A STUDY OF PRIMARY MARKETING COSTS FOR MANITOBA POTATOES
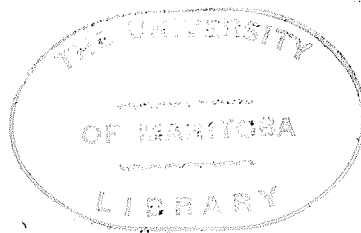
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EMMANUEL NEWTON AFFUL

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A STUDY OF PRIMARY MARKETING COSTS FOR MANITOBA POTATOES

by Emmanuel N. Afful

This study is mainly concerned with marketing costs for potatoes between the farm and the wholesale in Manitoba for the 1958-59 crop season.

First, the structure of the primary marketing system was briefly described. This was followed by a detailed study of the marketing services and costs.

Items comprising primary marketing costs were grading, transportation, storage and sack charges.

Cost estimates for these services were based on information collected from twenty-eight farms in the survey.

The description of marketing services and costs was followed by a brief analysis of potato prices for the season.

Total primary marketing costs were then compared with the potato prices for the season and for the last three years, 1956-1958.

On the basis of evidence obtained, primary marketing costs formed about 41.1% of the average gross farm price of potatoes for the season.

Wide dispersion was found in primary marketing costs between farms.

It was also found that primary marketing costs formed a substantial proportion of the farm price for potatoes. This proportion was high when price was low and low when price was high.

Total primary marketing costs were found to have a stronger influence than the wholesale margin on net returns to producers; and it was concluded that if producers could perform their marketing services more efficiently they might be able to modify the effect of the cost-price squeeze.

There was also evidence to show that additional storage operations could be profitable. To test the feasibility of storing potatoes beyond a certain time limit would require further study of the storage mechanism.

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CHAPTER 1

INTRODUCTION

Potatoes are an important vegetable, contributing a substantial proportion of the farm income in Manitoba. Sales of vegetables in Manitoba in 1958 amounted to 6,499 thousand dollars of which 805 thousand dollars, 12.5 percent was from potatoes alone.[1] Although some work has been done previously on the marketing of this product in the area, none has been directed specifically to the study of the services and costs involved in getting the crop from the harvest field to the wholesalers' door. It is in this area that the present study is undertaken.

The production of potatoes in Manitoba is rapidly moving from hand operation to machine operation making heavy investment in machinery necessary. In the other direction is the counter current of market competition which forces prices down, putting the producer in a precarious economic position, as far as his gross returns are concerned. The potato producer in Manitoba is faced with market competition from neighbouring provinces in Canada as well as from producers south of the border. Previous studies show that during the year 1944-45, 57.3 percent of all potatoes consumed in Winnipeg were produced in Manitoba. Other Canadian provinces

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[1] D.B.S., Farm Cash Income - Quarterly Review, 1958.

supplied 35.9 percent of the total, but only 6.1 percent was from the neighbouring provinces of Saskatchewan and Ontario, and 25.0 percent came from as far as the Maritimes and British Columbia. A further 6.8 percent came from southwestern United States.[1] (The situation has changed substantially since this report was written. However, quite a sizeable proportion, about 40% of potatoes consumed in the province, comes from outside the province). Despite the influx of imported potatoes into the province, the Manitoba producer enjoys a more favourable competitive position since he does not have to bear the high transportation and tariff charges. However, there is still room for him to increase his net returns, if he can find a way to reduce his marketing and other costs. But before turning to the search for the cost-reducing "elixir", it will be of interest to review some of the possible values of such a study.

Importance of the Study

Cost data are of fundamental interest not only to farmers, but also to economists, governments, industries, as well as all sections of the economy concerned with marketing policy decision making. Interest shown by these groups in cost studies does not lie in the costs themselves but in their bearing upon net income and producer prosperity.

To the individual farmer it seems axiomatic that, prices remaining the same, he can secure a higher income by reducing costs. Conversely, costs remaining the same, his income fluctuates with fluctuations in prices. There are two ways of increasing net return - by cost reduction or by price increases. The individual farmer can reduce his costs by his own actions. This he can

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[1]Elliot, R.S., et al., The Marketing of Fresh Fruits and Vegetables in Greater Winnipeg., 1946, p. 80.

do by examining his own cost data and by comparing his costs with those of other farmers.

To the legislator a marketing cost study of this nature might be useful as a basis for directing marketing policies and in determining the fairness of changesin rates; for example, freight rates, - that directly affect costs. Thus broadly stated, the objectives in farm cost studies can be grouped into two very broad classes. On the one hand there are cost studies conducted solely for the purpose of ascertaining costs of production in order that net farm price might be determined. On the other hand are cost studies made to help in allocating resources among alternative uses in order to maximize returns. Specific investigations may have both price determining and cost reducing objectives.

Objectives of the Study

Within the above context, the objective of this study will be directed primarily to the investigation of the characteristics of the marketing of potatoes in Manitoba, and the preparation of data as a basis for future research.

The term "characteristics of marketing" implies all aspects or phases of marketing. In other words, inasmuch as "marketing" includes all of the operations involved as products move from the first producer to the final consumer a complete study would include costs at the retail level. Thomsen points out that some industrial economists differentiate between processing or manufacturing operations and marketing, but in agricultural circles these operations are considered as a part of the marketing process.[1]

[1]Thomsen, F.L., Agricultural Marketing, 1951, p. 1.

The scope of the present study will cover only the primary marketing costs, that is costs incurred between the time of harvest and delivery to the wholesaler.

A secondary objective which is a natural supplement to the main objective will be the appraisal of the marketing services and costs in relation to the price of potatoes as a test of the efficiency with which producers perform primary marketing functions.

But before turning to the above objectives of the study it is of primary importance to set down a standard of measurement or hypothesis upon which conclusions can be based. Potato producers, apart from the purely internal problems of management, are faced with the economic forces of low price elasticities for their product. The existence of such low price elasticities makes it difficult for producers in the aggregate to keep their returns in line with production costs. This means the problem of low income cannot be solved through increased production which advancement in technology has made possible. The higher the production, the lower the returns since the increased output is more than offset by the declining price. Wide scale use of new technologies might result in low unit cost but producers in the aggregate would still not derive significant benefits from advances in technology. A large part of the extra produce may end up in waste while producer incomes still remain low.

It is not hard to see from the above that even though the potatoe producer will be contributing his full share towards the economic progress of the nation, his share of the economic prosperity will not be

commensurate with his contribution. The only way he might be compensated for his "unrewarding" contribution would be through price-support. This suggestion is more easily made than carried out.

However, the potato producer's situation is not altogether hopeless since he may be able to cut down his production and marketing costs in order to limit the extent of the cost-price squeeze, under the existing market conditions. He may, for example, by a more rational distribution of his productive resources cut down his costs considerably and be able to increase his profits. Still another possibility would be "proper timing" of his marketing to take full advantage of seasonal price fluctuations. Proper timing may also increase volume of sales and total returns.

In the light of the above possibilities of reducing costs to increase net returns, two hypotheses can be formulated to be followed in the study:

    a. That the potato producer in Manitoba may, by a more efficient performance of marketing services, cut down his primary marketing costs to increase his net returns.

    b. That by "proper timing" of marketing, the producer may increase his returns by taking full advantage of seasonal price fluctuations.

"Efficient performance" of marketing services may have two facets. One, those services that do not directly enhance prices may be entirely eliminated from marketing services. Elimination of such marginal services will reduce costs. Secondly, those services that are so vital that they cannot be dropped without causing a loss in price greater than the

potential saving may be performed at a reduced cost by proper and more efficient use of labour. Economies in the use of hired labour may be possible even though labour appears to be abundant and cheap.

"Timing of marketing" implies the use of storage facilities. Potatoes can be stored after harvest and released for sale in sufficient quantities to take advantage of unstable prices. The assumption here is that demand conditions in the market for potatoes are relatively stable and that the seasonality of potato production and marketing gives rise to seasonal price changes. Under such conditions a more even flow of potatoes to the market would keep violent price fluctuations under control and ensure a more stable income to the producer. The second assumption is that potatoes can be stored long enough to be able to take advantage of seasonal price fluctuations.

To achieve the above objectives the study will briefly review the potato market as it operates in Winnipeg. The study will further examine the different processes and services, particularly those that lie within the scope of the study, as will be defined in the next section. The study of the marketing services will include the description of the actual operation as well as costs involved. The estimate of costs will take account of labour charges and cost for materials used. Interest charges on capital will also be considered. Cost comparisons will then be made between farms. The description of the marketing system will cover both the producers and wholesalers.

A study of the efficiency of marketing operation requires extensive use of price data. Since this study will not extend beyond

the wholesale level, only the farm and the wholesale price levels will be considered. The effect of primary marketing costs on the net returns to the farmer will form the basis for judging the effectiveness of potato marketing at the primary level. The investigation of price series will concentrate on particular aspects such as cyclical and seasonal variations. The series will be presented in a graphic form in order to bring out clearly the above-mentioned variations. Following the examination of prices the marketing margins between them will be investigated.

Since the study covers only one crop season, data on price for that season alone are not adequate for certain steps in the analysis. To overcome this limitation, past data on prices for the Winnipeg market will be used when available. The use of such data, will permit a more complete analysis to be made.

Scope and Method of Study

Costs investigated in the study are limited to the direct costs incurred in the preparation of the harvested potatoes for the market. This definition therefore limits costs to those incurred at the primary level in the marketing system. The area of operation is confined to the period from the time the harvested potatoes are put in storage until they are sold to the wholesaler, f.o.b. Winnipeg. These costs include storage, grading, trucking and handling, freight and sack charges. Trucking into storage is considered part of harvesting and therefore not included in the study. Some minor charges such as washing and brushing, which essentially improve the appearance of the potatoes are also included. In cases where washing is required to bring the product

into a higher grade, such charges are deducted from the price. A

detailed analysis of these items of cost are treated in subsequent

sections under the respective headings. The study is limited to

growers in the three crop regions around Winnipeg who use Winnipeg

as their central market. These regions are the Red River, Winnipeg

and Springfield crop districts.

Records of deliveries were collected from 65 commercial growers

who delivered potatoes to the "Recording Office" set up for the purpose

during the period from October 1958 to April 1959. The method of record-

ing was voluntary on the part of the grower. It involved picking up

the delivery form or invoice (see Appendix L) before delivery, having

it filled out by the receiving wholesaler and returning it to the record-

ing office. The delivery form showed the address of the wholesale as

well as method of shipment and cost. This form was quite comprehensive

in its design. Besides the delivery sheets questionnaires were sent

out to each of the growers. The purpose of this was to gather as much

information as possible about the different services and costs that went

into the preparation of the crop for the market. A copy of the question-

naire used in the collection of the data is included (Appendix M) to

indicate the kind of information requested. Apart from the general

information, - name and address of the grower, and the legal description

of his farm, - provision was made for a description of the various items

that went into costof production as well as marketing.

The section on marketing, which is the subject of the present

study includes questions on methods of sale and delivery. The purpose

of this was to show the different procedures followed by producers in

marketing potatoes. For example, under "methods of sale" if the enumerator

puts down "100 percent", as sold to the wholesale, the next column, "delivered", refers to the quantity or proportion of the above sale which was delivered direct from the harvest field. The remainder of the sale which is not delivered, naturally goes into storage. Under "Method of Delivery" are subsections for, "Grading, Brushing, Loading Railway Cars, and Trucking to market. The general heading, however, appears to be a misnomer, since these items fit more appropriately into "Costs". Nevertheless, their main purpose is to show the services which help add both form and place utility to the potatoes and therefore add to costs. Form utility may not strictly apply here, since the physical nature of the potatoes is not appreciably changed. However, both brushing and washing remove dirt from the potatoes making them more presentable and thereby adding to market value.

Some difficulty was encountered in calculating storage costs, since costs for rented space and basement storage were not provided for on the forms. Cost of storage for rented space and basement could therefore not be estimated. The use of the basement of the house for storage is usually not charged for, since this is part of the house whether used to store potatoes or not. In view of the above omissions comparisons of the various methods of storage are not complete. Fortunately basement and rented storage space were used in very few cases in the survey so that their influence on storage cost would be very small.

The usefulness of any economic research depends on the reliability and adequacy of the data. The region under study is a very small section of Manitoba, but it forms the largest commercial potato producing region in the province. Any conclusions drawn from the study therefore

will serve as a good indicator of marketing costs for potatoes in the province. It should however, be made clear that only thirty of the sixty-five survey questionnaires were returned, and it was on twenty eight of these that all estimates of costs were made. This number represented only 43 percent of the growers, but it was considered a sufficiently adequate sample, since the three crop regions under study were well represented.

The most serious limitation lies in the manner of recording, both on the farm and in the recording office. Supply of information through questionnaire is usually subject to personal bias, and these records were by no means exempt from this personal defect. There was also incompleteness in coverage. This was due to the fact that recording was purely voluntary, depending only on the interest and the willingness of the producer. Deliveries are therefore under-recorded and cannot be taken as the total production of potatoes for the region for the year.

Another point requires clarification. Although the attached questionnaire covers a lot of topics on potato production and marketing, only those parts which are relevant to the subject of this thesis were used.

Throughout the study, especially the early parts, references have been made to the Elliot report on the marketing of fresh fruits and vegetables in Greater Winnipeg. It should be understood that several changes have taken place since that report was written, but in the particular cases where the report is quoted, it still remains the only available source of information.

CHAPTER 2

MARKETING

The structure of the primary marketing system is described
in this chapter. The market is made up of growers on one side and
wholesalers and retail agencies on the other. This study, however,
excludes the retail market. On the grower, or supply side, size of
farms as well as production per farm are examined; while the discussion
on the wholesale side covers volumes handled by each wholesale and the
total purchases for the season.

The Organization of the Market

To the farmer, the term "marketing" stands for the sale of
his products.[1] This is but one of the different phases of marketing.
The sale of the farm product comprises all of the operations and agencies
conducting them, involved in the movement of farm products from the farms
to final consumers; and the effect of such operations on farmers' returns.
As Robert M. Walch puts it:[2]

> Marketing is part and parcel of the modern productive
> process, the part at the end that gives point and purpose to
> all that has gone before. Marketing is getting the product to

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[1] Thomsen, F.L., Agricultural Marketing, 1951, p. 1.

[2] U.S.D.A. Marketing – The Yearbook of Agriculture, 1954, 83rd Congress,
2nd Session, House Document No. 280, p. 3.

the consumer. And it is the product too: the bread from the wheat, the cloth from the cotton, the steak from the beef, the salad from the lettuce. It is service and utility: The stores that sell the food and clothing, the railroad and trucks that carry the goods and banks, elevators, markets. It is people and work.

Put in simple terms, farm goods must be stored, transported, processsed and delivered in the form at the time and place that consumers desire.

Marketing comprises technological as well as financial operations. But for the purpose of this study the significance of the term will be narrowed down to cover only the business or economic aspects. This is the part which relates primarily to costs, prices and functions rather than the technological phase of the subject.

The potato market as it exists in Winnipeg, like all markets, is made up of two parts, (a) the suppliers or farmers and (b) the purchasers. Thus the potato market naturally operates under the two economic forces of supply and demand. Supply is controlled by certain factors. The farmer in the first instance decides the size of his farm. He chooses between competing products for the available land. In other words he chooses between the number of acres of farming space he will devote to potatoes in relation to other crops. His decision in this respect may be influenced or guided by past performance or expectations of future prices. Prospects for good prices may induce him to grow more potatoes while the opposite will take place if price expectations are poor.

The second group of controlling factors are purely external. These are the natural factors of soil and weather conditions. Through irrigation and proper soil management, these natural forces can be partially brought under control. Production or supply of potatoes for a particular season is therefore fixed by the above factors. It is assumed that, as imports come in, changes in prices will not affect the current local supply.

The forces of demand rest with the consuming public. A desire on the part of the public to eat more potatoes is transmitted backwards through the retailer to the wholesaler who demands more potatoes from the farmer. Increase in demand is indicated by higher prices. But this is only true when the supply remains unchanged. Price changes and surpluses or shortages of potatoes are often first noted in wholesale channels. Thus the wholesaler to a certain extent "discovers" the market prices.

Growers

Local supplies of potatoes come from all the crop regions in Manitoba. But by far the largest production comes from the three crop districts, Red River, Winnipeg and Springfield. These three areas together produced a total of 639,429 hundredweights, about 61% of the entire crop for the province in 1957. Production in the 1958-59 crop season by the growers included in this survey was 288,156 hundredweights on a total acreage of 1,926 acres. The 28 questionnaires on which these figures are based represent a little more than a third of the entire commercial potato producers in the area. Yields for each of the three areas, Red River, Winnipeg and Springfield were 148, 109.3 and 124.3 hundredweights per acre respectively. Variations in yield may be attributed primarily to soil, climatic and other natural factors.

Classifying producers by size of operation, Table 2.1 shows that five farms were between 0-20 acres in size, eleven were in the 21-40 and four in the 61-80 acre group. There was one each in the 81-100 and the over 101 acre farm groups. There was one farm of extremely large size, 613 acres.

Table 2.1

Size of Farm and Average Production per Acre
(Acres and hundredweights per acre)

Farm Size Acres of Potatoe	No. of Farms	Simple Average Yield per Acre Cwts.	Weighted Average Yield Cwts.
0 - 20	5	88.1	89.0
21 - 40	11	109.4	109.2
41 - 60	5	117.9	117.6
61 - 80	4	153.8	157.2
81 - 100	1	150.0	150.0
101 and over	1	149.0	149.0
ALL FARMS	27[*]	128.0	129.2

[*]Excluding the very large farm.

Weighted average yield at 89.0 hundredweights per acre was lowest on the 0-20 acre farms. Yields increased with farm size to a peak of 157.2 hundredweights per acre on the 61-80 acre farms. It then dropped to 149 hundredweights on the over 100 acre farms. This latter figure may not be representative since there was only one observation in the group.

On a per farm basis, the lowest production per acre, 75 hundredweights was found on two farms in each of the 0-20 and 21-40 acre groups. The highest yield of 187 hundredweights per acre was in the 61-80 acre group (Table 2.2). Judging from the table there is clear evidence that yields increased with scale. Yield per acre was maximum when farm size was between 61-80 acres. This is probably the most efficient farm size. However, the data available are not sufficient to permit the drawing of any definite

Table 2.2

Average Production Per Acre

Size Group (Acres)	Schedule No.	Potato Acreage	Total Production Cwts.	Yield Per Acre Cwts.
	36	613	117,696	192.0
101 and over	11	225.5	33,375	148.8
81-100	1	100	15,000	150.0
61-80	9	80	14,400	180.0
	46	80	15,000	187.5
	37	65	8,775	135.0
	2	63	7,087	112.5
Group Av. Yield/Acre				157.2
41-60	8	55	6,187	112.5
	24	55	6,188	112.5
	12	52	5,235	100.7
	10	50	5,700	114.0
	28	50	7,500	150.0
Group Av. Yield/Acre				117.9
21-40	13	40	4,860	121.5
	22	40	3,750	93.8
	20	40	4,500	112.5
	49	35	3,360	96.0
	3	33	3,960	120.0
	7	32	3,840	120.0
	56	30	2,250	75.0
	32	27	4,050	150.0
	39	25	1,875	75.0
	34	25	3,000	120.0
	16	25	3,000	120.0
Group Av. Yield/Acre				109.4

- Continued

Table 2.2 – continued

Size Group (Acres)	Schedule No.	Potato Acreage	Total Production Cwts.	Yield Per Acre Cwts.
0-20	60	20	1,500	75.0
	53	19	1,781	93.8
	55	18	2,025	112.5
	52	18	1,512	84.0
	33	10	750	75.0
Group Av. Yield/Acre				89.0
TOTAL[a]		1,312.5	170,460	3,146.8
WEIGHTED AVERAGE[a]				129.2
SIMPLE AVERAGE[a]				116.5

[a]Excluding Schedule 36, which appears atypical as to farm size.

conclusions regarding optimum size of operation. By comparison within the sample, it is found that about 75% of the farms are below the size at which maximum yields are obtained. The average farm size is 48.5 acres, and the range is 215 acres, not counting the very large farm (613 acres) which appears to be rather atypical.

The existence of many small farms in the 0-40 acre group, below the average, may be due to the fact that nearly all of the farmers reporting were part-time potato growers. In about 80% of these cases, potatoes were grown only as a supplement to the main crop which was grain. In other cases too, potatoes were grown with other vegetables. This type of small scale operation may be best suited to the Winnipeg area. The record data in Table 2.3 shows that there were only three cases in which the proportion of land given to potatoes exceeded 60% of the total cultivated acreage.

Table 2.3 — Proportion of Potato Acreage to Total Farm Size[*]

Farm Number	Total Farm Size (Acres)	Acres of Potatoes	% of Acreage in Potatoes
1	583	225	38.7
2	300	100	33.0
3	151	80	53.0
4	117	80	68.4
5	250	65	26.0
6	111	63	56.0
7	281	55	19.6
8	150	55	36.7
9	136	52	38.2
10	135	50	37.3
11	146	50	34.2
12	171	40	23.4
13	102	40	39.2
14	59	40	67.2
15	90	35	38.9
16	270	33	8.9
17	152	32	21.1
18	60	30	50.0
19	79	27	34.2
20	125	25	20.0
21	97	25	25.8
22	84	25	29.8
23	41	20	48.8
24	146	19	13.0
25	150	18	12.0
26	195	18	9.2
27	83	10	12.0
28	877	613	69.5
TOTAL	5,242	1,926	
WT. AV.	187	69.0	36.3%

[*]All 28 Farms

Table 2.4 Distribution of Growers and Total Production by Farm Size Group

Size Group	No. of Growers (Crop District)			All Districts	Production (cwt.)	Percent of Total
	3	4	5			
Large	5	7	8	20	124,609	78.4
Medium	2	11	8	21	25,640	16.1
Small	2	14	8	24	8,737	5.5
TOTAL	9	32	24	65	158,986	100.0

In two other cases the proportion was under 10% of the total cultivated area. The proportion of the total potato area, 1926 acres, to the over-all cultivated land area, 5,242 acres, was only 36.3%.

Actual sales of potatoes to the Winnipeg market was recorded by 65 commercial growers including the 28 discussed above. Total deliveries recorded at the recording office for these 65 growers was 158,986 hundredweights. This figure, however, understates the total marketings, since recording was voluntary on the part of the grower and no record was taken of that part of the product which did not pass through the recording office. Total deliveries are shown in Appendix I, Column 2. Of the 65 growers delivering to the office, 20 were classified as large producers, producing over 2,000 hundredweights. Twenty-one, producing between 700 and 2,000 hundredweights were classified as medium and all those producing under 700 hundredweights were classified as small. (Table 2.4). The 20 large producers accounted for 124,609 hundredweights or 78.4% of the total deliveries for the season, while the twenty-one medium producers accounted for 25,640. or 16.1% percent. The size classifications were selected to obtain groups of nearly equal size rather than to equalize total volumes of deliveries. When this classification was applied to the three crop regions, it was found that there was no definite pattern in the concentration of the classes. In region 3, the Red River area, there were 5 large, 2 medium and 2 small producers. In region 4, Winnipeg, there were 7 large, 11 medium and 14 small. While in region 5, Springfield, there were 8 producers in each of the three classes, large, medium and small.

The high concentration of medium and small growers in the Winnipeg area as mentioned earlier may be due to proximity to a centre of

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population. This situation has resulted in a more or less diversified market for vegetables and a profitable small scale market garden type of farming.

Receiving and Wholesale Agencies

Production should be calculated to meet the requirements of the market. At the same time the producer wants the highest return for his product. With these objectives in view, the producer normally searches for the best marketing channel and the best prices. .The potato producer has several alternative methods for selling his produce. He can sell to the wholesaler, dealer, retailer, processor or institutions, restaurants and hotels. He can also peddle his produce direct to consumers or sell as seed. As a last resort he can even trade with his neighbour, if this offers a better alternative. In all his efforts, his aim is presumably to get the highest possible return for his crop. Nineteen of the growers in the survey sold their produce to wholesalers. One sold 80% of his crop as seed and another 50% of his to institutions. On the aggregate, 91% of the crop was sold to wholesale, 3.7% as seed, 2.2% to institutions, 1% was peddled and 0.9% was sold to dealers. There were no sales to retailers or processors. The balance of 1.2% cannot be accounted for, but might be taken to represent exchange and trade between farmers. The above quantities were all received by buyers as direct purchases. There was no case of produce sold on commission or consignment basis.

Deliveries to wholesalers were made in sacks of 100, 75, 50, and 25 pound weights. (See Table 2.5). The 75 pound sack has for many years been the usual wholesale package for potatoes in Manitoba, the others being used only in limited cases.

Table 2.5

Distribution of Deliveries by Size of Package

Size of Package (Pounds)	Quantity Delivered (Cwts.)	Quantity Delivered as % of Total
100	12,496	8.0
75	142,612	88.7
50	3,828	3.0
25	49	.3
TOTAL	158,986	100

Out of the total deliveries, 88.7 were made in 75 pound bags, 8.0 percent in 100 pound bags, 3.0 percent in 50 pound bags and 0.3 percent in 25 pound bags. However, for the sake of convenience in calculation and comparisons, a standard weight of 100 pounds was adopted. Quantities and values of potatoes sold to the Winnipeg market are shown for each month from October, 1958 to April, 1959 in Table 2.6.

Table 2.6

Monthly Deliveries and Value of Manitoba Potatoes, 1958-59

Month	Quantity Cwts.	Value (dollars)
October	24,189	32,096
November	23,536	34,400
December	28,301	43,161
January	37,347	54,744
February	29,058	42,312
March	14,478	21,236
April	2,077	3,147
TOTAL	158,986	231,096

Sale of early potatoes starts from the latter part of July to early August, while harvest of late potatoes is usually in September and October. Early potatoes are usually small in quantity and high in price so that none are stored. It is, therefore, quite safe to assume in this study that all the above deliveries are from late potatoes. Deliveries were comparatively low at the time of harvest in October, but the volume built up gradually to a peak in January when a total of 37,347 hundredweights, about 23.5% of the total crop was sold. The volume then dropped gradually till the end of March and then took a sudden dip to the end of April when deliveries practically ceased. More than 85% of the crop was marketed after November 1st and almost 53% after January. During the period of low marketings, especially in March and April, interprovincial and across the border movement of potatoes into Winnipeg reaches its peak. This was also the period of high prices since transportation costs on these imported potatoes are usually high. From previous studies, the bulk of the Canadian imports comes from New Brunswick followed by Alberta, British Columbia, Ontario, Saskatchewan and Prince Edward Island in that order.[1] This situation, however, has changed since that report was written. From more recent reports,[2] the largest proportion of the late potatoes coming into the Winnipeg market came from North Dakota. This consisted of 468,375 hundredweights, on the

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[1] Elliot, R.S. et al., The Marketing of Fresh Fruits and Vegetables in Greater Winnipeg, p. 12, (Table 8).

[2] Crop and Seasonal Price Summaries Fruits and Vegetables – Part II, Marketing Service, Canada Department of Agriculture, 1957-58.

average for the last ten years. This was followed by Alberta with 113,250 hundredweights and New Brunswick with 109,875 hundredweights. Ontario, Prince Edward Island, Minnesota, British Columbia, Saskatchewan and Idaho followed in that order.

Both imports and local produce are handled by wholesalers. The names of wholesalers and quantities of the 1958-59 produce handled by each are shown in Table 2.7. The largest quantity handled by any one wholesale was 98,129 hundredweights, 61% of the entire product valued at $140,289. This was followed by three others who handled between 10,000 and 20,000 hundredweights each. The rest followed in varying quantities, between 20 and 4,000 hundredweights, the least recorded being 22 hundredweights.

Although the scope of the study does not include the market structure beyond the wholesale, it could be said in passing that a number of intermediaries exist between the wholesaler and the consumer. The wholesaler is the principal receiving agent for all produce arriving in Winnipeg, both foreign and domestic. Between the wholesaler and the consumer there is a network of retailers, chain stores, grocers, jobbers and truck operators. The last two operate mainly between the wholesale and the retail, but occasionally extend their services to the consumer. Some of the chain stores however, play a dual role acting as wholesale and retail grocers. "The gross trading profit earned by wholesalers and jobbers on imported produce seems to be reasonable and amounted to 13.1% of the landed cost in Winnipeg in 1944-45".[1]

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[1]Elliot, R.S., et al., The Marketing of Fresh Fruits and Vegetables in Greater Winnipeg, p. 41.

Table 2.7

Wholesale Agencies and Quantity of Potatoes Purchased

Name or number of Wholesale	Quantity Purchased (Cwts)	Value ($)
2104	98,129	140,289.45
745	17,286	25,786.91
2363	15,949	23,780.50
16	14,437	21,452.55
2120	4,079	6,063.60
638	2,278	3,418.05
2246	1,855	2,780.75
490	1,264	1,898.10
2477	1,112	1,778.30
A.A. Frozen Foods	752	1,103.00
1715	570.	787.40
100	513	726.90
Institutions	180	372.00
2094	143	190.00
978	131	201.25
Foodland	112	190.00
129	75	110.00
Hunters	61	90.20
300	38	50.00
Maple Fruit	22	27.00
TOTAL	158,986	231,096.51

Truck operators and peddlers play a very important part in the distribution of potatoes in Winnipeg. Their daily round of sales covers a large proportion of the consumers. Previous studies show that total purchase by peddlers in 1944-45 amounted to $136,529 and that over half of this amount was spent on Manitoba commodities. Peddlers operated for the most part during the summer and fall months when local produce was in ample supply. This undoubtedly accounts for the relatively large percentage of Manitoba produce handled by this group. Local peddlers purchased imported produce worth $64,059, local potatoes worth $30,756, local vegetables worth $38,552 and local small fruits worth $3,162.[1]

Peddlers depend partly on local wholesalers and jobbers for their supplies. Purchases from this source were made up of/7.1% of Manitoba potatoes and the rest of imported produce. However, they obtained the largest proportion, 73.9%, of their potatoes through existing facilities of the public markets. In a few cases peddlers approached growers at their farm in order to secure produce. They sometimes had more "wares" than their customers would take; in which case they sold to wholesalers and jobbers or groceries.

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[1]Elliot, R.S., et al., The Marketing of Fresh Fruits and Vegetables in Greater Winnipeg, p. 61

CHAPTER 3

MARKETING SERVICES AND COSTS

The main function of marketing is to increase the utility
of the commodity to the consumer. The attainment of this objective
may involve turning the product into a form more attractive and
suitable for consumption. For example, making potatoes into chips and
putting the chips into attractive packages may increase consumption and
the total demand for potatoes. Secondly, the attainment of the objective
may involve placing the commodity in a desired place at a desired time.
These services add form, place, and time utilities to the commodity.
thereby increasing its value in terms of money.

Washing, brushing or grading of potatoes help to make them more
presentable and therefore increase their form utility. Transportation,
or the movement of the product from the place of production to the point
where it can be most advantageously utilized, adds place utility to it.
Economically it is not the transportation agencies who add place utility,
but the potato producer who pays the transportation charges and assumes the
risk of obtaining some additional return in excess of his outlay. Time
Utility is added to potatoes when a part of the supply is stored at a
time when supply is in excess of immediate demand for consumption until

the "lean days" when they are urgently needed. The added utility in this
case may be measured by the price differential over time from the beginning
to the end of the storage period. It is sometimes argued that most of these
services, e.g. washing of potatoes, are unessential to the marketing of the
product and should therefore be eliminated in order to reduce costs. But
the extent to which the elimination of these supposedly unessential services
would affect farm prices of potatoes is yet to be shown. Elimination of
these services would be justified only if returns added by the inclusion of these
services failed to compensate for the added costs. The essential function of
marketing services is to make the product more useful to the consumer. This
contribution may be efficiently or inefficiently performed. But whether or
not the service ought to be performed can only be determined according to
the principle of relative gains or losses.

The area of marketing services treated in this study are those
which go into the preparation of the potatoes from the time of harvest
until they are sold to the wholesaler. These services include grading,
handling, trucking or transportation, packaging and storage. Costs incurred
in the execution of these services are called "marketing costs". Physical
loss through storage is also considered part of the marketing costs, since
this loss affects the net returns of the grower. In order to appreciate
the importance of the part each of the above services plays in the marketing
channel between the producer and the consumer, each process will be
considered separately.

Grading

The term grading, as used by Thomsen, is the sorting of products
into different lots, each of which have substantially the same quality

characteristics.[1] Grading is of basic importance to practically all
commodity transactions. The purpose is to establish a common language
understood by buyers and sellers as a basis for judging the quality
of a product in relation to its sales price. Product grades are useful
to all persons who engage in trade. They are also useful in describing
the quality of many consumers' retail goods. Potatoes, for example, are
purchased by people of varying income groups and for a variety of purposes.
Cooking potatoes may have qualities entirely different from chipping or
frying potatoes. In the same way people in the high income group may
prefer to buy the high grade potato at a high price and the low income
group may prefer lower grades at lower prices. The only means of meeting
these differences in preference and purchasing power is through the
separation of the product into groups having homogeneous physical
attributes. The buyer obtains the quality he wants more easily than
if he bought the ungraded product. From the sellers standpoint, grading
permits taking advantage of market preferences for different qualities.[2]

The seller gets the premium price from those able and willing
to pay, and the low quality product finds its best market among the low
income groups. Another economic advantage of grading is that once
graded products can be sold without personal inspection. Grading also
facilitates the financing of products in marketing channels, since the
warehouse receipts for the particular grade can be used as collateral
for loans from credit institutions.

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[1]Thomsen, F.L., Agricultural Marketing, 1951, p. 79.

[2]Ibid., p. 264.

Grading of farm products is done according to certain quality characteristics. Among these characteristics are colour, size, weight, shape, taste, strength, density, ripeness, etc. Each product has its own quality specifications. Potatoes are graded on the basis of maturity, physical appearance, quality and size. Quality specifications required by the Provincial Government for the sale of potatoes in Manitoba as stated in the Manitoba Vegetable Sales Act[1] are shown in Appendix A.

The official grade specifications are strictly adhered to by both producers and wholesalers. The entire potato product recorded at the office for the 1958-59 season was graded. Of the total crop graded, 97.1% was grade one and 2.9% was grade two. These were the only two grades used on the farm. Under this system all grade specifications designated in the provisions of the Act as Canada Fancy, Canada No. 1 large and Canada No. 1 come under one group as No. 1. Under this designation, potatoes called No. 1 will range from 2 to 4 inches in diameter to embody the above three grades, and should also exhibit the same quality characteristics. It should, however, be pointed out that there is a great deal of overlapping in the grade specifications between the various grades. Size is probably the best example as far as overlapping is concerned. The high quality of the grades might be due to improved harvesting and handling facilities which reduced damage to a minimum. Soil type and climatic conditions, as well as the use of fertilizers,[2] also presumably contributed to this high achievement in quality.

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[1] The Manitoba Vegetable Sales Act (S.M. 1941-42, Chap. 64), Sections 26-31.

[2] Harrington, F.M. and Wilson, E.A., Marketing Potatoes in Montana and Factors Influencing Market Quality, p. 17.

From the above it is evident that quality is affected by cultural practices. In reality, the marketing of potatoes begins with the growing of the crop. The marketing operation, however, is usually considered as beginning when the potatoes are dug.

Cost of Grading

Two methods of grading were used by farmers in the survey. These methods were (a) hand grading and (b) machine grading. The former method (see Table 3.1) seemed to be the most common among farmers. This may be due to the fact that most of the farms in the survey were small in size and the natureof their operation did not justify heavy investment in grading machinery.

In machine grading, the crew size varied from three to sixteen men, and for hand grading from one to three men. Table 3.1 shows the number of men and the volume of potatoes graded by each method. There does not appear to be any relationship between crew size and the volume of potatoes graded; nor does crew size appear to have any effects on grading costs. Normally it would be expected that there would be a strong relationship between the crew size and grading costs. However, such factors as insurance and depreciation, machine costs and the volumes graded under varied conditions must have obscured this relationship. The limited size of the sample, moreover, does not permit any detailed study in this direction.

Items included in grading cost included labour and machine costs. Labour cost was estimated at 75 cents an hour on the basis of information received through questionnaires. Machine cost included

Table 3.1

Crew Size and Volume of Potatoes Graded
(hundredweight)

HAND GRADING			MACHINE GRADING		
No. of Farm	No. of Men	Volume Graded	No. of Farm	No. of Men	Volume Graded
2	3	7088	1	4	2250
3	2	3960	9	5	14400
7	1	3840	11	7	26700
8	2	6188	12	3	5235
10	1	5700	22	6	3750
13	2	4860	36	16	117696
16	2	3000	37	6	8775
20	1	3600	39	6	1875
24	2	6187	46	3	15000
28	3	7500			
32	2	4050			
33	2	750			
34	1	1125			
49	3	3262			
52	2	1512			
53	1	1781			
56	2	2250			
60	3	1500			
TOTAL 19	35	68,153	9	56	195,681

depreciation of machinery and interest on capital invested in the equipment. Depreciation of machinery was taken as 10% of present cost and interest as 5%. Working on the basis of the above procedure, a weighted average cost of grading a hundredweight of potatoes was found to be 12.3 cents by machine and 14.6 cents by hand. The weighted average cost of grading by both methods was 12.6 cents for a hundredweight of potatoes. This figure was 0.3 cents higher than machine grading cost and 2 cents lower than hand grading costs.

When the methods are compared, it is clear that machine grading is not only more economical, but almost twice as fast as hand grading. An average of 10.9, 75-pound bags (8.2 hundredweights) are graded in one man-hour of machine operation as against 6.7, 75-pound bags (5.0 hundredweights) by hand. Machine grading, however, demands larger capital investment, but this disadvantage is offset by its efficiency and reduction in grading costs.

Within groups, machine grading cost per unit varied from a high of 23.3 cents to a low of 8.2 cents per hundredweight with a **simple average** of 14.3 cents per hundredweight and a range of 15.1 cents (See Appendix B). The largest producer within the group graded 117,696 hundredweights with a unit cost of 12 cents per hundredweight. The next two largest, grading 26,700 and 15,000 had costs of 9.8 and 8.5 cents per hundredweight respectively. The fourth largest producer had a unit cost of 23.3 cents for a total of 14,400 hundredweights graded. This high unit cost seems a little out of proportion with all comparable figures. This abnormality is probably due to the fact that this particular farm had the lowest volume output per day, resulting in rather high overhead costs per unit of output. On the lower side, the smallest volume grader with 1,875 hundredweights had a

unit cost of 18.0 cents. The next smallest grader with a little over 2,000 hundredweight had a cost of 9.6 cents per hundredweight. The third smallest had a unit cost of 18.0 cents. While odd cases of non-conformity exists within this group, there is clear evidence of scale economies. The large graders had a low unit cost compared with small graders.

The trend in hand grading is somewhat similar to that in machine grading. The two largest graders of 7,500 and 7,087 hundredweights had a unit grading cost of 14.4 and 17.1 cents respectively, while the two lowest with 1,500 and 750 hundredweights had unit costs of 24 and 20 cents respectively. The highest single unit cost of 29.0 cents was incurred on a farm where 1,781 hundredweights were graded. Costs in this group ranged from a high of 29 cents to a low of 9.6 cents per hundredweight, a range of 19.4 cents with a mean cost of 15.7 cents. The grading cost of 12.6 cents made up 20.9% of total marketing charges.

Analysis of the data showed a positive but weak relationship between volume of potatoes graded or the size of the operation and grading costs. (See Figure 3.1). Though this relationship is not as strong as would be expected, especially if the size of the sample had been a little larger, grading costs tend to vary with volume. Smaller volumes have higher grading costs than larger volumes. There is a reduction of 0.35 cents for every thousand or 3.5 cents for every ten thousand hundredweight of potatoes graded. The scatter diagram shows that grading costs are higher in the under 4,000 hundredweights group than in the larger volumes. Wide dispersions which could be attributed to several unidentified factors are also exhibited in costs within the various size groups.

Figure 3.1

Relationship Between Cost Per Hundredweight and Total Volume of
Potatoes Graded*
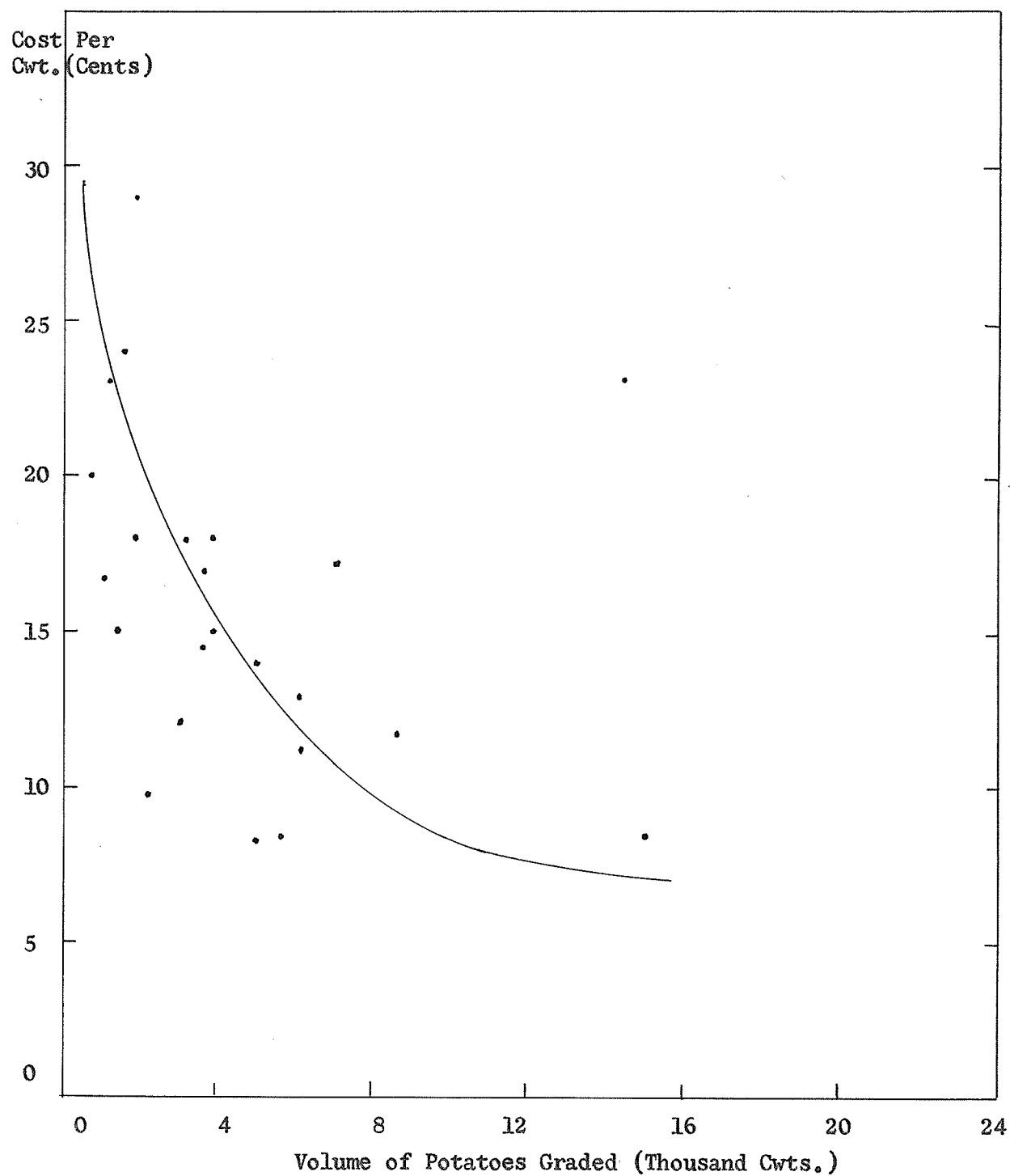
*Source Appendix B

Transportation

In a country of vast distances, of differences in climate and other natural factors; and of differences in concentration of population, transportation provides the essential link connecting the producer and the consumer. By this means all kinds of food raised in different parts of the country are made available to the housewife at a central point or market. Potatoes on the farm or a head of celery in the farmer's storage, though physically the same as the potato or celery in the housewife's basket, are entirely different economically. The one is more expensive than the other since transportation cost has been added and therefore it is economically more valuable. Transportation, therefore, creates utility in the product by moving it from one place to another, thereby raising its value in exchange to the housewife in relation to the original exchange value on the farm. The increase in price must be sufficient to cover the cost of moving the product between the two points.

Several methods are used in transporting agricultural products: railroads, trucks, water carriers and airlines. The mode of transportation is determined by the nature of the product and the distance of haulage. More perishable goods travel by the faster methods of transportation in order to reach consumers in good condition. Goods which are heavy or bulky relative to their unit value usually travel by slower modes of transportation. As yet, rail, truck and water are the three main avenues used to haul farm products. Refrigeration facilities have made long distance transportation of vegetables and other perishable foods possible. Air transportation is not yet widely utilized mainly because of high freight charges. On the other hand, truck haulage is taking an increasing share in transporting agricultural products.

Transportation Costs

Since potatoes are a bulky and heavy product relative to unit value, transportation costs are an important element in total marketing costs. Information obtained in the questionnaire provided a basis for estimating the actual average cost to the producer of transporting his potatoes to the wholesaler. The term transportation as used in this study refers only to moving potatoes from the farm to the wholesale market. Trucking to market may be straight from the harvest field or from storage. Transportation also includes "handling of potatoes" which refers to loading the potatoes in trucks or railway cars. Except in one instance where a Lockwood loader was used, all loading was done by hand.

In estimating transportation and handling costs, account was taken of depreciation and insurance on the truck used as well as interest on investment and labour cost. Estimates were based on information received from the survey. Depreciation of trucks was estimated on the basis of 20% of new value and 40% of present value. The assumption behind the use of the high depreciation rate in the latter was that, on the average, present value would be only half of new value. To get a comparable depreciation allowance for old machines whose initial price was unknown the rate was therefore doubled. License on trucks was taken as a fixed sum of $70.00 and insurance at $125.00. Operating cost depended on use in potato transportation, or potato-miles travelled. Gasoline was charged at 38 cents per gallon. Labour cost was valued at a dollar an hour. The average cost of transportation and handling, weighted by the volume of

potatoes handled, was 14.4 cents per hundredweight. On a per mile basis it cost 0.36 cents to haul a hundredweight of potatoes for one mile distance. The average cost-per-hundredweight-mile for growers who hauled for distances of 70 miles or over was 0.24 cents, while that for shorter distances was 0.44 cents (see Appendix C). On the other hand, the weighted average cost per hundredweight for the whole trip was 19.5 cents for long distance haulers and 12.9 cents per hundredweight for short distance haulers.

Theoretically, rates generally increase with the distance of haul, but at a decreasing rate owing to the effect of over-head cost distribution.[1] Comparing the estimates from this study with this normal behavior of transport rates shows complete conformity with the norm. Costs per hundredweight increased with distance hauled, while costs per hundredweight per mile decreased with distance.

A graphic analysis of the relation between transportation costs per hundredweight mile and distances travelled is shown in a scatter diagram in Figure 3.2. A free-hand curve fitted to the scatter shows that costs per hundredweight mile fall at a diminishing rate with increase in distance travelled.

Average costs per thousand pounds of potatoes hauled ranged from 6.7 cents per mile for distances of under 20 miles to 2.5 cents for distances of over 60 miles. There are, however, wide dispersions within distance groups. For distances of under 20 miles, costs ranged from 4.5 cents to 9.9 cents per mile per thousand pounds of potatoes.

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[1]Thomsen, F.L., *Agricultural Marketing*, McGraw-Hill, 1951, p. 248.

Figure 3.2

Transportation Cost Per Hundredweight Per Mile and Distance Travelled[*]

Miles Travelled
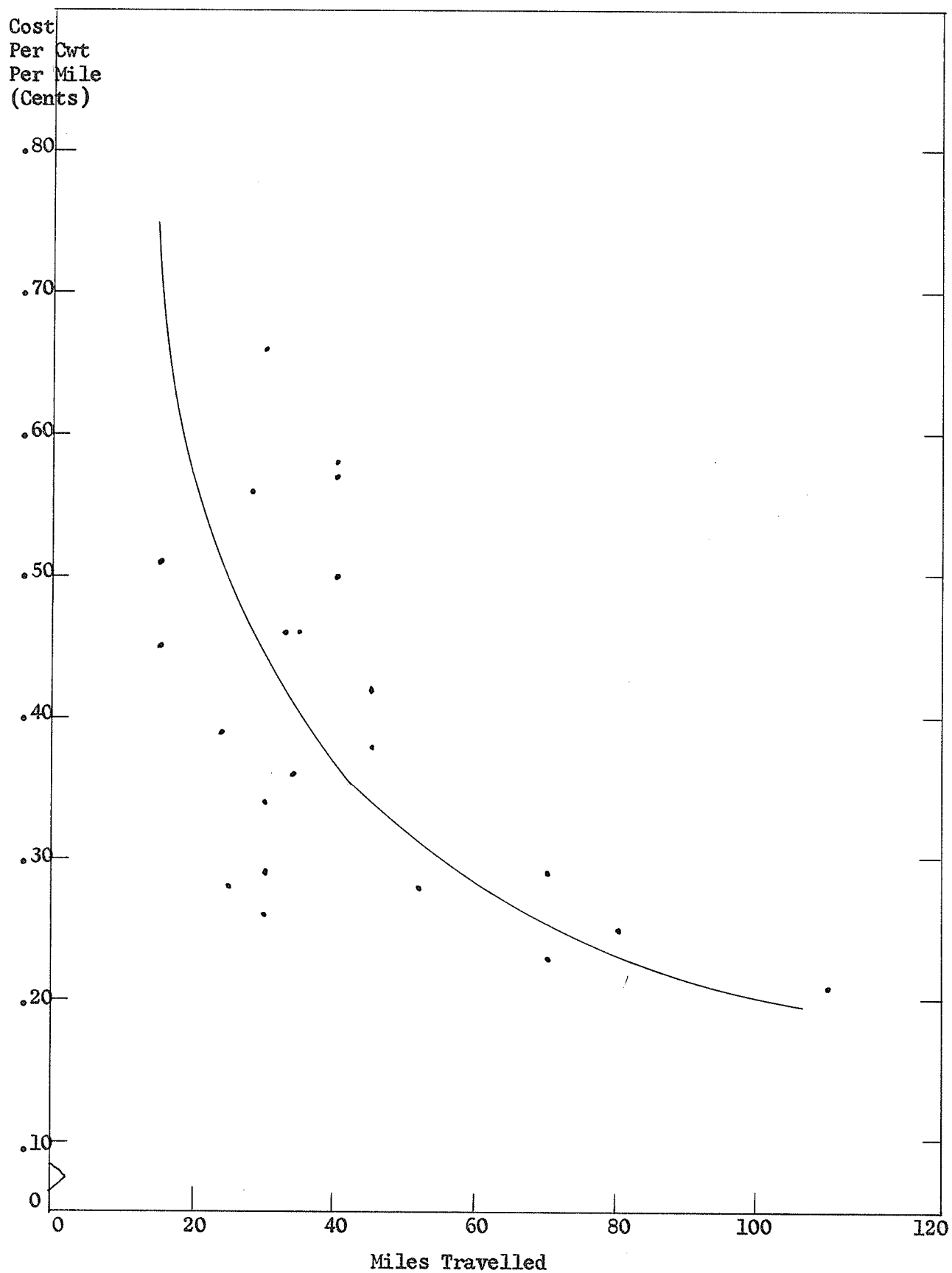
[*]Source Appendix D.

The costof 9.9 cents seems out of proportion with other rates. Two
out of the three cases in the group showed costs of 4.5 and 5.1 cents.
The high cost of 9.9 cents is attributed mainly to small loads (37.5
hundredweights) carried per trip. (See Appendix D, Column 13). Within
the 20-40 mile group costs varied between 2.6 cents and 6.6 cents per thous-
and pounds per mile, a range of 4 cents per mile. Costs were considerably
lower in the 40-60 mile radius group. There was a high of 4.2 cents and
a low of 2.8 **cents**, a range of 1.4 cents. After the 60 mile radius, costs
were relatively low - under 3.0 cents, with very little dispersion in costs.

Probably the best explanation for the wide dispersion within some
of the groups is the fact that farmers included in their transport costs
all trips they made to the city which were directly or indirectly connected
with the sale of their potatoes. In some of these trips the volume of
potatoes carried was practically negligible compared with the total distance
covered. Where such trips were included in the estimates, average transporta-
tion costs were high. Although there is no direct correlation between
number of bags carried per trip and cost per hundredweight, it can hardly
be denied that high costs will be associated with less than maximum utiliza-
tion of truck space on any particular trip. Actions of this nature, however,
are not uncommon among farmers, especially those who make frequent visits
to the city, for other purposes besides purely marketing trips.

One of the problems encountered in the study was the application
of the estimated weighted transportation rates to the rest of the growers
who did not submit survey sheets. This problem was particularly difficult
in the case of those in the Winnipeg area for whom distances hauled could

not be determined. Ordinarily it would be expected that transportation
rates for potatoes would be minimum within a certain distance radius, then
increase gradually to a point after which it would probably level off.
Lacking adequate information, the procedure adopted was to apply the
weighted average cost of 14.4 cents to all deliveries by truck within 35
mile radius of Winnipeg. For all growers beyond the 35 mile radius, the
weighted average cost per hundredweight per mile of 0.36 cents was applied
according to approximate total distance travelled.

There are shortcomings in estimations of this nature, but it
is expected that with a sufficiently large number of cost estimates,
some errors will cancel out. For example in the application of the
14.4 cents for the 35 mile radius, long distance haulage will compensate
for short distance haulage within that radius.

Other forms of transport used in hauling potatoes were Public
Service Vehicle, trucks and railroads. Freight rates for these were
obtained from the respective companies and were therefore less subject
to estimation errors. The over-all average transportation or freight
cost weighted by the quantity of potatoes hauled by all the 65 growers
was 22.6 cents per hundredweight f.o.b. Winnipeg. Quantities and costs
by each method of haulage are shown in Table 3.2.

Table 3.2

Volume and Cost of Potatoes Handled by Each Type of Transport[*]

	Volume (cwts)	% of Total Volume	Total Cost ($)	% of Total Cost	Cost/ Cwt. (¢)
Grower's Truck	96,321	60.6	11,774	32.7	12.2
Buyer's Truck	634	0.4	91	0.5	14.4
P.S.V. Truck	40,600	25.5	8,849	24.7	21.8
Rail	21,430	13.5	15,033	42.1	70.1
TOTAL	158,986	100.0	35,747	100.0	22.5

[*]Actual costs are used where available, otherwise weighted average cost from estimates used.

By far the largest volume of potatoes, 96,321 hundredweights or 60.58% of the total, was delivered to the Winnipeg market by grower's own truck at a total cost of $11,774. Next in importance were Public Service Vehicles with a value of 40,600 hundredweights, 25.54% at a cost of $8,849. Railways handled 21,430 hundredweights at a cost of $15,033 including loading of car at 10 cents per 100 pound bag and 7.5 cents per 75 pound bag. Buyers' Trucks handled only 634 hundredweights, 0.4%, for $91. The high cost of rail transportation for the small volume hauled is partly due to the high handling charges.

The part played by trucks in marketing farm products in recent years is growing in importance. According to a 1948 survey by the U.S. Bureau of Agricultural Economics, only 11% of agricultural commodities

moved from the farm to railroad or dock for further shipment by the grower.[1] Most of the remainder, or 88% of all agricultural commodities were shipped direct to the final market by truck. Although this finding applied only to the United States, the same rising trend in truck use can be found in Canada. Out of the total product of 158,986 hundredweights in the survey, 137,555 hundredweights or 87% was hauled by truck. (See Table 3.2). Sixty-one percent of the entire product was hauled by owner or grower's own truck. The fact that nearly all of these hauls were in the immediate vicinity of the Greater Winnipeg area is an indication of the nature of truck or garden farming which has developed in the Winnipeg market area.

The growing importance of truck haulage may be due to the fact that handling charges are lower and faster movement cuts down spoilage. Reduced handling and spoilage means reduction in marketing costs. More-over, greater speed gives the shipper or grower an opportunity to take advantage of a favorable market.

The most important transportation problem, however, is that of rates rather than service. A high transportation rate is apt to take a more than reasonable share of the farmers gross receipts. The over-all transportation cost of 22.6 cents in the study forms 37.5% of total primary marketing costs. This is extremely high compared with a similar study made in the United States which found transportation to be 11% of the total marketing bill in 1958.[2] The low cost in the

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[1]Purcell, Margaret R., "Haulageof Products from Farms", The Marketing and Transportation Situation, U.S. D.A., B.A.E., June 1948.

[2]Church, Donald E., "Inter-City Transportation and the Marketing Bill for Farm Food Products", The Marketing and Transportation Situation, U.S.D.A., May 1949. The total marketing bill includes retail. The transportation cost in this study is only at the primary level. That may be why it appears to be so high. It might compare favourably with the U.S. figure if the retail margins had been included.

latter case might be due to several factors, among which are special characteristics such as distance of haulage, volume hauled and special freight rate regulations. An example of freight regulations was the use of "hold downs", in applying certain maxima to the rate increases on various agricultural products including potatoes in the U.S. Another reason is that the U.S. estimates exclude charges for local truck movements.[1] This comparison, however, does not seem to be appropriate under the above conditions, since the same conditions do not exist in Canada.

Transportation costs for potatoes to Winnipeg have increased steadily over the past decade. This increase may be said to apply to railways as well as other forms of transportation. Rail freight rates for a hundredweight of potatoes from Carman to Winnipeg rose from 14.0 cents in 1948 to 30 cents in 1958. The same increase applied to shipments from Portage la Prairie. During the same period, the rate between Winkler and Winnipeg rose from 18.0 cents to 36 cents per hundred weight. (See Table 3.3).

Although freight charges are only one of the many costs which confront producers, they form a substantial proportion, 37%, of total primary marketing costs. A study of the changes in freight rates will therefore give an idea of the extent to which cost of moving potatoes to the market affects the economic position of the potato farmer. Table 3.3 shows the average percentage change in freight rates since 1948 for the three main rail lines which handled the largest proportion of the

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[1] U.S.D.A. Miscellaneous Publication No. 738, Food Transportation and What it Costs, p. 13.

Table 3.3

Changes in Rail Freight Rates for potatoes
from selected points to Winnipeg[*]
(cents per hundredweight)

Year	Carman	Portage	Winkler	Average Rate	Index of Rate[a]
1948	14.0	14.0	18.0	15.3	100.0
1949	17.5	17.5	19.0	18.0	117.6
1950	20.0	20.0	21.5	20.5	140.0
1951	22.0	22.0	25.0	23.0	150.3
1952	23.0	23.0	26.0	24.0	156.9
1953	26.0	26.0	29.0	27.0	176.5
1954	27.0	27.0	29.0	27.7	181.0
1955	27.0	27.0	29.0	27.7	181.0
1956	29.0	29.0	32.0	30.0	196.1
1957	30.0	30.0	33.0	31.0	202.6
1958	30.0	30.0	36.0	32.0	209.1

[*]Rates supplied by the C.P.R. and C.N.R. companies in Winnipeg.
Comparable rates for truck and P.S. vehicles were not available.
Rates for P.S.V. trucks probably increased, but at a less rapid rate.
Truck rates on cattle from Carman to Winnipeg increased by 12.5%
between 1948 and 1957, according to data collected by the Department
of Agricultural Economics, University of Manitoba.

[a]Index based on 1948 = 100

1958-59 crop. Average rail rates for the three points have gone up

from an index of 100 in 1948 to 209 in 1958. Increases however, have

not been uniform over the period. Rates increased at an average rate

of 15% of the 1948 base for the first four years after 1948, while

there was only 4% increase between 1953-55. There was a 15% increase

between 1955 and 1956, and still further increase each year to 1958.

Fluctuations in rail freight rate increases might be due to competition

from truck and other means of transportation. Although data are not

available to show corresponding increases in truck rates for potatoes,

it can be expected that these rates will have increased to a lesser

degree than rail rates.

Effects of Increasing Freight Rates

Generally, increases in freight rates have identifiable

economic effects. Both the producer and the consumer share in the

added burden created by these changes. If relative elasticities of

demand and supply remain unchanged, increased transportation costs

tend to raise prices to consumers and to decrease returns to producers.

If consumers continue to buy about the same quantities of potatoes as

before the increase in transportation rates, most of the increase

could be passed on to the consumer. This would leave the economic position

of the producer virtually unchanged. On the other hand, if consumers are

sensitive to higher prices and cut down their consumption because of

higher prices, the higher transport costs are reflected back to the farmer

in the form of lower prices. The middleman, whose services and charges

are more or less fixed, remains unaffected.

In addition to its effects on prices and costs, continuous increases in transportation costs may also lead to substitution of some other food products for potatoes with a resultant reduction in the returns to potato producers. Producers may eventually direct their attention and resources to more profitable alternatives. Thus an increase in transportation costs in the long run brings changes in consumption as well as production. Both changes are detrimental to the potato industry.

Storage

Like some other agricultural products, potato production is characterized by extreme seasonality and by large and irregular year-to-year fluctuations in production. In Manitoba the period of relative scarcity for potatoes is in the spring and early summer, just before the harvest of new potatoes in August. These periods of relative abundance and relative scarcity make storage of large quantities of potatoes necessary if Manitoba production is to supply the demands of consumers beyond the months of harvest.

The twenty-eight growers in the survey had between them a total storage space of 228,563 hundredweights. Storage facilities included different types of structures, ranging from pits in the ground to insulated concrete or metal structures above ground. Potatoes were stored for a period of from six to ten months, with the modal period around eight months. The storage period extended from the time of harvest, about September, - to about April or May when the bulk of the product was delivered to the wholesaler. All deliveries to the wholesaler after October 1 could be regarded as coming from storage since few sales are

made from the harvest field after that date. Thus sales for each month measure withdrawals from storage at any particular time (See Table 2.6).

Cost of Storing Potatoes

Four different types of storage facilities were used: Pit Storage, Above Ground Storage, Basement Storage and Rented Space.

Pit Storage is usually made by excavating sufficient earth to form walls and a floor. Roof construction consists mostly of straw and dirt supported by timber, iron rails or poplar poles. The larger cellars were constructed so as to permit the entrance of trucks. Some of them were equipped with electric lights. This type of storage was used for 110,475 hundredweights, 48.3% of the product stored during the season.

The second type of storage is "Above Ground" storage. "Above Ground" storage is usually of concrete, wooden or metal construction, insulated on the inside to permit maintenance of a stable temperature. Nearly half of the season's crop, 112,125 hundredweights or 49.1% was in this type of storage. This method of storage was found mostly among small producers for whom construction of a large storage space was not necessary or economical. In a few cases, too, a basement was used as an "over-flow" storage. This was particularly the case for some of the large growers whose product was greater than their available storage space could handle. However, only 5,213 hundredweights or 2.3% of the entire season's crop, was in this type of storage.

"Rented Space" was a fourth storage facility used. There were

required a higher capital investment than "Pit Storage", while the
reverse was the case for maintenance. Secondly, pit storage was
thought to have a longer useful life so that the $2\frac{1}{2}\%$ depreciation would
defray the cost in 40 years, twice of the useful life of above ground
storage. Maintenance then is the important consideration in pit storage
since change of roofing and replacement of wooden supports is almost a
routine operation. Pit storage in most cases required more frequent
attention and maintenance than "Above Ground" storage. Interest on
capital in both cases was calculated at 5% of reported value. Where
the storage structure was insured, the cost of insurance was taken into
consideration in estimating costs. There was no reported cost or charge
on "Basement" and "Rented Storage".

Storage costs for pit storage varied from 4.00 cents per
hundredweight to 9.75 cents, with a weighted average cost of 7.57
cents. (See Appendix E). These costs do not include loss in storage
nor cost of capital invested in stored potatoes. "Above Ground" storage
showed much wider variation in costs. For the individual growers, costs
ranged from 4.62 cents to 19.33 cents per hundredweight of potatoes with a
weighted average cost of 7.93 cents. This was about 0.36 cents higher than
for pit storage. Physical storage cost alone formed about 13.2% of total
marketing costs. Total storage cost, that is, physical cost plus loss
through spoilage and cost of capital tied up in the stored potatoes
amounted to 16.81[1] cents per hundredweight or 28.1% of total marketing costs.

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[1]Includes interest charges for 5 months average storage period at 5% rate
of interest (i.e. 14.0 cents plus 5/12 of 5% of $1.35).

Rationality in Storing

Storage operations, as already pointed out, are undertaken in order to take advantage of higher expected prices in the future. Farmers' decisions to store are therefore influenced by their anticipations of future prices. If future prices promise to be high, there will be a strong incentive on the part of farmers to store their product to be able to take advantage of the increase in price. On the other hand an expectation of falling prices will discourage their decisions to store. A second factor of equal, if not greater, importance than the above, in storage decision-making, is the farmer's need for capital. The farmer whose need for money is high will be less interested in storing, no matter what his future price anticipations are; while the farmer with little immediate need for money will tend to store more if future price prospects are bright.

However, under any of the above circumstances, profitability of storage operations will also depend on storing costs. It is only where future prices are higher than prices at time of harvest by enough to cover storing cost that storage will be justified. The ex-post relationship between price and cost of storing a hundredweight of potatoes is shown in Figure 3.3. The line showing storing cost represents the total cost of withholding a hundredweight of potatoes from October 1958 to April 1959 including the opportunity cost of selling the potatoes at the October price. Included in this cost line is physical cost of storage of 7.86 cents which was regarded as constant for all storage periods. This means that the same amount was charged irrespective of the length of time in storage. Loss through physical deterioration in potatoes will increase

Figure 3.3

Cost of Storage and Price per Hundredweight of Potatoes --
October 1958 to April 1959[*]
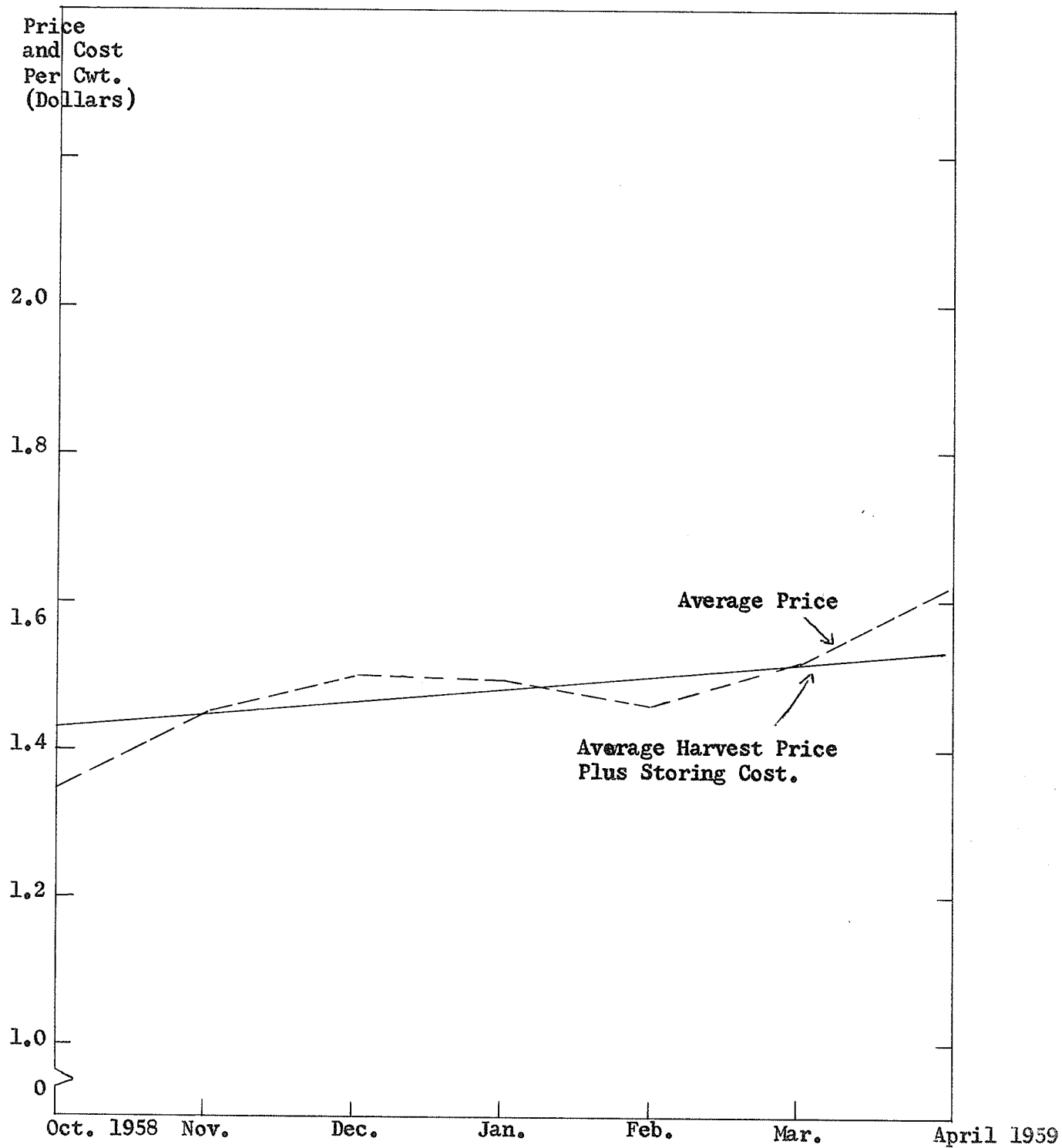
[*]Source: Appendix F

with length of storage period. As potatoes are stored longer, even
if ventilation and temperature control measures are strictly adhered
to, the physiological processes taking place in the potatoes will
result in cumulative deterioration. Physical loss occurring in this
manner, will therefore increase from one month to another. The average
percentage loss reported by farmers was 5% for the storage season. It
is not very likely that this rate of spoilage will be constant, but in
the absence of actual empirical data, the rate is assumed to be constant
over the storage period. Under this assumption, loss for the first month
of storage is estimated at $1/12$ of 5%, for the second month at $2/12$ of 5%,
and so on for the rest of the period. That part of storage costs
represented by these losses will increase in the same order.

The cost of capital invested in the stored potatoes will also
increase with time. If all the potatoes were sold in October and the
money invested in something else, given out on loan, or used to pay off
debts, the interest that would accrue or be saved by the end of a year
would be 5%, assuming that to be the current market interest rate. Loss
for each month will therefore be a fraction of this rate. Thus cost for
withholding one hundredweight of potatoes or "opportunity cost" for a
hundredweight of potatoes will increase with time.

The rising trend of the cost line therefore indicates that the
longer potatoes are held in storage, the higher will be the cost of
withholding. The deduction from this line is that a hundredweight of
potatoes sold for $1.35 at the time of harvest must sell for $1.535,
on the average, at the end of the seven-month storage period to make the

decision to store worthwhile. Should the price happen to fall below
this amount, storage would inevitably result in a net loss. Net returns
on storage for the whole season will depend on the movement out of
storage during each month of the storage period. Large sales at a time
when prices are low relative to storing costs may yield low or negative
net returns depending on whether price is above or below cumulative costs
of storage. Sales at a time of high prices, on the other hand, may lead
to higher net returns. The aggregate gain or loss on storage will there-
fore depend as much on volume of sales in each time period as it does on
price.

A comparison of the actual average price curve, that is,
monthly price paid to farmers for each month, with the "storing cost"
curve shows the October price below the storing cost curve since "storing
cost" includes the October price as opportunity cost. If the potatoes
were sold straight from the harvest field, fixed storage cost would be
lost (not recovered). This assumes, of course, that the cost of putting
up the structure is charged against each crop whether or not the storage
space is used. In the case of farmers whose storage structures have
fully depreciated, fixed cost of storage would be nil. The falling of
October price below the storing cost curve implies a loss equal to fixed
storage costs if no potatoes are stored. This cost may be covered if
the crop is stored and sold in the subsequent months. November price
was at par with storing cost. At this point costs of storage would be
completely covered if potatoes were removed from storage and sold. There
was a sudden jump in December price so that returns to farmers were well

above costs for withholding. Prices dropped from December to January, fell far below the cost curve in February and climbed to par in March, and reached a seasonal high in April.

From the nature of the curves in the graph, it may be concluded that if stocks could be held over for two or three months longer, returns on storage would be much higher, since the rate of increase in price is higher than the rate of increase in storing costs.

Potato prices reached their 1959 peak in the province in the period May-July (Figure 3.4) when local supplies were virtually unobtainable. Past records show that this time of high potato prices is the time when south-of-the-border, and inter-provincial flow of potatoes into Manitoba takes place. High transport costs coupled with tariffs on these imports might be said to account for these high prices. That is, local prices must rise to these levels in order that imports will be attracted to the local market. The existence of small abnormalities in prices, however, can be attributed to supply conditions, since transport and tariff costs are generally stable over the period.

The existence of high prices in the May-July period indicates that a proper storage operation directed to take advantage of these high prices could be utilized to improve net returns to potato producers in Manitoba.

Storage and Marketing of Potatoes

As pointed out earlier, storage facilities can be used as a safety valve to control the flow of potatoes to market and thereby maintain price stability. A close study of price movements for potatoes

Figure 3.4

Cost of Storing Potatoes For Twelve Months and Price per Hundred-
weight of Potatoes, 1948-58, 1954-58, 1958-59
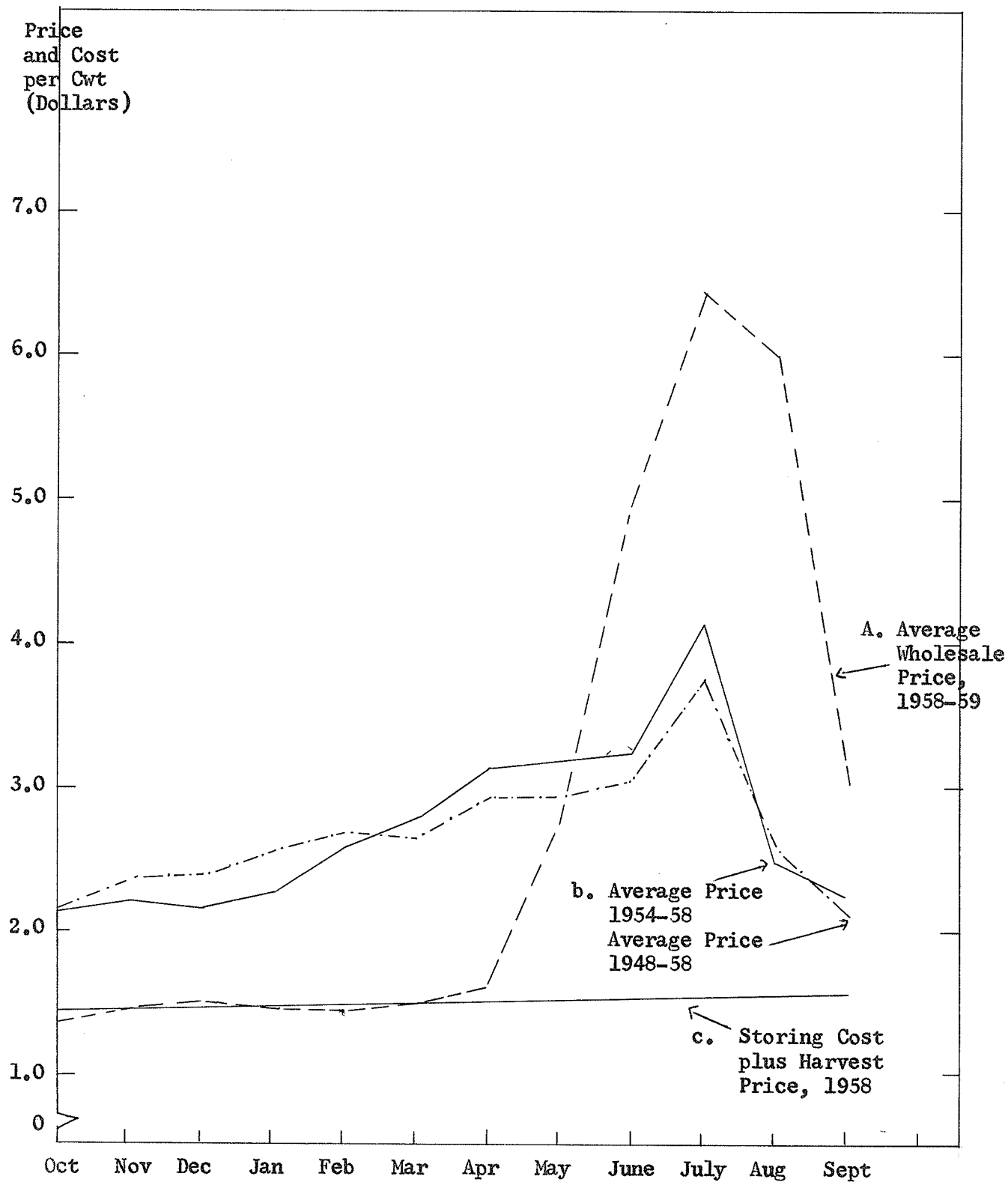
in the province reveals the fact that prices are generally higher in the period May-September when supplies of the local product are unavailable. It is a fact that new local potatoes are available at the latter part of this period (August-September), but the prices of these new stocks are much below the imported old stock. In the period October-January, following the Manitoba harvest when potatoes are abundant, the price is low as shown in Figure 3.4.[1] The reason for the May-October high price is that local potatoes are scarce and the bulk of potatoes on the market at this time of the year must come from California, Alberta and New Brunswick. The high transportation costs from these places add to the price. An even flow of local produce into the market throughout the year by means of an efficient operation of storage mechanism would be a great asset. Both producers and consumers would benefit from this operation.

Some of the advantages that would accrue to the producers are (a) aggregate increase in returns due to capture of part or all of the market which is now taken up by imported potatoes. This increase in revenue will come through the higher prices of potatoes which normally exist at this time of the year. (b) Output will also increase since production could be stepped up to fill the vacancy in demand created by the displacement of imported products. (c) From the consumer's point of view potato prices will be lowered since increased competition between

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[1]Average of Actual Prices, 1958-59. Prices from May to September 1959 were obtained from the Free Press. These may not reflect the true picture of existing prices as compared with the rest of the graphs. However, for the purpose of showing price movement it is quite adequate.

local storage potatoes and imported potatoes will keep prices down.

(d) Price of potatoes will also be stabilized as a more even flow will mitigate the influences leading to price fluctuations which result from highly variable volume of sales.

From the above discussion it is apparent that longer storage might be advantageously used, both to increase the revenue of the local producers as well as to strengthen their competitive position against out of state producers. Strengthening of the producers' competitive position will derive from the fact that output could be gradually increased to fill the vacancy created by displacement of out of state products. As this continues the price of potatoes would drop because of the increased supply of the local product on the market. If the relative drop in price were great enough, importers of potatoes would find their operations no longer profitable and therefore would withdraw from the market.

But the big question which is yet to be answered is whether the local product will keep sufficiently well until July or August to be able to take advantage of the high prices. If potatoes are to be kept in storage till August, special storage measures must be taken. The most important of these measures are refrigeration and sprout control. Potatoes keep well at a temperature of 38 degrees F. Many local storage facilities do not have this temperature control mechanism, with the result that storage after April becomes a very risky undertaking. "Sprout Inhibitors" must also be used if potatoes are to be kept longer than the normal period. The adoption of these extra measures would inevitably increase storage cost.

In order to determine whether local producers could utilize storage facilities fully to increase returns, further study of the storage mechanism would be required.

CHAPTER 4

TOTAL PRIMARY MARKETING COSTS

This chapter is primarily a summary of the individual items
of cost discussed in the earlier sections of the paper. The objective
is to find the relationship between the scale of operation and marketing
costs; and also to establish a basis for analysis in the succeeding
chapters. Scale of operation is established both in terms of volume
of sales and farm size in acres.

The items included in primary marketing cost of potatoes for
the 65 growers were grading, sacks, freight and handling, and storage
costs. Together the cost of these items amounted to 59.7 cents per
hundredweight or 41.1% of the average wholesale price for the season
(Table 4.1).

Table 4.1

Primary Marketing Costs for Manitoba Potatoes, 1958-59[*]
(cents per hundredweight)

Cost Items	Cost	% of Total Cost	% of Selling Price[a]
Grading	12.6	21.1	8.7
Sacks	16.6	27.8	11.4
Freight	22.6	37.9	15.6
Storage[b]	7.9	13.2	5.4
TOTAL	59.7	100.0	41.1

[*]Based on data obtained from survey questionnaires.
[a]Average price for season.
[b]Does not include loss on capital and loss through spoilage.

There was, however, wide variation in costs within each group as well as among the different groups in the survey. A scatter diagram of costs and quantities handled based on data from 28 survey questionnaires is shown in Figure 4.1. Costs associated with small volumes are relatively higher than costs for large volumes. Producers with volumes of under 2,000 hundredweights had the highest costs, followed by those with volumes of between 2,000 and 6,000 hundredweights. Contrary to expectations two farms in the largest group showed very high costs, with the largest producer incurring the highest unit marketing costs. The weighted average cost of selling a hundredweight of potatoes for the first group of producers was 59.9 cents. Costs among the twelve growers in this group ranged from 39.5 cents to 78.1 cents per hundredweight. (See Table 4.2 and Appendix C). It is rather remarkable that the largest seller with sales of 19,111 hundredweights had a cost of 78.1 cents per hundredweight of potatoes sold. This figure is much above the average cost for the group as well as the average for all growers. This high cost is partly due to the fact that this particular farm showed high costs for transportation and machinery. Labour charges were also quite high for this farm.

The second group of 11 growers with medium volume of sales marketed their potatoes at an average cost of 58.2 cents. Costs within this group ranged from a low of 46.3 cents to a high of 75.1 cents per hundredweight with smaller variation than in the previous group.

The third group of "small" growers, on the other hand, had a weighted average cost of 60.9 cents per hundredweight, about 1.2 cents above the average weighted cost for all growers. Costs in the group varied from 51.8 cents to 71.3 cents, a relatively narrow spread. Although the number (5) in the last group of "small" growers is smaller

than in the first two groups, the results are consistent with the
economic theory of the nature of costs for the firm. Average costs,
with a few exceptions tend to show a general decrease with increase
in the size of operation. A similar condition exists in the case of
all the various processes, except transportation, where the relationship
is reversed. Even in transportation, it should be pointed out that
cost/cwt./mile tends to decrease with distance travelled. The high
transportation costs incurred by "large" growers more than accounts
for the high cost for this group compared with 58.2 cents in the
"medium" group.

Table 4.2

Size of Operation and Marketing Costs
(cents pre cwt.)

Size	No. of Farms	Average Delivery (Cwt)	Freight	Grading Cost	Sack Cost
Large	12	5686	24.9	11.6	16.4
Medium	11	1316	18.6	16.2	16.8
Small	5	444	15.1	20.1	17.3
All Sizes	28	3033	23.5	12.6	16.4

Size	Storage Cost	Av. Total Cost	Cost/Cwt.
Large	6.9	3407.64	59.9
Medium	7.3	765.55	58.2
Small	7.8	270.76	60.9
All Sizes	7.0	180.95	59.7

Transport costs as shown in Table 4.2 range from 24.9 cents for the large producers to 15.1 cents for the small producers. The high cost of 24.9 cents per hundredweight in transportation cost of the large growers is largely due to location. Most of the growers in the "large" group are located more than 70 miles from Winnipeg; and shipments to market were mainly by rail. For example, the two largest producers in the group shipped by rail for distances of over 80 miles, while there were no rail shipments for the other groups.

Rail transportation, besides being high cost relative to all other methods of transportation, also necessitated a high loading cost. Thus, high rail rates and handling costs alone account for a large part of the differences in costs between the large and medium growers. Another factor causing variation in transport cost was cost of hauling by public service vehicle. Public service vehicle rates were almost as high as rail freight rates since the two forms of transportation compete with one another. A sizeable number of the large growers shipped their potatoes by public service vehicles. Since large quantities shipped via a more costly means of transportation will inevitably increase unit costs, it is not unexpected that this high cost was incurred by the large growers. The low transportation rate of 15.1 cents for the small growers is due to the fact that most of the growers are located only a few miles outside Winnipeg.

Grading cost among the groups presented a contrasting situation to transportation costs. Cost of grading was lower for the large growers and higher for the small growers. The behavior of costs in this manner

is perfectly normal and suggests that there are economies of scale in grading. Four of the largest growers in the group used machines in grading and had very low grading costs. Hand grading also showed a falling trend in grading costs from the small growers to the large growers.

Storage cost presented a situation similar to grading. Cost per hundredweight of storage space declined with scale of operation, being 6.9 cents for large growers compared with 7.3 cents and 7.8 cents for medium and small growers respectively. Sack charges, however, were fixed at 14 cents for 100 pound sacks and 13 cents for 75 pound sacks. Variations exhibited here must be due to weighting. The weighted sack charge was 16.6 cents for the group of 65 producers. The wide dispersion in costs (Figure 4.1) was caused by peculiarities on the individual farms and the degree of efficiency in performing the various marketing services. In cases where the farm was highly mechanized and production low, marketing costs were exceedingly high. There were a few cases in which labour hire was much above the average for the group, thereby leading to high costs.

Cost comparisons were also made on the basis of acre-size of farms (See Table 4.3). The weighted average cost for small farms of 0-20 acres was 62.0 cents per hundredweight, while that for farms of 41-60 acres was 46.9 cents per hundredweight, the lowest for any size group. Costs for the rest of the groups ranged between the above two. The weighted average for the 81-100 acres and over 100 acre groups were 55.7 and 55.5 cents respectively. Within groups costs exhibited wide variations (See Appendix H). The greatest range, 28.8 cents was found in the 61-80 acre group, where the highest cost was 75.0 cents and the

Table 4.3

Relationship Between Farm Size and Marketing Costs

Farm Size Acres	No. of Farms	Weighted Av. Prod/Acre (Cwt.)	Weighted Av. Cost/Cwt.
0-20	5	88.1	62.0
21-40	11	109.2	55.5
41-60	5	117.6	46.9
61-80	4	157.2	55.7
81-100	1	150.0	52.5
100$^+$	2	149.0	55.5

lowest 46.3 cents. The least range, 14.0 cents was in the 100 acres
and over size group where the highest and the lowest costs were 62.5
and 48.5 cents respectively.

Except for a few abnormal cases, again due to the peculiarities
on the farms concerned, there was a general tendency for costs to be
higher for "small" farms and lower for "large" farms.

Factors Affecting Marketing Costs

Since marketing costs are made up of costs of rendering or
performing marketing services, it is to be expected that any variation
in the cost of performing these services will directly affect marketing
costs. The extent to which variation in any particular cost item will
affect aggregate marketing cost will depend on its relative size in the
over-all cost picture. For example, railways hauled a quantity of
21,430 hundredweights, 13.48% of the total at a cost of $15,032.97
or 42.1 percent of total transport costs. This means any slight change
in rail freight rates alone would make a large proportionate change in

Figure 4.1

Marketing Costs and Volume of Potatoes Marketed, 1958-59[*]

Volume of Potatoes Marketed (Thousand Cwts.)
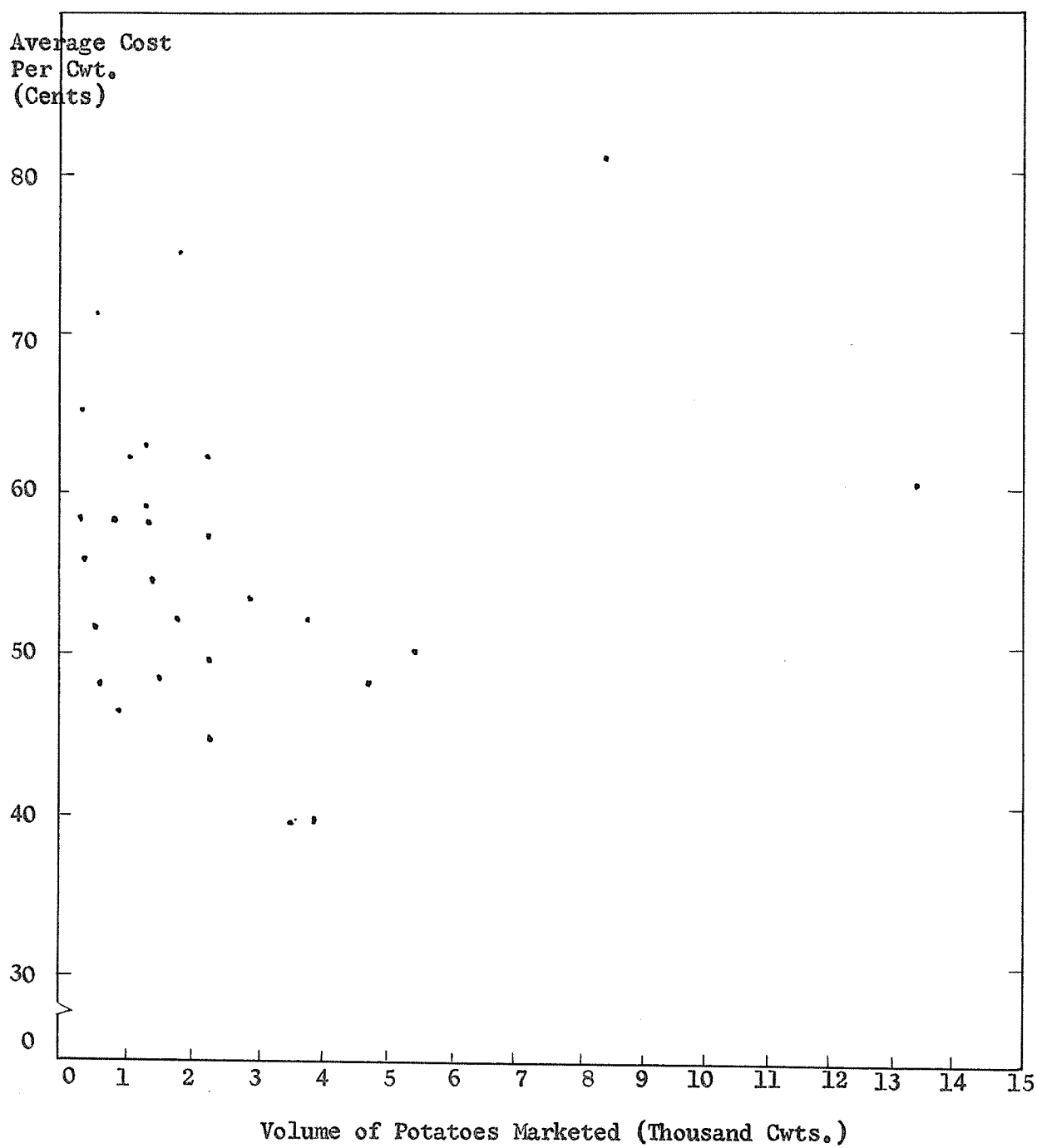
[*]Source: Appendix I. Marketing costs for volumes of over 16,000 cwts. not shown.

transportation costs and thereby affect the whole cost picture. Considering actual data, rail rates have increased nearly 209% in the past decade (Table 4.4). Although comparable figures for marketing costs over the years are not available for this study, it could be that such costs have increased similarly to the increase in rail rates. One way of estimating the effect of increase in rail rates on marketing costs, in the absence of data on other costs over a period of time, is to compare the percentage rise in potato prices for the same time period. Since increase in rail rates represents an increased deduction from gross returns, the relationship between price and freight rates will give an indication of the extent to which such freight increases have affected net returns at the farm.

Table 4.4

Increase in Rail Rates and Wholesale Price For Potatoes in Manitoba (1948-58)

Year	Rail Rates (Cents)	Average Wholesale Price	Index of Price[a] (Cents)	Index of Rail Rates[a]
1948	15.3	2.15	100.0	100.0
1949	18.0	2.51	116.7	117.6
1950	20.5	2.13	99.1	140.0
1951	23.0	1.83	85.1	150.3
1952	24.0	4.87	226.5	156.9
1953	27.0	2.47	114.9	176.5
1954	27.7	2.11	98.1	181.0
1955	27.7	2.64	122.8	181.0
1956	30.0	3.67	170.7	196.0
1957	31.0	2.02	94.0	202.6
1958	32.0	3.13	145.6	209.1

[a]Index 1948 = 100.

Using the above method of comparison, and assuming that
rail rates are the only cost items affecting marketing cost, the
relationship between rail rate increases and wholesale prices is
as shown in Figure 4.2. The year 1948 is taken as the base period.
It is clear from the diagram that increases in rail rates have been
greater than in wholesale prices of potatoes. The index of wholesale
potato price was higher than rail rates in 1949. In 1950 and 1951
the wholesale price index was below the index of rail freight rates.
In 1952 the wholesale potato price index was much above the index of
rail rates, but for the rest of the period was below the index of
rail rates. While rail rates have been rising persistently over
the 10-year period, wholesale prices for potatoes have been fluctuating
very widely. A persistently rising rail or freight rate absorbs a
substantial proportion of the revenue that accrues to the farmer since
increases in freight rates are in the short-run largely borne by
producers.

The rate of increase in freight rates is not likely to apply
in the same magnitude to other cost items over the years. In grading,
for example, it would be expected that grading costs would be rising
at a slower rate or even diminishing, since the widespread adoption
of grading machines and improvements in technique and skill might
lead to lower unit costs. This decrease in unit cost could occur
even though purchase price for grading machines and labour charges
might be increasing. Sack charges and storage costs may also have
increased but probably not as much as freight rates.

Figure 4.2

67

Trends in Rail Freight Rates and Wholesale Price for Potatoes in
Manitoba, 1948-58*
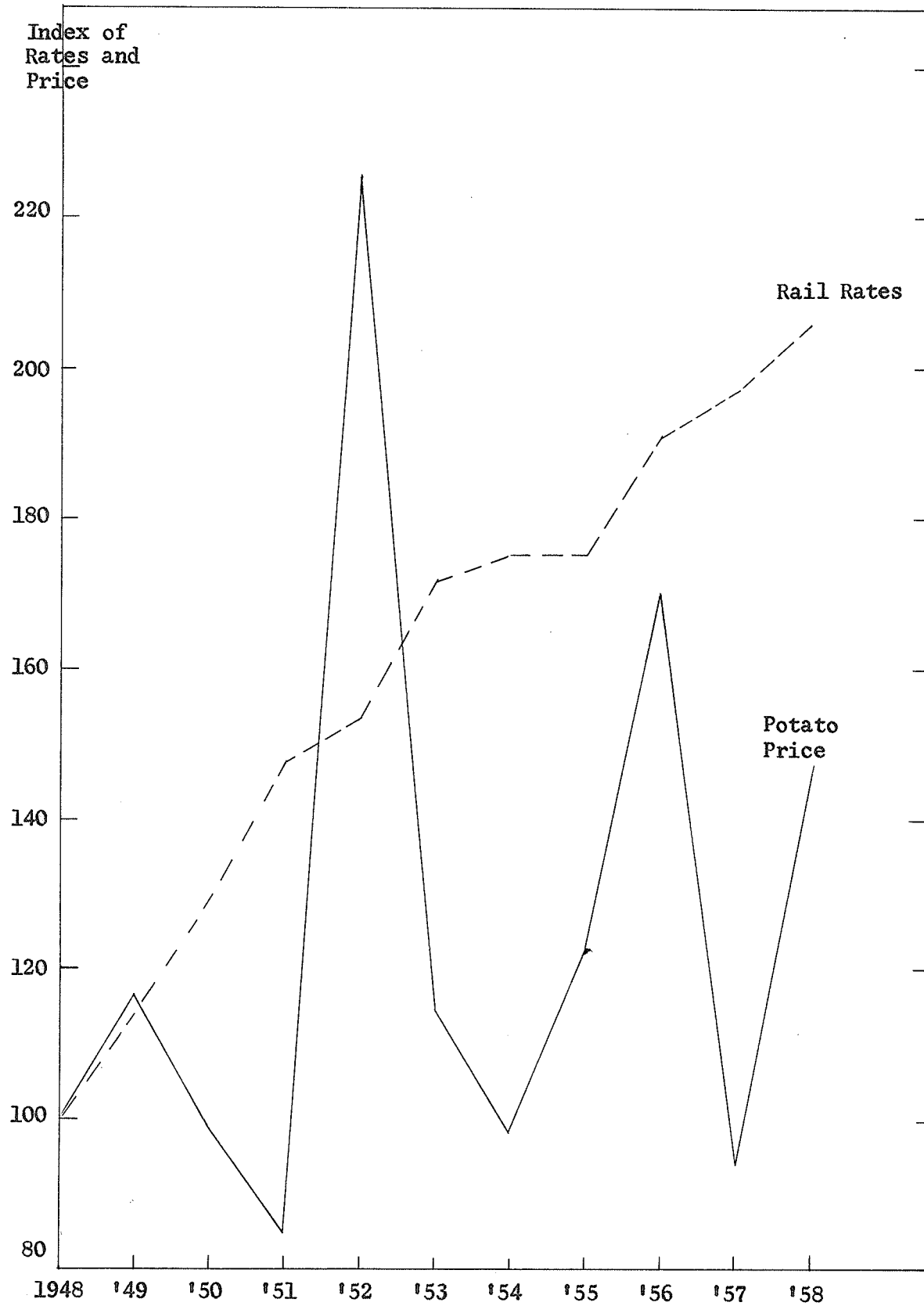
In the aggregate, any increase in the total marketing cost will directly affect the producers' income position. The magnitude of this effect on producers' income is the subject for the next chapter.

CHAPTER 5

MARKETING COSTS AND PRICE VARIATIONS

Although the scope of this study is limited to primary
marketing costs, the conslusions drawn will be more meaningful if
these costs are related to the price system.

The ability of an industry to survive depends in large
measure on its ability to adjust to changing conditions. It thus
depends on its ability to recognize specific changes affecting the
particular industry and to adapt itself rapidly and efficiently to
these new situations. Like other industries, the Manitoba potato
industry has been affected by many changes over time. These changes
have resulted from both internal and external factors. Changes from
internal factors have resulted in improved production practices,
mechanization, introduction of new varieties, concentration of
production, and improved methods of distribution. Changes from
outside the industry arise in general from changes in the character-
istics of consumer demand for potatoes and competition from other
goods. The former category tends to result in increased marketing
costs and the latter in reduced demand and hence lower prices. Both
lead to ultimate reduction in the proportion of the consumers' dollar

that goes to the farmer or producer. For the producer in Manitoba
to be able to maintain his position in the face of rising costs would
require either:

1. Subsidization of prices to enable him to meet the
   rising costs and allow him reasonable return for his
   services, assuming that production and demand remain
   unchanged, or

2. Reduction in his production and marketing costs in order
   to increase his net returns.

The first measure may not be effective since the above
assumptions regarding demand and production cannot be expected to
hold under normal conditions. Higher prices for local potatoes
might worsen the producer's economic position rather than improve
it. The only means open to him as an individual is cost reduction.

Marketing costs represent only a section of the producer's
over-all cost picture. But it cannot be denied that any cost
reduction measure that affects costs at one level of marketing will
affect the whole cost level. Any means adopted to reduce costs at
the primary marketing level will therefore have a definite beneficial
effect on the total cost outlay.

One criterion for judging the level of costs will be the
ratio of costs to farm price; and a second criterion, the extent
to which low unit costs are achieved among producers and between
the different groups of producers. On the last of the above two
criteria, it was pointed out earlier that there was wide variation

among farms in unit costs for performing similar services. The existence of such variations in costs reflects the degree of efficiency among producers. Low costs are usually attributed to more efficient operation. Producers with low unit costs can therefore be regarded as being more efficient than those with higher unit costs. But, although several shades of efficiency can be distinguished within each of the three groups of producers classified by volume of sales, the same cannot be said about the average costs for the groups. The average cost for the groups do not show significant differences from one another at the 5% level. This might be due to the differences in sample size. The situation, however, is different when comparison is made on the basis of farm size. There was a significant difference at the 5% level between the 41-60 acre-size farms, which showed the lowest average unit costs and the 0-20 and 81-100$^+$ acre farms. The last two farm size groups showed the highest average unit costs. Acreage or size of farms therefore seems to reflect efficiency between the various groups of producers better than volume of potatoes marketed. The association of low unit costs with the 41-60 acre-size farm suggests that an economic farm unit for the potato producers might be found in this size region, from the standpoint of marketing costs only.

Price Levels for Potatoes

Even though the farmer's share of the consumer's dollar does not serve as a useful standard for measuring market efficiency, either in the short or long run, changes in marketing costs can affect the level of the producer's returns. A comparison of the ratio between

Figure 5.1

Average Monthly Gross Farm Price and Wholesale Selling Price for
Potatoes in Manitoba, 1956-58 & 1958-59[*]
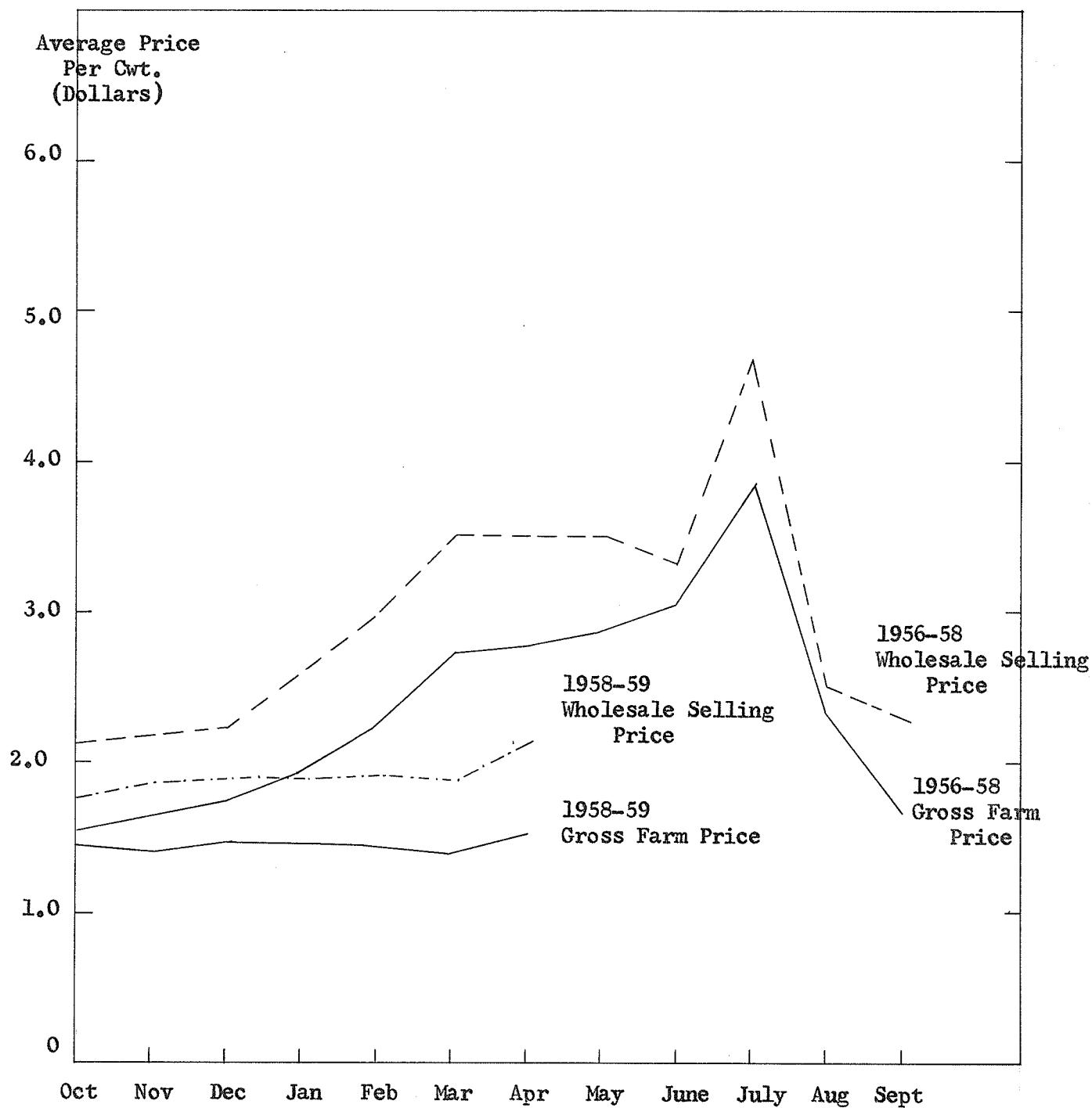
marketing costs and price of potatoes will therefore reflect the changes in producer's income over time. In this part of the analysis wholesale prices were used rather than retail prices. As the study was concerned primarily with the region between the wholesale and the farm, the use of wholesale prices was considered quite adequate. Changes in either the wholesale price or in marketing costs would result in a corresponding change in the net farm price and the farm to-wholesale margin.

The net farm price is the difference between the wholesale purchase price (gross farm price) and the farmer's marketing costs. The wholesale purchase price is the price at which the wholesaler buys from the farmer on a delivered at wholesale market basis. Thus the wholesale purchase price includes the farmers marketing costs. The difference between the net farm price and the wholesale price is the farm-wholesale margin.

A detailed study of the margin will necessitate an examination of the wholesale and farm price series which form the upper and lower limits, respectively, of the margin. Available data for this purpose covers only three years – 1956 to 1958. The purpose of using this series rather than 1958-59 figures (the period covered by the study) alone is to show the price movements over as long a period as possible. The limited data available does not permit detailed analysis of the series. However, it is believed that the salient feature, the effect of season-ality, will be clearly brought out.

Gross Farm Price

Gross farm price refers to wholesale purchase price, the
gross price received by the farmer or the f.o.b. price for potatoes
at the Winnipeg wholesale. It can be seen from Figure 5.1 that there
is some variation in the price paid to the farmer from one season to
another. There was a range of nearly 160% between the lowest and
the highest prices in the 1956-58 series the 1958-59 seasonal prices
were generally lower and varied only slightly from month to month.
Local and spatial influences account partly for the seasonality in
the prices. The existence of low prices in October are evidently due
to the flooding of the local market with newly harvested potatoes at
this time of the year. During the 1958-59 season the volume of the
product coming into the market increased gradually to a peak in
January and then fell off reaching a seasonal low in about April.
Corresponding to volume movements prices started moving upwards, but
rather slowly, from December to January and then rose more rapidly
to March. By this time of the year about 80% of the crop had been
sold. Price fell from March to May and then rose from May to a second
peak in July. The 1958-59 crop was practically sold out by the end of
April. After the peak in July, prices declined rapidly to September.

It has been observed that the period between May and July
coincides with the arrival of new or early potatoes in the Winnipeg
market. A large proportion of this new crop comes from the U.S.
(California and Washington), and may account partly for the high
prices at this time of the year. These imported potatoes are preferred

Figure 5.1

Average Monthly Gross Farm Price and Wholesale Selling Price for
Potatoes in Manitoba, 1956-58 & 1958-59[*]
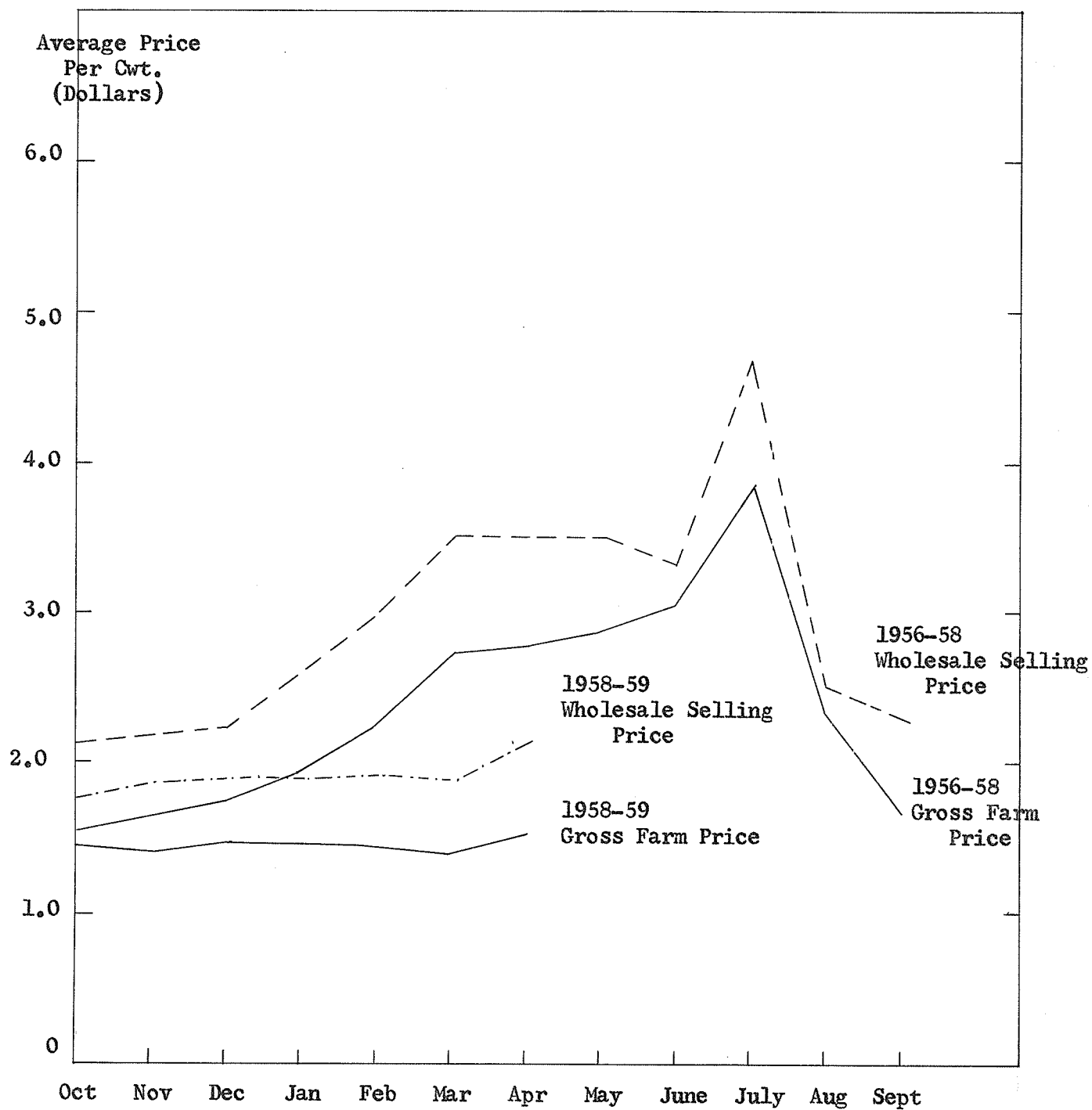
to the local product for their high quality. Another factor which might account for high prices would be an increased demand from the chip and flake industries for old potatoes during the summer months. The decreased demand for old potatoes for table use on account of the arrival of new potatoes would therefore be compensated for by the increased purchases of the processing industries.

Wholesale Selling Price

The wholesale selling price forms the upper limit of the farm-to-retail margin since it is the price at which the wholesaler sells his potatoes to the retailer. It would be expected, theoretically, that movements in wholesale prices would bear a close relationship to those in farm prices. These movements directly parallel one another when the margin is constant. In some cases however the movements in wholesale prices are inverse to those in farm prices. The relationship between the two price series depends on the mark-up policy followed by the wholesaler.

Except for May to June in the 1956-58 series, wholesale selling prices followed closely the movements in wholesale buying prices. (See Figure 5.1). Rather than a rise as in the buying price, the selling price showed a fall from May to June, after which there was a steep rise to the July peak. It is rather difficult to account for this irregularity, except that wholesalers may cut prices at this time in order to clear old stock to make room for new potatoes. Such price phenomena might well be expected for perishable products.

The Wholesale Margin

As mentioned earlier the size of the margin will form a
basis for the comparison of marketing costs and the gross return to
the farmer for potato production. The wholesale margin is defined
as the difference between the gross farm price and the wholesale
selling price. This includes the wholesalers' marketing costs and
profits. If wholesale selling prices remain constant, an increase in
the marketing costs or profit will cause a drop in gross farm prices
and a decline in the gross revenue going to the farmers. On the other
hand, if marketing margins remain constant, then a rise in wholesale
selling price will result in a rise in the gross farm price and an
increase in the farmer's returns. The net farm price is the wholesale
price to the producer minus the primary marketing costs. Stated in a
different form, the net farm price is the resultant of the wholesale
selling price minus the wholesale margin and primary marketing costs.

The wholesale margin varied widely between 1956 and 1958. It
was highest in July and lowest in June. Changes in the margin were quite
irregular. Except for July, the high or low margins were not necessarily
associated with the highest or lowest prices. The same irregularity
is evidenced in the 1958 price series. The relative stability in the
absolute size of the margin shows that mark-up consisted of a fairly
constant dollar margin. Under such conditions, percentage margins
were relatively lower with higher prices than when the farm prices
were low.

As a basis for comparison the total wholesale margin was
expressed as a percentage of the wholesale buying price (gross farm
price) and again as a percentage of the net farm price. In both cases,
Figures 5.2 and 5.3, the wholesale margin is on the vertical axis while
the wholesale buying price and net farm price are on the horizontal
axes. The scatter diagrams show that during the months when farm prices
were low, the proportion of the farm price absorbed by the total whole-
sale margin was higher than when prices were high. The approximate
relationship is revealed by the linear trend line drawn through the
points. There is a clear case of inverse relationship between the
margin and the wholesale or net farm price. The closeness of this
relationship is indicated by the correlation co-efficient (r) based on
the linear regression line.

1. Percent wholesale margin and Gross Farm Price   — 0.845

2. Percent wholesale margin and Net Farm Price   — 0.745

In both cases it is clear that the wholesale margin was a much greater
burden on the farm net and gross price when prices of potatoes were low
than when prices for potatoes were high. The high correlation co-efficients
suggest that about 68 percent of the variations in the margin ratio was
associated with changes in the farm price for potatoes. A large proportion
of the remaining 32 percent of the variations may therefore be due partly
to changes in the margin itself. Changes in the margin will result from
changes in marketing costs and mark-ups.

Since the study shows wide variations in costs between farms
(Fig. 4.1) an answer to part of the unexplained variations in the margin
ratio above might be found in the primary marketing costs.

Figure 5.2

Relationship Between the Wholesale Margin and the Wholesale
Buying Price for Potatoes in Manitoba, 1956-58[*]
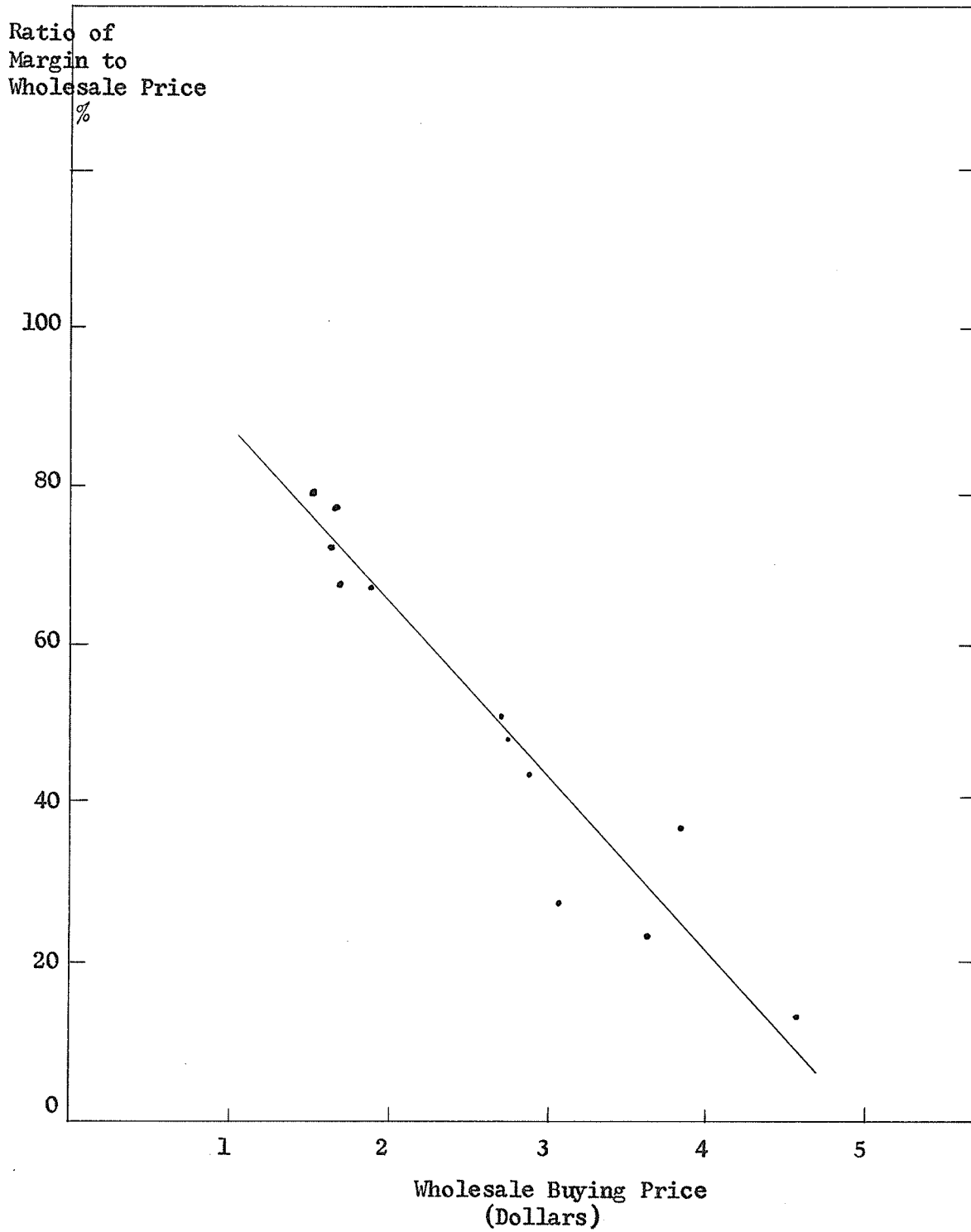
[*]Source: Appendix I

Figure 5.3

Relationship Between the Wholesale Margin and the Net Farm Price
for Potatoes in Manitoba, 1956–1958*
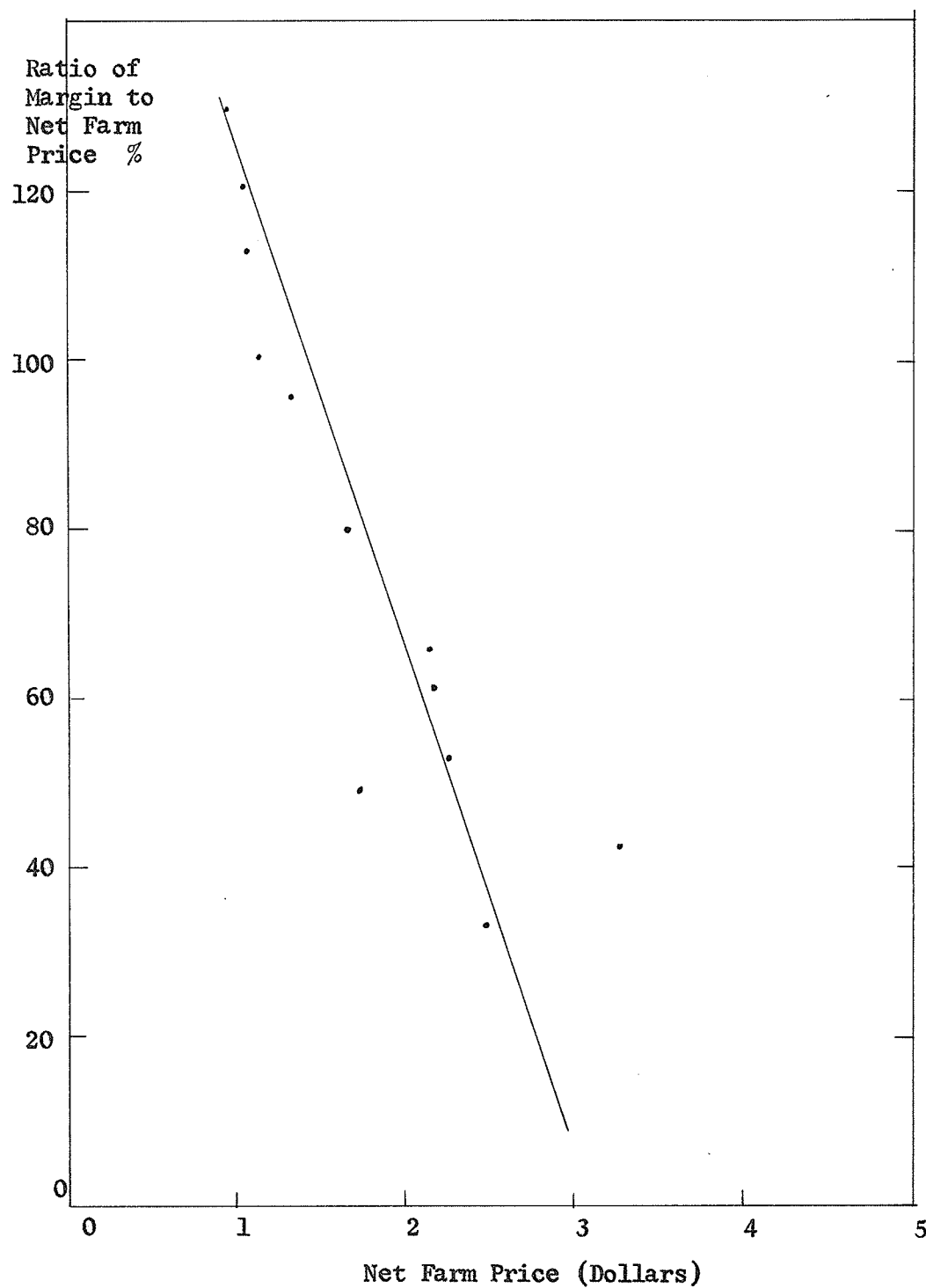
In order to establish this relationship, total primary market-
ing costs are expressed as a ratio of the gross farm price and again as
a ratio of the net farm price. The results are shown in scatter diagrams,
Figures 5.4 and 5.5. The approximate relationship is shown by the trend
line drawn through the points. As before there is an inverse relation-
ship. The correlation coefficient (r) based on the regression line is
as follows:

1. Percent primary marketing costs and gross farm price - 0.853

2. Percent primary marketing costs and net farm price   - 0.747
compared with the wholesale margin above, the correlation coefficient
(r) (based on a linear regression line) for the primary marketing costs
does not show any significant difference from the former. However a
visual comparison of the diagrams shows a much closer fit of the trend
line to the scatter diagram for the primary marketing cost than the
wholesale margin.

The closeness of this relationship suggests that the effect of
the primary marketing costs on the gross and net farm price is stronger
than the effect of the wholesale margin or the wholesale mark-up. When
prices were low the proportion of the returns absorbed by primary market-
ing costs was greater than when prices were high. It will therefore be
expected that changes in the primary marketing costs will directly affect
the net returns of the producer. Low primary marketing costs will modify
the margin and increase the returns going to the farmer.

In establishing the case for the first hypotheses it can be
concluded that a large proportion of the effort to improve the income
position of the potato producers must come from the producers themselves.
If they could reduce their marketing costs through increased efficiency in
performing marketing services, they would be able to increase their net returns.

Figure 5.4

Relationship between Primary Marketing Cost and Gross Farm Price *
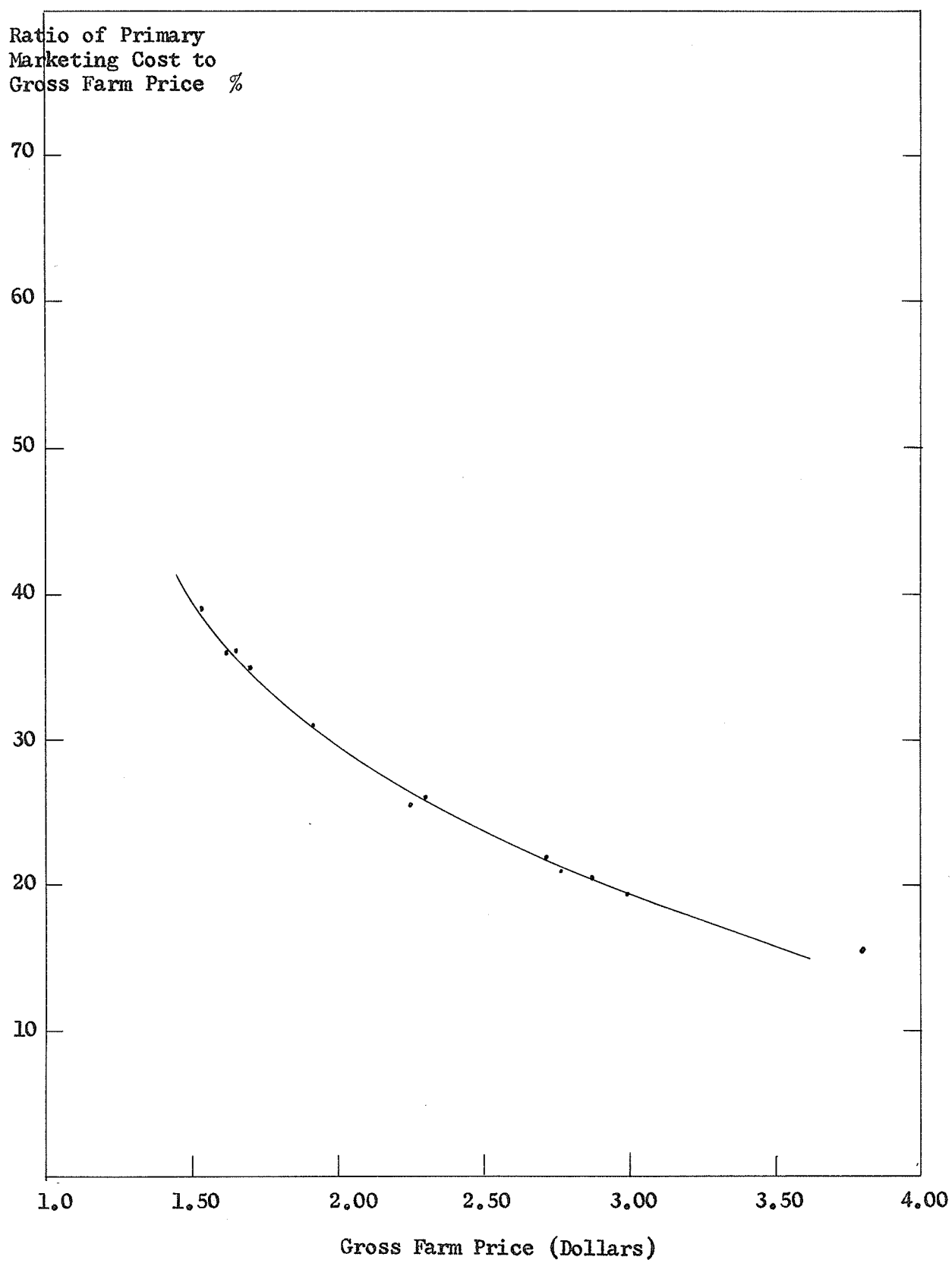
Gross Farm Price (Dollars)

*Source: Appendix J

Figure 5.5

Relationship between Primary Marketing Costs and Net Farm Price *
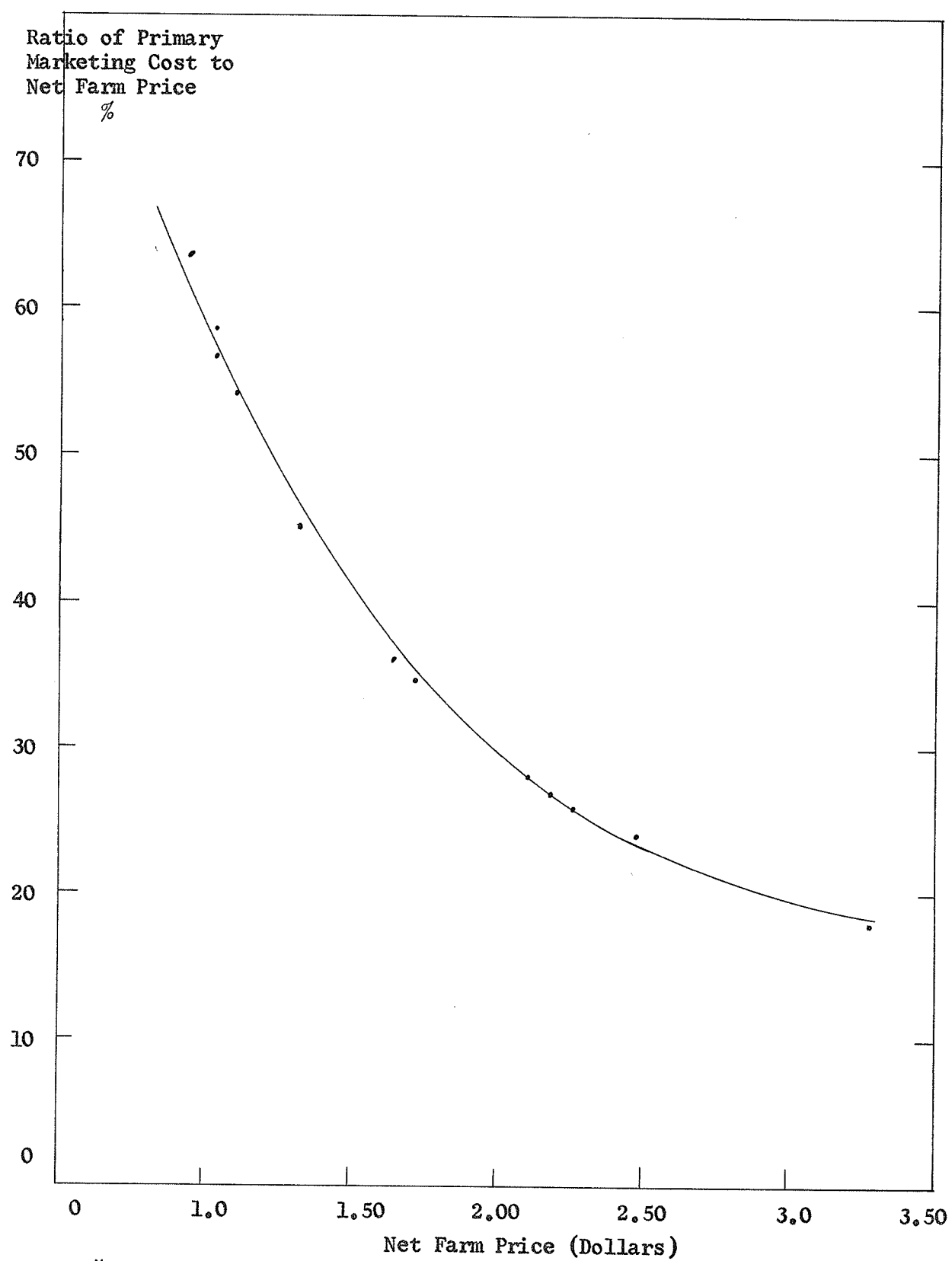
CHAPTER 6

SUMMARY AND CONCLUSIONS

Throughout the course of this study an effort has been made
to describe the different services and to estimate costs incurred in
the marketing of potatoes by farmers in Manitoba. The study covered
both the supply and demand side of the potato market. The supply side
was made up of 65 commercial potato growers who marketed their produce
through the Winnipeg recording office. Total sales recorded for these
65 growers was 158,986 hundredweight of potatoes valued at $231,096.51.
This quantity represented a little more than a third of the total annual
production of potatoes in the Province.

The 65 producers included growers operating farms of all sizes.
Farm size ranged from about 10 to 613 acres. On about 80% of the farms
studied potatoes were grown only as a supplement to some other crop. Total
area devoted to potatoes was 1,926 acres, which represented 36.3% of the
total crop acreage of these producers for the year. A large proportion
of the small farms were situated in the immediate vicinity of Winnipeg.
This is not unexpected since the ever-increasing size of the city makes
intensive farming of this nature a potentially profitable undertaking.

Producers were also classified by the volume of their recorded

sales. Twenty-one of the growers who sold over 2,000 hundredweights of potatoes each were classified as "large producers", and they accounted for 78% of the total recorded sales. The next twenty-one growers, classified as "medium producers" accounted for 5.5% of the sales.

Average yield per acre varied with farm size. On the very small farms of under 20 acres in size, average yield was 88.1 hundredweights per acre, while on the 61-80 acre farms, average yield was 153.8 hundred-weights per acre, the maximum for the groups studied. Yield dropped to 149 hundredweights for the large farms of over 80 acres. On a per farm basis, the highest yield was 187 hundredweights in the 61-80 acre farm group, while the lowest yield of 75 hundredweights was in the group of under 40 acre size.

Potatoes were sold to different purchasing agencies, but by far the largest proportion went to wholesalers. There were no direct sales to retailers. Sales were made in four different size units, 100, 75, 50 and 25-pound bags. Eighty-eight per cent of the total deliveries were made in 75 pound bags and 8% in 100 pound bags. The least used was the 25 pound size. Sales of local potatoes started in September and reached its peak in January when 37,347 hundredweights were sold. By the end of March a very large proportion, 98.7% of the crop, had been sold; and by the end of April sales were virtually completed.

The wholesaler is the chief receiving agent for potatoes. The marketing channel between him and the consumer is bridged by a number of intermediary dealers. Among these can be found the chain stores, the grocers, jobbers and truck operators, whose main job is to get the potatoes from the wholesaler to the consumer.

The marketing functions performed by the producer included grading, washing, brushing, storage and finally trucking to the wholesale. Grading involved separating damaged and unsound potatoes from the good ones. Two methods of grading were used - machine and hand grading. Machine grading was cheaper and nearly twice as fast as hand grading. The weighted average grading cost for a hundredweight of potatoes based on estimates of cost of machine use, labour and interest charges amounted to 12.6 cents. Labour use varied from one farm to another and ranged from one to sixteen men in a grading team. The indiscriminate use of labour in grading on some of the farms led to relatively higher grading costs. The data however, fails to show direct relationship between labour and grading costs.

Storage was a very important feature of the survey. The 28 growers in the survey had between them a total storage space for 228,563 hundredweights of stored potatoes. Cost of storage was estimated at 7.86 cents for a hundredweight of potatoes. There was an average reported loss of 5% through physical deterioration of the potatoes during the four to ten months storage period. If the money cost through this deterioration is considered, storage cost amounted to 14.0 cents per hundredweight of storage space. Estimates of physical cost of storage included depreciation of the structures, interest on capital and maintenance costs.

Facilities for storage included above ground concrete or metal structures, pit stores, basement, and in some cases rented space. Above ground storage was used for 49% of the stored product at a cost 0.47 cents

cents higher per hundredweight of potatoes than pit storage which handled about 48% of the crop. In the aggregate, storage operation for the season resulted in a net gain of one cent per hundredweight of stored potatoes. This net gain from storage tends to support the minor hypothesis, that storage operation could be used to increase the producer's returns.

Storage operations could be advantageous and, if well managed, could be used in controlling market flow of potatoes to the benefit of both the producer and the consumer. The producer would increase his returns by increase in volume of sales in the higher price season, while the consumer would benefit from more uniform prices. However, storage for longer periods than seven to eight months should be undertaken only after further study of storage costs and price expectations. Long period storage would necessitate special measures such as refrigeration and sprout inhibition control which would increase storage costs. The operation would therefore be worth the extra cost of storing only if future prices are expected to be high enough to cover these costs.

Transportation formed the highest single cost item in the whole study. The weighted transportation cost for a hundredweight of potatoes was 22.6 cents or 37.8% of the total primary marketing costs. Three different methods of transportation - farm truck, rail and public service vehicles, were used by growers. Trucks, handled 61% of the crop at an average cost of 13.3 cents per hundredweight. Public service vehicles were the next in importance, handling 25% of the crop at an average cost of 21.8 cents. The remaining 14% of the crop was hauled

by rail at a cost of 70 cents per hundredweight. Rail cost included handling and loading charges.

Trucks are becoming increasingly important in potato marketing, the main reasons being low costs and speed. For the small grower and some large growers, especially those who are not too far from Winnipeg, trucks are the best means of transportation.

Price for potatoes varied from month to month during the season, October 1958 to April, 1959. This variation, however, was found to be moderate compared with the 1956-58 price pattern. The seasonal high was in July and the low in October, the early part of the season.

The over-all primary marketing cost of 59.7 cents for a hundred-weight of potatoes was found to be 41.1% of the average price for the season. It is impossible to say that this marketing cost is excessive merely on the basis of this ratio. However, cost comparisons among farms show the existenceof wide variations in costs. Such variations could be regarded as prima facie evidence of inefficient performance on the part of some of the farms. All farms on the high side of the cost curve could therefore be made more efficient if their costs could be reduced . (On the basis of the survey, 28.5% of the farms were above the average primary marketing cost of 59.7 cents.) Cost reduction might be achieved through a more judicious use of labour and machinery. But the possibility and the extent to which costs can be cut to make these farms efficient cannot be determined on the basis of this study.

The study has also shown that marketing costs or marketing margins absorb a substantial proportion of the gross returns of the farmer. The effect of this proportion on the farm returns is heavier in periods of low prices than in periods of high prices. Any reduction in marketing costs through a more efficient operation of any of the marketing services will, therefore, result in a greater proportional increase in returns to the grower when prices are low.

It can be concluded in general that it has not been possible with the data available to set down any definite rules to follow to reduce marketing costs by using more efficient marketing methods at the primary level. But the individual producer could reduce his market margin and increase his returns by improved efficiency in primary marketing.

It is also believed that the basic data provided by the study will form a useful basis for future research in the same field.

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APPENDIX

A.

THE MANITOBA VEGETABLE SALES ACT   (1941-42 Ch. 64)

<u>Section 26.</u>   "All potatoes coming within the provisions of the Act or these regulations, shall be graded into one or other of the following grades:

    a.   Canada Fancy
    b.   Canada No. 1 Large
    c.   Canada No. 1
    d.   Canada No. 2

<u>Section 27.</u>1.Potatoes graded "Canada Fancy" shall consist of potatoes:

    a.   of one variety which are bright, well shaped, mature and firm;
    b.   free from dumbells and from which knobs have been removed;
    c.   free from secondary growth, sprouts, growth cracks, sunburn, hollow heart, cuts, bruises, freezing injury, dry rot, scab, bacterial ring rot, blight, soft rot or other diseases;
    d.   free from internal discolouration, insect injury, mechanical injury or other defects;
    e.   of not less than $2\frac{1}{4}$ inches and not more than $3\frac{1}{2}$ inches in diameter;
    f.   properly packed;

2.   In this section

    a.   "bright" means free from dirt or other foreign matter, damage or discolouration from any cause, so that the outer skin has the attractive colour normal for the variety;
    b.   "mature" means that the outer skin is firm and that there is no evidence of feathering;
    c.   "soft rot" means any soft, mushy condition of the tissue from whatever cause;
    d.   "well-shaped" means the typical shape for the variety in the district where grown, and free from pointed or excessively elongated and other ill-forced specimens.

<u>Section 28.</u>   Potatoes graded "Canada No. 1 Large" shall consist of potatoes:

    a.   meeting the requirements of potatoes graded "Canada No. 1" provided, however, that no potatoes in this grade shall be less than $3\frac{1}{4}$ inches in diameter.

<u>Appendix A continued</u>

<u>Section 29.</u>

1. Potatoes graded "Canada No. 1" shall consist of potatoes:

    a. of similar varietal characteristics which are reasonably mature, firm and reasonably clean;
    b. free from dumbells and from which knobs have been removed;
    c. free from sunburn, hollow heart, necrosis sprain, freezing injury, bacterial ring rot and soft rot;
    d. free from damage caused by:
        i. abnormal growth
        ii. growth cracks, cuts, scab, dry rot, blight or other disease;
        iii. sprouts, insect injury, mechanical or other means;
    e. of not less than 2 inches and not more than 4 inches in diameter, of which not less than 75% by weight, shall be $2\frac{1}{4}$ inches or more in diameter, provided, however, that in the case of long shaped varieties of not less than $3\frac{1}{2}$ inches in length, the minimum diameter shall be 1 3/4 inches;
    f. properly packed.

2. In this section

    a. "reasonably clean" means that the general appearance of the potatoes in the container is not materially affected, and that individual potatoes are not badly caked with dirt;
    b. "reasonably mature" means that the outer skin does not loosen or feather readily during the ordinary method of handling;
    c. "soft rot" means any soft, mushy condition of the tissue from whatever cause.

3. In this section and for the purpose of this grade, the following shall be considered as damage:

    a. pitted scab or any other form of scab which affects tissue of the tubers;
    b. surface scab which exceeds 5% of the surface of the potato or surface scab affecting more than 20% of the potatoes in any one lot;
    c. sprouts over 1 inch in length, at the time of shipment, affecting more than 10% of the potatoes in any one lot;
    d. any other injury or defect which causes a waste of more than 5% of the total weight of the potato, including peel covering the defective area.

Appendix A continued

Section 30

1. Potatoes graded "Canada No. 2" shall consist of potatoes:

    a. of similar varietal characteristics which are reasonably
       mature, reasonably firm and reasonably clean;
    b. free from dumbells and from which knobs have been removed;
    c. free from sprain, freezing injury, bacterial ring rot and
       soft rot;
    d. free from serious damage caused by sunburn, abnormal growth,
       growth cracks, cuts, scab, dry rot, blight or other disease;
    e. free from serious damage caused by insect injury, mechanical
       or other means;
    f. of not less than 1 3/4 inches in diameter, of which not less
       than 75% by weight shall be 2 inches or more in diameter;
    g. properly packed.

2. In this section:

    a. "reasonably clean" means that the general appearance of the
       potatoes in the container is not materially affected, and
       that individual potatoes are not badly caked with dirt;
    b. "reasonably mature" means that the outer skin does not loosen
       or feather readily during the ordinary methods of handling;
    c. "soft rot" means any soft, mushy condition of the tissue from
       whatever cause.

3. In this section and for the purpose of this grade the following shall
   be considered serious damage:

    a. Scab when more than 25% of the surface of the potato is
       affected;
    b. Any other injury or defect which causes a waste of more than
       10% of the total weight of the potato including peel covering
       the defective area.

Section 31. The following tolerances by weight shall be allowed in each
            of the foregoing grades:

    a. 2% below minimum size and 5% above maximum size;
    b. 1% soft rot, other than bacterial ring rot;
    c. 3% hollow heart;
    d. 4% for other grade defects, provided however that an additional
       2% may be allowed in the case of destination inspection of
       "delivered" sales.

Appendix A continued

Section 32.

1. The provisions of Section 27, 28, 29 and 30, providing for potatoes being "mature" or "reasonably mature", shall not apply to new potatoes sold prior to September 1st in the year in which such potatoes are grown.

2. New potatoes sold prior to September 1st in the year in which such potatoes are grown may have a minimum diameter of:

   a. not less than 1 7/8 inches for grading "Canada No. 1" and
   b. not less than $1\frac{1}{2}$ inches for grading "Canada No. 2.

B.

GRADING COST FOR POTATOES – MACHINE AND HAND GRADING

Machine Grading

Farm No.	Crew Size	Hours	Volume Graded/Day (Cwt.)	Total Graded (Cwt.)	Total Cost ($)	Cost Per Cwt. (Cents)
1	4	3	150	2,250	215	9.6
9	5	15	100	14,400	3,352	23.3
11	7	21	300	26,700	2,619	9.8
12	3	9	120	5,235	427	8.2
22	6	24	200	3,750	675	18.0
36	16	80	800	117,696	14,134	12.0
37	6	11	150	8,775	1,022	11.6
39	6	50	500	1,875	337	18.0
46	3	12	150	15,000	1,269	8.5
TOTAL[a] 9	56	225	2,470	195,681	24,053	119.0
AVERAGE	6	25	270	21,742	2,672	14.3
WEIGHTED AV.	–	–	–	–	–	12.3

Hand Grading

Farm No.	Crew Size	Hours	Volume Graded/Day (Cwt.)	Total Graded (Cwt.)	Total Cost ($)	Cost Per Cwt. (Cents)
2	3	24	140	7,087	1,215	17.1
3	2	12	70	3,960	678	17.1
7	1	12	80	3,840	576	15.0
8	2	16	140	6,187	707	11.4
10	1	12	140	5,700	488	8.5
13	2	14	100	4,860	680	14.0
16	2	12	100	3,000	360	12.0
20	1	8	55	3,600	523	14.6
24	2	20	150	6,187	825	13.3
28	3	18	125	7,500	1,080	14.4
32	2	20	150	4,050	540	13.3
33	2	10	50	750	150	20.0
34	1	10	60	1,125	187	16.7
49	3	18	100	3,262	611	18.0
52	2	9	60	1,512	226	15.0
53	1	20	70	1,781	508	29.0
56	2	12	125	2,250	216	9.6
60	3	12	50	1,500	360	24.0
TOTAL[a] 18	35	259	1,765	68,153	9,935	283.0
AVERAGE	2	14	98	3,786	552	15.7
WEIGHTED AV.	–	–	–	–	–	14.6

[a] Items may not add to totals because of rounding.

C.

TRANSPORTATION AND HANDLING COST PER CWT/MILE
FOR LONG AND SHORT HAULS

	Farm No.	Total Miles in Potatoes	Weight of Potatoes Per Trip (Cwt.)	Total Cost Per Trip[a]	Cost/ Cwt.[b] (Cents)	Cost/ Cwt. Per Mile[c] (Cents)
LONG HAUL	1	70	112.5	$ 18.41	16.4	.23
	3	70	52.5	10.72	20.4	.29
	9	110	75.0	17.28	23.0	.21
	53	80	52.5	10.53	20.0	.25
TOTAL		330	292.5	56.94	79.8	.98
WEIGHTED AV. COST			—	—	19.5	.24

	Farm No.	Total Miles in Potatoes	Weight of Potatoes Per Trip (Cwt.)	Total Cost Per Trip[a]	Cost/ Cwt.[b] (Cents)	Cost/ Cwt. Per Mile[c] (Cents)
SHORT HAUL	2	34	105.0	$ 12.78	12.2	.36
	7	45	60.0	10.17	17.0	.38
	10	30	105.0	9.20	08.8	.29
	12	30	82.5	6.39	07.7	.26
	13	52	75.0	10.75	14.3	.28
	16	40	75.0	17.19	22.9	.57
	20	40	39.0	8.96	23.0	.58
	22	25	93.7	6.43	06.9	.28
	24	45	97.5	18.67	19.1	.42
	28	15	93.7	7.10	07.6	.51
	32	24	93.7	8.68	09.3	.39
	33	30	37.5	7.47	19.9	.66
	34	40	60.0	11.97	20.0	.50
	37	15	112.5	7.63	06.8	.45
	39	15	37.5	5.60	14.9	.99
	46	30	105.0	10.63	10.1	.34
	49	35	75.0	12.13	16.2	.46
	52	33	45.0	6.85	15.2	.46
	55	28	45.0	7.07	15.7	.56
TOTAL		606	1,437.7	185.67	2,676	8.38
WEIGHTED AV. COST			—	—	12.9	0.44
WEIGHTED AV. COST FOR LONG & SHORT HAULS			—	—	14.4	0.36

[a]Includes depreciation, license and insurance and labour costs.
[b]Total cost divided by weight of potatoes carried per trip.
[c]Cost per hundredweight divided by distance travelled.

D

TRANSPORTATION COSTS

Farm No.	Depreciation Value $	Miles per yr.	Round Trip Mileage	Depr. Per.Yr.^{a} $	Depr. for Potatoes $	License Ins.For Potatoes^b $	Gas Cost/ Trip
1	3,400	6,000	70	680	7.47	2.28	2.66
2	975	8,000	34	390	1.66	0.83	1.29
3	2,500	12,000	70	500	2.92	1.14	2.66
7	2,000	6,000	45	400	3.00	1.46	1.71
9	2,700	11,000	110	540	5.40	1.95	4.18
10	700	4,000	30	280	2.10	1.46	1.14
12	2,400	9,000	30	480	1.60	0.65	1.14
13	2,700	8,000	52	540	3.51	1.27	1.97
16	1,700	3,000	40	680	9.07	2.60	1.52
20	2,250	7,500	40	450	2.40	1.04	1.52
22	700	6,000	25	280	1.17	0.81	0.95
24	4,000	5,000	45	800	7.20	1.76	1.71
28	3,100	8,000	15	620	1.16	0.37	0.57
32	3,000	4,000	24	600	3.60	1.17	0.91
33	900	5,000	30	360	2.16	1.17	1.14
34	2,500	4,000	40	500	5.00	1.95	1.52
37	4,500	8,000	15	900	1.69	0.37	0.57
39	2,450	10,000	15	490	0.74	0.29	0.57
46	4,000	12,000	30	800	2.00	0.49	1.14
49	1,200	4,000	35	480	4.20	1.71	1.22
52	795	10,000	33	318	1.05	0.64	1.16
53	2,300	12,000	80	460	2.45	1.04	3.04
55	2,250	9,000	28	450	1.40	0.61	1.06

- Continued

^{a} Depreciation Rate: 20% of new value and 40% of old value of truck.

^{b} Taken at a fixed rate of $195: $120 for Insurance and $75 for License.

Appendix D (Transportation Costs) continued:

Farm No.	Total Truck Cost[c] $	Lab. Cost @ $1.00/Hr. $	Total Cost Per Trip $	Wt. of Pot.Per Trip (Cwts.)	Cost per Cwt. per Trip (Cents)	Cost per Cwt. per Mile (Cents)
1	12.41	6.00	18.41	112.5	16.4	.23
2	3.78	9.00	12.78	105.0	12.2	.36
3	6.72	4.00	10.72	52.5	20.4	.29
7	6.17	4.00	10.17	60.0	17.0	.39
9	11.53	5.75	17.28	75.0	23.0	.21
10	4.70	4.50	9.20	105.0	8.8	.29
12	3.39	3.00	6.39	82.5	7.7	.26
13	6.75	4.00	10.75	75.0	14.3	.28
16	13.19	4.00	17.19	75.0	22.9	.57
20	4.96	4.00	8.96	39.0	23.0	.58
22	2.93	3.50	6.43	93.7	6.9	.29
24	10.67	8.00	18.67	97.5	19.1	.42
28	2.10	5.00	7.10	93.7	7.6	.51
32	5.68	3.00	8.68	93.7	9.3	.39
33	4.47	3.00	7.47	37.5	19.9	.66
34	8.47	3.50	11.97	60.0	20.0	.50
37	2.63	5.00	7.63	112.5	6.8	.45
39	1.60	4.00	5.60	37.5	14.9	.99
46	3.63	7.00	10.63	105.0	10.1	.34
49	7.13	5.00	12.13	75.0	16.2	.46
52	2.85	4.00	6.85	45.0	15.2	.46
53	6.53	4.00	10.53	52.5	20.0	.25
55	3.07	4.00	7.07	45.0	15.7	.56

WEIGHTED AV. COST   14.4[d]   0.36[e]

[c]The sum of the previous three columns.

[d]Transportation and handling cost per hundredweight of potatoes multiplied by quantity of potatoes delivered by each grower, divided by total quantity of potatoes delivered. ($6162127.70/429390.00 cwts).

[e]Weighted Cost per cwt. divided by total distance travelled.

E

STORAGE COSTS – BY TYPE OF STORAGE [*]

No.	Capacity of Storage (Cwts.)	Total Cost if Capacity used[b]	Cost per Cwt. (¢)
1	11,250	$ 962.50	8.56
2	4,875	278.75	6.60
3	5,625	439.00	7.80
7	3,375	270.00	8.00
8	4,875	274.19	5.62
9	9,750	450.00	4.62
10	3,375	282.50	8.37
11	38,250	1,816.00	4.75
12	3,375	213.13	6.31
13	4,500	308.00	6.84
16	3,000	225.50	7.52
20	3,750	302.50	8.07
22	3,000	287.50	9.58
24	3,750	292.00	7.79
28	9,750	997.50	10.23
32	3,750	187.50	5.00
33	338	—	—
34	450	—	—
36	66,000	5,225.00	7.92
37	17,400	1,696.88	9.75
39	6,000	—	—
46	12,000	1,450.00	12.08
49	3,750	117.25	3.13
52	1,500	—	—
53	1,875	93.75	5.00
55	750	—	—
56	750	554.50	7.39
60	1,500	120.50	8.03
TOTAL[a]	228,563	16,844.45	168.96
WEIGHTED AV. COST	–	–	7.86

[*]In addition to the amounts listed here, there were 5,213 Cwts. stored in basements and 1,875 Cwts. stored in rented space. Costs were not reported for most of these quantities.

[a]Quantities for which no costs were reported were subtracted from total before calculating average costs.

[b]Physical cost on structures. (Includes maintenance cost, depreciation and interest on investment).

Appendix E. Storage Costs – By Type of Storage – Continued

No.	PIT STORAGE			ABOVE GROUND STORAGE.		
	Quantity Cwts.	Total Cost	Cost/Cwt. (Cents)	Quantity Cwts.	Total Cost $	Cost/Cwt. (Cents)
1	11,250	$ 962.50	8.56	—	—	—
2	3,750	278.75	7.43	—	—	—
3	—	—	—	5,625	439	7.80
7	3,375	270.00	8.00	—	—	—
8	4,875	274.19	5.62	—	—	—
9	9,000	415.38	4.62	750	34	4.62
10	3,375	282.50	8.37	—	—	—
11	—	—	—	38,250	1,816	4.75
12	3,375	213.13	6.31	—	—	—
13	4,500	308.00	6.84	—	—	—
16	3,000	225.50	7.52	—	—	—
20	3,750	302.50	8.07	—	—	—
22	3,000	287.50	9.58	—	—	—
24	3,750	292.00	7.79	—	—	—
28	3,750	150.00	4.00	6,000	847	14.13
32	3,750	187.50	5.00	—	—	—
33	—	—	—	—	—	—
34	450	—	—	—	—	—
36	18,000	1,400.00	7.78	48,000	3,825	7.97
37	17,400	1,696.88	9.75	—	—	—
39	—	—	—	6,000	—	—
46	4,500	—	—	7,500	1,450	19.33
49	1,500	117.25	7.82	—	—	—
52	—	—	—	—	—	—
53	1,875	—	5.00	—	—	—
55	—	—	—	—	—	—
56	750	554.50	7.30	—	—	—
60	1,500	120.50	8.03	—	—	—
TOTAL[a]	110,475	8,338.58	143.39	112,125	8,412	58.60
WEIGHTED AV. COST			7.57			7.93

[a]Quantities for which no costs were reported were subtracted from total before calculating average costs.

F.

COST OF STORING (Per Hundredweight) POTATOES FROM OCTOBER, 1958 to SEPTEMBER, 1959

	Price ($)	Fixed Costs (Cents)	Spoilage Loss[a] (Cents)	Investment Cost[b] (Cents)	Total Cost (Cents)	Storage Cost Plus $1.35[c] ($)	Price/ Cwt. Average ($)	Net Return on Storage ($)
October	1.35	7.86			7.86	1.43	1.35	-0.08
November		7.86	0.56	0.56	8.98	1.44	1.45	0.01
December		7.86	1.12	1.12	10.10	1.45	1.50	0.05
January		7.86	1.68	1.68	11.22	1.46	1.49	0.03
February		7.86	2.24	2.24	12.34	1.47	1.46	-0.01
March		7.86	2.80	2.80	13.46	1.48	1.50	0.02
April		7.86	3.36	3.36	14.58	1.50	1.62	0.12
May		7.86	3.92	3.92	15.70	1.51	2.79	1.28
June		7.86	4.48	4.48	16.82	1.52	5.00	3.48
July		7.86	5.04	5.04	17.94	1.53	6.43	4.90
August		7.86	5.60	5.60	19.06	1.54	6.00	4.46
September		7.86	6.16	6.16	20.18	1.55	3.04	1.49

[a]Spoilage loss is taken as 5%. It may actually be more than this over 12 month storage period. Loss for one month is estimated at $\frac{1}{12}$ of 5%.

[b]Investment cost is estimated at $\frac{1}{12}$ of current interest rate of 5% per year.

[c]Storage cost plus October price for potatoes. Represents total cost or break-even point to make storing worthwhile.

G

SIZE OF OPERATION AND MARKETING COSTS FOR POTATO GROWERS IN MANITOBA[*]

Classification	No.of Farm	Total Del. Cwts.	Transport Freight $	Grading Cost $	Sack Cost $	Storage Cost (Physical Cost)	Total Cost $	Cost Per Cwt. $
Large 12	36	19,111	8,078	2,293.	3,051	1,513	14,937	0.781
	11	14,398	4,407	1,411	2,505	683	9,007	0.625
	8	5,551	799	632	924	311	2,669	0.508
	1	4,984	817	478	697	426	2,420	0.425
	13	3,940	563	551	622	269	2,067	0.525
	10	3,915	344	332	553	327	1,559	0.398
	12	3,620	278	296	627	228	1,431	0.395
	2	3,332	406	569	559	247	1,783	0.535
	32	2,456	228	326	423	122	1,101	0.448
	28	2,390	181	344	414	244	1,184	0.495
	3	2,336	476	399	405	182	1,463	0.626
	24	2,202	420	292	381	171	1,266	0.575
TOTAL		68,239	17,003	7,930	11,227	4,730	40,891	
WEIGHTED AVERAGE			0.249	0.116	0.164	0.069		0.599
Medium 11	9	1,958	609	456	313	90	1,470	0.751
	7	1,806	307	270	219	144	942	0.521
	56	1,511	217	145	261	111	736	0.487
	60	1,427	205	342	169	114	832	0.583
	16	1,411	323	169	244	106	843	0.597
	49	1,396	226	251	242	43	763	0.547
	20	1,359	312	193	235	109	856	0.630
	34	1,067	213	178	184	89	666	0.625
	39	975	145	175	169	82	571	0.587
	37	839	57	97	152	81	389	0.463
	46	725	73	61	127	87	349	0.482
TOTAL		14,477	2,690	2,346	2,321	1,062	8,421	
WEIGHTED AVERAGE			0.186	0.162	0.160	0.073		0.582

[*]Based on data from survey sheets

Classifi- cation	No. of Farm	Total Del. Cwts.	Transport Freight $	Grading Cost $	Sack Cost $	Storage Cost (Physical Cost)	Total Cost $	Cost Per Cwt. $
Small 5	53	629	125	182	109	31	448	0.713
	22	577	39	103	100	55	299	0.518
	52	397	60	59	68	33	222	0.560
	55	315	49	54	54	26	184	0.587
	33	302	60	60	52	25	198	0.657
TOTAL		2,221	335	460	385	172	1,353	
WEIGHTED AVERAGE			0.151	0.201	0.173	0.078		0.609
GRAND TOTAL		84,938	20,030	10,737	13,933	5,965	50,666	
WEIGHTED AVERAGE			0.235	0.126	0.164	0.070		0.597

NOTE: All decimals have been dropped. Totals will therefore not add up.

FARM SIZE AND MARKETING COSTS

Farm Size in Acres	No. of Farm	Transport Cost/Cwt. (¢)	Grading Cost/Cwt. (¢)	Sack Cost Per Cwt. (¢)	Storage Cost Cwt. (¢)	Total Cost Per Cwt. (¢)	Group Av. Cost (¢)
0-20	60	14.4	24.0	12.0	8.03	58.3	
	53	20.8	29.0	17.3	5.00	71.3	
	55	15.7	17.2	17.3	8.43	58.7	
	52	15.2	15.0	17.3	8.43	56.0	
	33	19.9	20.0	17.3	8.43	65.7	62.0
20-40	13	14.3	14.0	17.3	6.84	52.5	
	22	6.9	18.0	17.3	9.58	51.8	
	20	23.0	14.6	17.3	8.07	63.0	
	49	16.2	18.0	17.3	3.13	54.7	
	3	20.4	17.1	17.3	7.80	62.6	
	7	17.0	15.0	12.2	8.00	52.1	
	56	14.4	9.0	17.3	7.39	48.7	
	32	9.3	20.0	17.2	5.00	44.8	
	39	14.7	18.0	17.3	8.43	58.7	
	34	20.0	16.7	17.3	8.43	62.5	
	16	22.9	12.0	17.3	7.52	29.7	55.5
40-60	8	14.4	11.4	16.7	5.62	50.8	
	24	19.1	13.3	17.3	7.79	57.5	
	12	7.7	8.2	17.3	6.31	39.5	
	10	8.8	8.5	14.1	8.37	39.8	
	28	7.1	14.4	17.3	10.23	49.5	46.9
60-80	9	31.2	23.3	16.0	4.62	75.1	
	46	10.1	8.5	17.5	12.08	48.2	
	37	6.8	11.6	18.0	9.75	46.3	
	2	12.2	17.1	16.8	7.43	53.3	55.7
80-100⁺	36	41.2	12.0	16.0	7.92	78.1	
	11	30.6	9.8	17.4	4.75	62.5	
	1	16.4	9.6	14.0	8.56	48.5	63.0

TOTAL SALE OF POTATOES AND MARKETING COSTS 1958-59 [*]

1	2	3	4	5	6	7	8	9
Farm	Total Quantity Delivered	Invoice Amount $	Total Grading Cost $	Freight & Handling Costs $	Sack Charges $	Physical Cost of Storing $	Total Cost $	Wt'd Cost/Cwt. Cents
36	19,111	26,773	2,293	8,079	3,052	1,514	14,937	78.15
4	18,917	26,897	2,384	3,405	3,091	1,589	10,468	55.33
11	14,399	19,389	1,411	4,407	2,505	684	9,007	62.55
21	9,472	13,606	1,193	4,150	1,599	796	7,738	81.69
35	6,562	10,274	827	945	1,138	551	3,461	52.73
23	6,476	9,413	816	933	982	544	3,275	50.57
8	5,551	8,107	633	799	925	466	2,823	50.86
25	5,542	8,209	698	798	961	466	2,922	52.73
1	4,985	8,027	479	817	698	427	2,421	48.55
13	3,941	6,100	552	563	683	270	2,068	52.47
10	3,916	5,840	333	345	554	328	1,559	39.81
31	3,737	5,611	471	538	644	314	1,967	52.63
18	3,632	5,466	458	523	630	305	1,915	52.74
12	3,620	5,338	297	279	628	228	1,432	39.54
2	3,333	4,860	570	407	559	248	1,783	53.51
32	2,457	3,658	327	228	423	123	1,101	44.82
28	2,390	3,492	344	182	414	245	1,185	49.56
3	2,336	3,597	400	477	405	182	1,463	62.63
24	2,202	3,408	292	421	382	172	1,267	57.52
48	2,031	2,842	256	1,106	335	171	1,867	91.90
54	1,838	2,666	232	265	286	154	936	50.96
9	1,958	3,100	456	609	314	90	1,470	75.07
7	1,806	2,805	271	307	220	144	942	52.16
15	1,618	2,466	204	233	280	184	902	55.73
6	1,513	2,129	191	665	236	127	1,219	81.56
56	1,512	2,225	145	218	262	112	736	48.72
60	1,427	1,323	343	206	169	115	832	58.30
16	1,412	2,157	169	323	245	106	843	59.75
49	1,397	2,006	251	226	242	44	763	54.66

[*]All Decimals except the final column have been rounded
off to the nearest whole number. Items will therefore
not add up to totals.

Appendix I (Total Sale of Potatoes) continued –

1	2	3	4	5	6	7	8	9
Farm	Total Quantity Delivered	Invoice Amount $	Total Grading Cost $	Freight & Handling Costs $	Sack Charges $	Physical Cost of Storing $	Total Cost $	Cost/Cwt. Cents (Wt'd)
20	1,359	2,122	198	313	236	110	856	63.00
34	1,067	1,377	178	213	185	90	667	62.46
14	1,064	1,581	134	153	184	89	561	52.73
45	980	1,466	124	141	170	82	517	52.73
39	975	1,433	176	145	169	82	572	59.66
5	963	1,281	121	424	154	81	779	80.94
42	878	1,456	111	126	152	74	463	52.73
37	840	1,246	97	57	153	82	389	46.34
67	833	1,336	105	120	163	70	457	54.92
65	767	917	97	110	133	64	404	53.73
46	725	1,119	62	73	127	88	350	48.19
61	710	1,042	89	102	123	60	375	52.70
19	675	1,032	85	97	117	77	376	55.73
53	629	926	182	126	109	31	449	71.33
57	623	914	78	90	108	52	328	53.73
41	600	840	76	86	78	50	290	48.40
22	578	709	104	40	100	55	299	51.81
38	578	833	73	85	100	49	307	53.09
47	572	933	72	82	99	48	302	52.76
58	465	630	59	67	81	39	245	52.73
70	431	627	54	62	76	36	228	53.00
66	401	627	51	58	70	34	212	52.73
52	398	662	60	60	69	34	222	56.00
27	397	582	50	57	69	33	209	52.73
55	315	483	54	49	55	27	185	58.66
33	302	434	60	60	52	25	198	65.66

Appendix I (Total Sale of Potatoes) continued -

1 Farm	2 Total Quantity Delivered	3 Invoice Amount $	4 Total Grading Cost $	5 Freight & Handling Costs $	6 Sack Charges $	7 Physical Cost of Storing $	8 Total Cost $	9 Cost/Cwt. Cents (Wt'd)
69	300	440	38	43	52	25	158	52.73
50	296	482	37	43	51	25	156	52.73
59	290	421	36	42	50	24	153	52.73
17	260	407	33	76	45	22	175	67.50
51	255	416	32	37	44	21	134	52.73
43	240	338	30	35	42	20	127	53.09
26	49	81	6	7	8	4	26	52.73
63	41	55	5	6	7	3	22	52.73
68	23	27	3	3	4	2	12	53.33
64	22	29	3	3	4	2	11	52.73
TOTAL	158,986	231,097	20,068	35,747	26,296	12,408	94,520	3,668.72
WEIGHTED AV./Cwt.		1.451	.126	.225	.165	.078		.595

AVERAGE MONTHLY MARKETING MARGIN FOR POTATOES IN MANITOBA 1956-58

Month	Wholesale Selling Price $	Gross Farm Price $	Whole-sale Margin (Cents)	Farm-to-Retail Margin[1] $	Net Farm Price[2] $	Ratio of Margin to Gross Farm Price %	Ratio of Margin to Net Farm Price %	Ratio of Prim.Marketing Cost to Gross Farm Price %	Ratio of Primary Marketing Cost to Net Farm Price %
October	2.15	1.53	62	1.22	.93	79.5	130.0	39.0	63.8
November	2.19	1.62	57	1.16	1.02	71.9	113.6	36.8	58.5
December	2.25	1.70	54	1.14	1.11	67.0	102.9	35.1	54.3
January	2.60	1.92	68	1.27	1.32	66.4	96.2	31.1	45.2
February	2.99	2.25	73	1.33	1.65	59.1	80.3	26.5	36.2
March	3.52	2.71	80	1.40	2.11	51.7	66.2	22.0	28.3
April	3.52	2.77	74	1.34	2.17	42.4	61.6	21.5	27.5
May	3.53	2.88	63	1.23	2.28	42.6	53.7	20.7	26.2
June	3.31	3.08	23	.83	2.48	26.8	33.3	19.4	24.1
July	4.69	3.85	84	1.43	3.28	37.3	43.7	15.7	18.2
August	2.55	2.30	24	.84	1.71	36.5	49.1	26.0	34.9
September	2.33	1.65	68	1.28	1.05	77.7	121.5	36.2	56.8

[1] The Sum of Wholesale retail margin and Primary marketing cost of 59.7 cents.

[2] The residual of Wholesale selling price minus the Wholesale margin and primary marketing costs.

K.

AVERAGE MONTHLY PRICE FOR POTATOES IN MANITOBA
(for the years 1948-54; 1954-58; 1956-58; 1958-59)

Month	GROSS FARM PRICE				WHOLESALE SELLING PRICE	
	1948-54[a]	1954-58[a]	1956-58[b]	1958-59	1956-58[b]	1958-59
October	2.19	2.16	1.53	1.42	2.16	1.76
Nov.	2.35	2.21	1.62	1.40	2.19	1.87
Dec.	2.39	2.16	1.71	1.46	2.26	1.90
Jan.	2.55	2.27	1.92	1.47	2.60	1.90
Feb.	2.69	2.58	2.25	1.46	2.99	1.94
March	2.68	2.79	2.71	1.40	3.52	1.87
April	2.93	3.15	2.77	1.51	3.52	2.11
May	2.94	3.19	2.88	--	3.51	--
June	3.05	3.21	3.08	--	3.31	--
July	3.72	4.13	3.85	--	4.69	--
August	2.59	2.48	2.31	--	2.55	--
Sept.	2.12	2.23	1.65	--	2.34	--

[a]Quarterly Bulletin of Agricultural Statistics

[b] Wilson A., Primary Aspects of Potato Marketing (Unpublished)

MARKETING MANITOBA POTATOES

A RESEARCH STUDY OF THE DEPARTMENT OF AGRICULTURAL ECONOMICS AND FARM MANAGEMENT, THE UNIVERSITY OF MANITOBA — MANITOBA DEPARTMENT OF AGRICULTURE AND IMMIGRATION AND THE VEGETABLE GROWERS ASSOCIATION OF MANITOBA CO-OPERATING.

THIS RECORD IS FOR STATISTICAL PURPOSES ONLY

Sold to		Lic. No.	Date	19
Address			Shipped Via: Truck ☐ Transfer ☐ Rail ☐	
Delivered by		Reg. No.	Zone No.	
Address			Freight Charges	

QUANTITY	UNIT	GRADE	VARIETY	F.O.B.	PRICE $	c	AMOUNT $	c

FOR OFFICE USE ONLY	CHARGE AMOUNT $	c	ACTUAL AMOUNT $	c	
Sacks					CERTIFIED CORRECT
Grading					
Washing					
Freight					_____ Grower
Handling					
Total Deductions					
Net Return to Grower					_____ Receiver
Net Return per CWT.					
Officer's Signature					

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MANITOBA POTATO RESEARCH QUESTIONNAIRE

Name of Grower _____

Address _____

Legal Description of Land Operated _____

_____

Map of Land for Potatoes in Sufficient Detail to Locate on Soil Map.

Owned Land _____ acres   Value _____   Taxes _____

Rented Land _____ acres   Rental Arrangement _____

Operator Full Time _____ Part Time _____ Certified Seed Grower _____

_____

Land Use in 1958

Potato Varieties _____ acres.   Alfalfa _____ acres.

_____   Sweet Clover _____

_____   Fallow (S.C.) _____

Total _____   Other Fallow _____

Other Vegetables _____   Sown Pasture _____

Wheat _____   Other _____

Barley _____   Total Cult. _____

Oats _____   Native Pasture _____

Flax _____   Building Site _____

Sugar Beets _____   Other Waste _____

Soy Beans _____   Total Acres _____

Corn _____

Acres Seeded in 1959 Alfalfa _____

Sweet Clover _____

Grass-Legume Mixture _____

Labour Supply

Operator	_____ months		**Hired Labour**				
Son _____ yrs.	_____		_____ Annual _____ Wages ____ Board				
Son _____ yrs.	_____		Seasonal				
Wife	_____		Spring _____ days. Wages........ Board ____				
Daughter ____ yrs.	_____		Summer _____		_____		_____
Other Family	_____		Fall _____		_____		_____
	Total Labour		_____		_____		_____

Livestock	Number	Animal Units
Horses	_____	
Dairy Cows	_____	
Beef Cows	_____	
Other Cattle	_____	
Sows	_____	
Other Pigs	_____	
Ewes	_____	
Lambs	_____	
Hens	_____	
Turkeys	_____	
Other	_____	

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Equipment Owned

	Make & Model	Size	Year (Age) Purchased	Est. Value	Major Fuel	Fuel 10 Hrs.	Hrs. Operated or Miles Travelled
Tractor							
Tractor							
Tractor							
Truck							
Truck							
Plows Moldboard							
Plows other							
Discs							
Heavy Duty Cult.							
Field Cult.							
Harrows							
Rotary Hoe							
Grain Drill							
Fert. Att.							
Weed Sprayer							
Swather							
Combine							
Port. Elevator							
Corn Planter							
Corn Cult.							
Field Chopper							
Silage Blower							
Beet Drill							
Beet Thinner							
Beet Cult.							

	Make & Model	Size	Year (Age) Purchased	Est. Value	Tractor Used	Major Fuel	Fuel 10 hrs.	Hrs. Operated or Miles Travelled
Beat Harvester								
Mower								
Baler								
Rake								
Hydraulic Stacker								
Manure Spreader								
Other Equipment (Except Potato)								
Potato Equipment								
Cutter								
Planter								
Fert Att.								
Cultivator								
Finger Weeder								
Sprayer								
Duster								
Rotobeater								
Digger								
Harvester								
Bulk Wagons								
Elevator								
Sack Loader								
Grader								
Other Equipment								

Potato Operations

Seed Bed Preparation

	Crew Size	Implement Used	Man Hrs.	Tractor Hrs.	Truck Miles	

Haul Manure

Plow

Disc

Harrow

Planting

Cut Seed

Treat Seed

Haul Fertilizer

Haul Seed to Planter

Plant

Summer Operation

Cultivate   1.

         2.

Other Cult.

Hand Hoe and Weed

Spray   1.

      2.

      3.

Dust   1.

    2.

    3.

Harvest

Defoliate

Rotobeat

Dig

Harvest

Haul to Storage

F
S
F
S
F
S
F
S
F
S

Marketing

Method of Sale

to wholesaler	_____ %	Delivered	_____ %
to dealer	_____ %	"	_____ %
to retailer	_____ %	"	_____ %
to processor	_____ %	"	_____ %
to institutions	_____ %	"	_____ %
by roadside stands	_____ %	"	_____ %
by peddling	_____ %	"	_____ %

Method of Delivery

Graded	_____ %	Field Run	_____ %
Direct from Field	_____ %	Stored	_____ %

Grading

	Crew Size	Equipment Used	Man Hours	Truck Miles	Average Size of Load or Vol/Day
Grading					
Washing					
Brushing					
Loading R.R. Car					
Trucking to Market					

Normal Shrinkage in Grading _____ %

Storage

Storage Capacity _____ bus.   Age _____ yrs.   Cost _____   Insurance _____

    Type: Temporary _____ bus.

                Permanent _____ bus.   Pit or Below Ground _____ bus.

                                        Basement _____ bus.

                                        Above Ground _____ bus.

    Maximum Length of Storage Period _____ Months.

    Normal Losses in Storage _____ %.

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Custom Work on Potatoes

Cut Seed	bus. _____	cost inc. material _____
Treat Seed	bus. _____	" " " _____
Spray	acres _____	" " " _____
Dust	acres _____	" " " _____
Rotobeat	acres _____	" " " _____
Harvest	acres _____	" " " _____

Materials Used for Potatoes

Seed _____ Certified _____ bus. _____ Cost

Other _____ bus. _____ Cost

Seed Disinfectant _____ Kind _____ Amount _____ Value

Fertilizer 16-20-0 _____ tons   10-32-10 _____ tons

11-48-0 _____ tons   Others Specify _____ tons

B.Y.M. _____ tons

Spray Material _____ Kind _____ Amount _____ Value

Dust _____ Kind _____ Amount _____ Value

Harvest Sacks and Containers _____ Value _____ Life _____ yrs.

General:

Est. yield in 1958 _____ bus/ac.   Usual yield _____ bus/ac.

What crop will follow potatoes? _____

How much will the yield of this crop be increased? _____

Are you increasing or decreasing your potato acreage over time? _____

Why? _____

Are all your potato sales recorded at the Recording Office? _____

If not, fill in the attached sheet by estimation.