lower grade potatoes into the manufacture of starch or for livestock feed.

Description of Diversion Program XMD 3A[8]

General Statement

In order to encourage the domestic consumption of fresh Irish potatoes and to divert quantities from the normal channels of trade and commerce, the Secretary of Agriculture was given the power to use Section 32 (Public Law 320, 74th Congress, 1935) funds for diversion of potatoes to livestock feed and for starch.

The program is administered under the general direction or supervision of the Director, Fruit and Vegetable Division, Agriculture Marketing Service and in the field is carried out by the Commodity Stabilization Service. The area in which the program operated in 1955 and 1956 comprised

---

[8]See Appendix I for a detailed description of the law pertaining to the program.

those states that were able to work out an acceptable marketing plan. In 1955 Colorado, Idaho, Maine, Washington, Oregon, parts of California and Pennsylvania, and Utah participated in the program. In 1956 Colorado, Idaho, Maine, Washington, Oregon, and parts of California, Minnesota, North Dakota, and New York participated.

The 1955 program started in September and ended May 31, 1956. The 1956 program started in October and ended June 30, 1957. The payments for Specification A potatoes were 50 cents per hundredweight to December 31, 40 cents per hundredweight during January, February, and March, and 30 cents per hundredweight until the termination of the program which would be no later than June 30. Specification A potatoes were those that equaled or exceeded the quality requirements for U.S. No. 2 potatoes and certain diameter and weight specifications. (See Appendix I).

To comply with the program the person wishing to claim the diversion payments had to agree to divert all quantities under the program to either starch or livestock uses. Written forms were filed with state officers as to quantity and grade differences. To claim payment the diverter had to submit a properly executed Invoice and Certificate of Inspection and Diversion (CSS-118) to the state ASC office which approved their application. Generally, under the starch program an agreement was entered into between the manufacturer and the Agricultural Marketing Service. The manufacturer agreed to pay growers and other vendors a price higher than the "going" price by the amount of the diversion payment. The manufacturer was then periodically reimbursed for the difference. This eliminated the necessity, in many cases, of the individual growers keeping books. The livestock diverter had to mutilate

potatoes to be diverted to his outlet and provide for inspection.

For any state or area to qualify for diversion payments in 1956 it had to develop an acceptable marketing plan which would withhold all cull potatoes, and withhold in addition 10 to 15 per cent or more of the potatoes meeting U.S. grade requirements. According to changes later in the 1956 program, in order to qualify for potato diversion payments it was necessary for states or areas exceeding their acreage or marketing guide, including those areas already approved, to withhold all cull potatoes plus 20 per cent or more of the potatoes meeting U. S. grade standards. If the states had not exceeded their acreage and marketing guide they had to withhold all cull potatoes plus 15 per cent of those meeting U. S. grade requirements. These latter requirements were not in the 1955 requirements. In 1955 the state had to develop a marketing plan to improve the quality of potato shipments in the interest of producers and consumers in order to qualify; but, they were not related to the latter acreage marketing guides in the respective state concerned.

The program was designed to divert a large quantity of Specification A potatoes early in the marketing year. This would cause marketings to be low enough to support or maintain the prices of the commodity. The action of the program would also clear the spring market. It would accomplish this by deterring growers from holding stocks until the late spring months.

Nature of the Problem

In the spring of 1956, when for a brief period prices rose to record levels, the diversion program was hailed by some sources as one of the contributing factors to this price rise. In the fall of 1956 it became doubtful that the program alone would be enough to sufficiently alter the marketing structure or pattern of potatoes and

hence, improve their price. Dissatisfaction was expressed with the existing structure of the program and suggestions for possible revisions were offered from various sources.[9] The National Potato Council suggested that diversion payments should be higher for the entire operation of the program and that raising these payments would be enough to insure successful operation of the program. Dissatisfaction was also expressed with the bond that diverters had to post in order to be eligible for the program.[10] In December of 1956 it was also pointed out that there was much variation between areas in the net returns to growers under the program.[11] Some areas failed to acknowledge a feed value to potatoes in the livestock program, so that returns to the grower were not as high as if he were able to take advantage of a starch outlet where the diversion payment would be the same plus 25 cents per hundredweight for starch manufacture. Other questions arose as to the effectiveness of mutilating the potatoes for feed----that is, the cost involved, it was argued, was too high. Other questions also arose as to administrative problems and the general effectiveness of the program as a whole.

Scope and Purpose of the Study

The objectives of this study were: (1) to determine if a normal marketing pattern could be developed for potato producing states; (2) to discover if the diversion program in 1955 and 1956 significantly altered the normal marketing pattern in these states; (3) to ascertain

---

[9] National Potato Council News (Washington, D.C.: National Potato Council, September, 1956), p. 5.

[10] Ibid.

[11] Ibid.

the relative magnitude of monthly diversions in these states during the operation of the program in these two years; and, (4) to discuss and analyze suggested changes in the program.

CHAPTER II

METHODOLOGY

The Sample

The production area covered in this study was limited principally to five states: Colorado, Idaho, Oregon, Maine and Washington. These were the states that participated in and were largely concerned with the diversion program in the two years. These states also produce an important share of the U. S. crop as will be shown later. It was felt then that if the effect of the program could be measured in these five states, then the general magnitude of the program could be projected for the other states involved. Pennsylvania, an important contributor to the program during four months of 1955, was excluded from the program because some of the data concerning the state's carlot shipment activities could not be obtained. Pennsylvania did not participate in the program in 1956.

Sources of Data

Data concerning carlot shipments used in computing the seasonal indexes of marketings were taken almost exclusively from Fresh Fruit and Vegetable Shipments by Commodities, States, and Months published by the Fruit and Vegetable Division of the Agricultural Marketing Service, United States Department of Agriculture. "Weekly Shipment Summary of Fruits and Vegetables", a weekly publication published by the Market News Service, Fruit and Vegetable Division, A.M.S., U.S.D.A., was used as a source for the data pertaining to the last six months of the

carlot shipment series used in building the seasonal index. This was used as a substitute for the previously cited work as the monthly figures were not published and are subject to revision at time of publication. Data for the diversions by states were taken from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", a mimeo published weekly during 1955 and 1956 by the Fruit and Vegetable Division, A.M.S., U.S.D.A. Data on production and merchantible stocks were taken from Statistical Bulletin 122, "Potatoes" published by the B.A.E., U.S.D.A. in March of 1953, and from Statistical Bulletin 190, "Potatoes, Sweetpotatoes by States, 1949-1955" published by the Crop Reporting Board, A.M.S., U.S.D.A. Data on production figures in Statistical Bulletin 122 were converted from bushels to hundredweight by the use of the standard conversion factor (.60).

Methods of Analysis

Determining Feasibility of the Carlot Shipments Method

Different methods of analysis were applied to the different sections of the data. It was first necessary to determine if the figures reporting monthly carlot shipments of potatoes could be utilized to build a seasonal index of marketings and thus determine if a seasonal marketing pattern did exist in the states examined. First, reported merchantible stocks figures for the respective years were obtained. Secondly, carlot shipments through December 31 of the year were totalled and converted to hundredweight by using the conversion factor .36.[1] This figure was subtracted from total production for

---

[1]Since merchantible stocks figures were in 1,000 cwt. and each standard shipment contains 36,000 pounds per carlot, then the conversion factor used each month was .36 to convert to 1,000 cwt.

the year to give an "Estimated Merchantible Stocks" figure. This figure remained rather stable throughout the years examined in the respective states. This computation can be expressed algebraically as follows:

(Total production in year j) - (Carlot shipments through December 31 in year j x .36) = "Estimated Merchantible Stocks"

Note that although this method of calculating merchantible stocks did not give the same figures as "Reported Merchantible Stocks", the ratio of "Estimated" to "Reported" remained fairly constant in the states examined--that is, the amount of potatoes that could be accounted for over the years remained stable. A simple correlation between "Reported" and "Estimated" merchantible stocks also attested to this stability. So long as this stability existed it was concluded that a marketing pattern did exist and the carlot shipments could be used (both rail and truck combined) as a basis for measuring this marketing pattern by computing a seasonal index of carlot shipments.

Computing and Analyzing the Seasonal Index of Carlot Shipments

In computing and analyzing the seasonal index of carlot shipments, two alternative techniques were employed. Seasonal variation is a phenomenon that can by analyzed by various methods.[2] In computing a

---

[2]The general problem of seasonal variation is discussed in the following literature:

a. Frederick E. Croxton and Dudley J. Cowden, Applied General Statistics, (New York: Prentice Hall, 1955), Chapters 14, 15, and 16.

b. George Simpson and Fritz Kafka, Basic Statistics (New York: Norton and Co., 1957), Chapter 17.

c. Warren C. Waite and Harry C. Trelogan, Agricultural Market Prices (New York: Wiley and Sons, 1948), Appendix.

d. R. J. Foote and Karl A. Fox, Seasonal Variation: Methods of Measurement and Tests of Significance, Ag. Handbook 48 (Washington, D.C.: U.S.D.A., B.A.E., 1952).

e. Elwood E. Lewis, Methods of Statistical Analysis in Economics and Business (New York: Houghton Mifflin Co., 1953), Chapter 11.

seasonal variation one of the first considerations is whether the magnitudes are likely to vary by absolute amounts or by relative amounts. Thus, in determining seasonal variations in prices, storage costs may be expected to represent a dominant underlying seasonal factor and remain the same absolute amount from year to year. In this case it is probably best to determine the seasonal variation on the basis of actual magnitude. On the other hand, the utilization of storage stocks may be proportional to the passage of time, with perhaps half of the peak stocks exhausted at one time. In this case the relative movement is important rather than the actual magnitude. In computing seasonal averages for this type of variable, percentages or proportional relationships may be preferred.

The Quantity Relatives Method

If it is thought as it was in this case that the seasonal movement is of a relative character, one of the simpler methods, and one of the two used here, is to express each month as a percentage of the average for the year. The percentages for the individual months in a series of years are then averaged to provide the seasonal value for that month. In this case the series of years used for determination of the normal marketing pattern was from 1929 to 1955. This method will remove a considerable amount of trend in the series if present. It is important to note that the computation is based on the crop marketing year rather than the calendar year. In Maine the crop marketing year begins in August. In the rest of the states included, the crop marketing year begins in July. Algebraically the computation can be expressed as follows:

Q_o = Base or average carlot shipments for the year j.

Q_o = Carlot shipments in month i in the year j.
$Q_I = \frac{Q_i}{Q_o}$ = Carlot shipments in month i expressed as a percentage of average carlot shipments in year j.
$Q_I \ldots Q_n$ = Summation of individual Q_I in the series of years to be analyzed - (1929 - 1955)
N = Number of years in the series
$\frac{Q_I \ldots Q_n}{N}$ = Index of average seasonal variation

The Twelve Month Moving Average Method

A twelve month moving average is a series of averages which embraces the first twelve months of a series; next, the second to thirteenth months; and so on.[3] To be more specific, in considering the carlot shipment series the first twelve months in the series were added to give the first item in a twelve-month moving total which was entered between the sixth and seventh month. The total of the carlot shipments for the second to thirteenth months gave the second item in the series and so on. After the twelve-month moving totals were obtained for the series from 1930 to 1954 a two-month moving total of the twelve-month moving totals was computed--that is, the summation of the first two items in the twelve-month moving total series gave the first item in a properly centered two-month moving total series entered opposite the seventh month; the second item in the properly centered two-month moving total series entered opposite the eighth month was composed of the second and third items of the twelve-month moving total series and so on. By then dividing each item in the properly centered twelve-month moving total series by 24 each item in the properly centered twelve-month moving average series was obtained. The next step in computing the seasonal index consists of dividing each original monthly absolute value (carlot shipment) in the series by each corresponding value in the properly

---

[3]For a detailed explanation see Simpson and Kafka, op. cit., pp. 272-289.

centered twelve-month moving average series. This gives an index number of seasonal variation for that month. By summing each respective monthly value in the series, (for example, June, 1929-1956) and dividing by the number of years in the series a final average seasonal index number is obtained for the given month. The logic behind the procedure is as follows: Time series are assumed to be composed of T x C x S x I (Trend x Cycle x Seasonal x Irregular). The twelve-month moving average is a rough estimate of T x C because it smoothes out seasonal movements and, for the most part, irregular movements, since the latter are largely movements of small amplitude and short duration. If the original absolute carlot shipment figures are divided by the twelve-month moving average, an estimate of seasonal and irregular movements are combined:

$$\frac{T \times C \times S \times I}{T \times C} = S \times I$$

If a substantial seasonal movement exists, as it appeared to in the series under observation, the two methods described and used (as well as a number of other methods that may be employed) will yield approximately the same result.

Because the results of the two indexes were virtually the same the first method was employed in this study. The twelve-month moving average method excludes the last six months in the final computation. Because the first entry is between the sixth and seventh month the last entry is six months short of the final absolute figure of carlot shipments. This had an important significance because carlot shipments figures were only available for the first six months of this year--that is, the last six months of this past year's program. The carlot shipment figures would have to have been extended from July to December of 1957 to extend the twelve-month moving average another six months but that would actually

have described events that have not yet happened. The "quantity relatives" method gave approximately the same results and also would give an index of seasonal variations for each month through June or July, the end of the crop marketing year in the states concerned. Because of these advantages the "quantity relatives" method was used in the preparation of the final average index of seasonal variation that is presented.

Determining the Monthly Amplitude of Diversions

Determining the monthly amplitude of diversion within the states tested for the two years was done by summing the weekly diversion totals for each month concerning differentiation in quality and amount paid for diversions to starch and livestock. In 1956 costs of both phases of the program were lumped together on the weekly report. An approximate figure was obtained for weeks overlapping into a following month by attributing that portion of the respective month's production to the proper month. This was done by totaling the fraction of the week's quantity diverted and attributing it to the latter part of the first month concerned. The remaining portion was ascribed to the first part of the following month. Other methods used in explaining the importance of the program in the states concerned will be explained as the analysis proceeds (Chapter III).

The Test of Significance

The statistical test employed to test if there was a significant shift in monthly marketings during the two years of the program was a ramification of the basic "t tests".[4]

---

[4]For a discussion of problems involved in estimates and testing

The statistic employed here bears a close relationship to the basic "t test" expressed algebraically as follows:

If $\frac{\bar{X} - \mu}{S / \sqrt{n}}$ is $> C$ it can be said that the sample mean $< -C$ is statistically significant from universe mean

$\bar{X}$ = Sample mean
μ = Universe mean

$S = \sqrt{\frac{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}{n - 1}}$ = standard deviation

$\sqrt{n}$ = square root of items in sample
C = level of significance attached to analysis (in this case the 5 per cent level)

It can be said that if the sample mean of a very large sample is more than plus or minus 1.96 standard errors away from the mean of the universe (the five per cent level) then it can be classified as "unusual" or statistically significant.

It must be pointed out, however, that in this type of analysis dealing with an index of seasonal variation two types of trend exist; one of which can be eliminated by the two afore mentioned methods, and one that cannot and must be accounted for. The first, trend in magnitude, can be eliminated. The second, trend or shift in carlot movements over a period of years from, for example, January to November, would give a biased estimate, by use of the standard deviation, of the dispersion or deviation from the mean if left unaccounted for.

---

hypotheses and a detailed explanation of these tests employed in statistical influence see:

a. Wilfred I. Dixon and Frank J. Massey, Introduction to Statistical Analysis (New York: McGraw Hill, 1957), Chapters 6-10.
b. Simpson and Kafka, op. cit., pp. 420-429.
c. Lewis, op. cit., pp. 187-296.
d. Helen M. Walker and Joseph Lev, Statistical Inference (New York: Holt, 1953), Chapters 1, 2, and 3.

By fitting a trend line to the data by means of the least squares method[5] the trend in a particular month's shipments over a period of years can be obtained. By measuring the deviations from this regression line by the use of the estimate of the standard error of estimate[6] a much more accurate measure of dispersion is achieved. If there is no trend in the data the standard deviation from regression or the standard error of estimate will be approximately the same as the standard deviation. The actual statistical test employed then was:

If $\frac{X^* - \mu}{Sy.x/\sqrt{n}} > C$ or $< -C$ it can be said that the sample observation or value differs significantly from the universe mean.

X^* = individual value for each month for the two years under the program

μ = "expected value" in 1955 and 1956 predicted from trend line equation for each month. If there is no trend in the data this "expected value" for each month will be the same as the average from 1929-1955; hence, μ was used instead of $\bar{Y}$.

Sy.x= standard deviation from the regression or trend line. If there is no trend in the data this statistic will be the same as the standard deviation. Assumed that Sy.x is the same in 1955 and 1956 as it was previously.[7]

C = level of significance attached to the analysis (in this example the 5 per cent level). In this case 2.06 standard errors from the mean includes 95 per cent of the population (2.5 per cent of the upper limit and 2.5 per cent of the lower limit); that is, with 26 in the universe and n - 1

---

[5]For a detailed explanation of linear regression, curvi-linear regression in time series analysis see:
a. Simpson and Kafka, op. cit., pp. 235-271.
b. Lewis, op. cit., pp. 371-422.
c. George W. Snedecor, Statistical Methods (Ames, Iowa: Iowa State College Press, 1953), Chapter 6.
d. Croxton and Cowden, op. cit., Chapters 12 and 13.

[6]Snedecor, op. cit., pp. 117-118.

[7]See Appendix II for explanation of the method used in computing Sy.x.

degrees of freedom[8] if any value is obtained in this case greater than 2.06 or less than -2.06 standard errors from the mean it can be ascertained that 95 per cent of the time values would be obtained closer to the mean than this and, hence, it is termed an "unusual occurence" or statistically significant at the 5 per cent level.

$\sqrt{n}$ = square root of number in the sample to be tested, in this case one; so this term can be eliminated.

The use of this statistical test then was to measure whether the government diversion program had affected the seasonal index of carlot shipments, particularly in the months September through December when the highest diversion price was paid.

The selection of any particular statistical level of significance is arbitrary. Rather than use one particular level of significance in testing the changes in the marketing pattern in 1955 and 1956 the probability of the changes that did occur, happening by pure chance, was used.

Limitation of the Study

This method of deriving a seasonal index of carlot shipments has a somewhat limited use. It can only be utilized in those states that have a definite seasonal marketing period. In California, for example, the method could not be used because California has a definite overlap in the marketing of early, intermediate, and late crops. It can also only be used where a stable quantity of rail and truck carlot shipments can be accounted for during a series of years. Pennsylvania, an important contributor in the program in 1955, was excluded because no record of shipments is available in the period of the last three years. The effectiveness of such an analysis also is limited by a large standard

---

[8]For a discussion of degrees of freedom see Walker and Lev, op. cit., pp. 90-91, 135, and 145.

deviation due to the dispersion in the data. This dispersion was most accurately measured and, hence, minimized as pointed out earlier, by the use of the standard deviation from regression derived from either the linear or curvi-linear trend line equations in cases of data with definite trend.

CHAPTER III

THE IMPORTANCE OF THE DIVERSION STATES IN NATIONAL PRODUCTION AND THE NORMAL MARKETING PATTERN IN CERTAIN DIVERSION STATES

Importance of Potato Production in the Diversion States

In determining the importance of the diversion states in national potato production it is important to note the principal producing areas in the United States. A ten state area, five of which participated in the program both years, and five others, four of which participated either just one year or were disqualified sometime during the year, have produced an average of over 60 per cent of the potatoes for national use from 1929-1957. The former five are Colorado, Idaho, Maine, Oregon, and Washington. The latter five are California, Minnesota, North Dakota, New York, and Pennsylvania. Any program that seriously considers the support of potato prices through formal or informal plans would have to consider these areas.

From 1929-1957 each of these five groups of states averaged approximately 30 per cent of national production. It is important to note that in the last five year period, since the discontinuance of price supports, that this more specialized ten state group has produced an average of over 70 per cent of potatoes for national consumption. Colorado, Idaho, Maine, Oregon, and Washington alone have produced 40 per cent of national potato production since 1950. If marketings are altered considerably in these states, especially very specialized states

as Maine and Idaho, this will have an effect on total potato production and consequently on prices.

Over the 28 year period approximately 30 per cent of total production has remained in merchantible stocks on January 1 for marketings in the spring months. Size of these stocks is an important factor influencing spring prices along with spring production. Of this total production held in merchantible stocks, approximately 26 per cent has been held by the ten states involved in the program either in a minor or major way. Over the five year period since the discontinuance of price supports, 75 per cent of total merchantible stocks has been held by these ten states. In this same five year period the five states considered in this study held 71 per cent of total merchantible stocks for winter and spring marketings.

It appears that this specialized area of ten states produces and holds an important share of potatoes for national consumption. The six states participating in the program for both years produce a large share of this total and the five considered in this study (excluding California for afore-mentioned reasons) make up a large share of the total. Any type of program designed to indirectly support the potato industry prices would have to alter marketings in this ten state area significantly; or it would have to alter it in the five state area (selected for this study) which did participate even more in the program.

It is next necessary to examine this normal marketing pattern for this area to determine whether the marketing pattern was altered significantly in the first two years of the diversion program.

Construction of an Index of Marketings in the Five States Studied

Table 2a through Table 2e illustrates the "Estimated Merchantible Stocks" and their relationship to "Reported Merchantible Stocks" held on January 1 to determine the reliability of building individual indexes of marketings for the five states concerned. The carlot shipments series was the only series of data available for computing an appropriate index of seasonal marketings for potatoes. But before computing a seasonal index for each state, the reliability of using the carlot shipments series for the computation of a seasonal index in each state was tested. This was accomplished by the method outlined in Chapter II. The seasonal index was used to determine the normal marketing pattern and how much the seasonal marketing pattern in 1955 and 1956 departed from the normal marketing pattern.

TABLES 2a through 2e.-Relation of estimated merchantible stocks to merchantible stocks on January 1 reported by U.S.D.A. in five diversion states

	January 1 Merchantible Stocks 1000 cwt. (1)	Production 1000 cwt. (2)	Carlot Shipments through December 31 1000 cwt. (3)	Estimated Stocks (column 2 minus 3) 1000 cwt. (4)	Ratio of Reported to Estimated Stocks (column 1 divided by 4) 1000 cwt. (5)
Table 2a Colorado					
1930-42 ave.	2771	8063	1871	6192	43.7
1942	3972	9504	2416	7088	56.0
1943	3720	10,332	3214	7118	52.3
1944	3330	10,914	4342	6572	50.7
1945	3762	10,413	4226	6187	60.8
1946	3792	11,703	4423	7280	52.0
1947	3570	10,494	4575	5919	60.3
1948	3756	12,528	6024	6504	57.7

TABLES 2a through 2e--Continued

	January 1 Merchantible Stocks 1000 cwt. (1)	Production 1000 cwt. (2)	Carlot Shipments through December 31 1000 cwt. (3)	Estimated Stocks (column 2 minus 3) 1000 cwt. (4)	Ratio of Reported to Estimated Stocks (column 1 divided by 4) 1000 cwt. (5)
Table 2a--continued					
1949	4866	11,420	4256	7164	67.1
1950	4446	10,909	3985	6924	64.2
1951	2400	7,347	3387	3960	60.6
1952	4600	11,530	5106	6424	71.6
1953	4320	11,581	4317	7264	59.5
1954	4300	10,620	3730	6890	62.4
1955	3050	9,120	3923	5197	58.7
1956	3429[1]	10,197	4208	5989	57.2
Table 2b Idaho					
1930-42 ave.	6282	15,170	4781	10,389	60.5
1942	7254	18,354	5944	12,410	58.4
1943	10,704	26,082	7326	18,756	57.1
1944	8,304	23,788	8263	15,525	53.5
1945	12,540	27,675	8534	19,141	65.5
1946	14,046	27,768	7561	20,207	69.5
1947	6,996	17,160	5744	11,416	61.3
1948	12,588	27,360	8909	18.451	68.2
1949	9,936	21,790	7248	14,542	67.8
1950	15,852	30,516	7755	22,761	69.6
1951	9,000	23,055	8674	14,381	62.6
1952	11,600	26,929	10,102	16,827	68.9
1953	15,000	30,690	7420	23,270	64.5
1954	13,000	26,608	7765	18,853	69.0
1955	16,900	33,043	7755	25,288	66.8
1956	17,160[2]	33,104	7627	25,477	67.4
Table 2c Maine					
1930-42 ave.	15,043	26,344	5561	20,783	72.4
1942	16,278	26,304	4852	21,452	75.9
1943	21,144	43,200	10,420	32,780	64.5

TABLES 2a through 2e—Continued

	January 1 Merchantible Stocks 1000 cwt. (1)	Production 1000 cwt. (2)	Carlot Shipments through December 31 1000 cwt. (3)	Estimated Stocks (column 2 minus 3) 1000 cwt. (4)	Ratio of Reported to Estimated Stocks (column 1 divided by 4) 1000 cwt. (5)
Table 2c—continued					
1944	18,108	31,334	7,143	24,188	74.8
1945	19,026	32,729	7,622	25,107	75.8
1946	28,842	47,041	6,118	40,923	70.5
1947	26,604	39,060	6,124	32,936	80.7
1948	25,128	45,045	8,836	36,209	61.4
1949	30,200	42,228	5,098	37,130	81.3
1950	26,300	38,016	2,023	35,993	73.1
1951	17,900	27,000	4,226	22,774	78.6
1952	20,800	32,007	5,411	26,596	78.2
1953	24,700	34,839	4,001	30,838	80.1
1954	20,000	29,046	2,109	26,937	74.2
1955	24,000	35,814	3,262	32,552	73.7
1956	28,244[3]	41,748	3,182	38,566	73.2
Table 2d Oregon					
1930-42 ave.	1,541	3,845	807	3,038	50.7
1942	1,632	4,386	1,101	3,285	49.7
1943	2,538	7,656	1,842	5,814	43.7
1944	1,860	6,750	2,403	4,347	42.8
1945	2,376	7,488	2,453	5,053	47.0
1946	2,526	7,800	2,262	5,538	45.6
1947	1,662	5,400	1,884	3,516	47.3
1948	2,226	7,068	1,853	5,215	42.7
1949	2,640	6,940	2,083	4,857	54.3
1950	3,700	8,527	1,866	6,661	55.5
1951	1,620	6,485	2,525	3,960	40.9
1952	2,400	7,090	2,670	4,420	54.3
1953	2,800	7,998	2,445	5,553	50.4
1954	2,835	8,305	2,557	5,748	49.3
1955	2,600	7,645	1,799	5,846	44.5
1956	3,187[4]	8,530	2,738	5,792	55.0
Table 2e Washington					
1930-42 ave.	1,617	4,893	1,037	3,856	41.9

TABLES 2a through 2e—Continued

	January 1 Merchantible Stocks 1000 cwt. (1)	Production 1000 cwt. (2)	Carlot Shipments through December 31 1000 cwt. (3)	Estimated Stocks (column 2 minus 3) 1000 cwt. (4)	Ratio of Reported to Estimated Stocks (column 1 divided by 4) 1000 cwt. (5)
Table 2e--continued					
1942	1,104	4,059	1,031	3,028	36.5
1943	1,530	6,348	1,310	5,038	30.4
1944	630	4,512	1,526	2,986	21.1
1945	786	5,406	2,614	2,792	28.2
1946	1,230	6,552	2,732	3,820	32.2
1947	660	6,570	3,502	3,068	21.5
1948	1,320	7,752	3,225	4,527	29.2
1949	1,090	6,434	2,875	3,559	30.6
1950	1,680	7,115	2,643	4,472	37.6
1951	650	6,504	2,664	3,840	16.9
1952	750	6,268	2,992	3,276	22.9
1953	870	6,482	3,719	2,763	31.5
1954	870	7,926	4,627	3,299	26.4
1955	1,120[5]	9,633	4,437	5,196	21.6
1956	1,316[5]	10,255	5,619	4,636	28.4

Sources: Column 1—Merchantible stocks as reported on January 1 by U.S.D.A., taken from Statistical Bulletin 122 (1942-1949); Statistical Bulletin 190 (1949-1956); and Potatoes, Sweet Potatoes (August, 1957), U.S.D.A. publications.

Column 2—Production, Ibid.

Column 3—Carlot Shipments through December 31 times .36 (to convert to 1000 cwt.), taken from Carlot Shipments of Fruits and Vegetables by Commodities, States, and Months (Washington, D.C.: United States Department of Agriculture, Fruit and Vegetable Division of the Agricultural Marketing Service).

Column 4—Estimated Stocks equals column 2 minus column 3.

Column 5—Column 1 divided by column 4.

[1]Merchantible stocks series discontinued so the estimate is based on the fact that 1955 merchantible stocks were 76.2 per cent of 1955 total stocks.

[2]1955 merchantible stocks were 88 per cent of total stocks

[3]1955 merchantible stocks were 92.3 per cent of total stocks.

[4]1955 merchantible stocks were 78.7 per cent of total stocks.

[5]1955 merchantible stocks were 82.3 per cent of total stocks.

The relationship between these "Estimated Stocks" and "Reported Merchantible Stocks" as reported on January 1 of each year by the U.S.D.A. varies from state to state as Tables 2a through 2e attest. However, it appears that this relationship stays somewhat the same in each state indicating that a high degree of correlation between "Reported" and "Estimated" stocks exists in each state. The correlation co-efficient used for estimating the degree of relationship between "Reported" and "Estimated" stocks was computed from 1929-1957 data although all this data was not included in Tables 2a through 2e. The co-efficient of correlation varied from .98 in Idaho to .45 in Washington. However, in all states except perhaps Washington the relationship remained fairly stable from year to year.

Maine "Reported Stocks" have remained a high percentage of "Estimated Stocks" through the period of years tested. This indicates that a high percentage of disappearance has been accounted for by using this method. The co-efficient of correlation as computed in the Maine case was .96. Another important factor is to note the size of the "Reported Merchantible Stocks" on January 1 in Maine. As has been stated before, size of the aggregate stocks is an important factor in determining spring prices along with spring production. Maine merchantible stocks reported on January 1 consistently have been around 50 per cent of Maine's total production. Merchantible stocks have remained high in Maine and continued to be high despite the presence of the diversion program in 1955 and 1956 (Table 2c).

Although not as great a percentage of disappearance in Idaho was accounted for by carlot shipments, the amount of disappearance remained very stable. The co-efficient of correlation as computed in the relationship between these two variables was .98. Merchantible stocks, although not as large in absolute terms as in Maine, still remained at around 50 per cent of total production even in 1955 and 1956 (Table 2b).

This method as applied to Colorado data illustrated a closely associated relationship. There appears to have been little flucuation in the amount of disappearance actually accounted for by using this method. The co-efficient of correlation was .77 indicating that the relationship between "Estimated" and "Reported" merchantible stocks stayed reasonably constant. It could be pointed out, however, that in such a year as 1952, when a record average seasonal price was received by farmers that the relationship between the two items became very close. The amount of disappearance ascertained was very high indicating that in response to price a high percentage of the total crop was being shipped (Table 2a).

January 1 merchantible stocks in Oregon have been rather small in absolute terms and have varied considerably as a percent of total production. It appears that merchantible stocks are becoming a smaller part of total production. The co-efficient of correlation as computed to show the relationship between "Reported" and "Estimated" merchantible stocks was .94 showing that a close relationship exists between the two. The amount of disappearance accounted for in this state was quite small but also quite stable (Table 2d).

The co-efficient of correlation between the two previously discussed variables in Washington was the lowest of the five states. The

co-efficient of correlation was .45 indicating the relationship may not have been too close. However, Washington's contribution to the program in 1955 was almost nil and quite small in 1956. Therefore, the aggregate effect of establishing such an anlysis on Washington data was quite small. One should recognize this limitation when interpreting this analysis of the Washington program (Table 2e).

In summarizing the results of this section it appears that in areas with a definite seasonal marketing year this method can be applied to determine the feasibility of building an index of seasonal variation for that area. To producing areas such as California that have a definite seasonal overlap such an analysis would be quite difficult. In the five states analyzed it appeared that a definite relationship did exist between stocks as estimated and actually reported. This indicated that a stable monthly movement of potatoes could be accounted for through the use of carlot shipment data, through a period of years and, hence, a seasonal index of marketings could be established. This seasonal index in each of these five states will now be discussed.

The Marketing Pattern in the Five States Participating in the Diversion Program as Measured by Carlot Shipments

Tables 3a through 3e indicates the average seasonal marketing pattern in the five diversion states included in this study. The two indexes were computed by two alternative methods discussed in Chapter II. As can be observed from these tables the average index of seasonal variation number for each month is approximately the same computed by either method. The trend in each month's shipments over the period of years is also taken into account with the inclusion of the appropriate least squares equation for each month. The appropriate least squares

equation was determined by first plotting each index number for each respective month through the series of years studied. A first degree polynomial was then fitted to this data in the month analyzed and the standard deviation from regression or standard error of the estimate was computed. If the trend in the series appeared to be curvi-linear a second degree polynomial was fitted and the standard error was computed. If the standard error was smaller the second degree polynomial was used to determine the trend in the monthly data. This procedure was carried out in all of the months of the states in this study. It is important to reiterate here that trend in magnitude is eliminated in the construction of the indexes. The type of trend that is taken into account through the use of the appropriate least squares equation is the shift or trend in shipments from one month to another in the respective state. An example would be the shift in shipments from January, over a period of years, to August.

Table 3a indicated the actual seasonal movement or marketing pattern in Colorado. It can be noted from this table that over the last two decades seasonal marketings have reached peak amplitudes in three months—September, October, and January. There appears, however, to have been a shift in marketings from October and January, in some degree, to August. Otherwise no appreciable trend can be detected for the other nine months involved. Therefore, the 28 year average, in most respects, would be adequate for prediction and testing purposes. Marketings show a characteristic upward movement in the early and late fall months. They remain steady and move slowly downward with a small percentage marketed in May and June.

No appreciable trend in the seasonal pattern of marketings in Idaho for nine of the twelve months was observed. A slight shift in

TABLES 3a through 3e.—The normal marketing pattern in five diversion states computed by two alternative methods

	Quantity Relatives Method 1929-1955	12 Month Moving Average Method 1930-1954	Trend $\hat{Y}$ (from quantity relatives Method)
Table 3a Colorado			
July	26.6	25.4	$28.1 - .123x$
August	116.5	115.6	$127.9 + 4.4x - .189x^2$
September	175.96	175.1	$165.5 + .823x$
October	171.6	173.6	$198.9 - 2.19x$
November	111.3	112.3	$117.6 - .499x$
December	103.8	103.7	$98.2 - .41x + .096x^2$
January	142.7	143.9	$164.4 - 1.74x$
February	117.8	118.6	$124.1 - .510x$
March	123.0	122.2	$132.6 - .77x$
April	79.0	78.2	$73.3 + .460x$
May	28.3	28.2	$18.3 + .799x$
June	2.9	2.5	$2.61 + .27x$
Table 3b Idaho			
July	26.57	27.05	$33.85 + .32x - .123x^2$
August	51.84	51.99	$49.9 + .15x$
September	100.79	102.3	$113.97 - .106x - .235x^2$
October	151.9	151.41	$152.9 - .085x$
November	137.6	137.8	$116.5 + 1.68x$
December	125.7	125.3	$91.69 + 2.76x$
January	150.98	150.07	$146.38 + .368x$
February	125.02	124.08	$118.7 + .5x$
March	147.75	146.2	$134.26 - .444x + .245x^2$
April	117.52	116.3	$100.1 - 2.23x + .337x^2$
May	57.08	58.1	$84.4 - 2.19x$
June	7.22	7.58	$11.6 - .36x$
Table 3c Maine			
August	3.28	2.62	$.42 - .396x + .04x^2$
September	37.76	34.87	$27 - 3x + .132x^2$
October	92.44	92.30	$140.0 - 3.82x$
November	108.49	111.12	$104.75 + .299x$
December	121.03	122.20	$112.6 + .673x$
January	158.76	160.7	$154.4 + .336x$
February	165.45	166.7	$154.8 + .85x$
March	217.29	218.9	$168.6 + 3.89x$

TABLES 3a through 3e--Continued

	Quantity Relatives Method 1929-1955	12 Month Moving Average Method 1930-1954	Trend $\hat{Y}$ (from quantity relatives method)
Table 3c--continued			
April	177.91	176.7	135.5 + 3.39x
May	90.10	89.95	100.6 - .84
June	56.13	25.35	32.86 - .54x
July	1.26	1.46	$.244 - .198x + .02x^2$
Table 3d Oregon			
July	71.87	75.59	7.63 + 5.14x
August	110.3	116.57	-14.56 + 9.99x
September	91.39	95.63	$106.8 + 2.98x - .256x^2$
October	141.0	135.55	160.23 - 1.54x
November	151.19	150.85	189.14 - 3.04x
December	129.62	131.63	151.9 - 1.79x
January	147.96	147.90	189.5 - 3.33x
February	107.71	106.44	120.3 - 1.01x
March	131.52	128.16	170.1 - 3.09x
April	86.46	81.84	$70.27 - 3.71x + .281x^2$
May	27.19	26.04	$19.6 - 1.16x + .15x^2$
June	3.64	3.59	6.37 - .23x
Table 3e Washington			
July	162.37	169.34	73 + 7.09x
August	224.46	225.59	45.7 +14.24x
September	208.14	200.68	148.8 + 4.68x
October	165.07	165.38	161.4 + .240x
November	86.51	85.67	117.1 - 2.48x
December	57.30	59.02	79.9 - 1.83x
January	77.72	77.05	$75.98 - 4.08x - .01x^2$
February	61.37	59.19	$56.42 - 3.19x + .04x^2$
March	68.11	66.34	$55.4 - 4.81x + .20x^2$
April	51.50	52.37	$36.17 - 4.4x + .27x^2$
May	20.77	22.95	$10.78 - 2.53x + .19x^2$
June	16.76	16.57	$13.54 - 1.82x + .05x^2$

Source: Computed from Carlot Shipments of Fruits and Vegetables by Commodities, States, and Months, U.S.D.A. Publication, 1929-1956.

marketings over the 28 year period from April and May to a larger share shipped in November and December was noticed. For purposes of measurement and tests of significance, the 28 year average serves as a good measure of central tendency; and the standard deviation as well as the standard deviation from regression serves as an accurate measure of dispersion.

The three peak months of seasonal shipments in Idaho over the 28 year period were October, January, and March. The movement of carlot shipments shows an upward movement from July to October. It levels off in October because of storage till the winter months. A gradual upward movement in January is followed by a levelling off in February. An upward movement in March is followed by a gradual ending of shipments in May and June which ends the seasonal movement of shipments (Table 3b).

Maine is another state that markets large quantities of potatoes out of storage during the winter months. The average indexes of seasonal variation indicate that the three peak months of carlot shipments in Maine are in February, March, and April. Trend fitted by least squares method to the 28 year data indicated shifts from marketings in September and October to March and April. This indicates that increasing quantities have been marketed out of storage over the period. The remaining months showed no visible trend over the series of years analyzed; at least, it could be disregarded for purposes of analysis.

The general movement indicated is that rather moderate quantities are marketed for the first five months of the year, very heavy quantities are marketed from January through April, and a rapid decline of shipments in May, June, and July fulfills the seasonal marketings (Table 3c).

The seasonal movement in Oregon shows the most violent changes of any of the five states analyzed. Thepeak months of marketings over the 28 year period analyzed have been October, November, and January. However,

the trend in shipments over the years indicates that there has been a considerable shift in the marketings from the latter part of the season out of storage to marketings of an early crop in July, August, and September. Marketings appear to have held about steady; that is, with no shifts, in only three months. These months are February, May, and June. February is a fairly important month in Oregon marketings; but May and June have appeared to have accounted for very little of the total crop marketed. The most interesting aspect in observing the seasonal index in this state is to note the tremendous shift from late marketings to early marketings in the period observed (Table 3d). Table 3e indicates that the four peak months of marketings in Washington are July, August, September, and October. The heaviest volume of shipments over the 28 year period was in the months of August and September. The average index of seasonal variation in those months was well over 200 for the 28 year period. Trend fitted to the data by least squares indicates a heavy shift of shipments toward the first four months of the marketing year. Unlike the late fall potato producing states, Maine and Idaho, the index in Washington seems to suggest that a smaller share of the crop is marketed out of storage in this state than in a heavy late fall crop producing state such as Idaho or Maine.

Summarizing the results of this section two important features of this study are apparent. The first of these aspects is that the states selected for this study and most heavily involved in the diversion program have become increasingly important in the production of potatoes for national consumption. In the last five years, since the ending of the price support program, this five state area has produced slightly more than 40 per cent of national potato production. Production in this five state region has shown an upward trend since 1952.

In the two major potato producing states considered in this study (Idaho and Maine) trend lines fitted to the monthly data signified some important conclusions relating to the normal marketing pattern. Maine in particular has exhibited a strong tendency to ship heavily in the months of February, March, and April. It can also be noticed that there appears to be a definite shift from early fall to late fall and winter shipments out of storage. Carlot shipments seem to be concentrated heavily in this three month time period.

Idaho exhibits a more balanced marketing pattern. At least it appears that no group of two or three months completely monopolizes shipments. It appears that there has been a slight upward trend in the very late months of the marketing year. October, an early fall marketing month and one of the peak shipping months, has held about steady in terms of shipments over the 28 year period.

Colorado, Washington, and Oregon exhibit quite different marketing patterns. Colorado has two peak months of marketings in early fall (September and October) and another in January. Trends fitted to the monthly indexes reveal that a gradual shift to early fall marketings is indicated, with about average shipments in the late winter months.

Oregon and Washington have displayed even more marked shifts in shipments. Both these states have shifted from winter shipments out of storage to fall shipments. Washington's peak months of marketings are in the early part of the crop marketing year, with smaller quantities marketed out of stocks. Oregon has a peak month of shipments in January, but over the years January shipments have shown a downward trend.

CHAPTER IV

THE DIVERSION PROGRAM AND SHIFTS IN THE TIMING OF THE DIVERSION PROGRAM, 1955 AND 1956

The Diversion Program

The diversion program was initiated with one of its purposes being to divert quantities of lower quality potatoes from the market early in the marketing year. This was to be accomplished through its graduated payment plan. It is next necessary to examine the aggregate effect of the program as a whole as well as its magnitude in the five state area during each payment period in 1955 and 1956. Table 4 illustrates the cumulative program as a whole during 1955 and 1956.

TABLE 4.-Cumulative diversion, 1955 and 1956

	To Starch			To Livestock Feed		
	Spec. A (cwt.)	Culls (cwt.)	Total (cwt.)	Spec. A (cwt.)	Culls (cwt.)	Total (cwt.)
1955	6,339,429	2,389,464	8,728,893	845,365	600,392	1,445,757
1956	10,892,979	4,330,873	15,223,852	1,682,769	1,683,236	3,366,055
Total	17,232,408	6,720,337	23,952,745	2,528,134	2,283,628	4,811,812

	Total Diversions				
	Spec. A (cwt.)	Culls (cwt.)	Total (cwt.)	Percent of total U.S. production diverted	Total Obligation
1955	7,184,794	2,989,856	10,174,650	4.5	$3,182,002.83
1956	12,575,748	6,014,109	18,589,857	7.6	$4,988,805.00
Total	19,760,542	9,003,965	28,764,507		$8,170,807.83

Source: "Weekly Report of Irish Potato Diversion Operations, Program XMD 3A", U.S.D.A. Publication, 1955, 1956, and 1957.

It can be observed from Table 4 that the diversion program has been a relatively "inexpensive" program for the government to operate. It also can be observed that the starch diversions have been much more important than the livestock diversions during the two years. Furthermore, in absolute terms the diversion program was much larger in 1956 than in 1955. The question now arises pertaining to the magnitude of the program during each payment period. This question will be analyzed as well as noting important changes in timing that took place in the diversion operation in 1956.

Table 5 illustrates the relative importance of the diversion program in terms of total production, peak month of diversions, and peak month of Specification A diversions for the five states concerned. This table was included to illustrate the relative importance of diversions in these five states in 1955 and 1956; but most importantly, it illustrates the shifts in the peak months of diversions from the 1955 program to the 1956 program.

Tables 6a through 6e indicates the relative magnitude of diversions during each payment period in the two years for the five states concerned. Similar shifts in timing of diversions can be noted from the table also.

Producers in Colorado during the 1955 marketing year diverted approximately 6 per cent of a total production of 9.1 million hundredweight as contrasted to approximately 9.5 per cent of a total production of 10.2 million hundredweight in 1956.[1] In 1955 the peak month of diversions fell within the October to December 31 payment period. The peak month of diversions during 1956 was in March while the peak month

---

[1] See Appendix III for monthly diversion figures relating to quantity, specification, and total obligation in Colorado as well as the remainder of the diversion states.

TABLE 5.-Importance and timing of diversions in five diversion states, 1955-1956

State	Percent of Total Production Diverted		Peak Month of Diversions		Percent of Total Diversions Accomplished During Peak Month		Peak Month of Specification A Diversions		Peak Month of Specification A Diversions as a Percent of Total Diversions	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
Colorado	5.9	9.6	November	March	17.7	14.9	October	April	9.1	8.2
Idaho	5	7.3	January	May	22.7	19.8	December	May	10.7	8.7
Maine	19.8	30.1	October	March April	24.9	12.9 12.9	October	March April	21.9	10.1 10.2
Oregon	8.2	18.4	January	April	24.8	19.9	January	April	15.8	9.7
Washington	.34	7.1	January	November March	65.7	20.7 17.8	January	November March	34.6	11.9 11.0

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLES 6a through 6e.-The relative magnitude of diversions in five important diversion states during the three payment periods

	Diversions Accomplished to December 31 Percent			Diversions Accomplished December 31 to March 31 Percent			Diversions Accomplished April 1 to End of Period Percent		
	Total	Spec. A	Culls	Total	Spec. A	Culls	Total	Spec. A	Culls
Table 6a Colorado									
1955	50.14	25.65	24.48	42.96	18.79	24.17	6.90	2.45	4.45
1956	25.38	11.79	13.58	36.45	18.42	18.03	38.17	22.98	15.19
Table 6b Idaho									
1955	30.42	14.77	15.65	56.53	19.26	37.27	13.05	3.08	9.97
1956	18.18	5.41	12.77	37.35	12.03	25.32	44.46	17.69	26.77
Table 6c Maine									
1955	52.70	45.03	7.67	34.42	26.07	8.35	12.88	9.66	3.22
1956	32.08	25.11	6.97	33.17	25.55	7.62	34.75	27.79	6.93

TABLES 6a through 6e-continued

	Diversions Accomplished to December 31 Percent			Diversions Accomplished December 31 to March 31 Percent			Diversions Accomplished April 1 to End of Period Percent		
	Total	Spec. A	Culls	Total	Spec. A	Culls	Total	Spec. A	Culls
Table 6d Oregon									
1955	31.11	23.73	7.38	53.11	30.24	22.87	15.78	7.55	8.23
1956	18.04	7.93	10.11	41.22	17.47	23.75	40.74	20.20	20.54
Table 6e Washington									
1955	4.05	3.76	.29	95.95	46.47	49.48			
1956	38.24	21.43	16.81	44.89	24.89	20.00	16.87	10.71	6.16

Source: Computed from "Weekly Report of Irish Potato Diversion Operation--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957

of Specification A diversions was in the last time period. (Table 5). During the operation of the 1955 program 50 per cent of total diversion in Colorado had been accomplished before January 1. Only 25 per cent had been diverted as of that date in 1956. During the second payment period in 1955, 43 per cent was diverted with only six per cent diverted during the 30 cent payment period from April 1 to May 31. Thirty-six per cent of total diversions was accomplished during the 40 cent payment period, and 38 per cent was accomplished during the final 30 cent payment period in 1956 (Table 6a). It would appear that in 1956 the aggregative effect of the program was to supplement income rather than to indirectly raise price. This is borne out in the fact that 13 per cent more potatoes were diverted in the last payment period in 1956 than 1955 and that nearly 23 per cent of total Specification A diversion was accomplished in the 30 cent per hundredweight payment period. However, it is not argued at this point that the diversion program altered the price structure in 1955. It appeared that in 1956 a greater percentage of Colorado potatoes was diverted to the program even with the lower prices in the final time period. Colorado has only one starch plant, located in the heart of the San Luis valley production area. Still, with only one starch plant, starch diversion outranked livestock diversions in Colorado during the operation of the 1956 program. The Colorado diversion program cost approximately $115,000 in 1955 and approximately $200,000 in 1956. (See Appendix III).

Maine was by far the most important contributor to the diversion program in both 1955 and 1956. Nearly 20 per cent of a total production of 35.8 million hundredweight was diverted either to starch or livestock in 1955. Thirty per cent of a total production of 41.7 million hundredweight was diverted to these two sources in 1956. The peak month for both

total diversions and specification A diversions in 1955 occurred during October while in 1956 the peak month was March (Table 5).

Relatively speaking, somewhat the same effect observed in Colorado was observed in Maine. Nearly 53 per cent of total diversions was accomplished before December 31 during the operation of the 1955 program. In 1956 only 32 per cent was diverted prior to that date. Diversions during the December 31 to March 31 time period during the operation of the 1955 and 1956 programs were both about equal; but during the final time period of the operation of the 1955 program only 12.8 per cent was diverted as contrasted to nearly 35 per cent during the operation of the 1956 program (Table 6c).

Total diversions in Maine cost roughly 5 million dollars which was over half the total cost of the program for the two years. (See Appendix III). There are 22 starch plants in Maine; more than in Idaho, Colorado, Oregon, and Washington combined, which enables growers in the state to take advantage of the starch program more readily than in the other diversion states, except perhaps Idaho.

Five percent of the total potato crop of 33 million hundredweight in Idaho was diverted either to starch or livestock feed channels during 1955-1956. This figure rose to seven per cent of a total crop of 33.1 million hundredweight in 1956-1957. Peak month of diversions during the operation of the 1955 program was in January. The peak month in 1956 shifted from January to May. This also held true for Specification A diversions (Table 5).

Thirty per cent of total diversions was accomplished before January 1, 1956, in 1955, while only 18 per cent of total diversions had been accom-

plished during this same time period in 1956. Fifty-six per cent of total diversions had been accomplished in the December 31 to March 31 time period in 1955 while 37 per cent had been accomplished as of this same time period in 1956. Only 13 per cent of total diversions was accomplished from April 1 to the end of the program during the operation of the 1955 program while 44.5 per cent of total diversions was accomplished during this same time period during the operation of the 1956 program (Table 6b).

There are 13 starch plants located in Idaho; consequently, as in Maine, the diversions to starch were much more impportant than to livestock feed. The diversion program's total payments in Idaho for the operation of the 1955 program were $271,443. Total payments in 1956 amounted to $311,642. (See Appendix III).

Eight per cent of a totalp roduction of 7.6 million hundredweight in Oregon was diverted in 1955 and 18 per cent of a total production of 8.5 million hundredweight was diverted in 1956. As there are no starch plants within the state, total diversion activities in the state consisted of those directed to livestock channels. Some inter-state starch diversions might be possible but inter-state regulations as well as cost probably prohibit them. The same shifts in the timing of diversion activities existed in Oregon as in the other states. The peak month for both total diversions and Specification A diversions during the operation of the 1955 program occurred during January while the peak month during the operation of the 1956 program was April (Table 5). Thirty-one per cent of total diversions was accomplished in the October to January diversion period in 1955 and 18 per cent in 1956. Fifty-three per cent of total diversions was accomplished in the January to April period in 1955 and 41 per cent in 1956. Only 16 per cent of total diversions was

accomplished during the final diversion period during 1955 whereas 41 per cent of total diversions was accomplished during this same period in 1956 (Table 6d). Total cost of the program was $170,523 in 1955 and $277,845 in 1956.

Participation in the program by Washington producers increased from less than one per cent of a total production of 9.6 million hundredweight in 1955 to approximately seven per cent of a total production of 10.3 million hundredweight in 1956. Washington was the only state that no real discernible shift in peak diversions occurred. In both years peak diversion occurred relatively early in the diversion period (Table 5). Four per cent of total diversions was accomplished during the first diversion period in 1955 and 96 per cent during the January to April payment period. However, diversions in 1955 totalled only 42,893 hundredweight. Thirty-eight per cent of total diversion was accomplished during the first payment period of 1956, 45 per cent in the second, and 17 per cent in the third (Table 6e). Total payments in Washington totalled $6,730 during 1955 and rose to $179,272 in 1956. (See Appendix III).

There is one starch plant in Washington. However, starch activities were quite important in the Washington operation.

Pennsylvania, Utah and California participated in the program during part of the 1955 marketing year in addition to the five states previously discussed. However, Pennsylvania was disqualified for failure to comply with diversion regulations and did not participate in 1956. Minnesota, New York, and North Dakota also participated for a short time in 1956. North Dakota was the most important of these other states in the diversion program during 1956. However, North Dakota participated in the program only during December and January. (See Appendix III).

Diversions by all states were 4.5 per cent of total production in 1955 and 7.6 per cent in 1956 (Table 4).

Possible Reasons for the Shifts in Timing of the Diversions

There are a number of possible reasons for the shifts in timing of diversion activities in the five states observed. It could be hypothesized that the relatively small proportion of diversions in the last period of the operation of the diversion program in 1956 came as a result of, instead of a cause of, the 1956 spring price rise. That is to say as prices rose in the spring of 1956, due to factors such as the failure of the spring crop, fewer growers were willing to take advantage of the lower price for Specification A potatoes under the diversion program. This would account for the relatively small proportion of potatoes being diverted during the final period of the program. A different set of expectations could have been held by growers the following fall. They knew the plan was in existence or would probably be in existence during the 1956 crop marketing year whereas they did not in 1955. Production plans could have been adjusted upward because of the existence of the program and the previous high spring prices. The program would insure that some return could be gained on Specification A potatoes even if prices were low. This fact could have affected expectations accordingly.

This means that the program may have had the effect of narrowing the range of prices a grower could expect. The program had the effect of cushioning the very low return the grower could receive in the absence of the program. This assumption is supported by the fact that in the fall of 1956 some of the states' shipments were smaller than expected in months when the program should have had no effect. This occurred despite the

presence of increased production. However, high spring prices did not materialize in 1957 due to a large supply. This caused growers to take advantage of the program as a means to achieve some returns on Specification A potatoes during the final period of operation of the program. The hope of having spring prices rise as they had the previous spring might also have been present.

CHAPTER V

THE SEASONAL MARKETING PATTERN IN THE FIVE STATES DURING THE OPERATION OF THE DIVERSION PROGRAM

When the importance of potato production in the five state area included in this study was discussed, (Chapter III) it was noted that any government program designed to indirectly aid or support potato prices would have to alter marketings significantly in this important producing area. Some peculiar shifts in the 1956 diversion program were noted (Chapter IV) and it was hypothesized that perhaps these shifts were caused by the fact that prices were still relatively low in the last time period of the diversion program. Thus, producers continued to divert potatoes, partially in the hope to raise price and partially to gain some return on lower grade potatoes (No. 2's).

It is necessary at this point to examine the seasonal marketing pattern in this five state area and determine if it was affected by the operation of the government diversion programs during 1955 and 1956. If the program was effective the seasonal index of shipments should have been significantly smaller than the "expected" monthly index of shipments. This is because the carlot shipments figures used in the construction of the average index of seasonal variation consist only of those potatoes marketed for fresh consumption. Specification A potatoes diverted (No. 2 in quality or better), if diverted in a sufficient enough quantity, should have significantly lowered these shipments to markets for human consumption. This reasoning holds true for both starch and livestock

diversions. Livestock diversions would not appear on the carlot shipments figures as they would most likely be consumed on the farm or nearby farms. Starch diversions were handled by private trucking or other private transportation and they also would not appear on any rail or interstate truck shipment.

Table 7 indicates some of the relevant shipping point prices during the two years of the program. These prices are for washed-four-ounce-minimum potatoes and would have to be discounted if price to the grower was to be computed. The two extremes in prices are noticeable in the spring of 1956 and 1957.

Tables 8a through 8e show the actual marketing pattern in the principal diversion states in 1955 and 1956 and the "expected" marketing pattern calculated from the linear or curvi-linear trend equation. The probability that shipments could have varied from the usual marketing pattern by these amounts due to chance is included also. If there was a very low probability that these shipments could have occurred by chance, and very high diversions during the same month, it was then concluded that the diversion program altered or lowered those shipments significantly during that month.

The program did not alter the seasonal marketing pattern significantly in any month in either 1955 or 1956 in Colorado. Shipments in October, November, and December of 1955 were significantly larger. This indicated a larger than usual volume of carlot shipments during these months despite the operation of the program designed to appreciably lower them. The actual monthly values (X*) of shipments during the 1956 marketing season came very close to approximating the expected values (4) and, hence, it was obvious that they were not significantly altered during

TABLE 7.--Some average monthly shipping point potato prices (2 inch minimum or 4 ounce washed)*

	Colorado		Idaho				Maine	
	1955[a]	1956[b]	1955[c]		1956[d]		1955[e]	1956[f]
	No. 1's	No. 1's	No. 1's	No. 2's	No. 1's	No. 2's	No. 1's	No. 1's
July		3.30	3.30					
August	1.05	2.00	2.00					
September	1.40	1.90	2.00		2.20	1.10	1.00	1.50
October	2.00	2.60	1.95	.95	2.35	1.25	1.10	1.35
November	2.50	2.60	2.25	1.10	2.60	1.55	1.35	1.50
December	2.60	2.70	2.40	1.00	2.45	1.35	1.35	1.55
January	3.00	2.70	2.85	1.25	2.35	1.30	1.85	1.85
February	3.70	2.70	3.00	1.35	2.20	1.25	1.85	1.70
March		1.90	3.10	2.00	1.95	1.20	2.35	1.41
April		1.80	3.40	2.70	1.95	1.10	2.85	1.45
May		1.65					4.00	1.65
June								

*Monthly prices are a simple average of the midpoint of weekly range of prices for each month. These monthly prices are dollars per hundredweight.

[a]Source: William H. Cosper, Marketing Colorado Potatoes and Onions (Denver: U.S.D.A., May, 1956), p. 12.

TABLE 7--Continued

Sources--continued

[b] Source: William H. Cosper, Marketing Colorado Potatoes and Onions (Denver: U.S.D.A., May, 1957), p. 10.

[c] Source: John A. Kennedy, Idaho Potatoes (Idaho Falls: U.S.D.A., April, 1956), p. 18.

[d] Source: Ibid., April, 1957, p. 19.

[e] Source: S.W. Russel and M. R. Savage, Maine Potatoes (Presque Isle: U.S.D.A., May, 1956), p. 6.

[f] Source: Ibid., May, 1957, p. 6.

TABLES 8a through 8e.-The seasonal marketing pattern during the operation of the program*

	Actual Seasonal Index (x*)[1]		Expected Seasonal Index (ȳ)[2]		Standard Deviation from Regression (Sy.x)	Probability That Change Occurred By Chance[3]	
	1955	1956	1955	1956		1955	1956
Table 8a Colorado							
July	10.3	27.5	25.6	25.6	22.3	-.50	+ N.S.
August	116.9	138.0	157.5	157.2	44.3	-.40	- N.S.
September	185.5	177	191.5	193.0	33.1	-N.S.	- N.S.
October	185.8	148.1	145.9	144.2	23.3	+.10	+ N.S.
November	133.5	111.3	107.6	107.4	16.5	+.10	+ N.S.
December	136.1	109.5	112.1	114.8	15.9	+.10	-N.S.
January	140.2	133.1	122.7	121.2	24.0	+.40	+N.S.
February	109.6	97.5	114.0	113.8	30.1	-N.S.	-N.S.
March	124.8	104.6	115.7	115.4	34.3	+N.S.	-N.S.
April	52.2	92.0	63.1	62.8	24.1	+N.S.	+.30
May	3.9	61	40.0	41.1	26.0	-.20	+.40
June	0	.1	3.1	3.4	5.1		-.50
Table 8b Idaho							
July	2.0	23.8	16.7	13.8	10.3	-.10	+.40
August	31.6	46.1	52.5	52.3	13.7	-.15	-N.S.
September	43.7	63.1	68.1	61.1	18.6	-.20	+N.S.
October	111.7	139.7	147.1	146.2	22.3	-.10	-N.S.
November	154.8	147.7	156.3	157.1	18.8	-N.S.	-.50
December	160.4	131.8	158.0	160.3	3.9	-N.S.	-.001
January	153.9	150.7	152.1	151.8	20.9	-N.S.	-N.S.
February	154.7	136.1	128.5	128.5	16.5	+.20	+N.S.
March	196.9	156.6	165.8	171.0	19.9	+.20	-.40
April	143.2	136.4	124.9	131.0	25.2	+N.S.	+N.S.
May	46.7	67.0	26.8	24.6	26.9	+.50	+.20
June	.3	5.9	2.1	1.7	7.6	-N.S.	+N.S.
Table 8c Maine							
August	.05		1.9		4.6	-N.S.	
September	5.9	3.6	10.1	10.5	17.6	-N.S.	-N.S.
October	25.1	28.0	39.8	36.1	33.6	-N.S.	+N.S.
November	77.6	100.0	109.8	109.0	27.6	-.30	-N.S.
December	118.9	106.7	127.1	127.4	4.3	-.02	-.001

TABLES 8a through 8e--Continued

	Actual Seasonal Index (X^*)[1]		Expected Seasonal Index (μ)[2]		Standard Deviation from Regression (Sy.x)	Probability That Change Occurred By Chance[3]	
	1955	1956	1955	1956		1955	1956
Table 8c--continued							
January	169.4	151.6	159.4	159.5	20.1	+N.S.	-N.S.
February	185.0	174.9	172.7	173.2	21.2	+N.S.	-N.S.
March	259.7	257.0	263.5	266.7	29.8	+N.S.	-N.S.
April	253.1	222.3	218.4	221.3	29.4	+N.S.	-N.S.
May	94.6	89.8	77.0	75.9	33.5	+N.S.	-N.S.
June	10.6	64.4	18.4	17.7	18.8	-N.S.	+.05
July	.0	.67	1.0	1.4	3.1	-N.S.	-N.S.
Table 8d Oregon							
July	8.2	147.7	139.1	143.7	31.6	-.001	+N.S.
August	217.3	200.7	241.5	250.6	23.8	-.30	+.05
September	93.8	45.9	100.8	96.5	23.5	-N.S.	-.05
October	105.2	118.3	118.4	116.6	50.4	-N.S.	-N.S.
November	162.2	98.7	108.4	105.1	31.0	+.20	-N.S.
December	124.4	116.2	103.8	101.7	29.8	+N.S.	+N.S.
January	145.4	119.6	101.4	97.8	27.0	+.20	+.50
February	106.9	112.9	92.7	91.4	19.8	+N.S.	+.40
March	121.7	120.7	88.4	85.1	30.6	+.40	+.40
April	99.6	108.4	75.3	79.4	31.4	+.50	+.50
May	15.0	11.2	29.4	32.2	17.3	-.40	-.30
June	.2		.6	.4	4	-N.S.	-N.S.
Table 8e Washington							
July	12.2	117.7	237.6	240.1	99.1	-.02	-.20
August	203.9	397.4	383.7	390.1	82.7	-.02	-N.S.
September	412.9	323.5	249.6	249.8	55	+.01	+N.S.
October	291.9	162.9	154.7	152.3	42	+.01	-N.S.
November	105.7	52.8	48.6	45.6	28	+.01	+N.S.
December	35.7	34.1	29.9	27.7	23.6	+N.S.	+N.S.
January	44.5	41.8	19.5	153.4	24.2	+.30	+.20
February	32.8	24.0	20.0	17.8	18.4	+.50	+N.S.
March	37.5	24.2	24.5	24.7	23.2	+N.S.	-N.S.
April	18.1	15.8	22.6	25.0	26.3	-N.S.	-N.S.

TABLES 8a through 8e—Continued

	Actual Seasonal Index (X^*)[1]		Expected Seasonal Index (μ)[2]		Standard Deviation from Regression	Probability That Change Occurred By Chance	
	1955	1956	1955	1956	(Sy.x)	1955[3]	1956[3]
Table 8e--continued							
May	3.6	9.7	9.2	11.4	23.4	-N.S.	-N.S.
June	11.7	.1			9.4		

*Computed from Carlot Shipments of Fruits and Vegetables by Commodities, States, and Months, U.S.D.A. Publication, 1929-1956.

[1] X^* = actual individual index number for each month during 1955 and 1956.

[2] μ = expected index number in 1955 and 1956 predicted from least squares equation.

[3] Plus or minus signs preceding probability statements denotes whether the change was positive, negative, or was not significant (N.S.). If the probability was greater than .50 the change was concluded N.S.

the operation of the program (Table 8a). Merchantible stocks were slightly below normal in 1955 and 1956 however, indicating the program could have had an effect on marketings out of storage in Colorado. As both starch and livestock diversions were quite low and there was no significant difference in the actual monthly shipments as contrasted to the expected monthly shipments it was concluded that the diversion program had no influence on the Colorado marketing pattern for potatoes.

The actual seasonal shipments for the month of December in Maine in both years of the program were significantly smaller than the "expected" value for that month. This month was also the highest month of Maine diversions in 1955 and a very high one in 1956. (See Appendix III). It appeared then that the diversion program had a significant effect on the marketings during this month in Maine and could have maintained the price level

during this month. The rest of the marketing season seemed to conform to the expected marketing pattern. Shipments in the month of June, 1956, were significantly larger than expected. This happened despite the fact that Maine diverted 10 per cent more potatoes in 1956 and diverted nearly 35 per cent of total crop diverted during the final diversion period. As there was no significant differences in any of the other months it appears that the 15 per cent increase in crop size in 1956 over 1955 washed out possible aggregate effects the program would have in 1956 during these other months despite an increase of 10 per cent in total diversions (Table 8c). Merchantible stocks also were about normal in 1955 and 1956 indicating expected marketings out of storage would be about the same.

The diversion program in Idaho was second in importance only to Maine during 1955 and 1956; yet, only one month seemed to deviate from the norm in terms of marketing volume. July, August, September, and October were also very small in terms of marketings but this was before the program took full effect. As Table 8b indicates the index of shipments was significantly smaller than expected during December of 1956 only. However, as Appendix III indicates, diversions during December of 1956 were well below that for the peak month, so it appears that this deviation from expected was caused by extraneous factors. Stocks also remained about normal during these two years.

The largest share of the Oregon crop normally is marketed before January. Shipments during July of 1955 were much smaller than expected as well as in August and September of 1956. However, this was before the program took effect in both years so it appears that the shipments were smaller for reasons other than the operation of the program (Table 8d).

Merchantible stocks also remained about as expected in 1955 and 1956 indicating that about the same marketings out of storages would occur. A factor that limits the effectiveness of the Oregon program is the unavailability of starch plants. This means that all diversion activity must be directed to the livestock outlet.

Appendix III shows that the diversion program was of very minor importance in Washington during 1955. The majority of the Washington crop also is marketed quite early. The shifts to early fall marketings are illustrated by the fact that four fall months during the two years tested showed significant upward shifts in marketings (Table 8e). Shipments were possibly smaller in only two months due to the operation of the program. These months were November and March. Shipments were also smaller in February, 1957, but as diversions were not large during that month it appears they did not affect this decrease.

Summary of the Aggregate Effect of the Diversion Program

Diversions in Idaho, Colorado, and Washington all amounted to less than 10 per cent of these respective states' total production during the first two years of the operation of the program. No overall significant changes in marketings resulted in those states, nor was the monthly volume of shipments lessened to any great degree. On the other hand, an extensive effort was made in the Maine operation to divert a sizeable share of the state's total production. The final effort resulted in approximately 20 per cent of 1955 total production flowing to diversion channels and 30 per cent in 1956. The Maine operation was the most concentrated diversion effort and in the light of the other states' activities the most successful. December shipments were significantly lower than

expected in both years. In the other months tested it appears that a 15 per cent increase in production offset a 10 per cent increase in diversions. This apparently negated possible effects the program would have on the marketing pattern in these other months during the 1956 marketing year.

Production increased from 1955 to 1956 and it appears that these increases in production more than offset the increases in diversions during 1956.

The program during 1955 also appears not to have significantly lowered or altered the marketing pattern in any of these states in the aggregate. Thus, it appears that other unrelated factors must have caused any variation in the normal market supply during the spring of 1956. In the states analyzed actual carlot shipments during many months were very close to expected shipments and in some cases in 1956 they were larger than expected.

CHAPTER VI

A DISCUSSION OF RECOMMENDATIONS RELATIVE TO THE DIVERSION PROGRAM

Contrary to its more controversial predecessors, the diversion program has been a rather inexpensive program to operate in terms of total cost. However, some question arises as to its general effectiveness. With the exception of one month in Maine it appears that the program did not significantly alter the marketing pattern of the specialized potato producing states. In an overall sense both 1955 and 1956 actual monthly marketings appeared about as expected, even in peak diversion months. This, supplemented with shifts in timing of the diversion operation in 1956 shows that apparently the diversion program was abandoned in the spring of 1956 for higher returns on the open market. High diversions in the spring of 1957 when high market prices were not available illustrate that the program may have become a means to supplement income from lower grade potatoes. Various recommendations relating to improving the effectiveness of the program have been offered from different sources. In light of the results of this study the validity of these proposed changes as well as the author's recommendations will now be discussed.

Revision of Payments

The Long Range Planning Committee of the National Potato Council has suggested that a revision in the rate of payments be put into effect.[1]

---

[1] "National Potato Council News", op. cit., (September, 1956), p. 5.

Their suggestion was that payments be $1.00 per hundredweight until January 1, 75 cents per hundredweight until April 1, and 50 cents per hundredweight for the remainder of the season. Their reasons were that "the action of the spring market during the past two seasons wherein prices reached very high levels for short periods due to causes beyond anyone's control would undoubtedly induce farmers to market slowly in anticipation of much higher prices at the end of the season."[2] It is questionable that raising the diversion rates to these suggested levels would deter farmers from doing this. The possibility of a higher return could bring increased production the following year, which could over-ride possible effects that this increase in diversion rates would have. Even if this did not occur, the marginal return from higher rates of payment would be much smaller than the anticipated marginal return from a higher spring price, especially when a certain return exists in the spring. It also is apparently very difficult to lower the seasonal index of marketings in the spring, especially in those states in which peak months of marketings occur in the spring. For example, Maine in March and April of 1957 diverted well over 4000 carlots to diversion outlets; yet, the seasonal index was only 16 index points lower than expected in March and four index points lower than expected in April. Over 4000 carlot equivalents were diverted in June; yet, the index was about 40 points higher than expected. These marketings were in months of lower payments also. During March of 1956 the seasonal index was about 10 points lower than expected with a volume of diversions of about 2400 carlot equivalents. The index was 30 points higher in April with a volume of diversions of about 1800 carlot equivalents. During the operation of the 1955 program over 4800 carlot

---

[2] Ibid.

equivalents had been diverted by October 31. This volume of diversions just about equalized actual shipments with expected shipments.

The volume diverted in Idaho during both years appeared to approximate the amount in excess of that required to maintain the normal marketing pattern. Thus, despite lower diversion payments and the volume of spring diversions in both years, marketings were about as expected. Hence, it is questionable that changing the payment rates would accomplish the effect of lowering the winter marketings of these winter marketing states. With the possibility of some return on lower grade potatoes in the spring months it is probable that growers would take this opportunity as an avenue of marketing. Thus, they would still withhold potatoes until spring if prices were very low in winter months. Hence, diversions would pile up at a time when they would do no good. Higher payments might also result in higher production, with lower prices bringing demand for higher payments and so on.

Another suggested change in the diversion program was a higher rate of payment for potatoes to be diverted to livestock feed. The reasoning behind this was that potatoes have a starch value of 25 cents per hundredweight. A 50 cent per hundredweight diversion price was paid in addition to this, making the price to growers 75 cents per hundredweight during the first diversion period. The payment for diversion to livestock feed was a flat 50 cents per hundredweight, with no compensation for labor or time involved in the mutilation process. However, as S. R. Smith, Director of the Fruit and Vegetable Division, United States Department of Agriculture, pointed out to growers, computations of net returns failed to assign a feed value to potatoes. As he stated:

The difference between the 34½ cent net return from starch

> and the $7\frac{1}{2}$ cent net return from feed is due almost entirely to an acknowledged 35 cents per hundredweight valuation of potatoes for starch and a questionable amount for feed. In some areas potatoes for feed are valued at 25 cents per hundredweight or more which, if applied to the growers example would lift the net return to $32\frac{1}{2}$ cents. This compares favorably with the $34\frac{1}{2}$ cents obtained from starch.[3]

As the U.S.D.A. has left the responsibility of providing diversion outlets for lower quality potatoes to the potato industry it appears that it would be quite hard to manipulate payment rates between segments of the program.

It can be recalled that Maine producers diverted 20 and 30 per cent of total Maine Production In 1955 and 1956. Therefore, they bore a great deal of the responsibility in providing for diversion outlets for the commodity. Evidently some members of the Maine industry believe that they can assume the major responsibility in the diversion program and still maximize total revenue.[4] This could be true with certain conditions existing. If members of the Maine industry only divert lower

---

[3] Ibid., (November-December, 1956), p. 4.

[4] E. Perrin Edmunds, President of the Maine Potato Council at that time was quoted at a Maine potato industry meeting as saying: "We started with a bum market at $1.00 a barrel last year and wound up with $10.00 a barrel. We did the job last year and we should duplicate it. All of us helped and by coordinating our efforts again, I feel sure we can do it again but it won't be easy. We can gripe that the department didn't give money for our diversion potatoes, but the U.S.D.A. has made its decision and there probably won't be a reversal. We've got to take what we've got and make the most of it." "The Packer" (Kansas City: Packer Publishing Co., November 2, 1956), p. 1.

At that time Maine industry representatives decided to divert one-third of its total crop which it eventually succeeded in accomplishing.

E. E. Gallahue also stated that apparently much of the success of the Maine marketing year was due to the Maine diversion program. E. E. Gallahue, "Maine Potatoes, Problems and Progress", Agricultural Marketing (Washington, D.C.: U. S. Department of Agriculture, October, 1957), pp. 12-14.

grades of potatoes when the diversion payment is higher than the market price total revenue would be maximized under any condition. However, the final result of an arbitrary decision to ultimately divert one-third of their total production, come what may, could result in non-maximization of total revenue; especially since total industry diversions were only 4.5 and 7.6 per cent of total production in 1955 and 1956. It appears that Maine industry members are making the assumption that there is a low degree of substitutability between Maine potatoes and potatoes from other areas. Thus, the demand for Maine potatoes would be relatively inelastic. If this assumption were true it would pay Maine producers to divert lower grades of potatoes even if the market price was slightly higher than the diversion price. The restriction in the quantity of marketable potatoes would cause a rise in price that would more than compensate growers for the sacrifice in revenue from diverting.

Is this assumption true? Although the demand for the commodity as a whole is quite inelastic it is likely that different "brands" of potatoes are good substitutes. This means that if there is a disproportionate rise in the price of one particular "brand" of potato, consumers will tend to substitute another for it. It is very likely then that the demand for Maine potatoes alone is quite elastic. Because of this substitution effect producers from other states could profit from the Maine operation at the expense of Maine diverters. In the event of a price increase in the case of an elastic demand for Maine potatoes, total revenue to be gained from continued diversions would be less than that to be derived by marketing them for food. Thus an attempt by Maine producers to "lift the industry by its boot straps" could result in their sacrificing total revenue.

A final recommendation concerning the feasibility of stockpiling potatoes to be fed later to livestock could result in an abuse of the program. Mutilating the potatoes provides a safeguard that potatoes upon which payments have been made will not be resubmitted for additional payment or channelled into the market for food. The performance bond provides a similar service. Such abuses were among factors causing the death of the old program.

A Possible Plan for Revision of Payments

It appears that the diversion program as it operated in 1955 and 1956 did not bring about a significant change in monthly marketings, despite heavy diversion during some months. Diversions were especially heavy in the spring of 1957. This enabled growers to supplement income when there was not a great deal of chance of raising the industry price level. Thus a degree of uncertainty has again been removed from the industry. The following plan could possibly eliminate some of these shortcomings.

It has been observed that heavy marketings in the five states studied occur during three or four fairly discernible peak months. These peak months are: November, December, January, and March in Idaho; February, March, and April in Maine; August, September, and October in Colorado; and, July, August, October, and November in Oregon and Washington. An average of 50 per cent of total carlots shipped in these states in 1956 were shipped during these month. Appropriate indexes could be computed or approximated and peak months of marketings determined for other fall states concerned. The program would be administered in about the same manner and would contain most of the

important features of the present program. However, some important revisions would be incorporated. The first revision would be that the program would not be announced until very shortly before the fall marketing season. This would keep present the element of uncertainty and minimize the assurance of government aid. Second, there would be only one payment period in the states that were able to develop an acceptable marketing plan. Payments would be made only during peak marketing months in the states concerned. The rate of payment preferably would be higher than the present rate of payment during the first payment period.

The revision of payments could have several beneficial effects. First, there would be no guaranteed return on lower grade potatoes in the spring months. Thus, there would be a minimum of holding lower grade potatoes in storage until spring on the expectation of some payment if high market prices were not realized. Second, the higher rate of payment during the one peak marketing period coupled with the absence of spring payments could induce growers to divert large quantities of potatoes during this period. Diversion of a large volume of potatoes would have the beneficial effect of lowering marketings during these peak months. Such a payment schedule could conceivably stabilize or even raise the price of the commodity during this period. Another important effect that such a payment schedule could have would be to encourage a large volume of diversions early in the marketing year; this is something that the present program experienced difficulty in accomplishing this past year. Third, because of the short duration of the diversion period, total cost of this program would probably be no higher than that of the present program.

Some changes in the administration of the program would need to be incorporated. The seasonal indexes would have to be adjusted from time to time for changes in the peak months of marketings. It was also noted that 50 per cent of total carlots shipped in 1956 were shipped during four months in Idaho and during three months in the remaining states. To alter marketings, the length of the payment period would have to be varied in the states concerned to insure that an adequate volume of diversions would be accomplished during the peak marketing period. Strict adherence to acreage marketing guides and the enforcement of marketing orders would be necessary for the success of any program of this type.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Summary

This study was primarily developed to determine the effectiveness of U.S.D.A. Irish Potato Diversion Program XMD 3A. The program was first initiated in 1955 and has been in operation during parts of 1956 and 1957. Since the program was designed to alter the normal marketing pattern for potatoes in specialized potato producing states the first part of the study was devoted to determining the importance of potato production and the normal marketing pattern in these states. The following section analyzed the operation of the diversion program. This included the relative magnitude, timing, and total cost of the program in 1955 and 1956. The effect of the diversion program on the marketing pattern of five specialized diversion states was included in the next section. The final segment of the study contained a discussion of suggested changes in the program.

Conclusions

Potato production has become a more specialized process and since the discontinuance of price supports has had a tendency to become concentrated in certain areas. Growers in a ten state area who participated in the program during 1955 and 1956 have produced an average of 70 per cent of potatoes for national consumption in the last five years contrasted against a 1929-1957 yearly average of 60 per cent. These ten states are

Colorado, Idaho, Maine, Oregon, Washington, California, Minnesota, North Dakota, New York and Pennsylvania. The first five states participated for the full duration of the diversion program during both years while the latter five did not. Failure to comply with marketing orders was one of the reasons for their non-participation. The five state group which participated has produced a yearly average of 40 per cent of potatoes for national use since 1951. This can be contrasted against a 1929-1957 yearly average of 30 per cent.

The normal marketing pattern in this important five state area was computed from reports of monthly carlot shipments for the years 1929-1955 after the feasibility of using this data was tested. The average index of seasonal variation computed and adjusted for trend for each of these five states shows that Maine and Idaho tend to market quite heavily out of storage while Colorado, Oregon, and Washington have shown a trend towards heavy early fall marketings.

Several conclusions were drawn from the analysis of the operation of the program. First, it appears that the diversion program has been relatively inexpensive to operate. Total cost of the program was approximately three million dollars in 1955 and five million dollars in 1956. Four and one-half per cent of total United States production in 1955 and slightly over seven and one-half per cent of total production in 1956 was diverted. Producers in Maine were the most important contributors to the program in 1955 and 1956. Twenty per cent of Maine production was diverted in 1955 and 30 per cent was diverted in 1956. Nearly one-half of total diversion payments were made in Maine during the two years. The majority of the other states involved diverted less than 10 per cent of total production during 1955 and 1956. Cost

of the program in these states was relatively minor.

The second conclusion in this area of the study was that shifts in the timing of the diversion operation occurred in 1956. Heavy diversions in these states took place during the spring months. These were the months when the rate of payment for diversion potatoes was lowest also. It was concluded that the largest share of diversion activity came at a time when these diversions had little effect on market prices. Since the largest volume of diversions was not accomplished early in the diversion period it was concluded that the graduated payment plan had little effect in encouraging heavy diversions during the first payment period of the program.

One main conclusion was derived from the analysis of the effect of the diversion program in altering the marketing p attern of these five states. With the exception of one month in the Maine operation it was concluded that apparently the diversion program had little aggregate effect in altering the marketing pattern of these states. Because the marketing pattern in this five state area appeared to be normal in the spring of 1956, any variation in the normal supply during that time must be attributed to factors other than the diversion program.

BIBLIOGRAPHY

Books

Benedict, Murray, and Stine, Oscar. The Agricultural Commodity Programs. New York: The Twentieth Century Fund, 1956.

Croxton, Frederick E. and Cowden, Dudley J. Applied General Statistics. New York: Prentice Hall, 1955.

Dixon, Wilfred I. and Massey, Frank J. Introduction to Statistical Analysis. New York: Mc Graw Hill, 1957.

Lewis, Elwood E. Methods of Statistical Analysis in Economics and Business. New York: Houghton Mifflin Co., 1953.

Schickele, Rainier. Agricultural Policy. New York: McGraw Hill, 1954.

Simpson, George and Kafka, Fritz. Basic Statistics. New York: Norton and Company, 1957.

Snedecor, George W. Statistical Methods. Ames: Iowa State College Press, 1953.

Waite, Warren C. and Trelogan, Harry C. Agricultural Market Prices. New York: Wiley and Sons, 1948.

Walker, Helen M. and Lev, Joseph. Statistical Inference. New York: Holt, 1953.

Bulletins

Anonymous. Carlot Shipments of Fruits and Vegetables by Commodities, States, and Months. Washington, D.C.: U. S. Department of Agriculture, 1929-1957.

Anonymous. Potatoes. Statistical Bulletin No. 122. Washington, D.C.: U. S. Department of Agriculture, Bureau of Agricultural Economics, 1953.

Anonymous. Potatoes - Sweetpotatoes. Statistical Bulletin 190. Washington, D.C.: U. S. Department of Agriculture, Agricultural Marketing Service, 1956.

Anonymous. Potatoes and Sweetpotatoes. Washington, D.C.: U. S. Department of Agriculture, Agricultural Marketing Service, 1957.

Casper, William H. Marketing Colorado Potatoes and Onions. Denver: United States Department of Agriculture, 1956 and 1957.

Foote, R. J. and Fox, Karl A. Seasonal Variation: Methods of Measurement and Tests of Significance. Agriculture Handbook 48. Washington, D.C.: U. S. Department of Agriculture, Bureau of Agricultural Economics, 1952.

Gray, Roger W., Sorenson, Vernon L. and Cochrane, Willard. An Economic Analysis of the Impact of Government Programs on the Potato Industry in the United States. University of Minnesota Experiment Station: North Central Regional Publication No. 42, 1954.

Kennedy, John A. Idaho Potatoes. Idaho Falls, U. S. Department of Agriculture, 1956 and 1957.

Russel, S. W. and Savage, M. R. Maine Potatoes. Presque Isle, U. S. Department of Agriculture, 1956 and 1957.

Shuffet, D. Milton. The Demand and Price Structure for Selected Vegetables. U. S. Department of Agriculture Technical Bulletin 1105. Washington, D.C., 1954.

Articles and Periodicals

Anonymous. National Potato Council News. Washington, D.C.: National Potato Council, September, 1956.

Anonymous. "The Packer". Kansas City: Packer Publishing Co., November 2, 1956.

Anonymous. "Weekly Report of Irish Potato Diversion Operations—Program XMD 3A". Washington, D.C.: Fruit and Vegetable Division, Agricultural Marketing Service, U. S. Department of Agriculture, 1955, 1956, and 1957.

Anonymous. "Weekly Shipment Summary of Fruits and Vegetables". Washington, D.C.: Market News Service, Fruit and Vegetable Division, Agricultural Marketing Service, U. S. Department of Agriculture, January - July, 1957.

Gallahue, E. E. "Maine Potatoes, Problems and Progress". Agricultural Marketing. Washington, D.C.: U. S. Department of Agriculture, October, 1957.

APPENDIX I

UNITED STATES DEPARTMENT OF AGRICULTURE
Commodity Stabilization Service
Washington 25, D. C.

[illegible], 1956

FRESH IRISH POTATOES-LIVESTOCK FEED DIVERSION PROGRAM XMD 3a

IMPORTANT NOTICE TO PROSPECTIVE PARTICIPANTS.

[illegible] the terms and conditions under which the program for [illegible] diversion of potatoes [illegible] will be conducted and copies of the forms which [illegible] This program will be in effect only in those states and areas which develop [illegible] to the diversion of culls and low quality potatoes.

The purpose of the program is to assure that potatoes diverted by him under this program will be used for livestock feed and to provide for payment for such diversion. A grower may divert his own potatoes and feed them to his own livestock or sell them to others for use as livestock feed. A feeder may purchase diversion potatoes and divert them to his own use as livestock feed or divert and sell them to others for use as livestock feed. Any individual, partnership, corporation, association or other organization may likewise purchase potatoes and divert them to their own use as livestock feed or divert and sell them to others for use as livestock feed.

Participants in the program will be required to:

1. File Application Form CSS-117 in triplicate with their County ASC office and obtain approval for participation. The approval will be in the form of a diversion authorization issued by the State ASC office.

2. File a performance bond on Form CSS-117 with the first application for participation.

3. Arrange with the Federal or Federal-State Inspection Service for an inspector to determine the quality and quantity of potatoes diverted and to certify that diversion was accomplished. Participants will be required to pay the cost of such inspection services.

4. Provide scale tickets, weighing facilities or volume measurements for use in verifying the quantity of potatoes diverted.

5. Provide equipment and facilities, and cut, chop, slice, gouge, crush, cook, or ensile the potatoes in the presence of the inspector. The potatoes shall be processed by any of these methods so as to render them unsuitable for re-entry into the normal channels of trade as potatoes. Details may be obtained from the Federal or Federal-State Inspection Service.

6. Submit claim for payment on properly executed Form CSS-118 "Invoice and Certificates of Inspection and Diversion."

7. When requested to do so, sign a letter of release to relinquish diversion authority for quantities not diverted during the effective period of the Diversion Authorization.

8. Participants are cautioned that no payments will be made in connection with potatoes diverted prior to the approval of their application or in the absence of an inspector.

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL MARKETING SERVICE

FRESH IRISH POTATOES—LIVESTOCK FEED DIVERSION PROGRAM XMD 3a

[Reprinted from Federal Register, dated October 6, 1956]

Chapter V—Agricultural Marketing Service, Department of Agriculture

Subchapter B—Export and Domestic Consumption Programs

PART 519—FRESH IRISH POTATOES

SUBPART—FRESH IRISH POTATOES LIVESTOCK FEED DIVERSION PROGRAM XMD 3a

Sec.

519.130 General statement.
519.131 Administration.
519.132 Area.
519.133 Period of program.
519.134 Rate of payment.
519.135 Eligibility for payment.
519.136 Application and approval for participation.
519.137 Performance bond.
519.138 Period of diversion.
519.139 Determination of diversion.
519.140 Diversion to livestock feed.
519.141 Inspection and certificate of diversion.
519.142 Claims for payment.
519.143 Compliance with program provisions.
519.144 Inspection of premises.
519.145 Records and reports.
519.146 Set-off.
519.147 Joint payment or assignment.
519.148 Offsets and withholding.
519.149 Amendment and termination.

AUTHORITY: §§ 519.130 to 519.149 issued under sec. 32, 49 Stat. 774, as amended; 7 U. S. C. 612c.

§ 519.130 *General statement.* In order to encourage the domestic consumption of fresh Irish potatoes produced in the continental United States by diverting them from normal channels of trade and commerce, the Secretary of Agriculture, pursuant to the authority conferred by section 32 of Public Law 320, 74th Congress, as amended, offers to make payment for the diversion of 1956-crop potatoes for use as livestock feed, subject to the terms and conditions hereinafter set forth. Information relating to this program and forms prescribed for use hereunder may be obtained from the following:

Fruit and Vegetable Division, Agricultural Marketing Service, United States Department of Agriculture, Washington 25, D. C.

Offices of the State Agricultural Stabilization and Conservation Committees in the respective States.

County Agricultural Stabilization and Conservation Committees in the respective counties.

§ 519.131 *Administration.* The program provided for in this part will be administered under the general direction and supervision of the Director, Fruit and Vegetable Division, Agricultural Marketing Service and in the field will be carried out by the Commodity Stabilization Service through the Agricultural Stabilization and Conservation State Committees and Agricultural Stabilization and Conservation County Committees, hereinafter referred to as State and County Committees. Each State Committee will authorize one or more employees of the State Committee to act as representatives of the United States Department of Agriculture, hereinafter referred to as USDA, to approve applications for participation. State and County Committees or their authorized representatives do not have authority to modify or waive any of the provisions of this subpart or any amendments or supplements to this subpart.

§ 519.132 *Area.* This program will be effective in such States or areas as may be designated from time to time by the Director, Fruit and Vegetable Division, Agricultural Marketing Service, U. S. Department of Agriculture. Information with respect to the areas designated may be obtained from the offices listed in § 519.130.

§ 519.133 *Period of program.* This program will be effective from the date of this announcement and continue until further notice, but in any event not later than June 30, 1957.

§ 519.134 *Rate of payment.* The rate of payment per 100 pounds of potatoes meeting the requirements of Specification A as defined in § 519.140 and which are diverted as prescribed in § 519.139 will be 50 cents for potatoes diverted during the months of October, November, and December 1956, 40 cents during the months of January, February, and March 1957; and 30 cents during the months of April, May, and June 1957. No payment will be made for any fractional part of 100 pounds and such quantities shall be disregarded.

§ 519.135 *Eligibility for payment.* Payments will be made under this program to any individual, partnership, association, or corporation located in the continental United States, (a) who executes and files an application for participation on the prescribed forms, (b) whose application is approved, (c) who diverts fresh Irish potatoes directly or through any other person or persons to the producer's claim as protected in § 519.142, and who otherwise complies with all the terms and conditions of this subpart.

§ 519.136 *Application and approval for participation.* Persons desiring to participate in this program must execute a written application on Form CSS-119, "Application for Participation in Fresh Irish Potato Livestock Feed Diversion Program—XMD 3a." Each applicant must submit a performance bond as provided in § 519.137. Applications and bonds should be submitted to the County ASC Office for the county within which the potatoes are to be diverted. Applications will be forwarded to the State ASC Office and will be considered in the order received in the respective areas and in accordance with the availability of funds. Applicants will be notified of the approval or non-approval of their application. Approved applications may be modified or amended with the consent of the applicant and the duly authorized representative of the State Committee: *Provided*, That such modification or amendment shall not be in conflict with the provisions of this subpart or any amendment or supplements hereto. An approved applicant is hereinafter referred to as "the diverter."

§ 519.137 *Performance bond.* Each applicant shall submit with his first application for participation a performance bond as further assurance that the potatoes diverted pursuant to this program will be used exclusively for livestock feed. The bond shall be executed on Form CSS–119 by the principal and two individual sureties, all of whom shall agree to indemnify the USDA for any losses, claims, or payments made by USDA with respect to any quantity of such potatoes not used for livestock feed. The USDA may disapprove any bond if for any reason any surety does not in the opinion of USDA afford USDA full protection and security.

§ 519.138 *Period of diversion.* The potatoes in connection with which payments are to be made must be diverted (a) after the date of approval of the diverter's application, (b) within the time period specified in the approved application, and (c) in any event on or before June 30, 1957.

4681-WASH

§ 519.139 *Definition of diversion.* Diversion of potatoes for use as livestock feed as used herein means the preparation of potatoes for feeding to livestock by cutting, chopping, slicing, gouging, crushing, cooking, or ensiling so as to render them unsuitable to enter into normal channels of trade and commerce as potatoes.

§ 519.140 *Diversion specifications.* Potatoes in connection with which payments will be made must meet the requirements of "Specification A" which is hereby defined as meaning potatoes equal to or better than the quality requirements of U. S. No. 2 grade, and which have either a minimum diameter of 2 inches or a minimum weight of 4 ounces, with no tolerance being allowed for defects or undersize. Long varieties of potatoes which by clipping ends or second growth could be made to meet the quality requirements of U. S. No. 2 grade need not be so clipped to be classed Specification A but the portions which customarily would be clipped off shall not be considered as meeting the requirements of Specification A and this weight shall be deducted in determining the weight of those potatoes in the lot which do meet the requirements of Specification A.

§ 519.141 *Inspection and certificate of diversion.* Prior to diversion the potatoes shall be inspected by an inspector authorized or licensed by the Secretary of Agriculture to inspect and certify the class, quality, and condition of fresh Irish potatoes. The diverter shall be responsible for requesting and arranging for inspection sufficiently in advance of the diversion so that the inspector can be present to determine the proportion of potatoes in each lot which meet the quality requirements of Specification A. The inspector shall also verify the quantity of potatoes being diverted and that such potatoes have been diverted as defined in § 519.139. The diverter shall furnish such scale tickets, weighing facilities, or volume measurements as determined by the inspector to be necessary for ascertaining the net weight of the potatoes being diverted. The cost of inspecting, verifying the quantity, certifying that diversion has been performed, and issuing certificates thereof shall be borne by the diverter. Certificates shall be prepared on Form CSS–118 "Invoice and Certificates of Inspection and Diversion."

§ 519.142 *Claim for payment.* In order to obtain payment the diverter must submit a properly executed "Invoice and Certificates of Inspection and Diversion," Form CSS–118, to the State ASC Office which approved his application. All such claims shall be filed not later than August 31, 1957.

§ 519.143 *Compliance with program provisions.* If USDA determines that any quantity of potatoes diverted under this program was not used exclusively for livestock feed purposes, whether such failure was caused directly by the diverter or by any other person or persons, the diverter shall not be entitled to diversion payments in connection with such potatoes and shall be liable to USDA for any other damages incurred as a result of such failure to use the potatoes exclusively for livestock feed purposes. USDA may deny any diverter the right to participate in this program or the right to receive payments in connection with any diversion previously made under this program, or both, if USDA determines that: (a) The diverter has failed to use or caused to be used any quantity of potatoes diverted under this program exclusively for livestock feed purposes, whether such failure was caused directly by the diverter or by any other person or persons, (b) the diverter has not acted in good faith in connection with any transaction under this program, or (c) the diverter has failed to discharge fully any obligation assumed by him under this program. Persons making any misrepresentation of facts in connection with this program for the purpose of defrauding the USDA will be subject to the applicable civil and criminal provisions of the United States Code.

§ 519.144 *Inspection of premises.* The diverter shall permit authorized representatives of USDA at any reasonable time to have access to his premises to inspect and examine such potatoes as are being diverted or stored for diversion, and to inspect and examine the diverter's facilities for diverting potatoes, in order to determine to what extent there is or has been compliance with the provisions of this program.

§ 519.145 *Records and accounts.* If the diverter sells or otherwise disposes of potatoes diverted pursuant to this program to any other person or persons for use as livestock feed, the diverter shall keep accurate records and accounts showing the details relative to the diversion, and disposition of such potatoes. The diverter shall permit authorized representatives of USDA at any reasonable time to inspect, examine, and make copies of such records and accounts in order to determine to what extent there is or has been compliance with the provisions of this program. Such records and accounts shall be retained by the diverter for two years after date of last payment to him under the program.

§ 519.146 *Set-off.* If the diverter is indebted to USDA or to any other agency of the United States, any amount due the diverter hereunder may be withheld or set off against such indebtedness, unless the diverter requests otherwise in accordance with the provisions of the last sentence of § 519.143. Any such withholding or set-off shall not operate to release the diverter of the right to contest the existence or amount of the indebtedness involved, either by administrative appeal or by legal action.

§ 519.147 *Joint payment or assignment.* The diverter may name a joint payee on the claim for payment or may assign, in accordance with the provisions of the Assignment of Claims Act of 1940, Public Law 811, 76th Congress, as amended (31 U.S.C. 203; 41 U.S.C. 15), the proceeds of any claim, to a bank, trust company, or credit lending agency, or other recognized financing institution: *Provided*, That such assignment shall be recognized only if and when the assignee thereof files written notice of the assignment with the authorized representative of USDA who approved the application, together with a true copy of the instrument of assignment, in accordance with the instructions on Form CSS–66 "Notice of Assignment," which form must be used in giving notice of assignment to USDA. The "Instrument of Assignment" may be executed on Form CSS–347 or the assignee may use his own form of assignment. The CSS forms may be obtained from the State ASC Office or the Washington office shown in § 519.130.

§ 519.148 *Officials not to benefit.* No member of or delegate to Congress, or Resident Commissioner, shall be entitled to any share or part of any payment resulting from this program or to any benefits that may arise therefrom, but this provision shall not be construed to extend to such a contract if made with a corporation for its general benefit or to any such person acting in his capacity as a farmer.

§ 519.149 *Amendment and termination.* This subpart may be amended or terminated at any time but the amendment or termination shall not be effective earlier than the date of filing with the Federal Register Division. No amendment or termination shall be applicable to any potatoes diverted before the effective time of such amendment or termination.

NOTE: The record-keeping and reporting requirements contained herein have been approved by, and subsequent requirements will be subject to the approval of, the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

Dated: October 4, 1956.

[SEAL] S. R. SMITH,
Authorized Representative of the Secretary of Agriculture.

FORM CSS-117
(9-25-56)

U. S. DEPARTMENT OF AGRICULTURE
COMMODITY STABILIZATION SERVICE

STATE

COUNTY

APPLICATION FOR PARTICIPATION

FRESH IRISH POTATOES LIVESTOCK FEED DIVERSION PROGRAM XMD 3a

NOTE: Submit this form in an Original and 2 copies to ASC County Office.

I (we) hereby apply for payment to be made in accordance with the terms and conditions of the above named program and for approval of the diversion for use as livestock feed of not to exceed _____ hundredweight of fresh Irish potatoes meeting the requirements of Specification A.

I (we) agree that the entire quantity of such potatoes will be used for livestock feed only. I (we) understand that it is my (our) responsibility to assure myself (ourselves) that such potatoes are actually used for feed purposes only and that the sale or disposition of the potatoes by me (us) to any other person or persons will not in any way relieve me (us) of responsibility in the event the potatoes are used for other than feed purposes.

(SIGNATURE)

(TITLE)

(TELEPHONE NO.) (DATE OF APPLICATION)

PLEASE PRINT OR TYPE
NAME

ADDRESS (ST. AND NO., CITY AND STATE)

DIVERSION AUTHORIZATION

(DIVERSION AUTHORIZATION NO.)

(DATE)

above application is hereby approved for the diversion for use as livestock feed of not to
ed hundredweight of fresh Irish potatoes meeting the requirements of
ification A. The diversion of such potatoes shall be accomplished within the above indi-
State and County, and shall be completed not later than (MONTH) (DAY) (YEAR)

(AUTHORIZED REPRESENTATIVE OF THE

FSCM (SS-119
9-25-56)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL STABILIZATION SERVICE

PERFORMANCE BOND

FRESH IRISH POTATO LIVESTOCK FEED DIVERSION PROGRAM XMD 3

KNOW ALL MEN BY THESE PRESENTS:

of _____, in the State of _____

as principal, and _____, of _____

in the State of _____, and _____

of _____, in the State of _____

as sureties, are held and firmly bound unto the United States Department of Agriculture (hereinafter referred to as USDA), in a penal sum computed by multiplying the total quantity of potatoes covered by approved applications as referred to below by the applicable rate of diversion payment provided under the program, lawful money of the United States, to be paid to the USDA, to which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above named principal has made application, and may from time to time make additional applications, for payments for the diversion of fresh Irish potatoes into use as livestock feed pursuant to the terms and conditions of the above named program, and

WHEREAS, the regulations of the USDA require the principal to give bond to the USDA with surety to indemnify the USDA before approval will be given to the principal's application or applications.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above named principal shall faithfully and fully utilize such potatoes as may be diverted pursuant to such applications exclusively for livestock feed, whether such use for feed is by the principal or by any other person or persons, then this obligation to be void; otherwise to remain in full force and effect.

The above-bounden principal hereby consents and expressly agrees to furnish a new bond of indemnity with satisfactory surety (sureties) whenever hereafter the surety (or sureties) on this obligation, for any reason, does not in the opinion of USDA afford the USDA full protection and security.

Sealed with our seals, and dated this _____ day of _____ in the year one thousand nine hundred and _____.

One witness, with full address, to each signature.

As to _____
(NAME OF PRINCIPAL)

_____ _____ (SEAL)
(SIGNATURE OF WITNESS) (SIGNATURE OF PRINCIPAL)

(STREET AND NUMBER) (CITY) (STATE)

As to _____
(NAME OF FIRST SURETY)

_____ _____ (SEAL)
(SIGNATURE OF WITNESS) (SIGNATURE OF SURETY)

(STREET AND NUMBER) (CITY) (STATE)

As to _____
(NAME OF SECOND SURETY)

_____ _____ (SEAL)
(SIGNATURE OF WITNESS) (SIGNATURE OF SURETY)

(STREET AND NUMBER) (CITY) (STATE)

NOTE: IF THE PRINCIPAL IS A CORPORATION, ATTACH EVIDENCE OF AUTHORITY TO EXECUTE THIS FORM.

UNITED STATES DEPARTMENT OF AGRICULTURE
Commodity Stabilization Service

Approved: _____

(TITLE)

_____, 19__

INSTRUCTIONS

The following instructions should be strictly observed in executing Performance bonds:

1. NAMES. The full names of the principal and sureties must be written in the body of the bond and so signed to the bond, including the first name (spelled out) and the middle name or initials.

2. WITNESSES. - The signature of each party must be made in the presence of one person, who must sign his name as witness. All erasures and interlineations on the bond must be noted by the witnesses, who must certify that they were made before the execution of the bond.

3. RESIDENCE. - The residence and post-office address (giving number and street, where the residence is so designated) of the principal and each surety and witness must be given.

4. SURETIES. - The sureties on the bond, must be two in number and citizens and residents of the United States. County Committeemen, Community Committeemen, and employees of the County offices shall not be eligible to sign as sureties. A married woman will not be accepted as a surety.

5. CERTIFICATE OF AUTHORITY. - The official character and authority of the person or persons executing the bond in the name of the principal shall be certified by the secretary or other officer who shall be an officer other than the officer executing the bond) on the form at bottom of bond when a corporation is principal. In lieu of such certificate there may be attached to the bond copies of so much of the records of the principal as will show the official character and authority of the officer signing, duly certified as correct under the corporate seal by the secretary or other authorized officer as aforesaid. If the corporation has no seal, such records of authority must be sworn to by the certifying officer before a person authorized to administer oaths for general purposes, and such person must affix his seal.

6. UNINCORPORATED COMPANIES, ETC., AS PRINCIPAL. - When an unincorporated company, society, lodge, or association is principal a copy of the resolution or minutes of the meeting of the proper governing body of the association, under seal of the association (if it has a seal), authorizing an officer or officers to execute the bond must be attached thereto. If the company has no seal, the copy of the resolution should be certified as correct under oath before a notary public or other officer authorized by law to administer oaths (who must affix his official seal) by the secretary or other competent officer of the association.

7. MISCELLANEOUS. - If the Principal is an individual doing business under a company title, he must make affidavit that he is the sole owner of the business and execute the bond individually as sole owner of the company named. If a partnership is the Principal, the names of the individuals should be inserted as principals on the bond, thus: "John Jones and James Smith, composing the firm of Jones and Smith", or "John Jones and James Smith, composing the partnership of John Jones & Co." and the bond should be signed by each member of the partnership.

TO BE EXECUTED WHEN THE PRINCIPAL IS A CORPORATION, ASSOCIATION, ETC.

I, the undersigned, certify that I am the _____ Secretary of _____ named
(NAME OF PRINCIPAL)

as principal in the within bond; that _____ who signed the said bond on

behalf of the principal, was then _____ thereof; that I know his signature
(TITLE)

thereto is genuine; and that said bond was duly signed, sealed, and attested for and in behalf of said principal

by authority of its governing body:

(SEAL OF PRINCIPAL)

FORM CSS-118
(8-25-56)
Form approved by
Comptroller General U. S.
pt. 22, 1956

U. S. DEPARTMENT OF AGRICULTURE
COMMODITY STABILIZATION SERVICE

DIVERSION AUTHORIZATION NO.

STATE

COUNTY

DO NOT USE THIS SPACE

BUREAU VOUCHER NO.

INVOICE AND
CERTIFICATES OF INSPECTION AND DIVERSION
FRESH IRISH POTATO LIVESTOCK FEED DIVERSION PROGRAM XMD 3a

NOTE: *Submit Original of this form to ASC State Office.*

For the purpose of obtaining payments, I (we) hereby certify that the potatoes described below were mine (ours) and that they were diverted by me (us) for use as livestock feed in accordance with the above named program.

QUANTITY MEETING REQUIREMENTS OF DIVERSION SPECIFICATION A ..... _____ CWT.

QUANTITY NOT MEETING REQUIREMENTS OF DIVERSION SPECIFICATION A..... _____ CWT.

TOTAL..... _____ CWT.

Claim is hereby made for payment at the rate of _____ cents per hundredweight and in the amount of $_____ for the quantity of potatoes meeting the requirements of Diversion Specification A. I (we) certify, this claim is correct and just and that payment has not been received.

PLEASE PRINT OR TYPE	SIGNATURE
NAME	
ADDRESS (STREET AND NO., CITY AND STATE)	TITLE
	DATE OF CLAIM

I hereby certify that the quantity and quality of the potatoes described above are correct as stated and that such potatoes were diverted for use as livestock feed in accordance with the above named program.

SIGNATURE _____
(LICENSED FEDERAL OR FEDERAL-STATE INSPECTOR)

FOR INSPECTORS USE ONLY	DATE OF INSPECTION AND DIVERSION	STARTED .M.	FINISHED .M.
FEE $_____	LOCATION (SHOW NAME OF TOWN AND NAME OF FARM, WAREHOUSE, FEED-LOT OR OTHER IDENTIFICATION)		
EXPENSES $_____	IF LOADED, SHOW TRUCK LICENSE OR CAR INITIALS AND NO.		
TOTAL $_____	INSPECTION AND DIVERSION CERTIFICATE SERIAL NUMBER UNDER ABOVE AUTHORIZATION		

FOR STATE OFFICE USE ONLY

AMOUNT VERIFIED CORRECT FOR	SIGNATURE OR INITIALS
$	

ASCS-WASH

FORM CSS-120
(9-26-66)

U. S. DEPARTMENT OF AGRICULTURE
COMMODITY STABILIZATION SERVICE

DIVERSION AUTHORIZATION NO.

DATE ISSUED

STATE

COUNTY

LETTER OF RELEASE

FRESH IRISH POTATO LIVESTOCK FEED DIVERSION PROGRAM XMD 3a

TO:

The above numbered Diversion Authorization authorized you to divert and claim payment for not to exceed the specified quantity of Specification A potatoes for use as livestock feed. This authorization expired on _____. Our records show the following activity under this authorization.

Quantity authorized to be diverted. . . _____ cwt. Spec. A.
Quantity actually diverted. . . . . _____ cwt. Spec. A.
Balance authorized but not diverted . _____ cwt. Spec. A.

Since this authorization is no longer in effect, please check the above statement and, if it is in agreement with your records, sign below and return this letter to us immediately so that the account for this diversion authorization can be closed.

_____
(AUTHORIZED REPRESENTATIVE OF THE USDA)

STATEMENT OF DIVERTER

The above statement is correct and the quantity not diverted is hereby released and will not be the basis for any claim for payment under the program.

_____
(SIGNATURE OF DIVERTER)

Please return immediately to:

APPENDIX II

COMPUTATION OF STANDARD DEVIATION FROM REGRESSION OR STANDARD ERROR OF THE ESTIMATE

First Degree Polynomial: $Y = a + bx$

An unbiased estimate of $\sigma_{y.x}^2$ is $S_{y.x}^2$ where

$$(1) \quad S_{y.x}^2 = \frac{1}{n-2} \sum \left\{ y_i - \left[\bar{Y} + b (x - \bar{x}) \right] \right\}^2$$

or the algebraically equivalent formula

$$(2) \quad S_{y.x}^2 = \frac{n-1}{n-2} (S_y^2 - b^2 S_x^2)$$

where S_x^2 and S_y^2 are the variances of the observed x values and of the observed y values respectively. It can be seen from formula (1) that $S_{y.x}^2$ is a mean-square deviation of sample points from the estimated regression line.

Second Degree Polynomial: $Y = a + bx + cx^2$

Total variation is computed by means of the same expression as used for linear correlation.

$$\sum y^2 = \sum Y^2 - \bar{Y} \Sigma Y$$

After determining the values of a, b, and c, we can ascertain the explained variation, which is

$$\sum y^2_{cY.xx^2} = a \Sigma Y + b \Sigma XY + c \Sigma X^2 Y - \bar{Y} \Sigma Y$$

We may now obtain $\sum y^2_{sY.xx^2}$ in the same manner as for linear correlation

$$\sum y^2_{sY.xx^2} = \sum y^2 - \sum y^2_{cY.xx^2}$$

The standard error of the estimate is

$$S_{y.xx^2} = \sqrt{\frac{\sum y^2_{sY.xx^2}}{n}}$$

APPENDIX III

TABLE 1a.--The operation of the diversion program by months, 1955 crop marketing year.

Colorado 1955-56	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
October(cwt.)	36724	12155	35158	1732	71882	13887	48879	36890	85769	$24438.50
Carlot Equivalent	101.98	33.75	97.63	4.81	199.62	38.56	135.74	102.44	238.18	
November (cwt.)	36274	10230	45099	3826	81373	14056	46504	48925	95429	$23251.00
Carlot Equivalent	100.73	28.41	125.24	10.62	225.97	39.03	129.14	135.86	265.01	
December (cwt.)	35948	6763	43841	2166	79789	8929	42711	46007	88718	$21356.50
Carlot Equivalent	99.83	18.78	121.75	6.01	221.57	24.80	118.61	127.76	246.37	
January(cwt.)	27365	11383	36933	10489	65298	21872	38748	47422	86170	$16424.70
Carlot Equivalent	76.00	31.61	102.56	29.13	178.56	60.74	107.60	131.69	239.29	
February(cwt.)	24984	9337	35217	9830	60201	19167	34321	45047	79368	$13728.00
Carlot Equivalent	69.38	25.93	97.80	27.30	167.18	53.22	95.31	125.10	220.40	
March (cwt.)	19087	9024	31190	6453	50277	15477	28111	37643	65754	$11244.80
Carlot Equivalent	53.00	25.01	86.61	17.91	139.62	42.98	78.06	104.53	182.60	
April (cwt.)	5276	5322	14994	4982	20270	10304	10598	19926	30574	$3592.30
Carlot Equivalent	14.65	14.78	41.64	13.83	56.29	28.61	29.43	55.33	84.90	

TABLE 1a--Continued

Colorado 1955-56	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
May (cwt.)	811	1611	2462	1619	3273	3230	2422	4081	6503	$ 725.90
Carlot Equivalent	2.25	4.47	6.83	4.49	9.09	8.97				
Totals (cwt.)	186469	65825	244894	41097	431363	106922	252294	285991	538285	$114,761.70
Totals--carlot equivalents	517.82	182.74	680.06	114.10	1197.90	296.91	700.62	794.19	1494.81	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 1b--The operation of the diversion program by months, 1956 crop marketing year.

Colorado 1956-57	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
October(cwt.)	22807	2877	34968	1417	57775	4294	25684	36385	62069	$12842.00
Carlot Equivalent	63.33	7.98	97.11	3.94	160.44	11.92	71.32	101.04	172.36	
November (cwt.)	32193	7936	41148	8738	73341	16674	40129	49886	90015	$20064.50
Carlot Equivalent	89.40	22.04	114.27	24.26	203.67	46.30	111.44	138.53	249.97	

TABLE 1b—Continued

Colorado 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion Obligations	
December (cwt.)	33081	16171	30078	16171	63159	32342	49252	46249	95501	$23531.50
Carlot Equivalent	91.86	44.91	83.53	44.91	175.39	89.81	136.78	128.43	265.21	
January (cwt.)	24351	27037	25655	27579	50006	54616	51388	53234	104622	$21664.50
Carlot Equivalent	67.62	75.08	71.24	76.59	138.87	151.67	142.70	147.83	290.53	
February (cwt.)	29161	21264	32398	23048	61449	44312	50425	55446	105871	$20169.00
Carlot Equivalent	80.98	59.05	89.97	64.00	170.95	123.06	140.03	153.97	294.00	
March (cwt.)	33835	44075	36805	30374	70640	74449	77910	67179	145089	$31110.00
Carlot Equivalent	93.96	122.40	102.20	84.35	196.17	206.74	216.36	186.56	402.91	
April (cwt.)	36010	43969	31372	21568	67382	65537	79979	52940	132919	$26239.00
Carlot Equivalent	100	122.10	87.12	59.89	187.12	182.00	222.11	147.01	369.12	
May (cwt.)	37550	32146	25372	17489	62922	49635	69696	42861	112557	$20908.00
Carlot Equivalent	104.28	89.26	70.47	48.58	174.73	137.84	193.55	119.02	312.57	
June (cwt.)	30190	44330	31603	20566	61793	64896	74520	52169	126689	$22356.00
Carlot Equivalent	83.84	123.10	87.76	57.11	171.60	180.21	206.94	144.87	351.82	

TABLE 1b—Continued

Colorado 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
Totals(cwt.)	279178	239805	289399	166950	568577	406755	518983	456349	975332	$198884.50
Totals—carlot equivalents	775.27	665.92	803.67	463.63	1578.94	1129.55	1441.23	1267.26	2708.49	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 2a.—The operation of the diversion program by months, 1955 crop marketing year.

Idaho 1955-56	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
October (cwt.)	18169	7291	5273	1958	23442	9249	25460	7231	32691	$ 12730.00
Carlot Equivalent	50.45	20.25	14.64	5.44	65.10	25.68	70.70	20.08	90.78	
November (cwt.)	27372	14195	47594	8151	74966	22346	41567	55745	97312	$ 20783.50
Carlot Equivalent	76.01	39.42	132.17	22.63	208.18	62.05	115.43	154.80	270.23	

TABLE 2a--Continued

Idaho 1955-56	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
December (cwt.)	142415	37500	166873	32035	309288	69535	179915	198908	378823	$ 89957.50
Carlot Equivalent	395.48	104.13	463.41	88.96	858.89	193.10	499.62	552.37	1051.99	
January (cwt.)	91556	49070	178870	61092	270426	110162	140626	239962	380588	$ 59,077.70
Carlot Equivalent	254.25	136.27	496.72	169.65	750.97	305.92	390.52	666.37	1056.89	
February (cwt.)	67626	31540	156068	44519	223694	76059	99166	200587	299753	$ 39664.60
Carlot Equivalent	187.80	87.59	433.40	123.63	621.20	211.21	275.38	557.03	832.41	
March (cwt.)	51870	30440	131447	51376	183317	81816	82310	182823	265133	$ 32925.20
Carlot Equivalent	144.04	84.53	365.03	142.67	509.07	227.20	228.57	507.70	736.27	
April (cwt.)	24455	15316	64121	31517	88576	46833	39771	135409	175190	$ 12750.36
Carlot Equivalent	67.91	42.53	178.06	87.52	245.98	130.05	110.44	376.03	486	
May (cwt.)	8645	3202	24767	6627	33412	9829	11847	31394	43241	$ 3554.60
Carlot Equivalent	24.01	8.89	68.78	18.40	92.78	27.29	32.90	87.18	120.08	
Totals (cwt.)	432018	185554	775013	237275	1207121	425829	620662	1012288	1672721	$271433.46

TABLE 2a--Continued

Idaho 1955-56	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
Totals--carlot equivalents	1199.95	523.61	2152.21	658.90	3352.17	1182.50	1723.56	2921.56	4644.65	

Source: Computed from "Weekly Report of Irish Potato Diversion Program Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 2b.--The operation of the diversion program by months, 1956 crop marketing year.

Idaho 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
October(cwt.)	21558	923	57204	3224	78762	4147	22481	60428	82909	$ 11240.50
Carlot Equivalent	59.87	2.56	158.85	8.95	218.72	11.52	62.43	167.81	230.24	
November (cwt.)	40460	7748	100581	16199	141041	23947	48208	116780	164988	$ 24104.00
Carlot Equivalent	112.36	21.52	279.31	44.98	391.67	66.50	133.87	324.30	458.17	
December (cwt.)	45836	13360	106595	23081	152431	36441	59196	129676	188872	$ 29597.50
Carlot Equivalent	127.29	37.10	296.01	64.09	423.30	101.20	164.39	360.11	524.50	

TABLE 2b--Continued

Idaho 1956-57	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
January (cwt.)	56973	23520	124887	40724	181860	64244	80493	165611	246104	$33554.50
Carlot Equivalent	158.21	65.31	346.81	113.09	505.02	178.41	223.52	459.90	683.43	
February (cwt.)	69486	19587	149514	32995	219000	52582	89073	182509	271582	$35629.00
Carlot Equivalent	192.96	54.39	415.20	91.63	608.16	146.02	247.35	506.82	754.18	
March (cwt.)	86024	33344	212106	48161	298130	81505	119368	260267	379635	$47747.00
Carlot Equivalent	238.89	92.60	589.02	133.74	827.91	226.34	331.48	722.76	1054.25	
April (cwt.)	113803	31487	219648	44682	333451	76169	145290	264330	409620	$45864.00
Carlot Equivalent	316.03	87.44	609.96	124.08	925.99	211.52	403.47	734.04	1137.51	
May (cwt.)	167716	43057	226121	39367	393837	82424	210773	265488	476261	$62373.00
Carlot Equivalent	465.74	119.57	627.94	109.32	1093.68	228.89	585.32	737.28	1322.58	
June (cwt.)	58630	10285	106317	7112	164947	17397	68915	113429	182344	$21532.00
Carlot Equivalent	162.81	28.56	295.24	19.75	458.06	48.32	191.39	514.99	506.37	
Totals (cwt.)	660486	183311	1302973	255545	1963459	438856	843797	1558518	2402315	$311642.00
Totals--carlot equivalents	1834.16	509.05	3618.34	709.63	5452.51	1218.72	2343.22	4328.01	6671.23	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 3a.—The operation of the diversion program by months, 1955 crop marketing year.

Maine 1955-56	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Total Diversion	Total Obligations
October										
(cwt.)	1554304	94	17992	95	1734296	189	1554398	180087	1734485	$ 777119.50
Carlot Equivalent	4316.30	.26	49.96	.26	4816.14	.52	4316.56	500.10	4816.66	
November										
(cwt.)	739159	1085	161643	733	900802	1818	740244	162376	902620	$ 370121.00
Carlot Equivalent	2052.64	3.01	448.88	2.04	2501.52	5.04	2055.65	450.92	2506.57	
December										
(cwt.)	891897	3576	199053	1745	1090950	5321	895473	200798	1096271	$ 447,737.00
Carlot Equivalent	2476.80	9.9	552.77	4.8	3029.57	14.78	2486.73	557.62	3044.34	
January										
(cwt.)	633452	3642	211253	1561	844705	5203	637094	212814	849908	$ 254951.00
Carlot Equivalent	1759.10	10.11	586.65	4.33	2345.74	14.45	1769.21	590.98	2360.19	
February										
(cwt.)	541828	2868	168108	1170	709936	4038	544696	169278	713974	$ 217878.40
Carlot Equivalent	1504.66	7.96	466.84	3.25	1971.49	11.21	1512.62	470.08	1982.71	
March (cwt.)	661017	3738	207950	1520	868967	5258	664755	209470	874225	$ 265902.50
Carlot Equivalent	1835.64	10.38	577.48	4.22	2413.12	14.60	1846.02	581.70	2427.72	

TABLE 3a—Continued

Maine 1955-56	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
April (cwt.)	499818	2483	158816	996	658634	3479	502301	159812	662113	$ 150792.60
Carlot Equivalent	1387.99	6.89	441.03	2.76	1829.02	9.66	1394.89	443.80	1838.69	
May (cwt.)	180848	1431	66886	744	247734	2175	182279	67630	249909	$ 52470.70
Carlot Equivalent	502.21	3.97	185.74	2.07	687.96	6.03	506.19	187.81	694.00	
Totals (cwt.)	5702323	18917	1191701	8564	7056024	27481	5721240	1362265	7083505	$2537052.40
Total—carlot equivalents	15835.34	52.48	3309.35	23.73	19604.56	76.29	15887.87	3783.01	19670.88	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations—Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 3b—The operation of the diversion program by months, 1956 crop marketing year.

Maine 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
October (cwt.)	889504		153865		1043369		889504	153865	1043369	$ 444752.00
Carlot Equivalent	2470.15		427.28		2897.44		2470.15	427.28	2897.44	

TABLE 3b--Continued

Maine 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diverion	Totals Obligations
November (cwt.)	1105474	7158	328432	2340	1443906	9498	1112632	330772	1443404	$ 556315.50
Carlot Equivalent	3069.90	19.88	912.05	6.50	3981.96	26.38	3089.78	918.55	4008.33	
December (cwt.)	1163016	18314	382391	6493	1545407	24834	1181357	388884	1570241	$ 590679.00
Carlot Equivalent	3229.69	50.93	1061.89	18.03	4291.59	68.96	3280.63	1079.93	4360.56	
January (cwt.)	954583	24251	306301	8195	1260884	32446	978834	314496	129330	$ 408562.00
Carlot Equivalent	2650.88	67.34	850.60	22.76	3501.47	90.10	2718.22	873.36	3591.58	
February (cwt.)	952924	5511	286410	1612	1239334	7123	958435	288022	1246457	$ 383374.00
Carlot Equivalent	2646.27	15.30	795.36	4.47	3441.63	19.78	2661.57	799.84	3461.41	
March (cwt.)	1257600	6285	350334	1786	1607934	8071	1263885	352120	1616005	$ 501988.00
Carlot Equivalent	3492.35	17.45	972.88	4.96	4465.23	22.41	3509.81	977.84	4487.65	
April (cwt.)	1271207	5721	339223	1515	1610430	7236	1276928	340738	1617666	$ 388620.00
Carlot Equivalent	3530.14	15.89	942.02	4.20	4472.16	20.09	3546.03	946.23	4492.26	
May (cwt.)	982961	3794	244189	1104	1227150	4898	986755	245293	1232048	$ 296206.00
Carlot Equivalent	2729.68	10.54	678.11	3.07	3407.80	13.60	2740.22	681.18	3421.40	

TABLE 3b--Continued

Maine 1956-57	Spec. A Starch	Spec. A Livestock	Culls Starch	Culls Livestock	Total Starch	Total Livestock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
June(cwt.)	1207992	10045	279695	2327	1487687	12372	1218037	282022	1500059	$ 365411.00
Carlot Equivalent	3354.60	27.89	776.71	6.46	4131.31	34.36	3382.49	783.17	4165.66	
Totals(cwt.)	9785261	81106	2670840	25372	12456101	106478	9866367	2696212	12562579	$ 3935907.50
Totals--carlot equivalent	27173.66	225.22	7416.90	70.45	34590.59	295.68	27398.90	7487.38	34886.29	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 4a.-The operation of the diversion program by months, 1955 crop marketing year.

Oregon 1955-56	Spec. A Starch	Spec. A Livestock	Culls Starch	Culls Livestock	Total Starch	Total Livestock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
October(cwt.)	5195		1641		6836		5195	1641	6836	$ 2597.50
Carlot Equivalent	14.42		4.56		18.98		14.42	4.56	18.98	
November(cwt.)	55694		10946		66640		55694	10946	66640	$ 27847.00
Carlot Equivalent	154.66		30.40		185.06		154.66	30.40	185.06	
December (cwt.)	87811		33672		121483		87811	33672	121483	$ 43905.50
Carlot Equivalent	243.84		93.51		337.36		243.85	93.51	337.36	
January (cwt.)	98944		56827		155771		98944	56827	144771	$ 44747.10

TABLE 4a—Continued

Oregon 1955-56	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diverion	Obligations
January(cont.)										
Carlot Equivalent		274.77		157.81		432.58	274.77	157.81	432.58	
February (cwt.)		45735		39818		85553	45735	39818	85553	$ 18293.80
Carlot Equivalent		127.01		110.57		237.58	127.01	110.57	237.58	
March (cwt.)		44834		46674		91508	44834	46674	91508	$ 17933.80
Carlot Equivalent		124.51		129.61		254.12	124.51	129.61	254.12	
April (cwt.)		34867		35709		70576	34867	35709	70576	$ 11469.20
Carlot Equivalent		96.83		99.16		195.99	96.83	99.16	195.99	
May (cwt.)		12431		15584		28015	12431	15584	28015	$ 3729.20
Carlot Equivalent		34.52		44.28		78.80	34.52	44.28	78.80	
Totals (cwt.)	385511		240871		626382		385511	240871	626382	$ 170523.10
Totals--carlot equivalents	1070.57		669.90		1740.47		1070.57	669.90	1740.47	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations—Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 4b.--The operation of the diversion program by months, 1956 crop marketing year.

Oregon 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion Obligations
October (cwt.)	1770		1068		2838		1770	1068	2838 $ 884.50
Carlot Equivalent		4.92		2.96		7.88	4.92	2.96	7.88
November (cwt.)	39226		44184		83410		39226	44184	83410 $ 19613.00
Carlot Equivalent		108.93		122.70		231.63	108.93	122.70	231.63
December (cwt.)	83545		113540		197085		83545	113540	197085 $ 41773.50
Carlot Equivalent		232.00		315.30		547.31	232.00	315.30	547.31
January (cwt.)	101483		133920		235403		101483	133920	235403 $ 43719.00
Carlot Equivalent		281.82		371.90		753.71	281.82	371.90	753.71
February (cwt.)	71255		105716		176971		71255	105716	176971 $ 28503.00
Carlot Equivalent		197.87		293.57		491.45	197.87	293.57	491.45
March (cwt.)	101523		133335		234858		101523	133335	234858 $ 40609.00
Carlot Equivalent		281.93		370.27		652.20	281.93	370.27	652.20
April (cwt.)	152160		161045		313305		152160	161045	313305 $ 53228.00
Carlot Equivalent		422.55		447.22		870.05	422.55	447.22	870.05
May (cwt.)	118103		118619		236722		118103	118619	236722 $ 35631.00
Carlot Equivalent		327.97		329.40		657.37	327.97	329.40	657.37
June (cwt.)	46949		42866		89815		46949	42866	89815 $ 14084.00
Carlot Equivalent		130.38		119.04		249.42	130.38	119.04	249.42

TABLE 4b—Continued

Oregon 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
Totals (cwt.)		716014		854293		1570407	716014	854293	1570407	$ 277845.00
Totals—carlot equivalent		1988.37		2372.36		4360.73	1988.37	2372.36	4360.73	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations—Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 5a.—The operation of the diversion program by months, 1955 crop marketing year.

Washington 1955-56	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
November (cwt.)		704		55		759	704	55	759	$ 351.50
Carlot Equivalent		1.96		.15		2.11	1.96	.15	2.11	
December (cwt.)		529		42		571	529	42	571	$ 265.00
Carlot Equivalent		1.47		.12		1.59	1.47	.12	1.59	
January (cwt.)		11392		10237		21629	11392	10237	21629	$ 4556.80
Carlot Equivalent		31.62		28.43		60.06	31.63	28.43	60.06	
February (cwt.)		3132		5190		8322	3132	5190	8322	$ 1252.40
Carlot Equivalent		8.70		14.41		23.11	8.70	14.41	23.11	

TABLE 5a--Continued

Washington 1955-56	Spec. A Starch	Spec. A Livestock	Culls Starch	Culls Livestock	Total Starch	Total Livestock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
March (cwt.)	761		851		1612		761	851	1612	$ 304.80
Carlot Equivalent	2.11		2.36		4.47		2.11	2.36	4.47	
Totals (cwt.)	15285	1233	16278	97	31563	1330	16518	16375	32893	$ 6730.50
Totals--carlot equivalent	42.44	3.43	45.20	.27	87.64	3.70	45.87	45.47	91.34	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 5b.-The operation of the diversion program by months, 1956 crop marketing year.

Washington 1956-57	Spec. A Starch	Spec. A Livestock	Culls Starch	Culls Livestock	Total Starch	Total Livestock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
October (cwt.)		16620		8702		25322	16620	8702	25322	$ 8310.00
Carlot Equivalent		46.15		24.16		70.32	46.15	24.16	70.32	
November (cwt.)	23856	63729	23720	40861	47576	104590	87585	64581	152166	$ 43972.00
Carlot Equivalent	66.25	176.98	65.87	113.47	132.12	290.45	243.22	179.34	422.56	

TABLE 5b--Continued

Washington 1956-57	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
December (cwt.)	40444	13053	30905	19525	71349	32578	53497	50430	103927	$ 26749.00
Carlot Equivalent	112.31	36.25	85.82	54.22	198.14	90.47	148.56	140.04	288.61	
January (cwt.)	20179	26359	18620	27755	38799	54114	46538	46375	92913	$ 20042.50
Carlot Equivalent	56.04	73.20	51.7	77.08	107.69	150.27	129.24	128.78	258.02	
February (cwt.)	33518	22479	18479	31742	51997	54221	55997	50221	106218	$ 22398.00
Carlot Equivalent	93.08	62.42	51.32	88.15	144.40	150.57	155.50	139.46	294.97	
March (cwt.)	14110	66515	7573	43002	21683	109517	80625	50575	131200	$ 32251.00
Carlot Equivalent	39.18	184.71	21.03	119.42	60.21	304.13	223.90	140.45	364.34	
April (cwt.)		34544		22234		56778	34544	22234	56778	$ 12264.00
Carlot Equivalent		95.93		61.74		157.67	95.93	61.74	157.67	
May (cwt.)		35670		20294		55964	35670	20294	55964	$ 10701.00
Carlot Equivalent		99.06		56.36		155.41	99.06	56.36	155.41	
June (cwt.)		8615		2760		11375	8615	2760	11375	$ 2585.00
Carlot Equivalent		23.92		7.66		31.59	23.92	7.66	31.59	

TABLE 5b--Continued

Washington 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
Totals(cwt.)	132107	287584	99297	216875	231404	504459	419691	316172	735863	$ 179272.50
Totals--carlot equivalents	366.86	798.62	275.74	602.26	642.56	1400.88	1165.48	877.99	2043.49	

Source: Computed from "Weekly Report of Irish Potato Diversion Operation--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U. S. D. A., 1955, 1956, and 1957.

TABLE 6a.-The operation of the diversion program by months, 1956 crop marketing year.

North Dakota 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
December(cwt.)	42378	55787	12297	28992	54675	84779	98165	44289	139454	$ 49083.00
Carlot Equivalent	117.68	154.92	34.15	80.15	151.83	235.43	272.60	114.66	387.26	
January(cwt.)	6930	16967	1672	9794	8602	26761	23897	11466	35363	$ 11947.50
Carlot Equivalent	19.24	47.12	4.64	27.20	23.89	74.31	66.36	31.84	98.20	
Totals(cwt.)	49308	72754	13969	38786	63277	111540	122062	52755	174817	$ 61030.50
Carlot Equivalent	136.92	202.04	38.79	107.71	175.72	309.74	348.96	146.50	485.46	

TABLE 6a—Continued

Source: Computed from "Weekly Report of Irish Potato Diversion Operations—Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 7a.-The operation of the diversion program by months, 1956 crop marketing year.

California 1956-57	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
November(cwt.)	7897		12103		20000		7897	12103	20000	$ 3948.00
Carlot Equivalent	21.93		33.61		55.54		21.93	33.61	55.54	
December(cwt.)	14141		18894		33035		14141	18894	33035	$ 7050.50
Carlot Equivalent	39.27		52.47		91.74		39.27	52.47	91.74	
January(cwt.)	21578		29047		50625		21578	29047	50625	$ 9285.00
Carlot Equivalent	59.93		80.66		140.59		59.93	80.66	140.59	
February(cwt.)	13674		16085		29759		13674	16085	29759	$ 5469.00
Carlot Equivalent	37.97		44.67		82.64		37.97	44.67	82.64	
March(cwt.)	17906		19761		37667		17906	19761	37667	$ 7162.00
Carlot Equivalent	49.72		54.88		104.60		49.72	54.88	104.60	
April(cwt.)	18851		22307		41158		18851	22307	41158	$ 6600.00
Carlot Equivalent	52.55		61.95		114.30		52.55	61.95	114.30	
May (cwt.)	6961		6457		13418		6961	6457	13418	$ 2088.00
Carlot Equivalent	19.33		17.93		37.26		19.33	17.93	37.26	
June (cwt.)	2248		1854		4102		2248	1854	4102	$ 674.00
Carlot Equivalent	6.24		5.15		11.39		6.24	5.15	11.39	

TABLE 7a—Continued

California 1956-57	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
Totals(cwt.)		103256		126508		229764	103256	126508	229764	$ 42276.50
Totals—carlot equivalents		286.74		351.32		638.06	286.74	351.32	638.06	

Source: Computed from "Weekly Report of Irish Potato Diversion Operations—Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 8a.-The operation of the diversion program by months, 1955 crop marketing year.

Pennsylvania 1955-56	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
January(cwt.)	46953		8047		55000		46953	8047	55000	$ 20569.10
Carlot Equivalent		130.39		22.35		152.74	130.39	22.35	152.74	
February(cwt.)	37866		8221		46087		37866	8221	46087	$ 15146.20
Carlot Equivalent		105.15		22.83		127.98	105.15	22.83	127.98	
March(cwt.)	43659		8954		52613		43659	8954	52613	$ 17463.80
Carlot Equivalent		121.24		24.86		146.10	121.24	24.86	146.10	
April(cwt.)	9060		2251		11311		9060	2251	11311	$ 3299.30
Carlot Equivalent		25.16		6.25		31.41	25.16	6.25	31.41	

TABLE 8a--Continued

Pennsylvania 1955-56[1]	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
May(cwt.)		507		178		685	507	178	685	$ 152.10
Carlot Equivalent		1.41		.49		1.90	1.41	.49	1.90	
Totals(cwt.)		138045		27651		165696	138045	27651	138045	$ 56630.50
Totals--carlot equivalents		383.35		76.78		460.13	383.35	76.78	460.13	

[1]Pennsylvania did not participate in the diversion program in 1956-57.

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 9a.-The operation of the diversion program by months in states of minor importance, 1955 crop marketing year

1955-56[1]	Spec. A Starch	Spec. A Live-stock	Culls Starch	Culls Live-stock	Total Starch	Total Live-stock	Diversion Totals Spec. A	Diversion Totals Culls	Totals Diversion	Totals Obligations
November(cwt.)		815		982		1797	815	982	1797	$ 407.50
Carlot Equivalent		2.26		2.73		4.99	2.26	2.73	4.99	
December(cwt.)		4118		920		5038	4118	920	5038	$ 2059.00
Carlot Equivalent		11.43		2.55		13.98	11.43	2.55	13.98	

TABLE 9a--Continued

1955-56[1]	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
January(cwt.)		14362		12860		27222	14362	12860	27222	$ 6440.90
Carlot Equivalent		39.88		35.71		75.59	39.88	35.71	75.59	
February(cwt.)		11130		12209		23339	11130	12209	23339	$ 4453.60
Carlot Equivalent		30.91		33.90		64.81	30.91	33.90	64.81	
March(cwt.)		7600		8221		15821	7600	8221	15821	$ 3039.60
Carlot Equivalent		21.10		22.83		43.93	21.10	22.83	43.93	
April(cwt.)		6850		8928		15778	6850	8928	15778	$ 2228.10
Carlot Equivalent		19.02		24.79		43.81	19.02	24.79	43.81	
May(cwt.)		1118		1091		2209	1118	1091	2209	$ 334.70
Carlot Equivalent		3.10		3.03		6.13	3.10	3.03	6.13	
Totals(cwt.)		45993		45211		91204	45993	45211	91204	$ 18963.40
Totals--carlot equivalents		127.70		125.54		253.24	127.70	125.54	253.24	

[1]California and Utah are the two states which participated in 1955-56.

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, and 1957.

TABLE 9b.--The operation of the diversion program by months in states of minor importance, 1956 crop marketing year

1956-57[1]	Spec. A		Culls		Total		Diversion Totals		Totals	
	Starch	Live-stock	Starch	Live-stock	Starch	Live-stock	Spec. A	Culls	Diversion	Obligations
December(cwt.)	8426		2757		11183		8426	2757	11183	$ 4213.00
Carlot Equivalent	23.40		7.66		31.05		23.40	7.66	31.05	

[1]New York and Minnesota are the two states of minor importance which participated in 1956-57.

Source: Computed from "Weekly Report of Irish Potato Diversion Operations--Program XMD 3A", Fruit and Vegetable Division, Agricultural Marketing Service, U.S.D.A., 1955, 1956, 1957.

Date Due
