Marketing Aspects of the Michigan Potato Industry

by

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A Plan B Paper

Submitted in Partial Fulfillment of the Requirement for the Master of Science in Agricultural Economics

M.S.U.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Foreword</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter I: Introduction</td>
<td>Page</td>
</tr>
<tr>
<td>The Problem</td>
<td>1</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>2</td>
</tr>
<tr>
<td>The Approach</td>
<td>2</td>
</tr>
<tr>
<td>Objectives of the Paper</td>
<td>10</td>
</tr>
<tr>
<td>Procedure</td>
<td>11</td>
</tr>
<tr>
<td>Plan of the Paper</td>
<td>17</td>
</tr>
<tr>
<td>Chapter II: Comparison and Contrast of the U.S. and Michigan Potato Industries</td>
<td></td>
</tr>
<tr>
<td>1. Volume of Production and Value of Sales</td>
<td>18</td>
</tr>
<tr>
<td>2. Acreage and Yield</td>
<td>22</td>
</tr>
<tr>
<td>3. Farm Prices</td>
<td>26</td>
</tr>
<tr>
<td>4. Price Seasonality and Pattern of Shipments, All Potatoes</td>
<td>32</td>
</tr>
<tr>
<td>5. Modes of Transportation</td>
<td>39</td>
</tr>
<tr>
<td>6. Spatial Distribution</td>
<td>41</td>
</tr>
<tr>
<td>Chapter III: The Marketing Behavior of Michigan Potato Growers and Shippers</td>
<td></td>
</tr>
<tr>
<td>1. Growers and Grower-Shippers</td>
<td>46</td>
</tr>
<tr>
<td>1.1 The Product</td>
<td>46</td>
</tr>
<tr>
<td>1.2 Pricing Behavior of Growers</td>
<td>60</td>
</tr>
<tr>
<td>1.3 Physical Distribution Activities of Growers</td>
<td>70</td>
</tr>
<tr>
<td>2. Shippers and Grower-Shippers</td>
<td>76</td>
</tr>
<tr>
<td>2.1 The Product</td>
<td>77</td>
</tr>
<tr>
<td>2.2 Pricing Behavior of Shippers and Grower-Shippers</td>
<td>84</td>
</tr>
<tr>
<td>2.3 Promotional and Advertising Activities of Shippers and Grower-Shippers</td>
<td>85</td>
</tr>
<tr>
<td>2.4 Physical Distribution Aspects of Shippers' and Grower-Shippers' Operations</td>
<td>87</td>
</tr>
<tr>
<td>Chapter IV: The Structure and Conduct of the Michigan Potato Industry</td>
<td></td>
</tr>
<tr>
<td>1. Structure</td>
<td>89</td>
</tr>
<tr>
<td>1.1 Concentration</td>
<td>89</td>
</tr>
<tr>
<td>1.2 Product Differentiation</td>
<td>100</td>
</tr>
<tr>
<td>1.3 Conditions of Entry and Exit</td>
<td>104</td>
</tr>
</tbody>
</table>
2. Conduct

Chapter V: Main Problems and Issues Relevant to the Michigan Potato Industry

1. Marketing-Management-Related Problems and Issues 111
2. Establishment of a State-Wide Brand 117
3. Michigan and National Promotion Programs 121
4. Group Action 126
5. Processing Plants and the Michigan Potato Industry 129
6. Tablestock Strategy versus Processing Stock Strategy 135

Chapter VI: Summary and Conclusions 143

Bibliography and Literature Cited 152
FOREWORD

This is the second of several reports examining various aspects of the Michigan potato industry, both in itself and in relation to the American potato industry.

The first report, "Projections of Demand, Supply and Marketing Patterns for U.S. Potatoes in 1980"¹, provided the foundation for the entire research project by examining past, present and projected future relationships in the total U.S. potato industry.

The present report focuses on Michigan and attempts (1) to place this state's industry in the general picture of the national potato industry, and (2) to describe and diagnose the marketing organization of the first two participants in the market channel: producers and shippers.

CHAPTER I

Introduction

The Problem

The Michigan potato industry has undergone major transformations in the last twenty-five years. In Michigan the number of farms harvesting potatoes in 1969 was 1.4% of what it was in 1945! Since that date acreage in potatoes in the state decreased by two thirds. The industry deeply felt the shift in consumption from fresh potatoes to processed potato products. The industry has been a stagnant portion of the state agricultural economy with around 2% of the cash receipts from marketings since 1960. Yet there are some indications that the Michigan potato industry has a good potential which could be realized, if certain modifications in the ways it markets its products were implemented. Although this paper does not specifically appraise the comparative advantages of Michigan growers in contrast with producers in other states, Michigan seems to have the necessary productive capabilities (soil, climate) and technical knowledge, and is located near areas with high population density.
Purpose of the Study

Michigan potato industry leaders feel that the market for Michigan potatoes could be expanded. It appears that the welfare of the participants could be increased through improved marketing practices. To determine where are the opportunities for improving marketing performance and profitability of all segments of the industry some understanding of existing market relationships is needed. This paper focuses on the market for potatoes in their raw form, as opposed to processed potatoes or potato products. It includes potatoes sold as tablestock as well as potatoes sold as processing stock. The present paper attempts to provide an understanding of the relationships between basically two groups of participants in the market: those who grow potatoes and those who ship them to wholesalers, processors or retailers. Hopefully, with this understanding, individuals in the industry and in public agencies will have a better basis for evaluating problems and the consequences of the decisions they will make in trying to increase the total revenue in the Michigan potato industry.

The Approach

The conceptual approach of this paper is descriptive and diagnostic. The modus operandi is to describe some of the main marketing practices of the two types of market participants previously defined, to diagnose problem areas;
to describe the relationships between these two segments
and with their buyers and to diagnose problem areas.

Two types of framework are used. The first one
comes from the marketing field: the "4 P's" frame of
analysis popularized by Professor McCarthy. He "reduces
the number of variables of the marketing mix to four basic
ones: Product, Place, Promotion, and Price."¹

"The product area is concerned with developing the
right 'product' for the target market ... It
covers the problems of 1) selecting a product or
product lines, 2) adding or dropping items in a
product line, 3) branding, 4) packaging, and
5) standardization and grading."²

Physical distribution (or Place) deals with the problems,
functions and practices involved in getting the right
product to the target market in terms of place as well
as in terms of time.

Promotion encompasses sales promotion and
advertising and is aimed at communicating to the target
market about the right product to be sold at the right
price.

Price, as we shall consider it here, primarily
refers to the pricing behavior of participants in the
market and the institutions used in the process.

The 4 P's framework was used because it is a
fairly simple tool which gives categories in which to

¹E. Jerome McCarthy, Basic Marketing, Third Edition,

²Ibid., p. 32.
classify issues in a convenient and logical manner. It also follows pretty well the life of the commodity. Potatoes are first produced, the decisions being made by the farmer as to the variety to be planted, the type of grading or sizing standard used. Then potatoes are usually stored. A buyer is sought through promotion and, depending on price, will be found.

The 4 P's framework is readily applicable to potato growers as well as shippers. Their product mix and product line decisions involve such things as whether or not to focus on bakers or white potatoes,\(^1\) high or low quality. They have the tubers transported to a wholesaler or retailer, found through promotion, who is willing to deal at a certain price considering the product delivered.

This framework emphasizes the relationships between market participants, and thus compensates in this area for some of the shortcomings of the second framework used. It is also a framework which focuses on processes which are internal to individual firms.

The second framework used comes from the field of Industrial Organization. Professor Bain's Structure-Conduct-Performance\(^2\) categories enable the student of a whole industry to determine how close the industry is to

\(^1\)There are five scientific categories of potatoes, based on the color of the skin and the shape of the tuber: Round Whites, Long Whites, Round Russet, Long Russet, and Red Skin. Russets are typical baking potatoes.

the perfect competition model of economic theory, whether it is nearer to atomistic competition or to monopoly or monopsony.

Structure is defined as "those characteristics (of a market) which determine the relations a) of sellers in the market to each other, b) of buyers in the market to each other, c) of the sellers to the buyers, and d) of sellers established in the market to potential new firms which might enter it."¹ In other words, market structure means "those characteristics of the organization of a market that seem to exercise a strategic influence on the nature of competition and pricing within the market."² "Salient aspects or dimensions of market structure are: a) the degree of seller concentration—described by the number and the size distribution of sellers in the market, b) the degree of buyer concentration—defined in parallel fashion, c) the degree of product differentiation of the outputs of the various sellers in the market, the extent to which their outputs (though similar) are viewed as non-identical to buyers, d) the condition of entry to the market—referring to the relative ease or difficulty with which new sellers may enter the market."³

¹Ibid., p. 7.
²Ibid., p. 7.
³Ibid., p. 7.
"Market Conduct refers to the patterns of behavior that enterprises follow in adapting or adjusting to the markets in which they sell or buy."¹ Dimensions of Market Conduct include 1/"the objective pursued and the method employed . . . in calculating or determining price and output," 2/ the product policy of the firm or group, 3/ their sales promotion policy, 4/ "means of coordination and cross-adaptation of price, produce and sales-promotion policies of competing sellers."²

"Market Performance refers to the composite of end results which firms in any market arrive at by pursuing whatever line of conduct they espouse - end results in the dimensions of price, output, production and selling cost, product design, and so forth."³

Although we shall not specifically treat the performance aspect of the Michigan Potato Industry, the whole study was done with this concern in mind. Knowing the structure and conduct of an industry has little relevance to the policymaker if he doesn't know how the industry performs. But performance is a relative concept, it must be judged against specific criteria. No other criterion than "increasing the total revenue to the

¹Ibid., p. 9.
²Ibid., p. 10.
³Ibid., p. 10.
Michigan potato industry" was assigned to the researchers. The very nature of the Michigan Potato Commission, composed of representatives of growers, shippers, retailers and processors, but not consumers, made it difficult to formulate performance criteria specifically relevant to the concerns of the Potato Commission. But the researcher cannot work without some performance criteria underlying his research. Therefore, for the purpose of this study, seven goals and objectives for the potato production-distribution system were chosen: ¹

1. To provide an abundant, healthy and reliable supply of potatoes at economic prices.

2. To promote and facilitate the production and distribution of that combination of potato varieties, grade, potato products and related services which best reflect the preferences of consumers and the real relative costs of production.

3. To stimulate the development and adoption of improved technology and organizational arrangements that will lead to increased resource productivity in all aspects of potato production and distribution.

¹Adapted from: James D. Shaffer, "Designing Agricultural Marketing Systems in Developing Countries," Staff paper #72-3 (East Lansing, Michigan, Department of Agricultural Economics, Michigan State University, February, 1972), p. 3.
4. To increase the level of income of all participants in the system without detrimental effects on consumers and improve the relative income position of the poorest participants.

5. To create the conditions necessary to ensure the development of equitable and competitive exchange relationships in the potato market.

6. To discourage uneconomic uses and spoilation of natural resources and the environment.

7. To foster a sense of belonging and participation among participants in the potato production-distribution system.

Apparent in these goals and objectives are two concerns: one focuses on the "active" participants, the second on consumers, for, in the end, all participants in the potato production-distribution system work not only for their own good, but also for the welfare of the final consumers.

In order to do so, in an economy using a bargained exchange system\(^1\), competition and market coordination must exist together.

Competition will force each and every participant to strive for the highest attainable productivity, as his productivity level will condition his income. But

economists are increasingly aware of the fact that pure competition alone is not able to yield all the desired results of a production-distribution system; market coordination is needed. The problem is that there are trade-offs between the advantages of competition and those of market coordination. For instance one of the most effective means of market coordination is the large, vertically integrated firm; yet a large firm is likely to reduce competition in its industry by dominating smaller ones. The large, vertically-integrated firm, however, is best able to have longer planning horizons and thus help stabilize the market with important benefits for itself and for other participants further up or down the marketing channel. Through the well established information channels of the large, vertically-integrated firm, consumer preferences are easily transmitted from one end of the production-distribution system to the other.

The Structure-Conduct-Performance framework was used because, like the 4 P's framework, it provides a fairly convenient, if not always easy to apply, tool. It is a standard framework for agricultural economists so that the results of this study will perhaps be comparable to those of similar studies made either about other segments of the Michigan potato industry or about other states' potato industries. Further, it is less descriptive and more diagnostic than the 4 P's framework and looks
at the environmental settings in which enterprises operate, thus shedding light on their external side.

Both frameworks seem to balance each other in their analytical and explanatory strengths and weaknesses.

Objectives of the Paper

Taking into account the purpose of the study and the capabilities of the two approaches used, this paper has the following specific objectives:

1. To compare and contrast the Michigan and U.S. potato industries.

2. To determine general Michigan comparative advantages and disadvantages in the production and marketing of potatoes, both temporally and spatially.

3. To describe and evaluate the marketing management decisions of individual firms involved in the exchange of raw potatoes in Michigan, using a 4 P's approach.

4. To examine the determinants of the performance of the industry formed by the first two vertically-related sectors of the potato marketing system in Michigan, taking it as a whole, by studying its structure and conduct.

5. Based on the results of a diagnostic analysis determining and analyzing the main marketing and organizational problems of the industry,
to suggest and evaluate the feasibility of various possible solutions.

Procedure

The research leading to this report involved four stages. The first one, beginning in early 1972, was exploratory and aimed at providing the researchers with the basic necessary acquaintance with potatoes and the Michigan industry. Interviews with informants knowledgeable about the industry were performed on a very informal basis. Problems of all the segments of the industry were discussed with a district extension agent, a shipper, a processor and some growers.

The second stage, lasting from June 1972 to February 1973, involved gathering secondary data, pulling out information specific to Michigan, reviewing the literature about the national and state potato industries. Secondary data from the U. S. Department of Agriculture\(^1\) and the Michigan Department of Agriculture\(^2\) were used.

The "Economic Study of the U. S. Potato Industry"

\(^1\)In the main series used were: Crop situation, Marketing and Transportation, Stocks, Potatoes and Sweet-potatoes, Vegetable Situation, Fresh Fruit and Vegetable Unloads.

published in 1962\(^1\) provided a useful starting point. This study introduced the researchers to several characteristic aspects of the potato industry such as shifts in production between regions, specialization, the trend toward more processing, and the high inelasticity of demand for potatoes. The "Organization and Structure of the Red River Valley Potato Industry"\(^2\) provided a valuable comparison for a producing region other than Michigan and a reliable guide for the formulation of research questions and hypotheses. The present study is comparable to it in some respects. Other secondary data sources included the U. S. Census of Agriculture for Michigan, 1969, and industry publications such as the American Potato Yearbook,\(^3\) the National Potato Council annual Statistical Report\(^4\) and the Michigan Potato Industry News.\(^5\)


\(^{3}\)American Potato Yearbook, P. O. Box 279, Scotch Plains, New Jersey.

\(^{4}\)The National Potato Council, Suite 301 Montbello Office Building, 45th and Peoria, Denver, Colorado.

\(^{5}\)The Michigan Potato Industry Commission, 809 Center Street, Lansing, Michigan.
The third stage, January-February, 1973, saw the development of research questions and hypotheses and the formulation of two interview questionnaires (see appendices).

During the fourth stage, March-June 1973, those two questionnaires were tested, then used to gather primary data and accumulate first hand information about the organization, structure and behavior of growers and shippers - the first two operators carrying out the marketing of Michigan potatoes.

The first questionnaire, Potato Grower Survey, April 1973 (Appendix 1), was mailed in April-May 1973 to all of those Michigan potato growers and grower-shippers included in the list of the Michigan Potato Industry Commission. Out of 421 forms sent out about 90 were returned by the end of June 1973. The returned questionnaires represented 19% of the total acreage planted in Michigan and 24% of the 1972 Michigan potato production. The results of an early analysis of the answers are presented here. The analysis consists in the main of frequency counts and direct tabulations of the answers.

The second questionnaire, Potato Shipper Survey, March 1973 (Appendix 2), was aimed at providing the researchers with an in-depth understanding of the Michigan potato industry. As it was planned to be used as the basis for personal interviews, the questions were carefully worded so as to elicit from the interviewees as much
personal reactions as possible. On the basis of records made available for the purpose of the research by the Michigan Potato Industry Commission, interviewees were selected on the following criteria:

1. They had to belong to the group of people who are the first handlers of raw potatoes, be they table or processing stock potatoes. "Handlers" are defined as those involved in one or more of the following activities: grading, packaging, transporting, storing, selling to a processor or a wholesaler.

2. Location: all major producing regions in the State had to be represented; if possible the number of interviews in one region was to bear some relation to the importance of the region either in terms of the quantity it produces or the season during which harvest is done.

3. Size of the interviewee, quantity produced or handled. Some interviewees were selected because they were large, others because they were smaller.

4. Some balance was sought between growers, grower-shippers and shippers. Growers were defined as those who sell only the potatoes they grow or purchase insignificant amounts (1,000 to 2,000 cwt a year) from other growers. Growers-shippers were those who sell their own
crop together with the crops of other growers. Shippers, who sometimes are brokers, were those who purchase from or handle for potato growers.

Twenty-four interviews were planned but, because of time constraints, only nineteen interviews were performed by the author on a confidential basis, between March and June, 1973. Interviewees included eight growers, five grower-shippers, five shippers and one processor acting also as a shipper of fresh potatoes. Growers were of over average size in terms of production. Grower-shippers and shippers were of all sizes in terms of quantity shipped. They included four of the ten largest in the state, and seven between ranks eleventh and thirtieth, according to the records of the Michigan Potato Industry Commission.

About 4.4 million hundred-weight out of the 9.8 million cwt potato crop in Michigan in 1972, were represented in the same, or 45 percent. A very high percentage of the state copy was therefore taken into account. This means that, on the average, interviewees handled about 230,000 cwt a year. Thus they were among the biggest handlers of potatoes in the state. Our sample is biased toward large size. This will distort our conclusions in the sense that large firms are likely to be better organized and more efficient. But the advantage is that these firms probably set the pace for smaller ones.
Another limitation of the sample is that out of about 230 firms involved in the shipping of potatoes in Michigan only about 5 percent were included. But with such a small number of interviews it is difficult to escape this problem. In this type of research the trade-off is clearly between the size of the sample and the depth of the contact the researcher can reach with the interviewee. It was decided that it was best to limit the number of interviews and spend more time and money resources on each one of them. The average interview lasted from an hour and a half to two hours. Although the questionnaire was followed as much as possible, the author always tried to reach with interviewees the interpersonal level of communication at which information, even if the interview is quite confidential, flows more freely as trust increases; to achieve this it was often necessary to depart from the standard questions. We discovered much more than what was asked in the questionnaire. Not everything that was answered can be reported here. Interviewees were given the opportunity to speak their mind on all potato industry problems they cared to comment on. Fields, buildings and equipment were visited to provide the interviewer with a good feel of the interviewees' situation. Thus, despite their limited number, the interviews brought to the author a valuable, almost insider's, knowledge of the Michigan potato industry.

To make the sample as representative as possible and somewhat compensate for its above mentioned limitations
we sought the best geographical coverage. Interviews were scattered among all major potato producing regions of Michigan: the southeastern corner, the Grand Rapids area, the Edmore area, the Bay City area, the Gaylord area, and the central counties of the Upper Peninsula.

Plan of the Paper

The second chapter of this paper analyzes production characteristics, product characteristics and marketing patterns of Michigan in comparison with the national potato industry.

In a third chapter the conclusions of a sample survey of growers, grower-shippers, and shippers in Michigan, together with the partial results of a mailing survey of Michigan growers and grower-shippers will be presented and analyzed with a 4 P's framework (i.e., examining survey results in terms of product, price, promotion, and physical distribution).

A fourth chapter will give a total picture of the Michigan potato industry taking a Market Structure-Conduct approach.

The fifth chapter is an analysis of the problems as seen by the interviewees and as seen by the author.

It will be followed by a sixth chapter summarizing the situation in the Michigan potato industry and showing its implications for the future.
CHAPTER II

Comparison and Contrast of the U.S. and Michigan Potato Industry

The purpose of this chapter is to tentatively investigate one main question: How does the Michigan Potato Industry compare with the U.S. Potato Industry? We will contrast them with reference to production and marketing issues. The years of 1962 to 1971 will be our most common reference.

1. Volume of Production and Value of Sales

A comparison of Michigan and the U.S. in these terms is interesting because it helps better assess the relative importance of the state in the national potato economy, for all seasonal groups.

While over the years 1962-1971, Michigan produced between 2.85 and 3.28 percent of the total national potato production (Table 1), the value of Michigan potato sales varied between 2.90 and 3.90 percent of the total national potato value of sales. In 1971, for instance, with a total volume of production of 9.5 million cwt, Michigan represented about 3 percent of the national potato production but 3.75 percent of the national value of sales.
Table 1
Annual Potato Production
U.S. and Michigan
1962-1971

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S. Production Million cwt</th>
<th>Michigan Production Million cwt</th>
<th>Michigan as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>264.8</td>
<td>8.789</td>
<td>3.21</td>
</tr>
<tr>
<td>1963</td>
<td>271.2</td>
<td>7.720</td>
<td>2.85</td>
</tr>
<tr>
<td>1964</td>
<td>241.1</td>
<td>7.933</td>
<td>3.19</td>
</tr>
<tr>
<td>1965</td>
<td>291.1</td>
<td>8.978</td>
<td>3.08</td>
</tr>
<tr>
<td>1966</td>
<td>307.2</td>
<td>9.430</td>
<td>3.07</td>
</tr>
<tr>
<td>1967</td>
<td>305.0</td>
<td>9.593</td>
<td>3.13</td>
</tr>
<tr>
<td>1968</td>
<td>295.4</td>
<td>9.705</td>
<td>3.28</td>
</tr>
<tr>
<td>1969</td>
<td>312.4</td>
<td>9.656</td>
<td>3.09</td>
</tr>
<tr>
<td>1970</td>
<td>325.7</td>
<td>10.550</td>
<td>3.24</td>
</tr>
<tr>
<td>1971</td>
<td>319.3</td>
<td>9.509</td>
<td>2.98</td>
</tr>
</tbody>
</table>


We can draw the following conclusions: (1) Michigan is not a very important state in the national potato economy; (2) however Michigan's importance in the potato economy of the Great Lakes region may not be well described by referring to the national level; and (3) Michigan potatoes have, with reference to national figures, a larger percentage of the value of sales than of the volume of production; Michigan potatoes, therefore, carried, on the average, better prices than potatoes from other states.

The picture is even more contrasted if we consider Michigan and the U.S. within each seasonal group.

The annual U.S. potato crop is divided between 6 seasonal groups: Winter, Early Spring, Late Spring,
Early Summer, Late Summer, and Fall. Potatoes produced in Michigan belong to either of the last two seasonal groups.

Table 2

Potato Production
Seasonal Groups
U.S. and Michigan
1962-1971
1,000 cwt

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
<th>U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1962</td>
<td>28,264</td>
<td>1,334</td>
<td>4.72</td>
<td>194,875</td>
<td>7,455</td>
<td>3.83</td>
</tr>
<tr>
<td>1963</td>
<td>28,182</td>
<td>1,545</td>
<td>5.50</td>
<td>198,195</td>
<td>6,175</td>
<td>3.12</td>
</tr>
<tr>
<td>1964</td>
<td>27,267</td>
<td>1,733</td>
<td>6.35</td>
<td>174,491</td>
<td>6,200</td>
<td>3.58</td>
</tr>
<tr>
<td>1965</td>
<td>29,578</td>
<td>1,208</td>
<td>4.10</td>
<td>216,749</td>
<td>7,770</td>
<td>3.58</td>
</tr>
<tr>
<td>1966</td>
<td>29,425</td>
<td>1,475</td>
<td>5.00</td>
<td>228,442</td>
<td>7,955</td>
<td>3.55</td>
</tr>
<tr>
<td>1967</td>
<td>29,624</td>
<td>1,853</td>
<td>6.47</td>
<td>231,656</td>
<td>7,740</td>
<td>3.34</td>
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<td>1968</td>
<td>30,061</td>
<td>1,942</td>
<td>6.47</td>
<td>221,906</td>
<td>7,763</td>
<td>3.50</td>
</tr>
<tr>
<td>1969</td>
<td>28,645</td>
<td>1,836</td>
<td>6.43</td>
<td>239,460</td>
<td>7,820</td>
<td>3.41</td>
</tr>
<tr>
<td>1970</td>
<td>29,815</td>
<td>1,800</td>
<td>6.05</td>
<td>253,525</td>
<td>8,750</td>
<td>3.46</td>
</tr>
<tr>
<td>1971</td>
<td>27,465</td>
<td>1,344</td>
<td>4.90</td>
<td>253,796</td>
<td>8,165</td>
<td>3.22</td>
</tr>
</tbody>
</table>

Table 3

Potato Value of Sales
Seasonal Groups
U.S. and Michigan
1962-1971
$1,000

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
<th>Fall U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>47,026</td>
<td>2,318</td>
<td>4.92</td>
<td>257,309</td>
<td>11,678</td>
<td>4.55</td>
</tr>
<tr>
<td>1963</td>
<td>51,921</td>
<td>2,910</td>
<td>5.60</td>
<td>302,269</td>
<td>10,555</td>
<td>3.50</td>
</tr>
<tr>
<td>1964</td>
<td>66,050</td>
<td>4,600</td>
<td>6.97</td>
<td>566,656</td>
<td>20,456</td>
<td>3.61</td>
</tr>
<tr>
<td>1965</td>
<td>63,057</td>
<td>2,748</td>
<td>4.36</td>
<td>402,745</td>
<td>16,467</td>
<td>4.09</td>
</tr>
<tr>
<td>1967</td>
<td>53,784</td>
<td>3,972</td>
<td>7.38</td>
<td>339,256</td>
<td>12,914</td>
<td>3.81</td>
</tr>
<tr>
<td>1968</td>
<td>55,581</td>
<td>3,997</td>
<td>7.28</td>
<td>413,862</td>
<td>14,977</td>
<td>3.62</td>
</tr>
<tr>
<td>1969</td>
<td>57,732</td>
<td>4,799</td>
<td>8.30</td>
<td>452,159</td>
<td>19,128</td>
<td>4.23</td>
</tr>
<tr>
<td>1970</td>
<td>65,049</td>
<td>4,542</td>
<td>6.98</td>
<td>442,819</td>
<td>20,659</td>
<td>4.66</td>
</tr>
<tr>
<td>1971</td>
<td>49,879</td>
<td>3,547</td>
<td>7.13</td>
<td>390,702</td>
<td>16,704</td>
<td>4.21</td>
</tr>
</tbody>
</table>


The production of Late Summer potatoes in Michigan almost tripled between 1955 and 1968. While over the years 1962-1971, Michigan produced between 4.7 and 6.5 percent of the total national Late Summer production (Table 2), the value of Michigan Late Summer potato sales varied between 4.4 and 8.3 percent of the value of sales of U.S. Late Summer potatoes (Table 3). Michigan Late Summer potatoes represent a large chunk of that season's national production and have thus a strong impact on the U.S. Late Summer market.

The production of Fall potatoes in Michigan varied between 6 and almost 9 million cwt during the period 1962-
1971. While over that period Michigan produced from 3.1 to 3.8 percent of the total national Fall production (Table 2), the value of Michigan Fall potato sales varied between 3.5 and 4.7 percent of the value of sales of U.S. Fall potatoes (Table 3).

On the average the difference between the percentage of the national value of sales and the percentage of the national volume of production Michigan represents in each seasonal group, was greater for Late Summer potatoes than for Fall potatoes, and, for all the years considered, was always positive. Whatever comparative advantage Michigan has, is reflected in the price it receives for its potatoes.

The importance of the Late Summer crop for Michigan is further shown by the fact that it extracted from it, over the period 1962-1971, between 14 and 24% of the value of its potato sales; the Fall crop representing the remainder, between 76 and 86%. Over the same period, at the national level, the Late Summer crop gave only between 8.5 and 12% of the value of sales of all U.S. potatoes while the Fall crop represented between 60 and 74% of this value of sales, the remainder being accounted for by the four other seasonal groups.

The Late Summer crop in Michigan also takes a large share of the acreage.

2. **Acreage and Yield**

Between 1962 and 1970 the total potato acreage in Michigan fluctuated between 50,000 and 42,000 acres.
Table 4 shows that acreage has declined steadily since 1965. About 25% of the acreage was devoted to the Late Summer crop, the rest to the Fall crop, all through the years.

Over the same period in the nation, potato acreage ranged from 1.31 to 1.50 million acres and, in general, was increasing (Table 4). About 8 to 10% of the acreage were devoted to the Late Summer crop, and this proportion tended to decrease, while 72 to 77% went to the Fall crop and that proportion tended to increase.

Table 4
Potato Acreage by Season
U.S. and Michigan
1962-1971
(in acres)

<table>
<thead>
<tr>
<th>Year</th>
<th>All Potatoes U.S.</th>
<th>All Potatoes Michigan</th>
<th>Late Summer U.S.</th>
<th>Late Summer Michigan</th>
<th>Fall U.S.</th>
<th>Fall Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>1,347,100</td>
<td>44,700</td>
<td>133,300</td>
<td>9,200</td>
<td>980,900</td>
<td>35,500</td>
</tr>
<tr>
<td>1963</td>
<td>1,323,000</td>
<td>42,800</td>
<td>135,100</td>
<td>10,300</td>
<td>950,200</td>
<td>32,500</td>
</tr>
<tr>
<td>1964</td>
<td>1,311,300</td>
<td>43,000</td>
<td>133,800</td>
<td>11,000</td>
<td>967,500</td>
<td>32,000</td>
</tr>
<tr>
<td>1965</td>
<td>1,418,400</td>
<td>50,200</td>
<td>130,900</td>
<td>11,200</td>
<td>1,040,700</td>
<td>39,000</td>
</tr>
<tr>
<td>1966</td>
<td>1,497,600</td>
<td>49,400</td>
<td>135,100</td>
<td>11,900</td>
<td>1,094,000</td>
<td>37,500</td>
</tr>
<tr>
<td>1967</td>
<td>1,499,100</td>
<td>48,500</td>
<td>128,200</td>
<td>11,300</td>
<td>1,116,000</td>
<td>37,500</td>
</tr>
<tr>
<td>1968</td>
<td>1,414,500</td>
<td>46,700</td>
<td>127,200</td>
<td>11,200</td>
<td>1,058,900</td>
<td>35,500</td>
</tr>
<tr>
<td>1969</td>
<td>1,457,600</td>
<td>47,500</td>
<td>121,300</td>
<td>11,000</td>
<td>1,104,600</td>
<td>36,500</td>
</tr>
<tr>
<td>1970</td>
<td>1,449,900</td>
<td>46,200</td>
<td>123,400</td>
<td>10,200</td>
<td>1,122,600</td>
<td>36,000</td>
</tr>
<tr>
<td>1971</td>
<td>1,432,400</td>
<td>45,800</td>
<td>115,600</td>
<td>9,800</td>
<td>1,107,900</td>
<td>36,000</td>
</tr>
</tbody>
</table>

Michigan Late Summer potatoes occupied a growing part of the total acreage devoted to this seasonal group in the U.S., whereas Michigan Fall potatoes occupied a decreasing part of the total acreage devoted to this seasonal group in the U.S.

Table 5

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>197</td>
<td>184</td>
<td>93.5</td>
</tr>
<tr>
<td>1963</td>
<td>205</td>
<td>171</td>
<td>83.5</td>
</tr>
<tr>
<td>1964</td>
<td>190</td>
<td>177</td>
<td>93.5</td>
</tr>
<tr>
<td>1965</td>
<td>210</td>
<td>189</td>
<td>90.0</td>
</tr>
<tr>
<td>1966</td>
<td>210</td>
<td>185</td>
<td>88.0</td>
</tr>
<tr>
<td>1967</td>
<td>209</td>
<td>204</td>
<td>97.5</td>
</tr>
<tr>
<td>1968</td>
<td>214</td>
<td>211</td>
<td>98.5</td>
</tr>
<tr>
<td>1969</td>
<td>221</td>
<td>223</td>
<td>100.5</td>
</tr>
<tr>
<td>1970</td>
<td>229</td>
<td>246</td>
<td>107.5</td>
</tr>
<tr>
<td>1971</td>
<td>230</td>
<td>207</td>
<td>90.0</td>
</tr>
</tbody>
</table>

Source: Michigan Agricultural Statistics, various years

Yield per acre in Michigan is rising and has exceeded the national average in the last few years (Table 5). This was accomplished while acreage planted was reduced, so we can infer that better yields are partly due to either the use of better production techniques or to the use of soils more suitable to potatoes.
For Late Summer potatoes, yields in Michigan although rising up to 210 cwt/acre in 1970 were far below national average (Table 6). The situation has improved over the years but yields seem to be stabilized now at 80% of the national figures for this crop.

Fall potato yields in Michigan rose sharply between 1966 and 1970 from 205 to 250 cwt/acre (Table 6), or about a 5% yearly increase. Since 1966 Michigan yields have been above national average by as much as 12.5%. This was accomplished while acreage planted for the Fall crop was reduced.

Table 6

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Late Summer Michigan</th>
<th>as a % of U.S.</th>
<th>U.S.</th>
<th>Fall Michigan</th>
<th>as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>212</td>
<td>145</td>
<td>68.5</td>
<td>199</td>
<td>210</td>
<td>105.5</td>
</tr>
<tr>
<td>1963</td>
<td>209</td>
<td>150</td>
<td>72.0</td>
<td>209</td>
<td>190</td>
<td>91.0</td>
</tr>
<tr>
<td>1964</td>
<td>206</td>
<td>159</td>
<td>77.5</td>
<td>187</td>
<td>200</td>
<td>107.0</td>
</tr>
<tr>
<td>1965</td>
<td>229</td>
<td>115</td>
<td>50.0</td>
<td>214</td>
<td>210</td>
<td>98.0</td>
</tr>
<tr>
<td>1966</td>
<td>220</td>
<td>125</td>
<td>57.0</td>
<td>214</td>
<td>215</td>
<td>100.5</td>
</tr>
<tr>
<td>1967</td>
<td>227</td>
<td>170</td>
<td>75.0</td>
<td>212</td>
<td>215</td>
<td>101.5</td>
</tr>
<tr>
<td>1968</td>
<td>240</td>
<td>175</td>
<td>73.0</td>
<td>215</td>
<td>225</td>
<td>104.5</td>
</tr>
<tr>
<td>1969</td>
<td>243</td>
<td>170</td>
<td>70.0</td>
<td>223</td>
<td>230</td>
<td>103.0</td>
</tr>
<tr>
<td>1970</td>
<td>246</td>
<td>180</td>
<td>73.0</td>
<td>233</td>
<td>250</td>
<td>107.0</td>
</tr>
<tr>
<td>1971</td>
<td>243</td>
<td>140</td>
<td>57.5</td>
<td>236</td>
<td>230</td>
<td>97.5</td>
</tr>
</tbody>
</table>

It seems that Michigan is gifted, as far as yields, for Fall potatoes and handicapped for the Late Summer crop.

Paradoxically the Late Summer crop, for some years, increased its share of total acreage planted in Michigan, and its volume of production, (+350% between 1955 and 1968), while the volume of the Fall crop increased by a mere 60% over the same period. The explanation seems to lie in price considerations as we will see shortly.

3. Farm Prices

3.1 All Potatoes

Between 1955 and 1971 U.S. farm prices for all types of potatoes varied between 1.31 and 3.50 $/cwt; in the last years (1966 to 1971) it stabilized at just over 2 $/cwt on the average.


If we compare U.S. and Michigan prices year by year (Table 7), we see that this state's growers usually received higher prices; the difference being as large as 30% in 1971.
Table 7
Farm Prices
All Potatoes
U.S. and Michigan
(1955-1971)
($/cwt)

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955</td>
<td>1.79</td>
<td>1.67</td>
<td>93.5</td>
</tr>
<tr>
<td>1956</td>
<td>2.01</td>
<td>1.46</td>
<td>72.5</td>
</tr>
<tr>
<td>1957</td>
<td>1.93</td>
<td>2.38</td>
<td>123.3</td>
</tr>
<tr>
<td>1958</td>
<td>1.31</td>
<td>1.51</td>
<td>115.2</td>
</tr>
<tr>
<td>1959</td>
<td>2.03</td>
<td>2.26</td>
<td>111.0</td>
</tr>
<tr>
<td>1960</td>
<td>2.00</td>
<td>2.22</td>
<td>111.0</td>
</tr>
<tr>
<td>1961</td>
<td>1.36</td>
<td>1.48</td>
<td>109.0</td>
</tr>
<tr>
<td>1962</td>
<td>1.67</td>
<td>1.89</td>
<td>113.2</td>
</tr>
<tr>
<td>1963</td>
<td>1.78</td>
<td>2.00</td>
<td>112.2</td>
</tr>
<tr>
<td>1964</td>
<td>3.50</td>
<td>3.63</td>
<td>103.5</td>
</tr>
<tr>
<td>1965</td>
<td>2.53</td>
<td>2.49</td>
<td>98.5</td>
</tr>
<tr>
<td>1966</td>
<td>2.04</td>
<td>2.43</td>
<td>119.0</td>
</tr>
<tr>
<td>1967</td>
<td>1.86</td>
<td>1.97</td>
<td>106.0</td>
</tr>
<tr>
<td>1968</td>
<td>2.23</td>
<td>2.22</td>
<td>99.5</td>
</tr>
<tr>
<td>1969</td>
<td>2.23</td>
<td>2.69</td>
<td>120.5</td>
</tr>
<tr>
<td>1970</td>
<td>2.21</td>
<td>2.72</td>
<td>123.0</td>
</tr>
<tr>
<td>1971</td>
<td>1.90</td>
<td>2.47</td>
<td>130.0</td>
</tr>
</tbody>
</table>

1970-1971 Potatoes and Sweet Potatoes, August 1972, USDA.

For Michigan:
1968-1971, Potatoes and Sweet Potatoes, July 1972 and August 1972, USDA.

Graph 1 shows diagrammatically the relationship between Michigan and U. S. prices.
Prices received by Farmers All Potatoes

$/cwt

1/20 INCH = 2.5¢

Source: same as Table 7
3.2 Late Summer Potatoes

Although prices for Michigan Late Summer potatoes between 1955 and 1971 had a general upward trend (see Graph 2) the trend between 1964 and 1968 was definitely downward.

Michigan Late Summer potatoes, however, quite consistently carried prices much higher than the national average for this crop as is shown in Table 8.

Table 8

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>1.86</td>
<td>1.99</td>
<td>107.0</td>
</tr>
<tr>
<td>1963</td>
<td>2.01</td>
<td>2.07</td>
<td>103.0</td>
</tr>
<tr>
<td>1964</td>
<td>2.62</td>
<td>2.96</td>
<td>113.0</td>
</tr>
<tr>
<td>1965</td>
<td>2.30</td>
<td>2.59</td>
<td>112.5</td>
</tr>
<tr>
<td>1966</td>
<td>2.19</td>
<td>2.81</td>
<td>128.3</td>
</tr>
<tr>
<td>1967</td>
<td>2.04</td>
<td>2.37</td>
<td>116.0</td>
</tr>
<tr>
<td>1968</td>
<td>1.97</td>
<td>2.28</td>
<td>115.8</td>
</tr>
<tr>
<td>1969</td>
<td>2.19</td>
<td>3.09</td>
<td>141.0</td>
</tr>
<tr>
<td>1970</td>
<td>2.36</td>
<td>2.86</td>
<td>121.2</td>
</tr>
<tr>
<td>1971</td>
<td>1.96</td>
<td>2.91</td>
<td>148.5</td>
</tr>
</tbody>
</table>


As we hinted before this premium is perhaps the reason why Late Summer potatoes have been lately
Prices received by Michigan Farmers for Late Summer Potatoes $/cwt

Source: USDA

Potatoes and Sweetpotatoes,

various issues.
emphasized in Michigan notwithstanding their relative disadvantage in terms of yields.

3.3 Fall Potatoes

Graph 3 shows that between 1955 and 1969 prices for Michigan Fall potatoes varied without a definite pattern. No trend appears except for a slight increase roughly following general price inflation.

Michigan Fall potatoes quite consistently carried much higher than the national average for this crop. The premium has usually been over 10% but up to 35%, as shown in Table 9.

Table 9
Farm Prices
Fall Potatoes
U.S. and Michigan
1962-1971
($/cwt)

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Michigan</th>
<th>Michigan as a % of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>1.48</td>
<td>1.87</td>
<td>126.5</td>
</tr>
<tr>
<td>1963</td>
<td>1.70</td>
<td>1.98</td>
<td>116.5</td>
</tr>
<tr>
<td>1964</td>
<td>3.63</td>
<td>3.82</td>
<td>105.0</td>
</tr>
<tr>
<td>1965</td>
<td>2.10</td>
<td>2.47</td>
<td>117.5</td>
</tr>
<tr>
<td>1966</td>
<td>1.97</td>
<td>2.36</td>
<td>119.8</td>
</tr>
<tr>
<td>1967</td>
<td>1.68</td>
<td>1.87</td>
<td>111.2</td>
</tr>
<tr>
<td>1968</td>
<td>2.11</td>
<td>2.20</td>
<td>104.2</td>
</tr>
<tr>
<td>1969</td>
<td>2.14</td>
<td>2.60</td>
<td>121.5</td>
</tr>
<tr>
<td>1970</td>
<td>1.98</td>
<td>2.69</td>
<td>136.0</td>
</tr>
<tr>
<td>1971</td>
<td>1.77</td>
<td>2.39</td>
<td>135.0</td>
</tr>
</tbody>
</table>

1970-1971, Potatoes and Sweet Potatoes, August 1972, USDA.
Here again, as when considering other variables, we see that Late Summer potatoes are strongly differentiated from Fall potatoes: Late Summer tubers obtain the largest premium over the national average and their price grows much faster than Fall potato prices.

Michigan's situation as far as price is generally good, sometimes excellent (e.g., in the last three years) depending on the years considered. These annual averages, however, can hide a different situation within a year's sales or a season's sales. This is why it is necessary to examine price seasonality which, among other effects, can create a disparity between producers and can be given attention to when planning for marketing.

4. Price Seasonality, and Pattern of Shipments, All Potatoes

Graph 4 shows monthly prices for Michigan potatoes (thin line) and for all U.S. potatoes (thick line) over seven years.

Michigan prices are usually closest to the national average in August, September, and October, but diverge in November and December, sometimes widely. They are furthest from the national average in July, May and April. As appears from Graph 4 this seasonal pattern is fairly stable; it can be taken advantage of when planning for marketing.

Table 10 is a statistic over 13 years of monthly price differentials. Its last row shows that price
### Table 10

**Monthly Price Differentials for all Potatoes**  
*Michigan Price minus Average U.S. Price*  
1959-1971  
*Dollar/cwt*

<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>+.29</td>
<td>+.35</td>
<td>+.31</td>
<td>+.12</td>
<td>-.87</td>
<td>NQ</td>
<td>.00</td>
<td>-.08</td>
<td>+.08</td>
<td>+.05</td>
<td>+.36</td>
<td>+.24</td>
</tr>
<tr>
<td>1960</td>
<td>+.01</td>
<td>+.04</td>
<td>-.10</td>
<td>+.23</td>
<td>+.51</td>
<td>NQ</td>
<td>-.09</td>
<td>.15</td>
<td>+.10</td>
<td>+.30</td>
<td>+.38</td>
<td>+.44</td>
</tr>
<tr>
<td>1961</td>
<td>+.40</td>
<td>+.56</td>
<td>+.61</td>
<td>+.19</td>
<td>+.31</td>
<td>NQ</td>
<td>+.33</td>
<td>+.07</td>
<td>+.05</td>
<td>+.11</td>
<td>+.25</td>
<td>+.33</td>
</tr>
<tr>
<td>1962</td>
<td>+.23</td>
<td>+.23</td>
<td>+.17</td>
<td>+.40</td>
<td>-.23</td>
<td>NQ</td>
<td>+.12</td>
<td>+.06</td>
<td>+.19</td>
<td>+.27</td>
<td>+.27</td>
<td>+.27</td>
</tr>
<tr>
<td>1963</td>
<td>+.27</td>
<td>+.39</td>
<td>+.62</td>
<td>+.42</td>
<td>+.17</td>
<td>NQ</td>
<td>+.95</td>
<td>+.14</td>
<td>+.16</td>
<td>+.22</td>
<td>+.48</td>
<td>+.47</td>
</tr>
<tr>
<td>1964</td>
<td>+.38</td>
<td>+.33</td>
<td>+.15</td>
<td>+.16</td>
<td>-.42</td>
<td>NQ</td>
<td>+.46</td>
<td>+.20</td>
<td>+.31</td>
<td>+.52</td>
<td>+.31</td>
<td>+.31</td>
</tr>
<tr>
<td>1965</td>
<td>+.32</td>
<td>+.23</td>
<td>-.07</td>
<td>-.34</td>
<td>+.01</td>
<td>NQ</td>
<td>-.48</td>
<td>+.35</td>
<td>+.16</td>
<td>-.28</td>
<td>-.24</td>
<td>+.80</td>
</tr>
<tr>
<td>1966</td>
<td>+.65</td>
<td>+.73</td>
<td>+.61</td>
<td>+1.17</td>
<td>+1.45</td>
<td>NQ</td>
<td>+1.77</td>
<td>+.94</td>
<td>+.09</td>
<td>+.04</td>
<td>+.42</td>
<td>+.61</td>
</tr>
<tr>
<td>1967</td>
<td>+.65</td>
<td>+.47</td>
<td>+.75</td>
<td>+.75</td>
<td>+.41</td>
<td>NQ</td>
<td>+.96</td>
<td>+.09</td>
<td>+.01</td>
<td>+.00</td>
<td>+.45</td>
<td>+.41</td>
</tr>
<tr>
<td>1968</td>
<td>+.32</td>
<td>+.33</td>
<td>+.30</td>
<td>-.15</td>
<td>-.09</td>
<td>NQ</td>
<td>+.29</td>
<td>+.24</td>
<td>+.13</td>
<td>+.07</td>
<td>+.47</td>
<td>+.33</td>
</tr>
<tr>
<td>1969</td>
<td>+.40</td>
<td>+.34</td>
<td>+.20</td>
<td>+.14</td>
<td>+.33</td>
<td>NQ</td>
<td>+1.10</td>
<td>+.92</td>
<td>+.21</td>
<td>+.23</td>
<td>+.96</td>
<td>+.89</td>
</tr>
<tr>
<td>1970</td>
<td>+1.27</td>
<td>+1.46</td>
<td>+1.22</td>
<td>+1.12</td>
<td>+1.00</td>
<td>NQ</td>
<td>+.03</td>
<td>+.15</td>
<td>+.48</td>
<td>+.54</td>
<td>+.74</td>
<td>+.84</td>
</tr>
<tr>
<td>1971</td>
<td>+.91</td>
<td>+.98</td>
<td>+1.02</td>
<td>+1.13</td>
<td>+.60</td>
<td>NQ</td>
<td>+1.69</td>
<td>+.87</td>
<td>+.36</td>
<td>+.24</td>
<td>+.72</td>
<td>+.75</td>
</tr>
</tbody>
</table>

**Average of the absolute values**  
.47  .495  .47  .485  .505 //  .635  .33  .18  .22  .465  .515

<table>
<thead>
<tr>
<th>Rank of the month</th>
<th>6th</th>
<th>4th</th>
<th>6th</th>
<th>5th</th>
<th>3rd</th>
<th>1st</th>
<th>9th</th>
<th>11th</th>
<th>10th</th>
<th>8th</th>
<th>2nd</th>
</tr>
</thead>
<tbody>
<tr>
<td>NQ: not quoted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** USDA, Potatoes and Sweet Potatoes, various issues.
differences between Michigan and U.S. potatoes were largest on the average, in July. Months were ranked according to the size of the price difference, from largest to slightest: July, December, May, February, April, March, January, November, August, October, September (June is not quoted in Michigan).

This ranking of months can be explained partly by the seasonal pattern of shipments of Michigan potatoes:

\[\text{Diagram of seasonal pattern of shipments of Michigan potatoes.}\]

Key:  
- Most active shipping period
- Shipping decreases or ends
- No shipping
- New crop begins to be shipped


The two crops of the state appear distinctly: the late Summer crop from the beginning of August to mid-September, the Fall crop harvested in October and shipped until mid-April.

During the period May to July the supply of Michigan potatoes is very low; in May the Fall crop has been sold already; in July the Late Summer crop has not yet been harvested.
In August, September and October (the three months with the slightest difference in prices), the supply of Michigan potatoes is very abundant which tends to depress prices and bring them close to the national average; in August the Late Summer crop is harvested (it lasts until mid-September); in October the Fall crop is harvested.

September is the month of lowest price differential for Michigan potatoes. That low price differential is explained by the fact that the late summer and fall crop harvests overlap - creating a market glut. The law of supply and demand works to its fullest.

To further confirm this analysis we can look at the comparison of shipments from Michigan with shipments from the whole United States (Table 11).

Table 11 shows that:

1) The month of heaviest shipments in the U.S., June, is that of lightest shipments for Michigan,

2) Symetrically, the months when Michigan ships a large part of its production, September and October, are also months when shipments in the U.S. are at an average or low level (sixth and tenth months).

We notice that the ranking of months, according to the number of unloads from Michigan (Table 11) is almost completely the reverse of the ranking of months according to price differentials (Table 10).

Thus Michigan has a somewhat acyclical shipping pattern as compared to the United States as a whole. Its
Table II
1971 U.S. Shipments to 41 Cities - Seasonality - Number of unloads - Fresh Potatoes

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>1971</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total U.S. &amp; Can., Rail &amp; Truck 1971</td>
<td>11404</td>
<td>10488</td>
<td>12217</td>
<td>11714</td>
<td>10897</td>
<td>13376</td>
<td>11437</td>
<td>11072</td>
<td>11334</td>
<td>10900</td>
<td>11218</td>
<td>10539</td>
<td>136596</td>
<td>143946</td>
</tr>
<tr>
<td>Month as a % of Total Year</td>
<td>8.35%</td>
<td>7.68%</td>
<td>8.95</td>
<td>8.57</td>
<td>7.97%</td>
<td>9.80%</td>
<td>8.37</td>
<td>8.10</td>
<td>8.32</td>
<td>7.97</td>
<td>8.22</td>
<td>7.72%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order of Months</td>
<td>5</td>
<td>12</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>10</td>
<td>7</td>
<td>11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1971 Michigan Shipments to 41 Cities - Seasonality - Number of unloads - Fresh Potatoes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Michigan RR&amp;T 1971</td>
<td>605</td>
<td>578</td>
<td>501</td>
<td>299</td>
<td>80</td>
<td>6</td>
<td>77</td>
<td>779</td>
<td>873</td>
<td>854</td>
<td>614</td>
<td>550</td>
<td>5816</td>
<td>6860</td>
</tr>
<tr>
<td>Month as a % of Total Year</td>
<td>10.4%</td>
<td>9.95%</td>
<td>8.6%</td>
<td>5.15%</td>
<td>1.37%</td>
<td>0.1%</td>
<td>1.32%</td>
<td>13.4%</td>
<td>15%</td>
<td>14.7%</td>
<td>16.55%</td>
<td>9.45%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Order of Months</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>12</td>
<td>11</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>.4</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michigan's Shipments as a % of Total U.S. &amp; Can. Shipments</td>
<td>5.30%</td>
<td>5.52%</td>
<td>4.10%</td>
<td>2.55%</td>
<td>0.73%</td>
<td>-</td>
<td>0.67%</td>
<td>7.05%</td>
<td>7.70%</td>
<td>7.83%</td>
<td>5.46%</td>
<td>5.22%</td>
<td>4.26%</td>
<td></td>
</tr>
</tbody>
</table>

production arrives on the market when supply is scarce. This is possible because of Michigan's locational advantage: near large midwestern markets. This should, and apparently does, give Michigan a price advantage over its national competitors.

5. Modes of Transportation

The modes of transportation of a crop have a significant impact on its overall marketing pattern; they affect:

- the cost,

- the quality, more or less bruising, better or worse refrigeration, handling risks,

- the speed with which the crop is to be delivered to the end or intermediate market after leaving the region where it is raised,

- the speed of response to particular needs because of the different flexibility of the various means of transportation,

- the relative size of shipments (carlots or less than carlots), with a relationship to cost,

- the geographical coverage, trucks cover more area more conveniently, with greater ease of access to small markets.

The only available statistics on modes of transportation used for potatoes relate only to the fresh market, and further only to 41 major U.S. cities.
According to these statistics, potatoes have been transported as shown in Table 12.

Truck transportation has decreased in the U.S. as a percentage of the total; on the contrary, rail transportation has increased from 34.6% in 1969 to 41% in 1971. This is apparently a result of rising importance of Western producing states that are further from major markets and thus find rail shipment far more economical.

In the transportation of Michigan potatoes to the 41 cities, the contribution of railroads is completely negligible: 0.4%. One can say that Michigan potatoes are shipped only by means of truck.

Michigan thus, ships its potatoes in a way totally different from national habits.

Interestingly as they are these figures do not account for the whole reality, by a long shot. To begin with they cover only fresh potatoes and in this country fresh potatoes represent only about 50% of the total potato consumption. Furthermore, because only "41 major cities" are included, the number of unloads reported is only 43% of the total U.S. fresh consumption. To sum it up the "41 cities" reports account for only about one half of the U.S. fresh consumption and one fifth (21.5% in 1971) of the total U.S. potato production.

The 5816 unloads coming from Michigan in 1971 (1 unload equals 500 cwt) as accounted by the "41 cities" reports, represented 30% of the total Michigan 1971 potato
production. This elicits an important remark: Michigan ships 30% of its production to the 41 major cities, whereas the U.S. as a whole ships 21.5 of its production to these 41 cities. The fact that Michigan concentrates its sales on large cities, as we shall see in the next section, is further exemplified by Table 11: while it produces only about 3% of U.S. potatoes in volume, Michigan makes 4.26% of all U.S. shipments (Table 11, last row). Michigan ships more to the 41 major cities than its "fair share".

Table 12
Modes of Transportation, U.S. and Michigan
Fresh Potatoes to 41 Cities
1969 to 1971

<table>
<thead>
<tr>
<th></th>
<th>U.S. Percentage of Unloads</th>
<th>Michigan Percentage of Unloads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rail</td>
<td>Trucks</td>
</tr>
<tr>
<td>1969</td>
<td>34.6%</td>
<td>65.4%</td>
</tr>
<tr>
<td>1970</td>
<td>36.8%</td>
<td>63.2%</td>
</tr>
<tr>
<td>1971</td>
<td>41.1%</td>
<td>59.1%</td>
</tr>
</tbody>
</table>


6. Spatial Distribution

Here, instead of looking at Michigan as compared to the whole U.S. we shall look at it as compared to other states that compete with it on its major markets.
We shall neglect Michigan's rail shipments, except to say that Chicago represents 92% of them.

Our focus will be on unloads of Michigan and other states fresh potatoes (trucked and railed) based, as before, on the "41 cities" reports. Table 13 shows these unloads for the year 1971.

The major market for Michigan potatoes is Detroit. This city receives 66% of the state's recorded unloads. Only 52.5% of the unloads in Detroit in 1971 are Michigan potatoes. Other important suppliers in Detroit are: Idaho (with a 16% potato market share), California (9%), and Florida (6.5%).

The second most important market for Michigan potatoes is Pittsburgh, Pa., which receives 7% of the state's unloads. But Michigan is second to Maine on this market, with a market share of 12.8% versus 24.6% for Maine. On the heels of Michigan are Pennsylvania itself (12.7% share) and Idaho.

The third most important market for Michigan is Cleveland, Oh., which receives 6.1% of Michigan's unloads. This state has a good market share (8.2%) but it is superseded by several competitors: Idaho (18.5%), Maine and California.

The fourth market for Michigan is Cincinnati, Oh., where it sends 4.3% of its unloads. But Michigan ranks only fifth with 7.3% of the market, behind Idaho, Wisconsin, North Dakota (11.1% market share), and Indiana.
The fifth market for Michigan is Indianapolis, Ind., where it sends 3.15% of its unloads. Michigan with 5.1% of the market is out-ranked by four competitors: Idaho (41% share!), Indiana, Wisconsin, California. Maine is close to Michigan with a 3.9% share.

The next six markets for Michigan potatoes are the following: (Michigan's percentage of total unloads are shown in parenthesis) Louisville, KY. (2.45%), Birmingham, Ala., (1.9%), Nashville, Tenn. (1.9%), Memphis, Tenn. (1.7%), Atlanta, Ga. (1.7%), and finally Chicago, Ill. (1.7% or 99/5816).

Michigan shipments are represented on Map I.

Michigan seems to have very small and dispersed markets outside of Detroit. Except for Detroit, Michigan does not send more than 10% of its unloads to any particular city. Likewise it is relatively rare that Michigan supplies more than 10% of a city market, the only exceptions being Detroit and Pittsburgh. Dispersion has some marketing drawbacks but also some advantages.

Although lone and numerous communication lines can hamper the easy flow of information and products, it is positive to be positioned on several markets each of which is not crucial to the financial balance of the industry; vulnerability is diminished when the marketing risk is scattered among several customers.
<table>
<thead>
<tr>
<th>Unloads from California to the city</th>
<th>California as a % of all city unloads</th>
<th>Unloads from Maine as a % of all city unloads</th>
<th>Unloads from Wisconsin as a % of all city unloads</th>
<th>Unloads from Indiana as a % of all city unloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>659</td>
<td>9%</td>
<td>172</td>
<td>192</td>
<td>9</td>
</tr>
<tr>
<td>320</td>
<td>9.5%</td>
<td>783</td>
<td>117</td>
<td>185</td>
</tr>
<tr>
<td>405</td>
<td>12.3%</td>
<td>530</td>
<td>191</td>
<td>17.2%</td>
</tr>
<tr>
<td>179</td>
<td>6%</td>
<td>61</td>
<td>584</td>
<td>16.3%</td>
</tr>
<tr>
<td>241</td>
<td>6.9%</td>
<td>137</td>
<td>571</td>
<td>16.7%</td>
</tr>
</tbody>
</table>
Table 13
1971 Unloads and Fresh Potato Market Shares

<table>
<thead>
<tr>
<th>City</th>
<th>Total Unloads in the city</th>
<th>Unloads from Michigan to the city</th>
<th>The city as a % of all Michigan unloads</th>
<th>Michigan as a % of all city unloads</th>
<th>Unloads from Idaho to the city</th>
<th>Idaho as a % of all city unloads</th>
<th>Unloads from California to the city</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit, MI</td>
<td>7320</td>
<td>3860</td>
<td>66%</td>
<td>52.5%</td>
<td>1168</td>
<td>16%</td>
<td>659</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>3187</td>
<td>409</td>
<td>7%</td>
<td>12.8%</td>
<td>378</td>
<td>11.9%</td>
<td>320</td>
</tr>
<tr>
<td>Cleveland, OH</td>
<td>4288</td>
<td>352</td>
<td>6.1%</td>
<td>8.2%</td>
<td>797</td>
<td>18.5%</td>
<td>405</td>
</tr>
<tr>
<td>Cincinnati, OH</td>
<td>3387</td>
<td>248</td>
<td>4.3%</td>
<td>7.3%</td>
<td>615</td>
<td>18.2%</td>
<td>179</td>
</tr>
<tr>
<td>Indianapolis, Ind.</td>
<td>3511</td>
<td>179</td>
<td>3.15%</td>
<td>5.1%</td>
<td>1438</td>
<td>41.0%</td>
<td>241</td>
</tr>
</tbody>
</table>

MAP I

Percentage of the Michigan Fresh Potatoes
Truck Unloads To...

Source: USDA, Unloads in 41 cities.
CHAPTER III

The Marketing Behavior of Michigan Potato Growers and Shippers

Data presented in this chapter were made available by the cooperation and combined efforts of many people. Special recognition must go to those potato growers and shippers who agreed to take the time to answer our questions. Without their cooperation in this task, this work could not have been possible.

Drawing on the information gathered during interviews and contained in the answers to our mailed questionnaire, we shall first describe growers and grower-shippers in their producing and marketing activities, then shippers and grower-shippers in their marketing activities, with a 4 P's framework.

1. Growers and Grower-Shippers

1.1 The product

Three main aspects are discussed under this heading:

1) destination of the product toward final utilization (i.e., tablestock, chipping stock, seed),

2) varieties grown,

3) grading practices.
1.1.1 Destination of the product

Potato growers in Michigan are highly specialized. There is a clear cut difference between those who raise potatoes for tablestock and those who raise potatoes for chipping stock. Seed growers are also specialized but less so and often combine their seed operation with either tablestock or chipping stock production, usually the former rather than the latter.

There is a strong product specialization with respect to the final utilization of the product. Out of 13 growers and grower-shippers, 6 grow potatoes 100% for tablestock, 2 grow 100% for chipping stock, 3 grow 90% either for table or chipping stock, one of this is thinking about going all the way for one type; of the two remaining, one combines tablestock 20% and seed 80%, the other tablestock 70%, seed 30%. Only one 100% man is thinking about going to the other type of product.

There are several reasons for this all-or-nothing behavior with respect to the type of product raised. Some are physical, some are institutional, still others are economic, some are even of an emotional nature.

One of the physical reasons why people specialize is that the temperature at which chipping stock potatoes must be stored is high (between 50 and 55°F.).

"When potatoes are harvested and placed in storage, they are usually held at a temperature of 50° to 60°F. and relatively high humidity for 10 to 14 days. Under these conditions cuts and bruises heal rapidly, and subsequent losses from shrinkage and decay are reduced. After the preliminary curing period, storage
temperatures for tablestock potatoes are reduced to 38° to 40°F. Potatoes stored at 50° to 60°F. have better cooking and processing qualities because of the lower accumulate of reducing sugars in the tubers. However, at the higher temperatures sprouting occurs about 2 or 3 months, and shrinkage is much greater. Although a limited amount of sprouting does not affect the quality of tablestock potatoes, badly sprouted stock is "flabby" and difficult to market.

--If potatoes are to be processed within three months after harvest they are usually held at a storage temperature of 55° to 60°F., but if they are to be held for longer periods of storage this temperature is usually reduced to 50° to 55°F. Processing potatoes from storage are usually "reconditioned". That is, the storage temperature is raised to 60° to 70°F. for 2 to 4 weeks prior to shipment. This "reconditioning" reverses the physiological process and reduces the sugar content of the tubers".1

"If potatoes have been stored warm and if they don't chip well, i.e. do not give the required color grade, they are difficult to sell for tablestock." The reverse is all the more true, potatoes stored too cool and not properly re-conditioned will not chip well. As very often growers either have only one storage area and/or do not want to invest in special heating or cooling equipment, they specialize. The same temperature problem arises with soil temperature at harvest time; harvesting at different periods would complicate operations.

A second physical reason for specialization is the complex of variety-soil-irrigation-weather. Different varieties have different processing qualities, similarly they have different tablestock qualities. Most varieties

--

1John, K. Hanes, Organization and Structure of the Red River Valley Potato Industry, op.cit., p. 41.
that will chip well (i.e. produce a light colored chip) will not boil well. Different soils are more or less adapted to different varieties. The length of the growing season and rainfall also condition the optimal varieties to be grown in a region. One grower mentioned that the lack of irrigation obliged him to grow chipping stock only, because, although his product chipped well, the tubers were not smooth and nice enough for tablestock.

The institutional reason for specialization is that growers identify growing for chipping stock with contracting. In effect most growers raising for chipping stock do contract (see below). The characteristics of contracting for processing lead to very different farming practices: we mentioned the variety issue, but also affected are spraying practices (for weeds and insects), the use and ownership of grading and/or packaging equipment, the use and ownership of storage areas and their type, the financial management of the farm. The price certainty which characterizes contracting is considered either as an advantage or as a disadvantage by different growers (see below). Some growers will not produce chipping potatoes because they would have to contract and feel that "contracts with processors are undependable". The channels taken by chipping and tablestock potatoes are different and to deal in both complicates the growers' selling activities. As shippers also seem to be specialized (see below), this must be linked with the fact that growers often have particular
ties with their shipper. Some growers sell their entire crop to a single shipper who thus has the exclusive use of the grower's production.

Economic reasons for specialization are numerous. Several growers went out or plan to go out of the tablestock business because of the costs of packaging operations: labor requirements with their rising cost, grading requirements, the need to grade out other than number one tubers, the cost of big inventory, and finally price uncertainty since pre-harvest contracting is not customary for tablestock. All are deterrents.

Competitive reasons are also pointed out: first, contracted potatoes seem to carry, on the average, a lower price than those sold on the tablestock market; secondly, some varieties, such as Russet Burbank, have such a good fresh market that it is not thinkable to sell them for chipping; thirdly, some growers are located so far from processing plants that processing potatoes would not be able to support a costly freight.

One grower even told the author, "I will not go into the chipping stock business if I can help it, the best potatoes in the United States shouldn't go to chips" and another said that "the housewife should be educated to go back to the good tasting fresh potatoes". Probably these emotional reasons mix with the more economic ones but they should not be neglected.
The mixt of tablestock and seed production can be explained by considering either sizing or market availability. Under appropriate growing conditions a grower can cheaply size his potatoes, sell the small ones as seed, and market bigger ones for tablestock. Small seeds are in favor because they eliminate the need for a cutting operation before planting. Another advantage is that the "pee wees" are not marketable as tablestock. One grower who is in a region well suited for seeds did not go into this business as much as he could have under other conditions because he feels a lack of market, being somewhat isolated in a region with few growers. This example shows the importance of market availability.

A grower explains why he sells tablestock as well as chipping stock by saying that "what does not chip is sold on the tablestock market". This is possible because: 1) Chipping stock need not be stored; 2) Even if it has been stored at temperatures higher than 50°F., it can be sold as Unclassified (which is not a grade); and 3) Sales on the tablestock market as Unclassified are made to non-professionals who can be easily fooled. In effect there exist markets for lower grade tablestock potatoes, under the name Unclassified, in other places these potatoes would be dehydrated for instance, whereas "what doesn't chip, just doesn't and can't be sold for this purpose."
1.1.2 The Varieties grown in Michigan

Michigan potato producers grow a very large number of different varieties. The mailed questionnaire shows that on each farm several varieties are grown. Eighty-two tabulated answers show an average of more than two varieties grown per farm. Some grow as many as 6 varieties - Table 14 summarizes the results of answers to the mailed questionnaire.

Of the 31 specified varieties, 7 cited more than 5 times represent almost 88% of the total quantity reported by the sample. If we add the next 5 largest producing varieties, La Rouge, FL 460, Norgold, Haig and FL 73, these 12 varieties represent 95.75% of the total quantity reported.

The reasons for this situation are several:

1) Different varieties are grown for the two seasons in which Michigan harvests potatoes: Late Summer and Fall, the cutting point being around September 1st.

Over the years the situation has evolved: in 1954 it was estimated that of seven varieties commercially important in Michigan, "the Irish Cobbler was the most important early variety and Chippewa was the leading midseason one. Principal late varieties included Russet Rural, Katahdin, Sebago, Green Mountain and Pontiac".¹ No estimate was

Table 14

Characteristics of Varieties Grown in Michigan

<table>
<thead>
<tr>
<th>Variety Name</th>
<th>Times Cited</th>
<th>Total Quantity Produced in the Variety, in cwt</th>
<th>Total Acreage Planted in the Variety</th>
<th>Average Acreage per farm in the Variety</th>
<th>Average Yield cwt/acre</th>
<th>Cumulative Quantity for All Varieties in cwt</th>
<th>This variety as a percentage of quantity for all varieties</th>
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<td>1</td>
<td>350</td>
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</table>

Source: Mailed questionnaire to potato growers, Dept. of Ag. Econ., MSU, April, 1973.

Note: As some respondents only cited the name of the varieties they grow without giving the acreage or the yield or the production, their answers are reported here for the "times cited" but they are not included in the calculation of other totals and averages. Several times only the acreage was reported and in some cases the figure was quite large, thus some figures are distorted.
given as to the total number of varieties. A 1967 study estimated that the "number of varieties being offered for sale had diminished," and that "four varieties (Russet Burbank, Onaway, Sebago, and Katahdin) accounted for over 80% of Michigan production." Harvesting dates were normally:

- Early August for (Irish Cobbler), Norland, (Cherokee), Onaway,
- Late August for Chippewa, (Snowflake), Superior, Norgold Russet,
- Early September for Arenac, (La Chipper),
- Late September for (Emmet), Katahdin, Kennebec, Russet Burbank,
- Early October, for Merrimack, Russet Rural, Sebago.

Underlined are those varieties among the first seven, quantity-wise. One notices immediately that an important variety is grown in each of the five harvesting periods. Growers try to spread 1) their harvesting operations and 2) their marketings, over time so as to use the equipment in the best way and to produce a regular flow of potatoes in the market.

2) Resistance to specific diseases such as scab or late blight is an important consideration in choosing a variety, but equally important as a reason for growing

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several varieties is, of course, the variation in soils, climate and growing period. For instance, Arenac, Cherokee, Katahdin, Norland, Sebago, and Superior are recommended for muck soils.

3) The third reason relates to the processing and cooking qualities of varieties. For chipping stock growers usually raise either processors' varieties, such as the Frito-Lay varieties or Arenac, Kennebec, Merrimack, and Norchip. Kennebec and Norchip are among the seven major varieties in terms of quantity produced. The FL varieties represent a total of 99,850 cwt. in our sample or about 4%. The well known baking variety is the Russet Burbank, almost 27% of the sample, although Arenac is also well suited for this purpose. Of excellent boiling quality are Cherokee, Chippewa, Emmet, Norland and Sebago. Once again we note that Sebago is a much produced variety in Michigan, about 10% of the sample.

The product policy of Michigan potato growers with respect to varieties grown has deep implications and consequences. It not only affects the destination of the tubers towards processing or tablestock uses, but also the ease with which the products flow to their markets.

Because of the lack of standardization of varieties grown, the consumer who purchases "Michigan Potatoes", often Round Whites, will get several types of very different tubers at different times of the year.
Because of the very differing qualities of these varieties, the housewife is bound to be puzzled and, as she cannot recognize varieties, she is likely to be unable to select the potato required for the specific purpose she often has in mind. This might result in poor performance in cooking and will diminish her confidence in Michigan potatoes.

Because of the large number of varieties grown in this state, the task of developing a precise and good image for Michigan potatoes in the housewife's eyes is much complicated. The marketer's job is more difficult.

An informant knowledgeable about the market estimated that the optimal number of varieties to be grown in Michigan was five:

1) An early potato,
2) A late potato grown for chipping stock as well as table stock,
3) Sebago as the standby,
4) Superior,
5) Onaway.\(^1\)

If the number of potato varieties grown in the state was to be reduced, consideration should be given to:

1) the adaptation to soil capabilities and climate,
2) the adaptability and fitness for different manufacturing processes,

\(^1\)Interview, 5/17/72, Mr. M. Burns, at that time Director, Chief Wabasis Cooperative.
3) the capabilities as tablestock products,
4) the seasonality.

1.1.3 Grading practices of Michigan potato growers.

The vast majority of Michigan potato growers perform some type of grading operation on their farm. Out of 88 usable answers to question 9 in the mailed questionnaire, only 7 growers indicate that they do not grade (about 8%).

But, among those who do grade, practices vary widely. The main dividing line is between growers who raise for processing stock and growers who sell tablestock.

Among those raising for processing stock, two further categories are distinguished 1) chipping stock, 2) other, including potatoes for frozen products, canning and dehydrating.

All growers selling chipping stock do not actually grade potatoes, but only size them. For this operation they use a screen which can be adjusted for tubers of 1 7/8 inches or 2 inches; one of the growers interviewed even adjusts the screen at 1 3/4 inches. The reason why these growers do not grade their potatoes are two:
1) Grading is a costly process in equipment and labor; if done at harvest time it would create delays and bottlenecks in the harvesting operations.
2) The buyers (chip processors) grade samples of the loads harvested and brought by the grower anyway, so that the grower doesn't need to take care of it.
Of course, they could grade their potatoes, send to the processor only the potatoes with the required grade (usually US No 1 85%) and sell elsewhere the culls, as Unclassified for example on the tablestock market. But, because of the relatively low price culls carry and the high cost of grading, it is not economically feasible to grade out 15% non-US No 1.

On the contrary it seems economically feasible for the grower selling to a chip processor to screen his potatoes. The use of a screen will increase the average size of the potatoes he ships to the chipper and thus improve the average grade. Screening is not costly in either equipment or labor and is a simple operation which does not delay others. "B" sized potatoes or pea wees can then be sold to canners. Chipping potatoes are never washed.

Growers selling potatoes for canning size and grade potatoes. They select small ("pee wee"), sound tubers, best suited for this type of processing.

Growers selling potatoes for freezed French fries and other uses, to Ore Ida for instance, usually neither grade nor size their potatoes. Grading is done by the processor.

Growers selling on the tablestock market have widely different grading practices. All interviewees wash their production, but they say a few growers don't. It seems that the grade most commonly used quantity-wise
is US No 1 2 inch minimum, but the evidence is not very reliable as many standards are used among the 16 interviews for which answers are usable (two interviewees only size, one does not answer). In effect a frequency count shows that 11 persons use US no 1 1 7/8 inches minimum, and three out of 16 do not care to indicate which size standard they are using for the US No 1 grade. All but one of the eleven using the 2 inch standard have 75% or more of their potatoes in that grade. One interviewee handles potatoes with grade US No 1 2 inch minimum in combination with a 4 ounce minimum. The US No 2 grade does not seem to be very much in use in Michigan.

When they do not use the US No 1 grade, most interviewees use the "B" size (1 1/2 inches), potatoes are then sold for canning, or they use the Unclassified designation (not a grade) for sales on the tablestock market. "Culls" are either put into Unclassified bags, or dumped. It is a fairly common practice to dump potatoes in the field and use them as fertilizer despite the risk of contaminating the earth with insects and diseases, but we did not investigate this question.

The lack of homogeneity in grading practices creates serious marketing problems. Several different sizes are used for US No 1. It might have some advantages for the individual growers: those who are stricter, using the 2 inches minimum for instance, and do a better job of grading can differentiate their product and earn
a premium or some consumer loyalty. But the variation in grading practices creates problems on the consumers' side for the industry as a whole. When she buys Michigan US No 1s, a housewife is never sure of either the size or the real quality of the potatoes she gets. She will tend to identify "Michigan potatoes" with the worst bag she gets. The lack of product homogeneity prevents the establishment of a stable and precise image of Michigan potatoes.

1.2 Pricing behavior of growers

All potatoes are not sold the same way. Two systems are used: market price and contracting. In contracting not only the price is specified but also the quantity and the quality and, sometimes, the storage practices.

1.2.1 Market price and tablestock

In Michigan it seems that all potatoes for the tablestock market, except for direct sales to the final consumer, are sold by the growers to the shippers on a market price basis, except for the special arrangements between the cooperatives and their members.

At harvest time growers have the alternative of 1) selling their crop to the shipper at current market price, 2) retaining ownership and storing their potatoes on their premises for later sale to the shipper at market prices later in the season.
Interviews reveal that although "verbal arrangements" usually exist between growers and shippers, they affect only the existence of a selling-buying relationship, but neither the price nor the quantity.

The special arrangement between the potato marketing cooperative and its member is a type of contract renewed yearly by which the grower-member obliges himself to sell his entire crop through the cooperative under a penalty of 25% of the market price if he were to sell outside of it. Two kinds of contract exist. The pre-season contract by which the grower guarantees a certain quantity to be sold in return for a specified contract price which increases each month by about 10¢ a cwt., the grade used being 94% US No 1 1 7/8" minimum. With the second kind, or regular contract, the member receives the price his potatoes have been sold for by the cooperative minus a flat rate per cwt. handled for office work (5¢/cwt.). The cooperative handles only US No 1s and leaves to members the task of disposing of lower grades. Chief Wabasis cooperative handles a significant proportion of the potatoes produced in the state.

One of the main reasons why growers use various sizes for their US No 1s is probably that they seek some product differentiation. Another is that processors pay more and/or require specific sizes in their contracts.
1.2.2 Contracting

Contracting is prevalent for potatoes sold to processors. In a contract most of the very numerous aspects of a sale are dealt with. Contracts are therefore a complicated arrangement to analyze. They specify a price in all instance, which varies with the time of delivery; sometimes the quality of the potatoes to be delivered and related aspects such as size; most often the quantity to be delivered at certain periods; and in a few cases the variety of potatoes to be grown and storing practices. Contracts are a means of market coordination which helps growers and processors reduce critical uncertainties affecting their welfare and the smooth working of their operations.

Among the 19 interviews, 8 contracts linking a grower to a market participant further down the marketing channel are found. One interviewee has 2 different types of contract, another has one contract format used with several processors. To these we shall add for our analysis a contract used by a large processor interviewed in late 1972, outside the main sample.

Of these nine contracts, only one links a grower to a shipper; in this case we do not know whether the contracted potatoes were later used for processing or as tablestock; despite this uncertainty all nine contracts will be analyzed together as eight of them link growers with processors and anyway what interests us here is not
so much the final destination of the tubers but rather the
system under which they are exchanged.

Among those interviewed, all growers selling
potatoes for processing have a contract with the processor.
Answers to the mailed questionnaire confirm the finding
that all potatoes exchanged between growers and chippers
are under a written contract. Further, they show
(questions 14-15-16) that growers usually contract with
only one processor: out of twenty growers having written
contracts with processors, sixteen sell to a single pro-
cessor, two sell to two processors, and two to three or
more processors.

Price

Contracted prices vary according to 1) FOB or
Delivered type of arrangement, 2) time of delivery, and
3) quality and/or grade of tubers. Specifications on
quantity; variety, etc., are sometimes contracted.

The interviews indicate that there are as many
sales conducted with an F.O.B. type of arrangement as
there are sales made under a delivered price arrangement.
All potatoes for processing are sold bulk or in crates.

Depending on the time of delivery two systems of
price variation are used. This is because potatoes for
processing come from two harvesting seasons, late summer
and fall.

The first system is used for potatoes sold field
run in the Fall or which, coming from the Fall crop, are
stored during late Fall and following months. One price is set for October sales. Then price per hundredweight goes up month by month, for storage cost and losses, sometimes at a flat rate (10¢/cwt./month), in other cases at varying rates: an increase of 45¢ in November is followed by one of 15¢ in December, 25¢ in January, 20¢ in February and 25¢ in March. Usually February or March are the last few months specified, the contracts expire after.

The second system used is more complex. A base price is specified for sales between the 1st of August and the 15th of August or for the whole month, then the price drops sharply, often 10 to 15% of the base price, for either the second half of August or the month of September and in one case for the month of October too. Then, in November, the price takes on a large increase, up to 25% of the base price. From then on regular price increases in the order of 10 to 15 cents a month take place. For the months of February and March increases are usually larger: in the 15 to 25 cents bracket.

Quality

Only in some instances, four out of nine, is the grade of the potatoes specified in the contract. Usually the grade specified is 85% US No 1. In one case the contract reads 100% US No 1, the grower however, says this specification is not enforced by the purchasing processor. One large processor interviewed in 1972 gives a premium
for loads with a percentage of US No 1s over 50% (up to 65%) and imposed penalty under 50% (down to 35%) in its typical contract. A similar system of premium and penalty is used for the percentage of tubers bruise free, 80% bruise free carrying a substantial premium, the cutting point, with no premium or penalty being 49-50-51% bruise free. 20% bruise free carry a substantial price penalty. Yet in several cases the quality of potatoes is not specified at all. Typical statements in contracts are phrases such as "chipping potatoes", "chipping to Chipper's satisfaction on arrival". In only one case is the "Chipper's satisfaction" defined by reference to the color of the chip (color 1-2 or 1-3 was then used). Except in the contract of Ore-Ida, in none of the cases we meet is the specific gravity or sugar content of chipping potatoes specified although they are the chief qualities for chip processing.

The size of the potato is usually not specified. When it is, reference is made to either length of tubers (size "A") or to weight. Ore-Ida gave a premium for a given percentage of tubers of 10 ounces or more (between 30 and 12%).

Quality

Usually contracts specify quantities to be purchased for two types of periods: harvesting (ending at the end of October) and storage periods (November to
April). In some cases quantities were specified for each month, in others for the period as a whole.

In one case no quantity is specified and sales are made "according to needs of purchaser". In another case the purchaser was supposed to buy only from the contracting grower if the latter could supply. In still another case it seemed that the purchaser had to buy any acceptable potatoes from the seller.

A few contracts (2 out of 9) provide for an option to be exercised by the purchaser at a precise date on specified quantities.

**Variety and storing**

In only two cases is the variety to be grown specified (one of the cases is Ore-Ida). In another case the grower is strongly incited to use the processor's own varieties.

As for storing practices in one contract allowance is made, and included in the base price, for sprout inhibitors prior to storage. In a second contract sprout inhibiting is specified. In a third, it is required for potatoes sold in February, March and April. In a fourth the inhibitor itself is specified and a penalty is specified for failure to apply it. Other storing practices such as temperature and humidity are not specified. Potatoes for processing are never washed and only or Ore-Ida contract provides incentives or penalties for the percentage of foreign materials contained in shipments.
The reason why contracts are found primarily between growers and processors and not between growers and shippers is not totally clear. It is not surprising to find contracts in manufacturing operations: a plant is best and most easily run when its supply, or a fair chunk of it, is guaranteed under a contract, even though the risk of acts of nature always exist when linked with agriculture, and when the cost of this supply can be determined within a bracket at a high level of confidence. But the same should be true with retailers, their problems also relate to a stable supply at a known and stable price.

The different price arrangements, FOB versus delivered, can be explained by the ability, the willingness or the profitability for the grower to arrange for transportation. Owning trucks, knowing truckers, having the necessary time available, being able to get discounts or low rates for large quantities through group shipments, all explain why no definite pattern of behavior is found in this instance.

Price variations according to time of delivery are explained by simple supply and demand considerations. The price is higher when supply is low in this state. As shown in Table 10. The Michigan Late Summer harvest begins in the first two weeks of August. Processors who want to operate their plants as smoothly as possible are willing to pay a premium to potatoes grown in this state if they are spared the freight on processing stock
which would otherwise have to be imported from other states. When the supply increases in late August and early September there is no need for processors to pay the premium as growers only have the choice to sell on a glutted market or to incur storage costs. From then on the price contracted varies only with the cost of storage, sprout inhibiting, and shrink. Contracting beyond April is not done because, but for one exception, no grower has the needed facilities to store potatoes when the weather gets too warm.

There can be several reasons why grades are not specified in processing contracts. One is that some not very quality-conscious processors are not eager to oblige themselves, in a contract clause, to accept potatoes of a well defined grade or quality (i.e., giving a particular color of chips). Similarly the grower is not too anxious to be tied by a specified grade. It is certainly easier to contract that potatoes must "chip to chippers' satisfaction" than to oblige oneself to purchase a shipment which meets a more or less impartially determined standard. In times of low prices processors without such obligations can easily change to suppliers offering better deals than their contract. Other processors might legitimately care little for the size of the tubers they receive. This depends on the use it has for the shipment. It seems that Gerber Foods or Campbell Soup should not care too much about size if they are going to mash the potatoes. But
this should not be the case with chip processors who would look for as few small pieces of chips as possible.

The quantity contracted upon is usually specified because, as we saw earlier, the processor wants to have a part of his supply stabilized and guaranteed. The grower, on the other hand, likes to have an assured market in case of market glut and low prices; by signing the contract he is buying an insurance. Whether such insurance is reliable is debatable.

It seems that the variety is not generally specified because the grower needs to keep his freedom in order to plant what is best suited to his land's growing capabilities and his farming practices. Yet, as we already mentioned, the grower's choice as far as variety is somewhat limited. Some varieties do not chip well and would be refused by the processor on this ground. The processor in some instances supplies the grower with the seeds, possibly at lower prices, and therefore indirectly controls the variety. By his behavior, the processor can also provide incentives or inducements to the grower to have him plant the varieties the processor wishes.

We do not see any particular reason why contractors felt the need to specify storing practices. Except for protecting his source of supply we do not think the processor has a real advantage in making storage decisions in the grower's place. The processor could just as well indicate a specific gravity and/or a color below which
he will not accept potatoes. The grower would then just as well be induced to treat potatoes as needed. Yet in the case the grower does not have the know-how, the processor can teach him good storing practices through contract specifications.

We shall skip, almost, the Promotion aspect for what concerns growers. In effect they do not have direct promotional activities. Nevertheless, through the "Michigan Potato Industry Commission" ("To Foster-Develop-Promote the Michigan Potato Business" as its official title says) and the "National Potato Promotion Board", growers indirectly promote sales of Michigan potatoes and sales of potatoes in general. In 1972, for instance, the Michigan Potato Industry Commission organized a promotional action for Michigan potatoes and potato products in Fort Wayne, Indiana. In 1973 The National Potato Promotion Board financed an advertising campaign for potatoes on radio and television networks. These two organizations collect each a tax of one cent a hundredweight, from the grower, on all potatoes sold.

1.3. Physical distribution activities of growers

The grower's physical distribution activities involve creation of time and place utilities, through storage and transportation.

In Michigan most potato growers have storage facilities available for their crop. In almost all cases
the grower owns his storage facilities. When leasing does occur it involves relatively large quantities.

The mailed questionnaire reveals that out of 84 usable answers, 75 growers, or 90%, own storage facilities for potatoes. The total capacity owned by respondents is 1,810,000 cwt. or an average of 28,000 cwt. per grower (64 quantified answers out of 75). Only four growers own 100,000 cwt., or more storage capacity; 7 growers report a capacity of 50 to 99,000 cwt.; 24 growers own less than 10,000 cwt. storage capacity.

Twelve growers are leasing some storage capacity. Five significant answers show that the average capacity leased is in excess of 40,000 cwt. One very large grower does not own storage facilities and leases a large capacity.

Most growers do not know what is the cost of storage. Personal interviews show that the common practice is to store the potatoes field-run. Stored potatoes are never washed or graded.

It also seems that probably very few growers own storage facilities with more than the standard ventilation (three or four 3 to 4-foot fans for 50,000 cwt) and heating equipments. Only one grower is cited as having refrigerated storage, but other growers might also have this type of equipment.

The reason for growers' ownership of storage facilities is the need to be as independent as possible from buyers and from the market. Storage ownership enables
the grower to choose when he is going to sell his potatoes. It prevents price depressions as the whole harvest is not marketed over a short period of time. It is more profitable to store a product with a relatively inelastic demand, such as potatoes, than one which has a relatively elastic demand. From the grower’s operations standpoint storage also helps in that potatoes can be harvested, put into storage and when time is available, graded.

Growers usually own the storage facilities they use because everyone needs them at the same time so that there is very little capacity available for lease at harvest time. Growers do not want to be dependent on other growers for their storage just as they want to be dependent as little as possible on the market and buyers for their sales.

The evidence indicates that no definite storage ownership pattern appears, as far as under or over capacity. A grower with an average production of 10,000 cwt. might have either 20,000 or 5,000 cwt. storage capacity. Of course storage capacity is planned for the lowest amount which will give the desired insurance.

Potatoes are usually stored unwashed and ungraded. Experts recommend that potatoes be washed and graded prior to storage, in order to reduce the danger of decayed tubers contaminating sound ones, and to save storage capacity. But most Michigan growers do not follow that advice. There appears to be three reasons why growers choose not
to wash and grade potatoes before storing: habit, timeliness of harvest and labor utilization. They are not used to this practice and do not clearly see its advantages. The time constraint in storing practices is very important. Storing field run potatoes enables the grower to speed up his harvesting operations. Speed in harvesting is critical because the possibility of freezes often endangers the crop. After the potatoes are safe in storage, grading operations will occupy the farm man-power during cold periods when little else can be done. Expenses for grading also explain this behavior as growers have little cash possibilities at harvest time as they do not have the crop sold yet.

Yet washing and grading prior to storing offers several advantages. Washing removes foreign materials such as stones that could cause damage and take up valuable storage space. It will also improve the ventilation of potatoes stored at the bottom of the heap. During the washing operation preservatives, such as chlorine, can be added to the water to protect the stored tubers and prevent them from developing diseases or attracting insects and rodents. Likewise grading potatoes would rid the stored potatoes of rotten ones. Grading before storing would also add some flexibility to the growers' marketing operations. They would be able to ship or pack more quickly since delays were sometimes cited as a bottleneck for sales.
The organization of the transportation of Michigan potatoes from the place of production to the place of business of the next participant in the marketing channel follows no regular pattern.

Growers raising for processing stock seem to generally own trucks and transport their crop to the plant. They are paid on a delivered price basis. Yet some processors are mentioned as making transport arrangements. But other growers give very different and sometimes puzzling answers to questions relating to transportation arrangements.

Many potato growers own trucks and deliver in-state sales, but use truckers for out-of-state sales. In other out-of-state sales arrangements are made by the shipper or the sale is made FOB at the farm.

One grower makes the following statement: "I sell FOB through a broker for tablestock, the broker hires the truck but I pay the freight which is included in the price".

It seems that in the northern part of the Lower Peninsula and in the Upper Peninsula growers consistently sell FOB and all costs and arrangements for transportation are taken care of by the shipper.

Trucking rates seem to be quite stable. Growers and grower-shippers give consistent answers. Table 15 gives a sample of these rates from typical Michigan shipping points to important markets.
Table 15
Trucking Rates for Potatoes $/cwt, 1973

<table>
<thead>
<tr>
<th>From To</th>
<th>Southeast Michigan</th>
<th>Southwest Michigan</th>
<th>Central Michigan</th>
<th>Bay City Michigan</th>
<th>Northern Lower Peninsula</th>
<th>Upper Peninsula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit, MI</td>
<td>.25</td>
<td>.40</td>
<td>.40</td>
<td>.40</td>
<td>.55</td>
<td>.55</td>
</tr>
<tr>
<td>Bay City, MI</td>
<td></td>
<td>.45</td>
<td></td>
<td></td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td>Greenville, MI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.40</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td></td>
<td></td>
<td>.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philadelphia, PA</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York, NY</td>
<td></td>
<td></td>
<td></td>
<td>1.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffalo, NY</td>
<td>.85 to .90</td>
<td></td>
<td>.85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dayton, OH</td>
<td></td>
<td></td>
<td>.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleveland, OH</td>
<td>.40</td>
<td>.60 to .65</td>
<td>.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cincinnati, OH</td>
<td></td>
<td>.65</td>
<td></td>
<td></td>
<td></td>
<td>.70</td>
</tr>
<tr>
<td>Toledo, OH</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Chicago, IL</td>
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<td>.40</td>
<td></td>
<td></td>
<td></td>
<td>.57</td>
</tr>
<tr>
<td>Terre Haute, TN</td>
<td>.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.65</td>
</tr>
<tr>
<td>Indianapolis, IN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Wayne, IN</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Louisville, KY</td>
<td>.55</td>
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<td></td>
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</tr>
<tr>
<td>Memphis, TN</td>
<td>.95</td>
<td></td>
<td>.85 to .90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birmingham, AL</td>
<td></td>
<td>1.30</td>
<td>.85 to .90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlanta, GA</td>
<td>.75</td>
<td></td>
<td>.85 to .90</td>
<td>.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Orleans, LA</td>
<td>.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.60</td>
</tr>
<tr>
<td>Dallas, TX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.60</td>
</tr>
<tr>
<td>Orlando, FL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.50</td>
</tr>
<tr>
<td>Richmond, VA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.70</td>
</tr>
</tbody>
</table>

Growers raising processing stock generally transport their crop to the plant because potatoes are in bulk form and because it involves delivering to only one place, usually close to the farm. Thus farmers can use either an all purpose truck or even a tractor-towed trailer. As the place of delivery is unique and close, the operation is simple and not too time consuming.

Other growers took care of in-state deliveries because of relative simplicity. The more complicated the transport arrangements and the farther from the market, i.e., the higher the freight, the more growers sell FOB and let shippers perform the transport arrangements. This is readily apparent in the behavior of growers located in the Upper Peninsula. Another reason is that because of the small amounts growers ship at a time they cannot take advantage of truck load rates (although they denied receiving quantity discounts for trucking).

2. **Shippers and grower-shippers**

Grower-shippers have already been defined. Shippers are those participants in the marketing of potatoes who link growers with either processors, produce wholesaler or retailers. They sometimes take title to the product (real shippers) though at other times they simply act as brokers-matching a buyer and a seller.
2.1 The product

We shall discuss three major characteristics of the products handled by shippers and grower-shippers:
1) Destination of the product toward final utilization,
2) Packaging,
3) Branding.

2.1.1 The product

Just as growers specialize in the type of product they raise, so shippers and grower-shippers specialize. They usually buy and sell potatoes either for tablestock or for processing, not both.

Out of 11 shippers and grower-shippers, 8 are selling 100% either for tablestock or for processing stock. Most are selling for tablestock, especially pure shippers. Specialization is very high. Of the three who are diversified, 2 have a 60-40 product mix between processing and tablestock potatoes, the third one has a significant percentage of his sales in seed besides tablestock.

One of the reasons for shippers' specialization is that they buy from already specialized growers. Of course they buy from several growers but most often these growers are in particular areas; because they farm under particular conditions of soil-irrigation and weather and have to raise particular varieties, growers specialize which leads to shippers' specialization.

The reason why most pure shippers sell for tablestock is that processing stock is mostly sold through
contracts. The grower deals directly with the processor. The matching of supply and demand is relatively simple and straight-forward and does not require an intermediary whose activities would only raise the price without adding much utility.

Shippers and grower-shippers who are exclusively in the tablestock business often explain their behavior by saying that selling processing stock is a very different business, in terms of market participants, price pattern, because of the absence of packaging. Several also felt that the chipping stock business was very competitive with "many people going out of it" or "too many people in it" or just too speculative: "I tried it and got burnt".

Some shippers said they did not seek processors as buyers because they do not need additional outlets: "I don't need to change my market. I grow with my buyers and want to take care of one segment."

2.1.2. Packaging

Packaging is an activity characteristic of grower-shippers. When a grower-shipper buys potatoes from a grower he packages these potatoes on his farm, whereas when a pure shipper buys potatoes packaging is normally done on the farm by the grower using bags provided by the shipper.

Packaging is used as a privileged means of product differentiation. There is no standardization of packages
containing Michigan potatoes. Interviews show that Michigan shippers and grower-shippers use 8 different sizes of packs in terms of weight and 6 different packaging materials. The range of package sizes include 4, 5, 8, 10, 15, 20, 50, and 100 pounds. Leading sizes are ten and twenty pounders. In most instances growers report that 10 and 20 pound packages make up about 80% of total sales - with each representing 40%. The six types of packages are paper with window, paper without window, mesh, polyethylene clear, polyethylene colored (usually red), and burlap. The majority of packs are made of paper, for both bags with and without window. Usually unclassified potatoes are sold in paper bags without window, as are the fifty pound bags. Paper bags with window are clearly the most common package for regular US No 1 potatoes. Mesh and burlap are far less important and polyethylene bags are used only occasionally. Only one shipper used polyethylene more than any other bag material.

Packaging always takes place at the farm level for three basic reasons:
1) Because it avoids transportation of the potatoes in bulk to the shipper's premises and thus lowers the cost,
2) Because packaging is combined with grading so that the shipper can buy a specified grade and let the grower take care of marketing the rest.
3) Because packaging provides an occupation to the grower during the cold season (a reason given by a shipper).

The reasons for so many sizes and types of packages are numerous. Four, eight and fifteen pounders are called "trickers", intended to give the housewife the impression of getting five, ten, or twenty pounds. Several shippers use eight and fifteen pounders. Sales of these bags might have been larger than usual in 1973 because of high prices. Sales of ten pounders also have been higher than usual because they move more easily than twenty pounders in times of high prices.

Paper with window is used for good quality potatoes. The housewife likes to be able to see what she is buying. On the contrary paper bags without window are used for lower quality potatoes in order to hide the product. Paper is widely used for several reasons: it is very strong, it protects the product from mechanical damage, it keeps out light which causes greening, and it is an easier package to handle.

Polyethylene and mesh bags are used for high quality potatoes in order to maximize product visibility for the consumer. Sometimes red polyethylene is used to protect from light and prevent greening although some shippers say coloring is not very effective. The main advantage of polyethylene bags is their price: about half the cost of paper bags.
All those different sizes and types of bags contain different varieties, some are even designed and in use partially to fool the consumer. One cannot expect the housewife to develop a great preference for Michigan potatoes. Package is closely related to brand and is extremely important in establishing and maintaining brand identity.

The lack of standardization in packaging is also hinders efforts at standardization in bagging and above all, transportation practices. Palletization for instance will not be very easy to establish if bags can have eight different weights.

2.1.3. Branding

Brand differentiation is very extensive among Michigan potato shippers. Each generally has several brands with different characteristics in terms of variety and grade of the potatoes, size and type of bags. Ten usable answers to the branding question reveal that most firms involved in shipping (these included some large growers who do not buy from other growers; but do ship their own potatoes), have at least two brands; a few have five or more different brands.

Brands are differentiated, apart from the name, of course, by origin, variety, grade of potatoes, size and type of bags. Those with two brands usually have one for US No 1, the other for US No 2 or Unclassified. But some have one brand reserved for round white potatoes and the other for "bakers" (Russet Burbank). One
grower-shipper packs his own potatoes under one brand and purchased potatoes under different brands. Those with more than two brands differentiate also along these lines but add variation through size of bags. One brand for instance would have only four and ten pounders, while the other would have only twenty pounders. Unclassified potatoes are usually sold as anonymously as legally possible, under brands using paper bags without window, often only in large bags (twenty or fifty pounders).

One obvious reason for the branding behavior of shippers and grower-shippers is that everyone thinks he does a better job of grading than the competitor and wants to differentiate his product. Pride is probably partly involved in branding but it is certainly not the major reason for it.

Branding is an effort to acquire consumer loyalty for a given marketing firm in order to expand and stabilize sales. It appears that Michigan shippers in general are not very successful in distinguishing their products from the products of other potato shippers in the eyes of the housewife; but to what extent this is true must be investigated further by consumer research. Certainly, brands of potatoes are, for all practical purposes, valueless if they have no meaning to target consumers. It is not certain whether, for instance, brands carry price premiums or whether they assure the shipper of a regular demand because of consumer loyalty.
With the very large number of brands covering Michigan potatoes it is not clear that they all get the recognition they would need to be acceptably effective.

Chances are that the large number of brands, particularly for some shippers, defeats the very purpose of branding. The principle "the bigger the company or the brand in the eyes of the consumer, the better the brand impact" is violated. Most of the brands, in all likelihood, do not reach the critical mass beyond which one must go before becoming efficient. Spreading sales efforts over half a dozen brands cannot be as efficient as concentrating them on, say, two brands.

Yet, in some instances, a variety of brands is useful. It enables the shippers' buyers to differentiate between themselves: when shipper Z sells to Kroger under brand Y and to A & P under brand X, both Kroger and A & P customers can believe they buy different potatoes, even if this is not really true, so that Kroger and A & P are not in direct competition. The variety of brands used by Michigan potato shippers fulfills, in some instances, the same function as private brands of supermarket chains. In contrast shipper in Idaho elected to use a state-wide brand for their potatoes, which performs as a "national brand" on the market. The possibility for Michigan to adopt a similar strategy will be examined later.

A variety of brands can be useful in another way. As Unclassified potatoes are of very low quality, it is
prudent on the part of shippers to try to prevent the consumers from associating the brand name under which they are sold with the brand name of higher quality potatoes; for this purpose the use of different brands is justified.

It seems that, often enough, the brands try to de-emphasize the Michigan origin of potatoes by shifting the attention of customers to another name. This happens when shippers think that Michigan potatoes in general are of low quality and wish to draw the line between theirs and the average ones. Actually most shippers apparently think that Michigan potatoes do not have an identity, and that if they have one it has a bad image. One interviewee explains that in the late 1940's a large proportion of Michigan potatoes was sold on the Chicago market; but they had a bad image because of poor grading. Some shippers, instead of putting "MICHIGAN" on the bags, as required by law, switched to "UPPER PENINSULA" and "MICH." only, which was still legal. This little trick is said to have given good results by redefining the origin of the potatoes.

It is certain that with such a wide gamut of brands, the job of the Michigan Potato Commission in its promotional activities is made more difficult.

2.2 Pricing behavior of shippers and grower-shippers

Michigan potato shippers work mainly with the "market price". Little or no contracting seems to exist. Many shippers act only as brokers. In this role they
simple provide the link between a grower and retailer without taking title to the goods, and coordinate packaging (bags always bear their name). Shippers acting as brokers operate on a commission, based on quantity handled. The commission of 15 cents per hundredweight is usually paid by the grower. Yet many growers say that handlers' (broker or shipper) gross margin is in the order of 60 cents per cwt because brokers, as shippers, supply the bags, make arrangements and pay for trucking; but it is not very clear whether this alleged 60 cents per cwt gross margin applies to both brokers and shippers (the latter taking title to the goods and assuming the risks thereof) or only either to the broker or the shipper.

The only pure shipper to have contracts with processors is a very special one (Chief Wabasis). Only grower-shippers sell to processors on a contract basis.

No grower-shipper or shipper reports written contracts with retailers. Yet very steady arrangements exist between them.

2.3 Promotional and advertising activities of shippers and grower shippers

Few Michigan potato shippers and grower-shippers have promotional and advertising activities. When they do, however, these activities seem to be fairly important and well organized.
Out of 10 usable answers to questions 47 and 48 of the interview questionnaire only three people shipping potatoes have a promotional program (two are growers shipping only their own crop); two programs are steady and apparently coordinated, the other is irregular and informal. A fourth shipper has had some promotional activities in the past. A fifth also does some advertising. But the five other shippers and grower-shippers are not interested in product promotion and/or advertising. And they are not necessarily the smaller ones in terms of quantity handled.

Most of those who have some activities of this kind do not seem to be very satisfied with their results. Efficiency and effectiveness seem to be low.

Those who do no advertising give the following reasons.

1) The most frequent answer is that promotion and advertising are absolutely not needed because "they are growing with their buyers". This phrase comes as a dominant, recurrent theme in several interviews.

2) Many say that a good product, with a good looking package, is enough to achieve the same results as promotional or advertising campaigns.

3) In some instances it is felt that the price charged to the retailer is what really matters.

4) Several respondents say that they already have more business than they can handle or want to handle.
Some fear to grow too large and lose control of their operations.

5) Others say they are too small to undertake any feasible activity of this kind.

6) Several think promotion and advertising are too expensive.

2.4 Physical distribution aspects of shippers' and grower-shippers' operations

We shall consider here two of the main functions of physical distribution: Transportation and storage. While the first is performed by both types of participants, the second is left to producers.

2.4.1 Transportation

In all instances shippers and grower-shippers take care of transportation. This is indeed one of their main functions as shippers. They make transport arrangements and pay the trucker.

Shippers and grower-shippers make transport arrangements because their buyers are scattered, each one buying relatively small volumes at a time. It would be too complicated for the grower to coordinate scores of shipments to many various destinations. Also shippers and grower-shippers because of the large volume of potatoes they handle, relative to what a single small grower handles, can have steady business relations with truckers. This facilitates the trucking operation.
Shippers and grower-shippers pay the freight because their buyers are interested in a delivered price. On one hand although freight rates seem to be fairly stable and do not vary from one trucker to the other, it would be more difficult for the grower to pay the freight than for the shipper because growers are not in contact with the trucker. On the other hand retailers or wholesalers whose supply comes from thousands of origins would have a hard time organizing transportation and paying for it.

2.4.2 Storage

Shippers in Michigan own very little storage capacity. Grower-shippers to own storage facilities. One shipper mentions that he owns a large storage unit but does not use it. Four shippers do not have or use storage, two others have a relatively small capacity.

It is certain that potatoes, being a product of low value and containing a fairly large amount of low grade tubers which must be removed before marketing, are stored more advantageously in or near the area of production.
CHAPTER IV

The Structure and Conduct of the Michigan Potato Industry

In this chapter we shall use an almost pure Bainsean framework only leaving the performance aspect to other students in the industry. Despite its shortcomings this framework is a useful and fairly simple one.

1. Structure

The structure of the industry and of its segments will be described and judged with reference to three characteristics: Concentration, Product Differentiation and Barriers to Entry.

1.1 Concentration

Seller concentration in number of growers is low but increasing in Michigan: growers are becoming fewer. Between 1964 and 1969, the number of potato growers in Michigan decreased from 3,154 to 1,186 a decline of 62%.¹ This is probably because of inefficient potato farms went out of business or because farmers shifted from potato production to more profitable crops. This resulted in larger farms.

In effect, seller concentration in size distribution of growers was relatively low but increasing. Growers became bigger in terms of quantity produced and acreage farmed in potatoes. On the average they farmed 12 acres and produced 2,300 cwt of potatoes in 1964, as against 36 acres (total acreage in Michigan increased only 14% between 1964 and 1969) and 7,750 cwt in 1969.

The answers to question 4 of the mailed questionnaire placed the average acreage grown in potatoes at 138 acres, the total acreage reported being 12,150 acres for 88 respondents (about one fourth of the state’s total potato acreage). These results seem to be too different (138 versus 36 acres farmed on the average) from those of the Census of Agriculture of 1969 to allow us to use the questionnaire in judging grower concentration. We shall therefore analyze the structure of growers with 1969 Census data.

Table 16 shows that the 136 growers with farms of 500 acres of more produce just about half (49.55%) of the total quantity of potatoes produced in Michigan. These 136 growers are the most efficient, and even the only above average, growers. In effect for each of the other classes of acreage the input/output ratio between acreage and tonnage (i.e., percent of total acreage over percent of total production) is consistently superior to one. To summarize 11.5% of the growers produce half the tonnage. Potato production in Michigan is concentrated on large farms.
Table 16. Michigan Potato Farms with Sales $2,500 and over, 1969 by Size of Farm.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>1-9 acres</th>
<th>10-49 acres</th>
<th>50-69 acres</th>
<th>70-99 acres</th>
<th>100-139 acres</th>
<th>140-179 acres</th>
<th>180-219 acres</th>
<th>220-259 acres</th>
<th>260-499 acres</th>
<th>500-999 acres</th>
<th>1,000 to 1,999 acres</th>
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<tbody>
<tr>
<td>Number</td>
<td>1186</td>
<td>4</td>
<td>92</td>
<td>60</td>
<td>129</td>
<td>156</td>
<td>139</td>
<td>132</td>
<td>90</td>
<td>248</td>
<td>108</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Total acreage by column</td>
<td>42,672</td>
<td>6</td>
<td>752</td>
<td>733</td>
<td>1,379</td>
<td>2,044</td>
<td>2,029</td>
<td>3,420</td>
<td>2,570</td>
<td>11,742</td>
<td>10,894</td>
<td>4,510</td>
<td>2,671</td>
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<tr>
<td>Production by column in cwt</td>
<td>9,208,285</td>
<td>1,380</td>
<td>110,720</td>
<td>110,667</td>
<td>234,402</td>
<td>345,858</td>
<td>348,793</td>
<td>639,411</td>
<td>511,569</td>
<td>2,341,529</td>
<td>2,673,901</td>
<td>1,099,141</td>
<td>790,974</td>
</tr>
<tr>
<td>Column as % of total acreage</td>
<td>100%</td>
<td>*</td>
<td>1.75</td>
<td>1.7</td>
<td>3.2</td>
<td>4.8</td>
<td>4.75</td>
<td>6.0</td>
<td>6.0</td>
<td>27.5</td>
<td>25.5</td>
<td>10.5</td>
<td>6.25</td>
</tr>
<tr>
<td>Column as % of total production</td>
<td>100%</td>
<td>*</td>
<td>1.20</td>
<td>1.20</td>
<td>2.55</td>
<td>3.75</td>
<td>3.80</td>
<td>6.95</td>
<td>5.55</td>
<td>25.45</td>
<td>29.00</td>
<td>11.95</td>
<td>8.60</td>
</tr>
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</table>

*: lower than 0.1%

In Michigan, the potato growers are concentrated spatially. Montcalm county, in the middle of the Lower Peninsula, although it does not have the largest number of growers, produces the highest percentage of the state's potato production. Combined with Bay county it produces more than 40% of the state total production (see Table 17). If the next largest producing county is added, three counties produce almost 50%; seven counties account for just two thirds and ten counties out of 83 represent three fourths of the state crop. Five of the ten largest counties form two clusters close one to the other and they neighbor the large Detroit market; they are Montcalm, Bay, Mecosta, Tuscola and Lapeer and account for almost 55% of the state production (see Map 2). Reasons related to soils, and the length of the growing season are obviously partly responsible for this state of affairs. But certainly the proximity to the largest market for Michigan potatoes, and consequently low freight costs, also explain much of it. Profitable alternate crops (e.g., beans) exist for growers in these major potato producing areas and therefore specialization is not imposed by nature.

Because of this spatial concentration of production, one might expect a parallel concentration of other marketing institutions and facilities. The locational advantage of some regions probably excludes in part other producing regions from the Detroit market and

<table>
<thead>
<tr>
<th>County</th>
<th>County Production in cwt</th>
<th>County as a % of Total State Production</th>
<th>Cumulative %</th>
<th>Number of Acres</th>
<th>% of Total State Acreage</th>
<th>Number of Growers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Montcalm</td>
<td>2,451,450</td>
<td>26.6%</td>
<td>26.6%</td>
<td>3,088</td>
<td>21.2%</td>
<td>75</td>
</tr>
<tr>
<td>2 Bay</td>
<td>1,311,577</td>
<td>14.2%</td>
<td>40.8%</td>
<td>7,734</td>
<td>18.1%</td>
<td>176</td>
</tr>
<tr>
<td>3 Mecosta</td>
<td>802,685</td>
<td>8.7%</td>
<td>49.5%</td>
<td>2,573</td>
<td>6.0%</td>
<td>10</td>
</tr>
<tr>
<td>4 Monroe</td>
<td>597,712</td>
<td>6.5%</td>
<td>56.0%</td>
<td>2,665</td>
<td>6.2%</td>
<td>26</td>
</tr>
<tr>
<td>5 Manistee</td>
<td>377,002</td>
<td>4.1%</td>
<td>60.1%</td>
<td>1,187</td>
<td>2.8%</td>
<td>13</td>
</tr>
<tr>
<td>6 Dickinson</td>
<td>303,573</td>
<td>3.3%</td>
<td>63.4%</td>
<td>1,320</td>
<td>3.1%</td>
<td>25</td>
</tr>
<tr>
<td>7 Allegan</td>
<td>297,163</td>
<td>3.2%</td>
<td>66.6%</td>
<td>1,474</td>
<td>3.4%</td>
<td>28</td>
</tr>
<tr>
<td>8 Presque Isle</td>
<td>263,737</td>
<td>2.8%</td>
<td>69.4%</td>
<td>1,707</td>
<td>4.0%</td>
<td>65</td>
</tr>
<tr>
<td>9 Tuscola</td>
<td>246,319</td>
<td>2.7%</td>
<td>72.1%</td>
<td>1,417</td>
<td>3.3%</td>
<td>26</td>
</tr>
<tr>
<td>10 Lapeer</td>
<td>176,947</td>
<td>1.9%</td>
<td>74.0%</td>
<td>929</td>
<td>2.2%</td>
<td>31</td>
</tr>
</tbody>
</table>

obliges them to seek other, more distant, markets, but we were not able to investigate this. One of the implications could be that producing regions remote from Detroit have to be more stringent on the quality of the potatoes shipped so that they can support higher freight charges. Some evidence seems to sustain this hunch.

Growers are not dependent one upon the other for their activities. Except perhaps for seeds, very little inputs are exchanged within the group and alternative sources of supply always exist. We saw that storage facilities are almost always owned and very seldom leased; moreover when they are leased it is not known for sure whether the lesor is a grower or not.

Shippers are very little interdependent. Interviews show that they do not buy from one another to any great extent although some exchange did take place.

As far as the interdependence between growers and shippers it is certain that the former depend for a significant portion of their welfare and income on the latter. In contrast if it is true that Michigan shippers do a large portion of their business with Michigan growers, and thus depend on them, shippers have additional sources of supply from other states, to which they have an easy access.

Interviews show that even in areas where there are several shippers available, a grower will usually deal with one shipper, at the most with three.
Out of the 65 respondents who give an answer to the relevant question of the mailed questionnaire only 18 use more than 2 shippers. Sales by growers to a single buyer, as a percentage of the grower's production are distributed as follows:

<table>
<thead>
<tr>
<th>Percentage of Production to A Single Buyer</th>
<th>0-50</th>
<th>51-75</th>
<th>76-95</th>
<th>96-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Answers</td>
<td>16</td>
<td>17</td>
<td>15</td>
<td>19</td>
</tr>
</tbody>
</table>

When growers do sell to a second buyer, the buyer purchases on the average less than 20% of the grower's production.

On the contrary shippers usually deal with at least 10 to 20 growers. Interviews are our only source of information on this. In most cases the largest 25% of the suppliers for a shipper represent a large proportion of their procurement needs, on the order of 40%.

There are two main reasons why shippers have several suppliers:

1) Shippers need a large volume to make a living. Those who actually are brokers get 15¢ a cwt and thus need to move large quantities.

2) Large growers seem to often undertake their shipping operations themselves. They can then supplement their own crop with other grower's crops and become grower-shippers to reach the minimum economically feasible size for shipping operations.
In almost all cases the number of growers a shipper buys from does not vary from year to year. Relationships are very steady. There are several reasons for this behavior.

1) The strength of habit and of mutual understanding and trust.

2) The risk incurred in making deals with strangers.

3) The proximity of growers and shippers,

4) Growers have backlog inventories of shipper bags.

Additional reasons, not as legitimate as the previous, are mentioned during interviews. On the one hand, growers are, for shippers, a "private property": a shipper does not like to see other shippers coming around to "steal" "their growers". Such a behavior might trigger retaliations: refusal to exchange information, refusal to sell a few loads of potatoes in case of need, etc. . . . On the other hand, shippers do not like to see "their growers" looking or shopping around for other shippers with a better deal to propose. One shipper says that another large shipper competitor tells his suppliers: "If you sell one load to him, referring to me, then you'd better sell all to him this year."

In Michigan concentration in number of shippers (i.e., the absolute number of shippers which control
potato marketings\(^1\) seems to be moderate. The Census of Business does not account for potatoes in particular and places them in the large category of "raw farm products". Thus no precise data are available from this source. We had to turn to the Directory of the Michigan Potato Industry\(^2\) and the records of the Michigan Potato Industry Commission. The directory lists 65 bonded (see below) potato shippers and 172 non-bonded potato shippers.

Growers are under the impression that they have few alternative shipper-buyers. Several times during the interviews growers (and grower-shippers) say that there are not many shippers to whom they can sell.

This may be because some of the shippers mentioned in the Directory are either not specialized at all in potatoes or are local wholesalers (or even retailers) or finally, processors who purchase mainly on a contractual basis (e.g., Frito-Lay, Ore-Ida). Thus buyer concentration of shippers might be higher than the Directory's list shows. Furthermore there appears to be a fairly high degree of geographic specialization among shippers. Although the interviews reveal some important exceptions most shippers buy from growers located in a limited area, usually close to their place of business, which in most


cases, is unique. Shippers usually get their potatoes from the three or four counties contiguous to their center of operations. Some areas such as the Upper Peninsula seem to have a higher than usual concentration of shippers probably because it is remote from major markets and also because farms are larger. Exceptions are found with large shippers.

From these observations we can only conclude that buyer or seller concentration in number of shippers cannot be said to be either very high or very low; the evidence available is mixed.

Buyer concentration in size distribution of shippers seems to be high. The Michigan Potato Commission keeps track of a part of the first sales because it is supposed to receive one cent on each hundredweight traded by Michigan potato growers for the first time. But "tax evasion" exists as the Commission receives only about 80 to 90% of the money it should get according to USDA production figures, taking shrink and losses into account. Thus our evidence, which is based on the records of the Commission, cannot be really relied upon; unfortunately it is the only data available.

Ore-Ida is the single largest processor, shipper and buyer of potatoes in the state. Its contractors "produce more than 23% of the total potatoes produced in
the state."\(^1\) The first five shippers in the state, Ore-Ida included, handled in 1971 over four million hundredweight of potatoes or 42.5% of that years crop, and yet one of these shippers had not reported his fourth quarter sales at the time of the tabulation.

The first ten shippers handled almost five million cwt or about 53% of the 1971 crop. The first 30 shippers, Ore-Ida included, handled about 6.3 million cwt in 1971 or 66% of the crop. This shows that the size distribution of shippers is concentrated even though the data, as mentioned, have an underevaluating bias.

1.2 Product Differentiation

"The degree of product differentiation refers to the extent to which buyers differentiate, distinguish, or have specific preferences among the competing outputs of the various sellers established in an industry."\(^2\) Kohls has suggested five factors which create product differentiation: 1) real physical differences (such as grade, size, appearance and size of package; 2) assumed differences in product, such as brand name, established reputation, good will, etc.; 3) special services offered with the product; 4) habits and customs; 5) locational advantages.\(^3\)

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\(^2\)Bain, op.cit., p. 223.

Despite the fact that with raw agricultural products, such as potatoes, producers find little opportunity for introducing physical product differentiation among their outputs (Bain notes that "in agriculture product differentiation is generally of slight or negligible importance"¹), differentiating can be attempted on the basis of assumed differences.

Whereas product differentiation for Michigan tablestock potatoes is moderate to high in terms of real differences in grade, size, appearance and size of package, it is very high in terms of assumed differences: the number of brands is large.

For processing stock, stock differentiation is low to moderate; it involves real differences in the product such as size, specific gravity and sugar content and bruises, in the case of processing stock other than chipping; assumed differences are not a product differentiation means for processing stock.

As far as processing stock, growers have only three means to differentiate their products: the variety grown, the temporal availability, the care taken in harvesting operations.

By controlling the variety grown, growers affect all three real differences in the product. Different varieties yield different average sizes of tubers with

¹Bain, op.cit., p. 236.
different specific gravities and sugar contents. The large number of varieties grown in the state shows that growers do attempt to differentiate their products on real differences through the means of the varieties they use.

The variety grown has a direct bearing on one aspect of the temporal availability means of product differentiation: some processing varieties are harvested early in the year, others later. Playing on this variable growers differentiate their product by making it available at different times to the processor.

The second aspect of product differentiation of processing through temporal availability is storage. By storing his potatoes at the required temperature and humidity levels growers can supply processors after the harvesting season at a time when supply is shorter but demand still at its usual level.

For processing stock other than chipping the condition of the potatoes has some importance and is used as a means of product differentiation. Depending on the care the growers take in their harvesting operations more or less bruised potatoes will come out of the harvesting line. The fact that Ore-Ida established a "bruise free" program of incentives shows that growers do have some control over this variable.

Real physical differences are a major means of product differentiation in tablestock potatoes for both
growers and shippers. As we indicated earlier Michigan potato growers and shippers use several grades and sizes for potatoes sold on the tablestock market. Some packers differentiate their products by "doing a good job of grading" that is by following closely the standard for the grade and not trying to take advantage of all the various tolerances the standard allows. Other packers will differentiate by exceeding the standard for the grade. This is often done by using a somewhat larger size, e.g., 2 1/2 inches instead of the two inch standard for size "A" tubers or by selling only a minimum weight (say 4 oz.) potato.

The practice of washing potatoes is so widespread in Michigan that for most packers of tablestock potatoes it is not a very effective way of differentiating their product on the basis of appearance. More important in this context is the practice of removing bruised, hollow-hearted or mishaped potatoes; at any rate if this was not done it could result in the package failing to meet the US No 1 grade.

By providing their customers with several sizes of packages, packers put a real difference in their products. The different needs of customers in terms of quantity purchased at one time are satisfied through this means.

Contrary to processing stock, tablestock potatoes are also differentiated on assumed differences, mainly
through the use of brands. The number of brands owned by a packer is related to the number of regular customers and the quality of the potatoes.

Packers often do not sell the same brand to more than one retailer or wholesaler in a specific market. This is to help the buyers differentiate between themselves. Brands also help to differentiate between grades: the brand used for US No 1's will not be used for Unclassified.

1.3 Conditions of Entry and Exit

The conditions of entry and exit of firms in an industry affects the level of competition in this industry and the ability of this industry to adjust to changes in economic conditions.

Very little information was collected on this issue although it is a critical one. Established firms have some protection from new entrants, but it does not seem to be very powerful.

At the grower level, people well informed about the industry estimate that in 1973 the financial requirement, to set up a viable potato farm with its equipment, is in excess of 200,000 dollars. Few people can raise that much money and the financial barrier is certainly a powerful deterrent to entry into potato farming.

But potatoes are just an alternate crop for already existing farms. Under different economic conditions producers of other crops could go into potato
production with relative ease. Potato production techniques are well known and/or available to new growers.

"Although some specialized equipment is used in potato production, most of the equipment is the same as that used in the production of other crops. Potato harvesters which cost $10,000 to $12,000 are the most expensive item of specialized equipment."¹ Hanes cites a study by Maier and Loftsgard², unfortunately fairly old, which revealed that, on the average, harvesters accounted for 25.5 percent of the total investment in machinery used in potato production. Specialized equipment can probably be rented, although this is not investigated in either the interviews or the mailed survey. On the selling side, brokers can be used at a known and fixed cost.

At the shipper level, barriers to entry seem to be fairly high. For a newcomer, difficulties would arise from both his supply and demand sides.

Supply is limited by the fact that growers are reluctant to shift shippers lest they do not make a good choice and have difficulties coming back to their former buyer. As was seen under the first section of this chapter, some shippers try to prevent their growers from

¹John K. Hanes, op.cit., p. 95.

shifting to competitors. Growers also are sometimes left with a backlog inventory of their shipper's bags which they purchased and would lose this investment if they shifted shippers.

Demand also presents a hurdle for the newcomer in the shipping business; potential markets for him are already tied up with existing shippers. Those who buy from established shippers benefit from the full product line they are able to supply. The difficulty of finding new business contacts seems to be another significant barrier.

On top of these supply and demand hurdles, newcomers, if they act as shippers taking title to the goods, have to secure operating capital.

Besides these economic barriers there is a legal and financial barrier. Since 1964 the Michigan Bonded Dealer Law protects Michigan potato growers, giving them an insurance in case of default in payment. Any dealer who handles potatoes for a grower must be bonded, except those who make cash payments. The bond varies with the amount of business of the dealer, from a minimum of 2,000 dollars to a maximum of 25,000 dollars. Processors buying potatoes from a grower, however, do not have to be bonded.

Anybody dealing in potatoes must have a license to conduct business. The license is issued for a nominal fee by the Michigan Department of Agriculture and is renewed annually.
Grower dependence on shippers is an important barrier for newcomers in the shipping business. Established shippers seem to be able to extract lower prices from the growers because they somewhat guarantee them an outlet for their crop. As one shipper put it, "they grow potatoes expecting to sell them to me".

2. Conduct

The conduct of the Michigan potato industry and of the segments which constitute it, will be described and judged with reference to Price and Output Policies and Predatory and Exclusionary Tactics. Our information on this issue is extremely scant and many statements are founded only on hunches developed through interviews.

1. Price and Output Policies.

"For both individual sellers and cooperating groups of sellers, a matter of first important is the determination of the selling price of the product and of the quantity of output that will be produced and offered for sale."¹

Potato growers in Michigan, as in other states, have a means to determine their output and thus the price for it. Acreage marketing guides published yearly in April by the USDA provide forecasts and make recommendations for acreage planted in potatoes so that the resulting output will as closely as possible match market needs. This study does

¹Joe Bain, op.cit., p. 304.
not investigate whether these guides are followed by Michigan potato growers.

Growers do not seem to exchange much information between themselves about the price they get for their potatoes. Secrecy seems to be sought. Prices for contracted potatoes are not always easily obtained during the interviews. Contract prices reached between growers and processors seem to be somewhat variable which would tend to show that information exchanges are at a low level. Results from the mailed survey, not yet analyzed at this writing, should provide more information on this point.

Price leadership and/or collusion seems to exist to some extent among shippers with respect to the price they give to growers. There is talk among growers that the four or five main shippers in the state meet at the beginning of the harvesting season and agree on some price bracket within which they will deal with growers. Kinship relations existing between some shippers might facilitate such agreements.

2. Predatory and Exclusionary Tactics.

Of course cutting down on the price asked from retailers can be the result of two different causes: either brisk competition, or attempt to weaken or eliminate competitors.

In the first case the price cutter only plays the game in accordance with its rules. In the second
case he only seeks to change the game and get rid of the pressure of competition. The line is difficult to draw between these two. Predatory price cutting does not seem to take place to any great extent in the Michigan potato industry. On the contrary we witness what seems to be an exemplary stability of market shares and business relations among shippers.

It seems that the main exclusionary tactic used is monopolization of raw material supplies. As we pointed out earlier threats have sometimes been made to growers to keep them from selling to many shippers. The stability of relationships between growers and shippers seems to sustain this hunch.
CHAPTER V

Main Problems and Issues Relevant to the Michigan Potato Industry

Six problems and issues will be covered here:

1) Marketing management related:
   - The average quality of Michigan potatoes,
   - The number of varieties grown,
   - The "identity" of Michigan potatoes.

2) The establishment of a state-wide brand.

3) The effectiveness and profitability for Michigan potato industry members of state promotions and national promotions.

4) Conditions for and expected results of group action in the Michigan potato industry.

5) Present and potential use of various types of processing plants located in Michigan.

6) The choice between a strategy under which only the tablestock market would be sought and a strategy under which only the processing stock market would be sought as an outlet.

Most of them were discussed with interviewees in response to questions in the questionnaire. Others were volunteered by respondents. The last issue treated was pervasive through the whole study but not formulated as such during the interviews.
1. Marketing-Management-Related Problems and Issues

1.1 Quality

Although all interviewees think that quality is a very critical variable and that the higher the better, most people in the industry seem to think that low quality is a critical problem; only a few respondents express satisfaction with the overall quality of Michigan potatoes. A respondent in the Upper Peninsula says that quality is a problem chiefly in lower Michigan.

Several ways to improve quality are suggested.

"The law is too lax," says someone and the tolerances should be decreased. "When the shipper takes advantage of all the tolerances he winds up putting perhaps 20% culls in the US No 1 package."

One respondent points out that it is difficult to improve quality without a strict grade enforcement policy on the part of the state inspection service. The same person thinks that if they were strictly enforced present grade laws would be sufficient to provide a good quality. To get better US No 1 packages, one would only have to be more stringent and grade out an increased amount of low quality tubers which would be sold as Unclassified.

Some interviewees think that the critical institution for the enforcement of quality is not the inspection service but the shipping business and especially "the five or six largest shippers who set the pace for
others. They are the ones who must insist that growers strictly apply grading laws.

Still other interviewees think that the worst damages occur to potatoes when in the hands of wholesalers and retailers. Handling of the tubers in retail stores is said to be rough because produce managers think of potatoes as being a very non-perishable commodity. Careless piling of bags, exposure to cold, warmth or light are certainly partly responsible for the fact that the housewife receives tubers of a lower quality than when they were packed. Therefore, if produce managers in retail stores were to give more attention to the way potatoes are handled, some improvement in quality at the point of final purchase could be obtained.

One respondent notes that the main advantage for either an individual or the industry in doing a better job in grading and quality is not getting a higher price but rather in being able to always move the produce. Renewed purchases and consumer loyalty would be enhanced by a higher and more consistent quality.

It is the author's own feeling that a significant proportion of Michigan potatoes, maybe one fourth, which are sold as US No 1, exceed the tolerance for this grade. It is doubtful that in many Michigan shipments there is less than "a total of 8 percent for potatoes in any lot
which fail to meet the requirements for the grade."¹ In effect it seems very unlikely that, respecting the standard growers get an excess of 90 percent of US No 1's out of their crop, as it is sometimes stated during interviews. One interviewee says that it is not unusual to have an inspector certify a lot with double the tolerance. Rather than changing the grade once more (it was changed in 1971) or trying to enforce the grade through the inspection service, we would suggest that the participants in the marketing of Michigan potatoes make an effort to understand that it is to their own future advantage to present the housewife with a tuber of a higher and more stable quality. If Michigan is to retain a significant portion of the shrinking fresh market, growers and shippers in the state much seek to acquire more consumer loyalty. Loyalty cannot be generated without quality.

1.2 Varieties

The industry seems to be very divided on the issue of the optimal number of varieties which should be grown in Michigan. A few people go to the extremes of saying, "all that is needed is two varieties, one White and one Russet", or on the contrary "the number of varieties is not a problem because buyers have different needs". To be sure forty varieties seem to be excessive and to create serious marketing problems.

As we pointed out earlier some diversity in varieties is certainly needed because different growing conditions exist in the state and because varieties have specific characteristics which make them optimally suited for specific uses. The problem with respect to tablestock is that the housewife is not able to recognize the different varieties and does not know their specific uses. The task of educating her could be undertaken if she had to be taught about a very few varieties (maybe three or four), but with almost 40 varieties there is absolutely no hope of success. Idaho succeeded in convincing housewives that the Russet Burbank, the only potato variety is sells, is the best baking variety; in a similar advertising campaign Michigan could teach them that it produces an excellent "mashing" variety or a very good "boiling" variety. Such a campaign would be expensive but, above all, it would imply that Michigan potato growers and shippers specialize their production and incur the risks thereof.

By specializing in a few varieties, Michigan potato growers would have to forsake some of the benefits of flexibility. When a grower can choose among a large number of varieties he can elect that which is best suited for growing conditions prevalent in his area and get maximum yields. With only a few varieties, growing conditions and variety used are no longer optimally matched and the average yield will decrease. To be sure some
high yielding varieties with poor cooking qualities will have to be eliminated. Similarly varieties which do not hold well in storage will have to be deemphasized.

Together with the benefits of specialization, and the reduction in the number of varieties grown, on the consumer side, the benefits of increased standardization of the product should accrue to participants in the marketing system. Varieties grown on less than 100 acres in the whole state (see Chapter III, Table 14) are only rarely quoted; price comparisons are made difficult. A reduced number of varieties would facilitate price comparisons between sellers as the productions of each variety grown would be larger and thus quotations frequent enough. Because consumer acceptance and loyalty will be increased, promotional expenditures made by growers and shippers for Michigan potatoes will become more efficient or, alternatively, lesser amounts of money will be required to communicate the product to its target consumers.

Here again we feel that efforts aimed at reducing the number of varieties grown in Michigan should be the result of private moves made by individual members of the potato production-distribution system. One must learn "not to forsake the prey for its shadow"; to build oneself a "market niche" in red potatoes for instance, might be very profitable for a while until this market shrinks to such a size that it is no longer profitable to supply it;
the situation is disastrous if, doing so, one fails to
develop or enter other markets which will be the only
remaining in the future. For these reasons the Michigan
potato industry must be cautious in its "variety policy". For
instance it would be dangerous to position itself
only on the declining fresh market.

1.3 "Identity"

The question of the "identity" of Michigan
potatoes, that is "the collective aspect of the set of
characteristics by which [a product] is recognized or
known", is very much related to the previously examined
questions of quality and varieties. Because of the wide
array of products presented to the consumer, Michigan
potatoes are not seen as homogeneous. They have no
identity or image; they have no collective aspect.

Packaging and Branding practices do nothing to
correct it. How can a housewife recognize Michigan
potatoes under hundreds of packages of different sizes,
made of different materials, painted in different colors,
names with different brands? Moreover the packages con-
tain tubers graded according to four or five standards
and of perhaps thirty varieties (some varieties are used
only for processing). Finally, Michigan potatoes, being
sold for all possible uses (boiling, mashing, baking,
frying . . .) are mixed into the "all purpose" category,
which actually does not mean a thing as there is no
potato which can really satisfy all the various cooking
needs.
The result is that Michigan potatoes as a whole, if they do have some kind of identity, are identified by consumers at the lowest and least desirable level.

Product differentiation among Michigan potatoes defeats its own purpose. Instead of projecting contrasted and precise images to the consumer, the picture is blurred and nothing can be recognized.

Under these conditions it is not surprising that the task of promoting Michigan potatoes as a whole, seems hopeless from the start. The promotion programs of the industry can be as wonderfully organized and as plentifully funded as desired, but they will be of no avail if products fail to match the promises of the promotion.

2. Establishment of a State-Wide Brand

A Michigan state-wide brand for potatoes might help solve some of the problems reviewed before.

A program to establish a state-wide brand would include:

- a consumer research to determine the best "identity" which should be given to Michigan potatoes.

- the creation and registration of a brand name, e.g., Chef's Choice for US No 1 Michigan potatoes (which was registered with the US Patent Office in late 1972).

- the creation of a package design and a package color.
- proposing or imposing the use of the branded package to all people shipping Michigan potatoes.
- a uniformization of grading practices by choosing one or two size and weight standards.
- an agreement on the price to be charged to buyers.
- eventually, the choice of three or four varieties to be packed under the brand.
- the creation and registration of a brand name and coordination of other related aspects for the marketing of Michigan Unclassified potatoes, or elimination of this grade.

During the interviews and in answers to the mailed questionnaire several problems are raised with regard to the establishment of a Michigan state-wide brand.

A strong resistance is spelled out, of course, by those who already own one or more brands. If the program was compulsory they would lose their investment in developing and promoting their brands and they would no longer be able to individually differentiate their potatoes to their buyers. The investment problem is the chief one since the product differentiation question is precisely what a state-wide brand is all about. Dwindling profits for some firms might be another financial issue. For their financial loss brand owners could be compensated or a scheme could be set up under which existing brands would be gradually phased out. In a first stage for
instance, present brand-owners could introduce the Michigan brand into their product line and be authorized to mention their name on the package.

A second problem mentioned is the feeling expressed by potato marketers in the Upper Peninsula that their product is drastically different from the Lower Peninsula potato. This should be solved by uniformizing grading practices. If a uniform standard is consistently used by all industry members no difference should appear between potatoes raised in the Upper Peninsula and those grown in the lower part of the state.

But certainly it would be difficult to enforce uniform grading practices. There are two issues there:
1) the choice of one or two size and weight standards, and 2) the way to enforce it. Although different standards are presently used, it should not be too difficult to agree upon size and weight standards. It should not make too much difference to a grader to change from a 1 7/8 inch size to the 2 1/4 inch standard of the official US No 1 medium grade. The critical thing is enforcement. Will it be voluntary or compulsory? Will it be carried out by Federal or State inspectors or by industry inspectors or by the growers themselves? We do not know what would be best but doubtlessly effective enforcement cannot be done without some cooperation from the grower. If they want to protect their independence and at the same time reap the benefits of a more healthy and organized industry they
must learn to act responsibly when they grade. If grade enforcement is not compulsory a few free-riders can destroy the program.

The establishment of a state-wide brand should greatly contribute to the health and growth of the Michigan potato industry. The benefits of standardization will accrue to all participants in the production-distribution system. By giving an identity to Michigan potatoes it will enhance the effectiveness and efficiency of promotion programs. If the promotional budgets of tens of individual firms' brands were put together, campaigns would be sufficiently funded and the promotion would have a considerable impact on consumers as the brand would have gathered the critical mass at which the support of specialized agencies and modern promotion techniques can be used. The objective of promotional programs is to increase the demand for the product; if this is effective, then each participant is supposed to gain from the program in proportion to the volume he markets. With a state-wide brand it would become the interest of an individual firm to help other firms, for instance by exchanging information on improved methods, because all would be motivated to enhance the quality of potatoes sold under a common brand. In the short-run a state-wide brand might appear mainly as a constraint to individual firms because of the changes entailed by its creation, but in the longer run constraints will fade away and most firms will see that their interest
is more and more linked to the interests of the group. Financial resources will be concentrated, co-operation will come into existence and energies will be focused on a single goal.

3. **Michigan and National Promotion Programs**

   In February 1972 the Michigan Department of Agriculture, in co-operation with the Michigan Potato Commission, organized a potato promotion program in Fort Wayne, Indiana. Between February and April 1973, the National Potato Promotion Board conducted a television promotion program.

   During the interviews mixed reactions to these programs are expressed.

   There are concerns that the relative lack of financial resources for the state programs prevent them from reaching the critical mass at which they will deeply and lastingly change consumer purchasing habits. Some interviewees feel that the 1 cent a hundredweight assessed by the Commission could not be enough to adequately fund promotion programs. In effect under optimal conditions the Commission would collect only about 90,000 (on a 9,500,000 cwt crop, making some allowance for shrink, losses, personal use of the grower, seed, etc.). Taking into account office and payroll expenditures what remains is not much. When asked if they would agree to have the one cent assessment doubled some interviewees answer
positively, provided that it was spent in useful ways.

All those interviewed feel that the National Promotion Program was very useful in trying to correct the idea consumers have of potatoes as being fattening and emphasizing the high nutritional value and low caloric content of the product. Fighting consumer biases is recognized as one of the best endeavors a national program, necessarily neutral with respect to producing states, could undertake.

The questions and disagreements between industry members as far as state programs apart from financial and funding considerations, concern three main areas: 1) the markets to be aimed at; 2) the duration of effects; and 3) the relative advantages of national versus state programs.

1. Some people suggest that state programs should be aimed at markets within Michigan while others think out-of-state markets should be sought.

It is certain that the main markets for Michigan potatoes are in the state itself. In effect, Michigan production is barely sufficient for its consumption. Very rough computations based on the population of the state and the U.S. average equivalent raw potato consumption per capita, show that between 1963 and 1970 Michigan potato production never covered its needs. In 1968, 1969 and 1970 the deficit of the trade balance in potatoes for the state was about 1.3 million cwt. As
we saw in Chapter II Detroit takes 66% of the state's unloads of fresh potatoes but is not totally supplied in potatoes by Michigan only. Detroit satisfies only about 50% of its needs with Michigan potatoes. This seems to support the view of some respondents that the Michigan potato industry should first try to supply the state's needs before looking for out-of-state markets. Certainly there is room for more in-state sales (a respondent speaks of a potential increase of 15% in market size on the average), especially in particular markets such as Detroit. The Michigan potato industry could focus its efforts on them.

The opposite conclusion is reached if we consider the fact that prices for out-of-state sales were said to be higher than those for in-state sales. We did not investigate the question to any great extent. One reason for higher out-of-state prices (if we exclude errors due to failing to take freight into account) might be that a higher quality of potatoes is shipped out. This would make sense as higher quality, thus more expensive, potatoes can more easily support high freight costs. But we also know that a very significant part of Michigan Unclassified potatoes is shipped to low income areas in the Southern region of the United States. These low quality tubers do not carry a high price, yet they have to travel a long way to find market outlets.
Further backing for the out-of-state solution is provided by considerations of market size, and quality of the potatoes to be moved. Obviously the market outside of Michigan is greater than inside of it. It is certainly surprising that Michigan does not supply Cleveland with more than 8% of the city's needs. Maybe the 50% of its needs Detroit gets from Michigan are all it can take. It is possible that rather than hauling potatoes from the Upper Peninsula, Detroit finds it more economical to import some from Ohio or Indiana. Similarly it is perhaps more feasible for Upper Peninsula shippers to market in Milwaukee, Wisconsin. Furthermore, some processed potato products, such as dehydrated products, are just not produced in Michigan.

Michigan has to get rid of its lower grade or Unclassified potatoes. It is doubtful that the state can absorb all of them. They have to be sold out of state. However, a problem could well develop wherein Michigan becomes known in other states mainly for its "culls". The risk could be lowered if grading for US No 1 was more severe (see above); in effect it would improve the average quality of the potatoes graded out.

2. In a few instances interviewees are skeptical about the duration of the effects of promotion programs. This position might partake in the "image of limited good" discovered by anthropologists among traditional-people: no one in the food industry can improve his lot without
doing it at the expense of other participants. "What potatoes gain, sugar or tomatoes will lose". This might be true in some ways since total food intake is fairly constant once it has reached a threshold. Also expressed is the view that Michigan potato promotions will trigger similar programs on the part of competing commodity groups or other potato producing states. In the short run some positive results will be reached but in the longer term the impact on sales will fade away unless the programs are sustained for long periods of time at a great cost.

3. One of the reasons why national potato promotion programs are felt as more effective than state programs for Michigan is that while the national program can promote a precise, well defined product, the potato in general, Michigan does not have a precise, homogeneous product to promote. We can see that issues earlier mentioned are linked with this one. In effect one can tell the public about the specific characteristics of potatoes in general by comparing them to other foods: but what can be said about "Michigan potatoes" in general, except that they are potatoes and that they come from Michigan. This does not distinguish them very much from other state's potatoes. Of course it can be said, as was done in 1972, that they are lower-priced than many potatoes of other origins but this might raise doubts sometimes founded, as to their quality. Moreover, notwithstanding the
current skyrocketing food prices, it is a moot point whether a few cents difference on a 10 or 20 pound bag of potatoes can increase potato sales since food is a shrinking expenditure item as a percentage of per capita disposable income and since the price elasticity of demand for potatoes is very low.

Here again creating the conditions for and achieving a better homogeneity for Michigan potatoes would render their promotion more effective. To promote a product one needs to have a distinguishable product.

4. Group Action

In addition to the Michigan Potato Industry Commission which represents all the types of participants in the production-distribution system of Michigan potatoes, three other institutions could be used to help increase the revenue of potato growers, who claim to be the least favored group in the industry, by improving the marketing of their products. They are bargaining associations, marketing or processing cooperatives, and marketing orders.

To be successful a bargaining association grouping growers, must be based upon a deeply felt need for increased bargaining power vis-a-vis their buyers. Moreover, the association must cover large enough region so that buyers are restricted in their ability to use alternative sources of supply. In general, a bargaining association for Michigan potato growers would be most needed and
effective in their relations with processors, but also useful in their relations with shippers. In effect it seems that many growers feel that they are not getting a "fair price" in their contracts with processors in view of the profits processors derive from the processed product. Likewise, although perhaps to a lesser extent, shippers seem to acquire great wealth at the expense of the growers. Effectiveness of a bargaining association would be enhanced by the high concentration in both the processing industry and the shipping sector. The bargaining power processors and shippers derive from their size as buyers would be better checked by a group of organized and informed growers than by an atomized production sector. The geographic concentration of supply in Central Michigan increases the feasibility of the establishment of a bargaining association in this region as growers are more easily put together in a limited, though large enough, area.

An alternative way to increase revenue for potato growers is already in use in Central Michigan. The Chief Wabasis Potato Grower Cooperative undertakes the marketing of potatoes for the grower's benefit. By contracting with its members 100% of their production the cooperative has a stable and reliable supply which it can either ship or contract to a processor. In shipping the members' potatoes the cooperative cuts to the bare minimum the selling costs involved in the
exchange of the commodity. The cooperative charges a flat rate per hundredweight to the grower for its activity but any profits are redistributed. When it contracts to a processor the cooperative acts as a bargain association.

This potato growers marketing cooperative could act as the nucleus for the development of other organizations of the same type. It could also evolve into a processing cooperative which would own processing facilities. With such a system the potato grower would receive an even larger share of the profits found in processing potatoes than through bargaining on contracts with processors.

The recent Michigan Agricultural Marketing and Bargaining Act\(^1\), could provide the basis for the establishment of strong bargaining associations.

Finally a state market order could be issued. Some aspects of the situation of the Michigan potato industry and characteristics of the product would help in making the market order effective: 1) the market is divisible into parts as uses for potatoes are very varied and each variety is best suited for a specific cooking process, moreover potatoes are amenable to grading and grades have sharp differences between themselves; 2) demand elasticity for fresh potatoes and the various processed potato products are different; 3) there is a

relatively small number of marketing firms (shippers) who handle a great proportion of the state's potato production. Thus it is possible to discriminate between markets and the enforcement of the order is facilitated by the small number of firms to control.

Yet another characteristic is not very favorable: potatoes are not highly perishable and can be stored fairly easily up to a year, so that people not submitted to the order can get control over supply by storing it; as we saw, however, potato growers in this state control most of the storage facilities so that it is them, rather than shippers or processors, who have the means to control supply.

A market order might be able to create more orderly marketing conditions by improving market information for instance on supply and demand conditions. But in the case of Michigan potatoes it seems to us that the greatest advantage of a market order is that it provides a means to strongly enforce grading regulations and thus enables the creation of a state-wide brand with all the benefits attached to it.

5. Processing Plants and the Michigan Potato Industry

Examining the numerous opportunities for improvement in the organization of the Michigan potato industry one must not limit himself to those which primarily affect the marketing of raw products. The whole production-
distribution system must sometimes be modified in order to take advantage of all marketing alternatives.

More potato processing plants for Michigan is sometimes suggested as the remedy which will cure all the diseases of the state's potato industry. The creation of potato processing plants in Michigan is considered as a prerequisite if the state is to present the consumer with the full range of potato products and wants to use all the potatoes it produces. The low quality of Michigan potatoes, the benefits of a stable and maybe contractually specified demand, stable prices, a simplified marketing system, and the easy disposition of lower grades, are the advantages pointed out by the supporters of such a policy.

But processing plants cannot be all put into the same category. Chipping, freezing, canning, dehydrating and starch plants are undoubtedly different.

Chipping plants need potatoes of a high quality, without internal defects, of a high specific gravity and low sugar content, which must be regularly supplied to the processing facility because of the fairly high perishability of potato chips which cannot be stored for long periods. Freezing plants likewise demand high quality tubers and benefit from regular deliveries, but end products can be stocked longer than chips.

Canning plants are agreeable to small size potatoes but quality must be reasonably high. The end product is storable so that deliveries need not be very regular.
Dehydrating plants can use tubers of a fairly low quality; the end products are highly storable. Starch plants can take any type of potato, culls will do; supplies can be stored without much care, so can the end product.

We can see that not all difficulties will be solved by any single type of processing plant. The presence in the state of one of the last three types of plants will help upgrade US No 1 potatoes. Graders would be less reluctant to incur the loss of grading out small or defective potatoes. This would contribute to the improvement in the average US No 1 as a smaller amount of culls would be packaged.

But problems would appear. Basically five were mentioned during interviews: the loss of independence with contracting, the location of the plants, the narrow supply, the price received by growers, and the strategic implications of increasing the amount of potatoes processed.

Farmers in general are not very willing to give away their independence. This is their whole way of life. They feel, in most cases, that contracting their production will reduce their independence. Under a contract they lose the choice of the people they are selling to, at least for a year, and very often are limited in their farm management decisions (for instance on the varieties to be grown, the time of harvest,
storing practices) . . . A grower says that "rather than contract his potatoes, he would just as soon work in a factory". The advantages of price and sales guarantees are not enough to pay for the price of subordination. Yet one must remark that the existence of processing plants does not necessarily require that contracts be made, although if growers were to refuse contracting they would deprive themselves of many of the benefits of the presence of processing plants.

The location of plants does matter. If they are placed in producing areas on the border of the state they will perhaps be optimally located with respect to this area but not with respect to other areas. In effect, since processing stock, even of high quality, does not carry high prices compared to tablestock, it cannot bear freight costs to any great extent. This is even more sensitive with plants processing low quality tubers. One cannot think of a grower in the Upper Peninsula shipping his culls to a starch factory in Monroe County. So the supply in raw materials of a plant will be deeply conditioned by its location.

Some interviewees say that it would be next to impossible to supply in sufficient amounts several, or even one or two, processing plants, whatever their location, especially if they were to use lower grades or culls. We tend to disagree with them. In Chapter IV we have shown that almost 55% of the state production is
harvested in a cluster grouping five counties in the middle of the lower Peninsula. If we assume that 10% of field-run potatoes would be graded out as culls under strict grading practices, this is about 500,000 cwt which would be readily available for a plant located for instance in Saginaw County. Although we do not know what is the minimum size of a profitable dehydration or starch plant we feel that this is almost guaranteed volume of supply would be a good start. What are the alternatives to the grower? He can dump his culls or he can try to market them as Unclassified. In the first case he loses a revenue which would help him absorb his fixed production costs; in the second case he invests his time, effort and money in selling activities, he contributes to the bad consumer image of Michigan potatoes, he increases the supply of potatoes on the market and he helps to lower the average price. It has been shown\textsuperscript{1} that "a ten percent change in [potato] production is associated, on the average, with a 40 to 45 percent change in gross income, in the opposite direction." Perhaps diverting as little as 10% of the crop to processing plants the end products of which can be more easily exported or put to industrial uses, would result in better incomes to the growers.

\textsuperscript{1}An Economic Study of the US Potato Industry, op.cit., p. 35.
The price received by growers for the potatoes they deliver to processors must be acceptable, i.e., it must leave a fair return to the seller and to the buyer. Not all processing stock potatoes are equally valuable. Three main criteria must be considered: quality of the tuber, shape and size. Growers seem to get a fair return for their US No 1's. The problem is with potatoes which have defects. A tuber badly sprouted and flabby, greened, odd shaped and small cannot be used for anything other than starch; it will receive a very low price since starch is an inexpensive industrial product. If a tuber is of good quality but odd shaped and small it can be dehydrated and will command a relatively higher price. Finally, if the tuber if sound but small it can be canned and should receive a good price. In times when the price of potatoes goes up to almost $10 a hundredweight at the farm gate it is puzzling to hear growers say that they get only 60 cents a hundredweight for "pee wees" to be canned. The final question, which we did not investigate, is the cost of sorting according to the three criteria potatoes which have been graded out of US No 1's.

The last problem mentioned is a complex one and is mixed with the question we shall examine in the next section. Some respondents say they are not in favor of getting more processing firms to come to Michigan because it will only worsen the trend of decreasing amounts of fresh potatoes consumed. Assuredly some emotion goes into
such statements. But it might be granted that processed potato products do compete for food dollars with fresh potatoes. If the grower gets a better price for tablestock than for processing, as is the case, his best interest is to try to develop tablestock uses. Some growers express hope that with the current high food prices the housewife will increasingly notice that she can get a ten pound bag of excellent potatoes for a dollar while with the same amount of money she buys only one pound of instant mashed potatoes.¹

6. Tablestock Strategy versus Processing Stock Strategy

By a tablestock strategy we mean that the potato industry members in Michigan could elect to concentrate all their efforts, as a group, on producing and marketing potatoes for the tablestock market. Such a strategy would be carried out by the following policies. The industry would choose one limited tablestock market: either the baking potato market or the boiling potato market (for soups, salads . . .) or the mashing potato market. Michigan potatoes would then be positioned on a precise market.

Depending on the market chosen a plan for reducing the number of varieties will be established. Only those

varieties which best fulfill the specific requirements of the market chosen, in terms of cooking qualities, would be kept.

Grading practices would be standardized according to the specific needs of the market as far as quality, size, weight. These needs will have to be determined by a careful and complete consumer research which will also tell what market size and market share could be expected.

The target market will be hit by a powerful and well coordinated promotion program aimed at differentiating Michigan potatoes by emphasizing their particular adequacy for the kitchen use determined previously. The program could be organized around a state-wide brand.

Potatoes that don't meet the minimum grade standard will be disposed of in the best profitable manner; dumping them could be considered if growers really do not see any way to sell them in order to cover their fixed production costs (i.e., if there are no starch or dehydrating plants in their area).

By a processing stock strategy we mean that the potato industry members in Michigan could elect to become industrial agriculturalists. They would then concentrate all their efforts, as a group, on raising the raw material of potatoes, having them processed or processing them into other types of potato products and marketing these end products. Such a strategy would imply the following policies.
Michigan potato growers would choose to create and own processing plants or alternatively to sell raw potatoes to existing processors, or both. If the second alternative was preferred efforts should be made to attract new processors to the state. This could be done by providing incentives: help to the processor in locating his plant, guarantee of supply, even maybe tax incentives asked by the industry on the processor's behalf to the state legislature.

Growers would then have to see to it that the best processing stock varieties are grown in the state. They could fund research aimed at developing varieties suited to the different types of processing and giving the highest possible yield. Depending on the processing uses, higher yields rather than better quality will be sought by growers in their production practices.

Grading out premium potatoes, in a first stage on the basis of the size of the tuber (3 inch minimum for the "large" and Bakers designation according to the 1971 Federal standard), would not be ruled out as it can be cheaply done with a screen; in a second stage sized potatoes would be graded according to other requirements for a "US Extra No 1 Large or Baker" grade, then sold at a premium to restaurants and institutions, and in fancy, count packages to housewives.

These two strategies have very different advantages and drawbacks.
With the tablestock strategy, depending on which market the Michigan potato industry wants to position itself, two difficulties will arise. If the baking market is chosen Michigan will have decided to fight head on with a very powerful and well established competitor. Idaho has been on the baking potato market for several decades with its Russet Burbank and will defend its position. Michigan potato growers might not be able in every producing region of the state to "put out a baker of this variety, or of another variety possibly, with the required consistently high quality. Since the Russet Burbank is not an early potato, the late summer market would be forsaken. If the boiling or mashing potato market was chosen the Michigan potato industry would have to undertake the education of the housewife, teaching and convincing her that the specific uses she has for potatoes require that she buy the specific varieties of potatoes, which Michigan supplies.

Michigan potato industry members could increase their incomes if all the policies indicated were implemented. Prices for tablestock potatoes are much higher than for processing stock and an increase in quality should result in an increase of the average price. But grading carefully and strictly will cost more in manpower, equipment (it might have to be redesigned to better protect the tubers) and in cull out losses.
One of the great risks of a tablestock variety is that the whole industry would be positioned on a shrinking market and completely geared to supplying it. Should this strategy fail great conversion costs would have to be sustained. The tablestock market in the United States represents less and less of the total equivalent volume of potatoes consumed. In 1970 fresh and processed potatoes equally shared the total potato consumption. According to recent projections\(^1\) fresh potatoes by 1980 might have only a 38% share in the total potato consumption. Of course this figure is only the projection of current trends. In the event the projection is confirmed what will be the composition of the fresh market? In all likelihood a good chunk of it will go to bakers. There is uncertainty as to whether the remainder will be taken by other types of premium fresh potatoes used for boiling or mashing (since processed products exist for these purposes), or by low quality tubers sold at low prices in low income areas.

The second great risk of a tablestock strategy is that it is very demanding for each member in the industry. A few free-riders could destroy the whole plan. The entire industry would have to "move together" in order to make the strategy successful. If any improvement from

\(^{1}\)Stephen O. Sparks, op.cit., p. 85.
the present situation is to be achieved the agreement and commitment of each and every industry member would be needed; this is a difficult thing to get.

With the processing stock strategy one of the first problems is that growers will get a rather low income from their potatoes if low prices continue to be associated with processing stock sales. If growers can secure the large financial resources required by the creation of processing plants with the capacity to absorb most of the planned production of the state, they will get good incomes as they will pocket the profits made on the sale of the end products. This could be done by creating a potato processing cooperative-type operation. Then a major difficulty of the processing stock strategy would be nullified. Under such a strategy, if growers cannot finance the plants, their only way of improving their situation is to collectively bargain for higher prices with processors. But some loss of independence for the grower is necessary under either scheme. Industrial operations simply require regularity in deliveries, and in the quality of the raw materials supplied. Be it owned by a private processor or by a group of growers, the plant is best managed with contracts regulating its raw product deliveries.

The processing stock strategy presents the great advantage that the Michigan industry will be positioned on an apparently growing market. It will be brought forward
by existing trends, if they continue and will grow with minimal efforts and investments in promotion. Depending on the type of plants created (i.e., canning and dehydrating) it is conceivable that some foreign exports, could eventually be made.

If all five types of plants are built in the state and are optimally located, all qualities of potatoes produced in the state could be used, from the best to the worst. The total production would be absorbed. This would make it more feasible for growers to seek higher yields even at the expense of quality.

The last advantage we see to such a strategy is its flexibility. In the event of a failure of the strategy the flexibility will not be greater than with the alternative strategy because of the large investments in producing facilities, although investment in promotion will not be large. But flexibility will be great in that the free-rider problem is not as crucial. Even if a significant number of growers and shippers were to keep selling on the tablestock market this would not hurt the processing industry very much. Supply could always be obtained from neighboring states at feasible prices. This is how one of the presently existing processing plants located in Southwest Michigan solves its procurement problems. Growers or shippers selling for tablestock even the lowest quality should not damage the image of
processed potato products manufactured in Michigan because fresh and processed products are easily differentiated by the consumer.
CHAPTER VI

Summary and Conclusions

The Michigan potato industry is neither a prominent part of the national potato industry (whatever the criterion Michigan potatoes represent less than 4% of U.S. potatoes), nor a very significant portion of the state's agricultural economy.

Yet, historically, both the Michigan Late Summer crop and Fall crop have been sold by growers at a premium price over the national average. While average Late Summer yields per acre were lower than the national average (by one fourth to one half), Michigan Late Summer growers have been expanding production in absolute terms until 1966, tripling the tonnage between 1955 and 1968. Proportionately, Michigan occupied a growing part of the total acreage devoted to Late Summer potatoes in the U.S. This was the result of a great price incentive. With a lesser price incentive and a weaker competitive position in its seasonal group, Michigan Fall crop production has been more stable, although yields were good compared to the national average.

The marketing advantages resulting in premium prices for Michigan tubers derive from two factors. The
first one is the atypical shipping pattern of the Michigan potato production as compared to the United States as a whole: the month of heaviest shipments in the U.S., June, is that of lightest shipments from Michigan, and the months of heaviest shipments from Michigan, September and October, are months when shipments in the U.S. are at an average or low level. This factor, which concerns both the Late Summer and Fall crop, is probably even more decisive for the Late Summer crop as early potatoes are always scarce and thus receive a premium. The locational advantage of Michigan is the second factor. Michigan as a producing state is close to large consumer markets. While the main outlet is the city of Detroit, significant markets are found in neighboring states: Pennsylvania, Ohio and Indiana. Other large markets within easy reach could be tapped to a greater extent: Chicago for instance represents a mere 1.7% of Michigan annual fresh potato unloads. Because of low transfer costs to major markets, growers can receive a higher price even though retail sale prices of Michigan potatoes are as low or lower than other states' potatoes.

The characteristics of the potato industry of Michigan as compared to the U.S. potato industry are better understood, and the potential for improvements in the situation of industry members is better assessed, with an analysis of the conditions prevailing in the production-distribution system which brings Michigan potatoes to their markets.
At the level of the individual farmer, Michigan potato growers specialize as to the destination of the potatoes produced: some grow for tablestock, others for processing stock. But this specialization, which could be a trump in the hands of the industry for the efficient marketing of its potatoes, is counterbalanced on the one hand by the great number (more than thirty) of varieties of potato seeds used by the industry as a whole and on the other hand, by the lack of uniform grading practices. These characteristics inhibit the development of a better, more stable and precise image for Michigan potatoes.

The situation is not improved by shippers' practices. They also specialize in the type of product they sell and get a fairly homogeneous supply, but they pack and brand the potatoes they sell in scores of different packages and under hundreds of different brand names. Their attempts at differentiating their products from those sold by their competitors, might result in some benefit for the individual firm but harm the industry as a whole. So, although the price for Michigan potatoes is higher than the national average, it does not reach the premium attainable through a stronger product differentiation (as shown by the Idaho example) based on a product which has a greater homogeneity and a more regular quality.

One of the consequences of this situation is that, to get a more stable net income, some Michigan potato growers rather than selling on a market price basis revert
to contractual sales arrangements with processors. But contract prices on processing stock are lower than prices carried by tablestock potatoes even though the contractual arrangement limits the grower's freedom while giving him a guaranteed outlet for his production.

Michigan potato growers who sell tablestock often use the services of a broker. This enables them to gross the market price minus a 15 cent brokerage commission per hundredweight. The grower is also able to preserve his freedom of decision on what to sell, in what quantity, at what time, and at what price. In a few cases the price is negotiated directly between the wholesaler, retailer, or sometimes processor, and grower-shippers of higher than average size.

Only a few Michigan potato shippers and grower-shippers, primarily those involved in sales to retailers and wholesalers, have direct promotional and advertising activities. Thus the industry as a whole does not seem to be very aggressively seeking new markets in order to expand sales. Shippers expect to continue to "grow with present markets" and therefore make few efforts to develop new markets.

Physical distribution activities (storage and transportation) are the last and important stage in the operations of industry participants. One can roughly say that growers take care of storage, shippers and grower-shippers take care of transportation. To a large extent
growers own storage facilities and thereby increase their marketing independence, and help stabilize prices since storing prevents market gluts.

Yet, by failing to wash and grade potatoes for storage, Michigan potato growers do not fully utilize their storage capabilities. Although some growers take care of transportation this activity is usually performed by shippers and grower-shippers. They have steady business relations with truckers and sell on a delivered price basis to their scattered buyers.

The description and analysis of the producing and marketing activities of the Michigan potato industry through a 4 Ps framework had to be completed by a study of the structure and conduct of the system to give a comprehensive view of the subject.

The structure of the Michigan potato industry shows a fairly high concentration in all segments and by all criteria. Although growers and shippers are numerous in both groups, the largest growers and the largest shippers account for a high percentage of potato production and sales in the state. Spatially the concentration of production is also high: the three largest producing counties represent almost 50% of the production proximity to the crucial Detroit market seems to be the main factor. Because of the structural concentration, small growers are very dependent on shippers.
Product differentiation is used chiefly for tablestock potatoes and is achieved more through assumed differences based on brand, than through real physical differences of grade, size, appearance or size of packages. But product differentiation is pushed to such extremes by individual firms that consumers cannot easily recognize Michigan potatoes as coming from this state.

Entry into the potato growing business seems to be hampered mainly by the amount of investment required, and entry into the shipping business is substantially barred. A new shipper could not easily supply himself with potatoes because of the strong, maybe forced, loyalty between growers and established shippers. Furthermore access to customers is made difficult by the small volume a newcomer has to begin with, which prevents him from offering a full product line to potential retailers. Legal barriers, however, are not difficult or expensive to overcome.

On the conduct aspect our conclusion are neither very numerous nor very reliable. It does seem safe to conclude, however, that participants in the system exchange very little information, especially on price, except for some indication of communication among shippers.

We can see that the Michigan potato industry has to solve, as a group, several problems which inhibit its growth and prevent the full use of its potential. It also has to take a position on issues which will deeply affect
the relationships between the various segments of the industry.

The main problems are related to marketing management: the quality, the number of varieties grown, the identity or image of Michigan potatoes. The quality of Michigan potatoes is low or at least extremely irregular. A stricter enforcement of grade standards by the state inspection service or an effort of wholesalers and retailers to better handle potatoes, could be envisaged, but rather it is suggested that the industry itself attempt to be self-disciplined in its grading practices. Some reduction in the number of varieties grown is certainly desirable. It would facilitate marketing by making price comparisons easier and by simplifying promotion to the final consumer. Though specialization in a few varieties benefits others besides growers, such a decision can be made only by producers. A solution being given to the two previous problems, Michigan potatoes will acquire, little by little, a favorable image in the eyes of the consumer, if in addition, some agreement is reached in the industry on the ways potatoes will be packaged and branded.

The establishment of a state-wide brand could be suggested to cure some marketing related ailments on the industry. Its basis, but also its Achille's heel, would be a uniform grading practice, and the funding of the brand's promotion by all industry participants.
This raises the issue of promotion programs, both local and national. Although these programs are considered effective in fighting consumer biases it is difficult to determine how Michigan potatoes should be promoted: they are so heterogeneous and their markets so diverse that the first step to be taken is to create the conditions of the formation of a good and precise image.

The recourse to group action is examined: bargaining associations, marketing or processing cooperatives, and marketing orders. It seems that a grower bargaining association in the Central Michigan region would be an effective way of solving some of the crucial problems of the potato industry in this region, a marketing coop would also be a good means. But the privileged solution, although somewhat authoritative, is the issuance of a state market order. The tools for group action are available and most of the prerequisites seem to be fulfilled, whether potato growers will take this route depends on individual decisions.

By creating numerous potato processing plants of several types in Michigan most present problems would be displaced but not solved. Such a strategic decision should be geared with a processing stock production strategy if it is to have a favorable impact on the state's potato industry. The last two sections of Chapter V are closely intertwined. Electing to position itself on the tablestock market only, the Michigan potato
industry would also need to impose upon itself rigorous grading standards. Some type of market agreement or order would be the most feasible way to have it enforced industry-wide. Such a strategy would have high risks but might yield larger profits than a processing stock strategy as prices for fresh potatoes are higher. A processing stock strategy would provide growers with one of the benefits they are constantly looking for: stable prices and stable outlets. Even though they would lose some independence, the industry as a whole would be positioned on a growing market.

Since all sectors of the potato industry are dependent to one degree or another upon the continued production and sale of potatoes at a sufficient volume and price to be profitable to those involved, problems which appear vital to the long run welfare of the entire industry must be attacked using resources from all sectors of the industry. This study only examined aspects related to the first two sectors performing along the marketing channels. It must be completed by a study of growers in the producing activities, especially their costs, and a study of processors and retailers. Finally, before taking any crucial decision, the Michigan potato industry must learn to know better the final consumers of its products.
BIBLIOGRAPHY AND LITERATURE CITED


Sullivan, G. H. *The Potato Industry*. Purdue University, Agriculture Experiment Station, Research Bulletin No. 862, 1968.


1. Code for respondent: ________________________________

2. How long have you been in the potato business? ________________________________

3. How did you get started? ________________________________

4. Are you: _____ (a) a grower shipper? ________________________________
   _____ (b) a shipper? If shipper only, go to #9.

   If grower shipper, interviewer reminder: In cases of family clusters, be sure to note whether
   you are getting data only from interviewee's farm or the total for the family.

5. How many acres did you operate in 1972?
   (a) Total ________________________________
   (b) In potatoes ________________________________

6. When do you usually begin harvesting?
   _____ (a) Late summer
   _____ (b) Fall

   (Late summer is here defined as potatoes harvested before September 1st.)
7. Can you give me an estimate of total potato production on your farm in:
   (a) 1972
   (b) 1971
   (c) 1970

8. What varieties did you produce last year? What was the percentage of your total production from each of the first 4 varieties?

<table>
<thead>
<tr>
<th>Name</th>
<th>Yield</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety #1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety #2</td>
<td></td>
<td></td>
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<tr>
<td>Variety #3</td>
<td></td>
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<tr>
<td>Variety #4</td>
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<tr>
<td>Variety #5</td>
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<td>Variety #6</td>
<td></td>
<td></td>
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<tr>
<td>Variety #7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interviewer reminder: Check: You had only X varieties? What varieties give the best yield?

9. Do you buy: (a) from the other growers?  Yes  No  If no, go to #26.
   (b) from other shippers?  Yes  No

10. Can you give me the total quantity of potatoes you purchased this year (1972)?
    (a) 1972
    (b) 1971 (last year)
    (c) 1970 (year before last)
11. On the potatoes you purchase, who does the grading, washing and packaging?

Grading

Washing

Packaging

12. Who supplies the bags?

13. What are the most prevalent size and type of bags?

<table>
<thead>
<tr>
<th>Size</th>
<th>Ranking</th>
<th>Type</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 lb. (baled or unbaled)</td>
<td></td>
<td>Paper (window)</td>
<td></td>
</tr>
<tr>
<td>10 lb.</td>
<td></td>
<td>Paper (w/o window, solid)</td>
<td></td>
</tr>
<tr>
<td>20 lb.</td>
<td></td>
<td>Mesh</td>
<td></td>
</tr>
<tr>
<td>50 lb.</td>
<td></td>
<td>Polyethylene (clear)</td>
<td></td>
</tr>
<tr>
<td>Bulk</td>
<td></td>
<td>Polyethylene (red)</td>
<td></td>
</tr>
</tbody>
</table>

14. About how many growers, shippers or brokers do you buy from?

(a) Growers

(b) Shippers

(c) Brokers

15. Does this number vary from year to year?  

Yes  No
16. About what percentage of your total purchases are made from your (20% of total growers) most important growers?

   ________________________________

17. In what counties are your growers located?

   ________________________________
   ________________________________
   ________________________________
   ________________________________

18. Do you usually buy from the same growers year after year?

   Yes    No

19. Why? ________________________________

   ________________________________
   ________________________________
   ________________________________
   ________________________________

20. What qualities do you look for in a grower? (Can you rank these qualities by order of importance?)

   Volume of production
   Stability of quantity produced
   Quality of his potatoes
   Varieties grown
   Other (specify) ________________________________

   ________________________________
   ________________________________
   ________________________________
   ________________________________
21. Do you find yourself frequently losing growers to other shippers and being forced to seek other sources?

___ Yes    ___ No

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
22. Do you think written contracts with growers are desirable?
   Yes   No

23. Do you have verbal or written contracts with growers?
    (Interviewer reminder: If contract written, ask for a copy.)
   Yes   No

24. If yes, what quantity do you normally contract with growers?

25. Can you give me details? How arrive at price? Does price vary with
    month of delivery?
    Quantity,   Variety,   Grade,   Season

    Delivery Arrangement
26. Do you sell only chipping potatoes or only tablestock—or both?
   __________ chipping potatoes
   __________ tablestock potatoes
   __________ both

27. If both, what is the proportion: chipping __________
   tablestock __________

28. If only chipping or only tablestock:
   Have you considered going to the chipping or tablestock business?
   Why or why not?

29. On your selling side, could you break down this year's or last year's total sales on a seasonal, variety, washed-unwashed, and grade size basis?

<table>
<thead>
<tr>
<th>Seasonal</th>
<th>Variety</th>
<th>Washing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late Summer</td>
<td>#1</td>
<td>Washed</td>
</tr>
<tr>
<td>Fall</td>
<td>#2</td>
<td>Unwashed</td>
</tr>
<tr>
<td></td>
<td>#3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>#4</td>
<td></td>
</tr>
</tbody>
</table>

   Grade and Size
   U.S. #1 1 7/8 in. min. __________
   U.S. #1 2 in. min. __________
   U.S. #1 4 oz. min. __________
   U.S. #2 __________
   Undersized __________
   Other (specify) __________
30. Do you own or lease storage facilities?
   Capacity owned
   Capacity leased from others
   Capacity leased to others

31. How much do you figure the storage costs you per month, per cwt.? Does it vary with the month? How?

32. How much did your storage building cost you?

33. Do you try to protect yourself from price fluctuations on stored potatoes by hedging?
   Yes   No

34. How do your stocks vary over time?
35. In what months do you normally ship potatoes?

36. What are your peak months in terms of volume shipped?

37. Do you usually sell to the same buyers year after year?
   Yes  No

38. Do you have verbal or written contracts with buyers?
   Yes (If written, ask for a copy.)
   No

39. If yes, what quantity? (Or, what percentage of your production and purchases?)

40. What are contract arrangements?
   Price (does it vary with delivery date? How?)
   Quality (grade)?
41. How are contracts enforced as far as grades?
42. On your selling operations we would like to have some details: What proportion of your products are you selling through different marketing channels (chain stores, wholesalers...). When during the year, and where are they located? Do some of them ask you special packages (such as their own private brand packages?)

<table>
<thead>
<tr>
<th>Channel</th>
<th>% of Sales</th>
<th>Period of Sales</th>
<th>Special Pack.</th>
<th>Location of Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Product A</td>
<td>Product B</td>
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<td></td>
</tr>
<tr>
<td>Chain store</td>
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<tr>
<td>Wholes (Number</td>
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<td>of buyer in</td>
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<td>this category:</td>
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<tr>
<td>Independent</td>
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<tr>
<td>Wholesalers</td>
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<td>(Number of</td>
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<tr>
<td>buyers in this</td>
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<tr>
<td>Independent</td>
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<td>Retail Stores</td>
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<td>buyers in this</td>
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<td>chips</td>
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<tr>
<td>others</td>
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<tr>
<td>Restaurants &amp;</td>
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<tr>
<td>Institutional</td>
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<tr>
<td>Market</td>
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<tr>
<td>Other Shippers</td>
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</tbody>
</table>
43. Do buyers in some regions concentrate their purchases from you in certain months?

44. In your 4 major markets, who are your prime competitors?

<table>
<thead>
<tr>
<th>Market</th>
<th>Competitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
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<td>3</td>
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</tbody>
</table>

(Interviewer may wish to probe further on problems of competition.)

45. How do you market lower grade potatoes?

- Culls
- U. S. #2
- Unclassified
- Pee Wees
46. Do you have your own brand or brands?

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Characteristics</th>
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<tbody>
<tr>
<td></td>
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</table>

(Characteristics: quality, price, quantity, market outlet, variety) - Ask for big samples of each brand.

47. Do you help your buyers to promote your brands?

48. How? Advertising allowances

- Display material
- Special promotions
- Other

49. From time to time in the last few years have you found it necessary to look for new market outlets?

50. If yes, how did you go about finding new markets?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
51. Do you think it would be wise for the Michigan industry to set up a state-wide brand?

52. If yes, how?

53. What is your opinion of the national potato promotion program? (May be skipped)

54. Who pays for the transportation, you or the buyer?
55. What are typical transport rates to your four (4) major markets?

<table>
<thead>
<tr>
<th>Market</th>
<th>Cost (c/mt.)</th>
</tr>
</thead>
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<tr>
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</table>

56. Do transport rates vary?

57. If so, in what way? Why?

58. Who makes transport arrangements?
59. Do you think Michigan needs more processing plants?

60. Do you think Michigan needs to find a way to increase the quality of its fall stock product?

61. Do you have more than one shipping office?
   
   Yes       No

   If yes, where?  
   ______________________________
   ______________________________
   ______________________________

62. What is your opinion of Michigan potato shippers?
   (Are they efficient, profitable, dynamic?)