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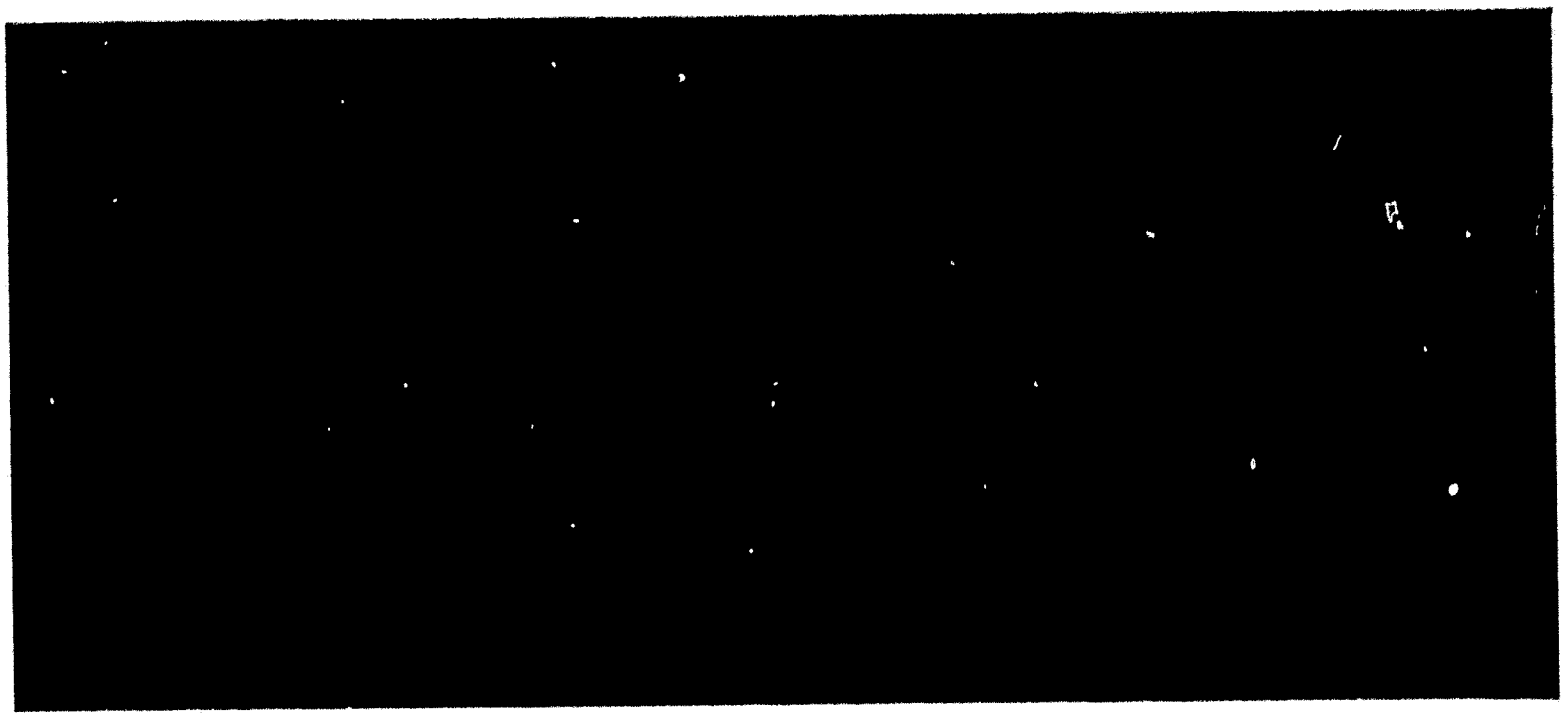
To estimate the magnitude of changes in agriculture, past agricultural trends in Michigan were summarized and projected to the year 1980. Some major trends in the 1950's were: (1) The number of farms and cropland harvested declined at about the same rate as for the United States, (2) Total units of livestock showed a sharp decline, (3) The size of Michigan farms increased at a rate less than the national average, and (4) Michigan farmers have a high comparative advantage working off-the-farm at higher than average factory rates instead of spending full time on a small farm. Some 1980 projections are: (1) continued reduction in land in farms, (2) continued reduction in number of farmers, (3) a sharp reduction in the number of farms, (4) further specialization of farms, (5) markedly greater capital and credit needs per farm, (6) far less total labor needs in agriculture, (7) higher managerial requirements needed to successfully operate the larger farm business, and (8) greater need for education for both those remaining in agriculture and those moving out. (DM)

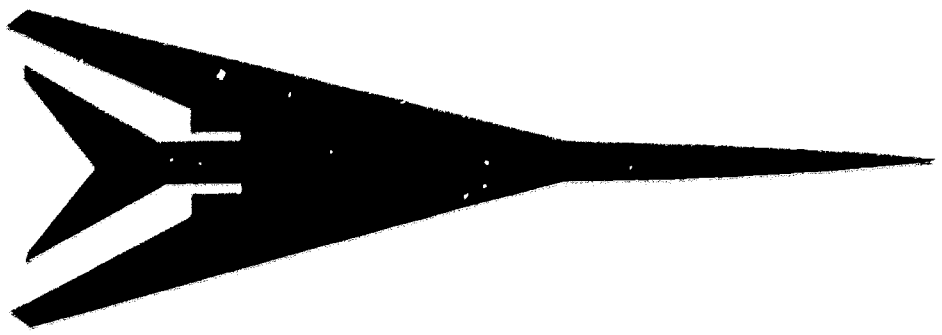
RESEARCH REPORT

FROM THE MICHIGAN STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION AND COOPERATIVE EXTENSION SERVICE, EAST LANSING

PROJECT '80

RURAL MICHIGAN
Now and in 1980





FOREWORD

THE RURAL SCENE in Michigan is changing very rapidly. Many decisions are being made that require commitments for several years ahead. Long range planning is a must. In order to encourage long range planning and assist the people of rural Michigan in this effort, the College of Agriculture of Michigan State University launched PROJECT '80 in early 1964. PROJECT '80 is a study of the prospects and potential for rural Michigan by 1980.

PROJECT '80 is designed to seek answers to three important questions: (1) What will rural Michigan be like in 1980, *in the natural course of events?* (2) What do rural people and others concerned want it to be like in 1980? (3) What can be done to capitalize on the opportunities, avoid impending problems, or change the natural course of events and redirect Michigan's rural economy toward the goals?

A task of this magnitude has required the time and effort of many individuals. Dean T. K. Cowden, the College of Agriculture, appointed a steering committee composed of the chairman, Dr. L. L. Boger, chairman of the department of agricultural economics; Dr. Raleigh Barlowe, chairman of the department of resource development; Dr. John Carew, chairman of the department of horticulture; Dr. Charles Lassiter, chairman of the department of dairy; Dr. Alexis Panshin, chairman of the department of forest products; and Richard Bell, assistant director of the Cooperative Extension Service. Dr. John Ferris of the Department of Agricultural Economics has been the project director and Mark Allen of the department of information services has been the editor.

The steering committee delegated to selected faculty members the responsibility of preparing some 50 discussion papers covering the many facets of the rural economy—agriculture, agribusiness, forestry, fisheries and wildlife, nursery crops, floriculture, recreation, service industries, and people. Many rural leaders and representatives of businesses directly concerned with the rural economy participated in the project by reviewing these papers, offering suggestions, and submitting ideas for needed programs.

About 200 of these individuals joined 100 campus-based faculty members in a two-day seminar at Michigan State University's Kellogg Center on March 31-April 1, 1965, for such a review. Other meetings have been held for this purpose, including a two-day workshop for the entire faculty of the College of Agriculture and the Extension Service.

It is possible to make use of analytical techniques in the development of long range—a decade or more—projections. However, there are numerous forces impinging upon the future that defy analysis. For this reason, PROJECT '80 researchers have sought the wise counsel and judgment of persons within and outside of the College of Agriculture.

This report is one of a series prepared for PROJECT '80. The emphasis of this report is on answering the first question posed by the project, "What will rural Michigan be like in 1980, *in the natural course of events?*" These are the projections. They are based on certain assumptions, research, and a great deal of judgment. They should not be regarded as inevitable. True, many of the developments projected will occur regardless of or in spite of what is done in Michigan. But at the same time there are forces over which we do have some control. Here people can do something to change the course of events if they act soon enough and if they really want to accept the challenge. In a sense, PROJECT '80 is an early warning device designed to spark action to change some of the projections before it is too late.

A study such as PROJECT '80 can focus on making projections, but the question of goals and actions must be answered by individuals and organizations.

Formally, PROJECT '80 is completed with the publication of these reports. The success, however depends on what happens after this date—how well it succeeds in bringing the best information available to the attention of rural Michigan and in stimulating people to discuss the future and to plan accordingly.

BACKGROUND ASSUMPTIONS AND PROJECTIONS

Rural Michigan will be a part of a dynamic and interrelated economy between now and 1980. Because of this we must recognize what some of the underlying forces will be. Here are some of the highlights from *Rural Michigan — Now and in* 1980, *Highlights and Summary*, Research Report No. 37.

Between now and 1980 we assume:

(1) No major war.
(2) No major depression.
(3) Inflation of about 1.5 percent per year in consumer prices.
(4) Average weather and little success in controlling weather.
(5) Development of new technology will be even more rapid than in the past 15 years.
(6) The rate of adoption of new technology will be somewhat faster than in the past 15 years.
(7) The continuation of some type of price support program with increasing emphasis on area development.

The population of theUnited States is expected to increase from 188 million in 1962-63 to about 245 million by 1980, a 30 percent increase. A similar growth rate is projected for the East North Central States and for Michigan. Michigan's population is to increase from 8.0 million in 1962-63 to 10.2 million by 1980. Many of the counties in the Upper Peninsula and Northwest Lower Michigan are not expected to share in this increase; in fact, population in these areas is projected to continue to decline.

Population will continue to shift away from farms and central cities to the suburbs and to rural nonfarm residences. A higher proportion of the population will be in the younger and older age categories. The average Michigan resident over 25 will have attained 2 more years of formal education.

The national economy will have exceded the trillion dollar level by 1980, enough to provide the population with disposable incomes above $3,000 per capita (in 1962-63 dollars), more than $900 greater than in 1962-63. The Michigan economy is projected to grow at least as rapidly as the national economy, with incomes and wage rates remaining above the U.S. average. (In 1965, wage rates in Michigan were the highest in the nation.)

People will have more leisure time. The average work week may well be reduced to 4 days. Employees are likely to have another week of paid vacation time and more will retire at earlier ages. A larger proportion of the labor force will be women.

Larger proportions of incomes will be spent on "nonessentials"; a smaller proportion will be spent on necessities such as food. The composition of diets will continue to change and people will spend more for processing and marketing services.

Per capita food consumption in terms of pounds and calories will likely continue to decline. But individuals will consume more beef, poultry, meat, cheese, ice cream, fats and oils (excluding butter), and processed fruits and vegetables, *per capita*. Because of rising population, *total* domestic comsumption will increase on nearly all farm products between now and 1980.

World population is expected to increase by about 40 percent between 1962-63 and 1980, with the rate of growth twice as great in the low income countries as in the high. Underdeveloped nations will request increased assistance from the more developed nations in the form of food. The nutritional gap in these underdeveloped countries consists of proteins, fats and oils.

The rapid growth rates in high income countries will be accompanied by changes in demands for food similar to those projected for the United States. The big gainer will be animal protein. This should provide a good outlet for U.S. exports of feed grains and meal.

Farmers will face an increasingly concentrated and specialized marketing system which will impose more rigid specifications on the product, specifications dealing with quantities, qualities and timing of delivery.

The urban sprawl and diversion of farm land to forests, parks and highways will reduce the land in farms by 20 percent between 1964 and 1980.

Urban demands will give rise to aggravated ground water problems in many communities. Recreational demands will prompt more intensive use of Michigan's lakes and streams, demands for tighter pollution control measures and efforts to zone or police the uses made of public and private waters.

It is within this setting that rural Michigan will perform between now and 1980.

Summary

The major points of this bulletin are summarized in two sections. The first consists of short statements summarizing past agricultural trends in Michigan compared with those in the U.S. The second section consists of a table showing the more important past trends and 1980 projections for Michigan, along with some comments on the major changes and projections.

Agricultural Trends in Michigan vs. U.S. in the 1950s (see Tables 1 and 2)

1. Michigan's number of farms and cropland harvested declined at abou the same rate as for the U.S., but total land in farms declined faster.
2. Our total units of livestock showed a sh..rp decline, while there was an increase for the U.S.
3. Our crop yields and milk production per cow increased at about the same rate as the national average.
4. Michigan's total sales of farm products did not increase as rapidly as the nation's, largely because of the difference in livestock trends.
5. Michigan farms were approximately one-half the national average size in 1949-53 and showed much less increase in size since then.
6. Our "per farm" average sales of products and net farm earnings, based on all farms, were considerably below the national average during 1949-53, and improved less in the following decade. In 1959-63 Michigan ranked 39th in average net earnings per farm.
7. Many Michigan farmers have more comparative advantage working off the farm at our higher than average factory wage rates, than spending full time on a small farm. More do this than is usual in the U.S., and the percentage doing such work increased faster than the national average from 1950 to 1959. On a state basis, this additional income offsets much and possibly most of the lower average farm earnings.

1980 Projections for Michigan (see Table 14 page)

1. Continued reduction in the land in farms and cropland in the state.
2. A continuing increase of about 3 percent a year in crop yields but only about one-half that increase in total crop production, due to the reduction in acreage in crops.
3. Little or no change in total livestock production, with total output of crops and livestock increasing about 1 percent a year.
4. An increase in prices paid by farmers of at least 1 percent a year, with a chance of some increase in prices received, but probably a greater cost-price squeeze than during 1959-63, unless there is a change in agricultural policy.
5. Under the above price projections, the total expenses of Michigan farmers are expected to increase more than income, leaving less total net income for all farmers (but far fewer farmers). If U.S. policy toward supplying food to the needy nations is changed, with diverted acres brought into production, then income probably would be increased considerably.
6. About one-half as many farms as in 1964, with a sharp reduction in the number of general farms with less than 180 acr s and those with sales of less than $10,000 a year.
7. Consolidation and enlargement of farms, where there are adequate resources and managing ability, with a faster increase in average size than in the past.
8. Over twice as many farms with sales of $20,000 or more as in 1964, with their percentage of all farms increasing from 10 percent in 1964 to nearly 40 percent by 1980, and with them producing over 80 percent of Michigan's agricultural production.
9. Further specialization of farms, with a change in the relative importance of the various types.
10. Markedly greater capital and credit needs per farm.
11. Far less total labor needs in agricu.ture, but slightly more per farm.
12. Continued predominance of the family farm, with a considerable increase in family partnerships.
13. Higher managerial requirements needed to successfully operate the larger farm businesses.
14. Greater need for education for both those remaining in agriculture and those moving out.
15. Comparatively little change in the average net returns per acre, but considerably higher returns per farm, where appropriate adjustments are made, and there are adequate resources and management ability.

ECONOMIC PROSPECTS OF FARMERS —NOW AND IN 1980

By K. T. Wright[1]

Department of Agricultural Economics

Introduction

Farming in Michigan has changed drastically in the past 15 years. It will change at least as much in the next 15. This we can predict with certainty. But what about the probab'e magnitude of the many changes affecting the economic prospects of farmers, such as the land in farms, the size of farms, the investment, production, prices, income, etc.?

In this bulletin we will attempt to answer some of these questions by: a) presenting information on the general competitive position of Michigan farmers, as shown by what has been happening in the state compared with other states, b) showing past trends in Michigan's total agricultural production, income and earnings, and making projections for these items for 1980 (under the assumptions given on page 1), c) presenting trends and 1980 projections of the number, size, and type of farms, and d) presenting information on per farm size, investment, income and earnings.

Making such projections involves considering not only the probable amount of land in farms and the crop and livestock production, but also such things as the number, size, and type of farms; the prices received for the products and the income per farm; the farm inputs and expenses; and the net returns to farm operators; because these have a bearing on the competitive position and economic prospects of Michigan farmers for 1980.

These predictions are fraught with all the perils of making any future projections. Yet farmers, and all businessmen for that matter, have to make decisions about the future. Perhaps not for 15 years, although some decisions may be in effect longer than that. Unfortunately none of us has a crystal ball that shows the future with the desired accuracy. Most agricultural economists feel that the trends of recent years are indicative, in a general way, of probable future trends, given no unusual new developments.

[1]This publication is a revision of a mimeograph entitled "The Farms of Michigan" by K. T. Wright and R. A. Loomis.

The author has generally made at least two or three projections for most items and used his judgment as to which appeared the most realistic. No claims, however, are made for infallibility. It is only hoped that this bulletin will stimulate more and sound thinking about the future and be of some help in arriving at better decisions to improve the future prospects of Michigan agriculture.

Past Trends Indicating Michigan Farmers' Competitive Position

Farmers, much the same as other businessmen or manufacturers, are continually affected by their competitive position and obviously, their future prospects for survival with satisfactory earnings depend to a large degree on this relationship. The farmer's competitive position depends to a considerable degree upon his comparative advantage in the production of the various farm products. For instance, as you think of such products as corn, fruits, beef cattle, milk, eggs and the like, the degree of Michigan producers' comparative advantage relative to other farmers in the nation varies widely. Presumably, this was taken into consideration by the different commodity committees in making their respective 1980 projections.

Michigan farmers are generally relatively close to large and growing metropolitan markets and have access to foreign outlets, through nearness to the St. Lawrence Seaway. Weather conditions are particularly favorable for the production of some crops. We also have soils well adapted to the production of certain crops. Farmers in Michigan who feel it desirable to get an off-farm job have the benefit of one of the country's highest average factory wage rates.

This factor, however, has a negative effect for those farmers who wish to hire labor. They have to pay higher wages than many farmers in other states, and may find it more difficult to hire any labor. These comparative advantages and disadvantages are reflected in our farmers' incomes, expenses and earnings, and indicate their general competitive position with farmers in other states.

To get a rather rough measure of the competitive position of our Michigan farmers, trends over the past decade or so were studied. Two types of comparisons were made. One dealt with total production and income measures of agriculture in Michigan compared with the national average. The other considered average per farm figures on income, expenses, and net income in Michigan compared with the national average and with selected states. These comparisons of our competitive position should be helpful in the making of 1980 projections regarding Michigan farmers' economic prospects.

Total Production and Income Measures

As an introduction to this discussion, a brief comparison of some measures of Michigan's total agricultural production and income with those of the U.S. may be of value (Table 1). From 1950 to 1959, the land in Michigan farms declined much faster than for the entire United States, while the acreage of cropland harvested declined about the same. During this period, the number of farms declined about 30 percent, both in Michigan and in the U.S. On the other hand, the total number of livestock animal units (meat animals, dairy and poultry) in Michigan showed quite a sharp decline compared with an increase in the entire country. Apparently some Michigan farmers chose other alternatives for using their labor, feed crops and other resources than by keeping livestock.

In comparing some measures that tend to vary more from year to year, five year averages for 1949-53 and 1959-63 were used. Milk production per cow increased about 30 percent in the 10 years, both in Michigan and the U.S. (average production in Michigan, however, has increased faster since 1960 and now stands in the top quarter of the states). Crop yields also showed an increase of about 30 percent in both Michigan and the U.S. during this period. Thus, it appears that Michigan farmers are at least remaining competitive in efficiency through higher crop and livestock yields. The index of total livestock production in Michigan, however, showed no increase, due to the reduction in number of head kept, while it increased about 18 percent for the U.S. On the other hand, the index of total crop production in Michigan increased about 20 percent, or nearly the same as for the entire nation.

Prices received for farm products fell 13 percent in Michigan between these two periods, compared with 11 percent for the U.S. as a whole. Total cash receipts from the sales of farm products in Michigan during 1959-63 were only 6 percent higher than 10 years earlier, while they were 15 percent higher for the entire country. Michigan's percentage of the national cash receipts from the sale of farm products has been declining consistently for 25 years, and while this decline in percentage may not seem large, it amounts to millions of dollars for the state and several hundreds of dollars per farm. Thus, one cannot help but wonder about the competitive position of our individual Michigan farms.

Per Farm — Size, Income, Expense and Earning Measures

Michigan and U. S. Averages

To further the comparison of Michigan with the entire U.S., average per farm figures were computed for 1949-53 and 1959-63. It should be kept in mind that these are averages for all farms, both commercial and non-commercial (part-time and part-retirement). The averages for 1949-53 and the changes to 1959-63 are shown in Table 2.

Let us look at the first period averages for Michigan and the U.S., then consider the changes that occurred by 1959-63. Michigan farms are small, averaging only 114 acres during 1949-53. This was only 52 percent of the U.S. average, or 106 acres smaller. Sales of products per farm in Michigan averaged 79 percent of the national average, or some $1,208 less. Production expenses per farm were 81 percent of the U.S. average, or $736 less. Thus, the average product sales over expenses per farm

Table 1 — Selected total agricultural production and income measures of past trends, Michigan and U.S.

Item	Years covered	Percent change		Michigan vs. U. S.
		Mich.	U.S.	
Number of farms	1950 to 1959	−14	−3	Much faster decline
Land in farms	1950 to 1959	−8	−7	Same decline
Cropland harvested	1950 to 1959	−28	−31	About same decline
Livestock animal units	1950 to 1959	−15	+6	Sharp decline vs increase
Milk production per cow	1949-53 1959-63	+29	+32	About same % increase (more lbs.)
Crop yields	1949-53 1959-63	+33	+29	About same increase
Farm product prices	1949-53 1959-63	−13	−11	Somewhat faster decline
Farm product sales	1949-53 1959-63	+6	+15	About half the increase

Table 2—Michigan and U.S. Changes in Per Farm(A) Averages, 1949-53 to 1959-63

Item	Michigan			U.S.		
	1949-53	Change to 1959-63		1949-53	Change to 1959-63	
		Amount	Percent		Amount	Percent
Size of farms	114A	+18A	+16	220	+87A	+40
Farm product sales	$4448	+$2016	+45	$5656	+$3583	+63
Production expenses (b)	3124	+2433	+78	3860	+3363	+87
Sales over production expenses	1324	−417	−32	1796	+220	+12
Government payments received	45	+227	+500	46	+289	+628
Perquisites (c)	777	+301	+39	730	+105	+14
"Realized" net farm income	$2146	+111	+5	$2572	+614	+24

Source: Computed from data in "Farm Income—State Estimates," 1949-64, USDA, ERS, FIS-199 Supp. August 1965.
(A) Based on the total number of farms (commercial and non-commercial).
(B) Includes all current operating expenses, taxes on farm property, interest paid and depreciation on buildings and machinery, but not interest on farmers own equity or a charge for his and family labor.
(C) Estimated value of house rent and farm produce used.

in Michigan of $1,324 was only 74 percent of the national average, or $472 less.

Government payments received per farm in Michigan and the estimated rental value of the farm home and the farm products were the same as for the U.S. When these last two items are taken into consideration to get what is called "realized" net farm income, Michigan's per farm average of $2,146 for 1949-63 was 83 percent of the U.S. average, or $426 less.

What about the changes that took place from 1949-53 to 1959-63? The average size of Michigan farms increased only 18 acres, or less than 2 acres a year, while the national average showed an increase of nearly 9 acres a year. Farm product sales per farm in Michigan increased an average of $2,016 compared with $3,583 as a national average.

Production expenses also increased less than for all farms in the U.S., but there was less difference than in sales. Thus, the net of sales over expenses per farm in Michigan in 1959-63 was $417 less than 10 years earlier, while the U.S., average showed an increase of $220. When government payments and perquisites are added in, the average "realized" net farm income in Michigan in 1959-63 was only $111 more than 10 years before compared with $614 increase for all farms in the nation. Thus, our Michigan farms with nearly $1,000 lower earnings in 1959-63 than the national average, compared less favorably than in 1949-53. This was due mainly to their much slower increase in average size and consequent slower increase in product sales per farm.

Net farm income, referred to above, does not include farmer's income from work off the farm or any other non-farm income of the farmer or his family. Michigan farmers do more off-farm work than is generally done in other states, but data on the earnings from this and the other non-farm income were not collected until the 1964 Census. Thus, until this information becomes available on all states, we can not say how total farm and non-farm earnings of Michigan farm families compare with those of farmers in other states.

Another way of considering competitive position is to compare production expenses per dollar income (product sales and government payments). Michigan farmers in 1949-53 spent 70¢ for a dollar income, leaving 30¢ as return for interest on their equity in the business and for their own and family labor. The average for all farmers in the U.S. during this period was 68¢ expense per dollar income. During 1959-63, our farmers spent 82¢ to get a dollar income (cutting the net to 18¢), while the national average increased to 75¢ expense per dollar income. To net $3,000 per farm in Michigan required average sales of $10,000 in 1949-53 and $16,667 in 1959-63. This is the cost-price-squeeze you know about. It is evident that our Michigan average farm earning situation did not improve as much as the national average and that our farmers must increase the size of their business (sales) if they are to stay competitive and realize satisfactory farm earnings.

High and Low Farm Earning States and Michigan's Rank

From the previous discussion, the question arises, what states did best during this decade, and where did Michigan rank among the states? During 1949-53, average "realized" net income per farm ranged from $14,180 in Arizona to $1,049 in West Virginia. Michigan with $2,146 ranked 32nd among the 48 states. Nine of the top 12 states were Illinois and westward (Fig. 1). Most of the lowest 12 were in southeastern United States.

During the 1959-63 period, average "realized" net income per farm ranged from $17,388 in Arizona to $917 in West Virginia. In this period, Michigan with its $2,257 average ranked 39. This time eight of the

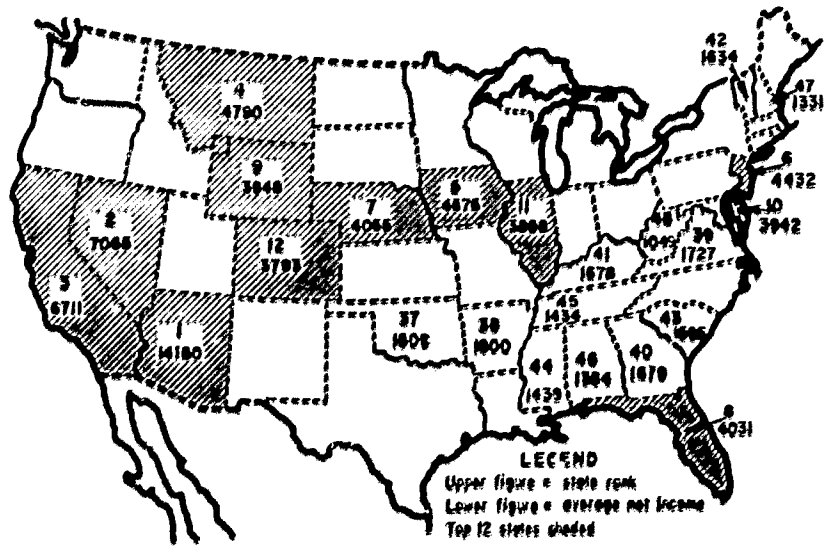


Fig. 1. Average "realized" net income per farm and state rank 1949-53 for top and bottom 12 states.

top 12 states were Illinois and westward, but somewhat different states. Again a large share of the bottom 12 states were in the southeastern region, but this time Ohio and Michigan joined the group. Generally speaking the states with the higher per farm average net incomes were those where either the farms were large, the soil productive, irrigation practiced, high income crops grown or much livestock kept.

Which states were in the top and bottom quarters in *change in average "realized" net income per farm?* Florida topped the list with an increase of $4,253, while Nevada was at the bottom with a decrease of $3,586 (Fig. 2). In general, most of the states in the group showing the greatest improvement were from Florida west to California, although some eastern states got into the top 12. About three-fourths of the 12 states showing the least improvement were north and west of Illinois. The top 12 states in increase in "realized" net income per farm from 1949-53 to 1959-63 had an average increase of $1,830 per farm (Table 3). This compares with a decrease of $550 as an average for the bottom quarter. Thus, there was a difference in the net situation of $2,380 per farm.

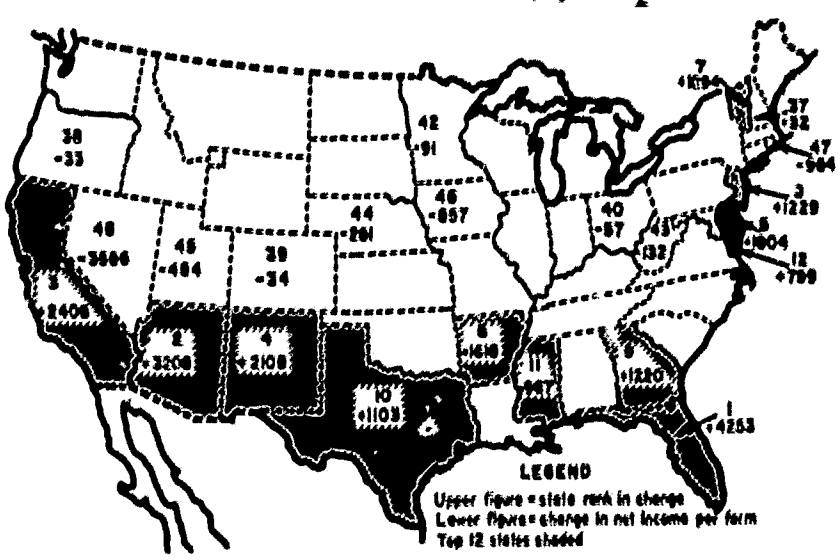


Fig. 2. Change in average "realized" net income per farm and state rank in change, 1949-53 to 1959-63 for top and bottom 12 states.

Table 3—Comparison of 1949-53 to 1959-63 Changes in Per Farm Net Income, Gross and Expenses in Michigan and Other States

Item	Michigan	U.S. av.	Top and bottom states in net income change: Top 12	Bottom 12
Change in "realized" net farm income, 1949-53 to '59-63	+$111	+$614	+$1,830	—$550
"Realized" gross income:				
1949-53 average	$5,270	$6,432	$10,816	$9,051
Change to 1959-63 av.	+2,544	+3,977	+8,668	+3,797
Percent change	+48	+62	+80	+42
Production expenses:				
1949-53 average	$3,124	$3,860	$6,781	$5,698
Change to 1959-63 av.	+2,433	+3,363	+6,838	+4,347
Percent change	+78	+87	+101	+76
Realized net farm income:				
1949-53 average	$2,146	$2,572	$4,035	$3,353
Change to 1959-63 av.	+111	+614	+1,830	—550
Percent change	+5	+24	+45	—16
Expense per dollar income(A)				
1949-53	59¢	60¢	63¢	63¢
1959-63	71	69	70	78
Change	+12	+9	+7	+15
Size of farm (acres)				
1950	111	216	637	566
1959	132	303	910	892
Change	+21	+87	+273	+326
Realized gross income per A. (B)				
1949-53	$ 47.48	$ 29.78	$16.98	$15.99
1959-63	59.65	34.35	21.41	14.40
Change	+ 12.17	+ 4.57	+4.43	—1.59

Sources: Income data computed from data in "Farm Income—State Estimates," FIS 199 Supp. ERS, USDA, Aug. 1965, and farm size from U.S. Census of Agr. General Report, Vol. II., Chap. I.

(A) In this case, income includes the estimated value of house rent and farm produce used, as well as product sales and government payments received.

(B) Based on average acres per farm in 1950 and 1959.

What was done or what happened in the 12 states showing the greatest increase in "realized" net income per farm during this decade? It is impossible to answer completely, but a comparison of the average gross income and expenses, and their change from 1949-53 to 1959-63, and the change in size of farms throws some light on the question (Table 3). First of all, the farms in the 12 states of both the group showing the most increase in net income per farm and the group having the least increase, were at least 50 percent larger businesses than the U.S. average in 1949-53, as indicated by gross income. During 1959-63, the farms in the 12 states showing the most improvement in net income, had an increase of nearly $8,700 in average gross income, compared with about $3,800 for those improving the least, or some $4,900 difference.

Production expenses per farm in 1949-53 also were higher than the U.S. average in both groups, as would be expected with larger businesses. During 1959-63, expenses on the farms in the states with the greatest improvement in net, were about $6,800 higher than 10 years earlier. This compares with approximately $4,300 increase on the bottom quarter. So, even though the expenses per farm in the most improvement group had increased roughly $2,500 more than on those in the least improvement 12

states, their net increase in gross was nearly double that, leaving approximately $2,400 increase in net over the bottom 12.

In other words, the key factor was size of business (gross income) and increase in that gross income. How was this obtained? The average size of the farms in both of these groups was two to three times larger than the national average in 1950. The average size was increased 273 and 326 acres, respectively, on the two groups by 1959, compared with 87 acres increase for the U.S. and 21 for Michigan. Gross income per acre in 1949-53 on the two groups was about the same. But 10 years later, the farmers in the top 12 states had increased their gross income per acre $4.43 vs a decrease of $1.59 on the bottom 12. This could have been kind and yields of crops, more livestock income or possibly prices received.

These changes in income and expenses can be well illustrated by the calculated expense per dollar gross income. In 1949-53, the farmers in both groups had an average production expense of 65¢ per dollar "realized" gross income (includes house rent and farm produce used). By 1959-63, this had increased to 70¢ on those with the most improvement in net income, compared with 78¢ on the least increase group. This is twice the increase of the most improvement group, so that by 1959-63 the net per dollar income was 30¢ and 22¢ respectively. Thus, we see importance of increasing the income per acre, as well as the average size of the farm.

How do *Michigan's* figures compare with these two groups and what meaning do they have relative to our competitive position? Michigan's average changes in "realized" net income per farm in this decade was an increase of $111, which made in rank 36th, or just above the 37th state that started the bottom quarter. This increase was some $500 less than the national average, $1700 less than the top quarter in improvement, but some $660 better than the bottom quarter. Even though our average income per acre is high and we had a good increase, our expenses per acre also were high and increased quite rapidly. Also our farm size was small and increased slowly. Our farmers' expenses per dollar income were about average in 1949-53, but increased more than the national average and almost as much as the least improvement group.

Michigan and Nearby States

A few words about the changes and the income situation in adjacent states or those with similiar type of farming are in order. It has been pointed out that the change in "realized" net income per farm in Michigan from 1949-53 to 1959-63 was an increase of $111. The comparable figure for Indiana was $160, and Wisconsin $196, while Minnesota had a decrease of $91. In other words, they were little different from Michigan.

What about the percentage of the farms in these four states according to the amount of product sales per farm and in those classed as part-time and part-retirement? In 1959, there was a relatively small difference among the four states in the percentage of the farmers having product sales of $20,000 or more per farm (Table 4). The other states, however, had more farmers with sales of $10,000 to $19,999, so they had 22 to 26 percent with $10,000 or more compared with Michigan's 16 percent.

Table 4—Percent of farms according to sales of products per farm, selected states, 1959

Sales of Products	Michigan	Indiana	Wisconsin	Minnesota	U.S
			Percent		
Commercial Farms					
$20,000 and Over	4.3	7.5	4.0	6.8	8.5
$10,000—19,999	11.4	15.8	18.1	19.5	13.0
Total $10,000+	15.7	23.3	22.1	26.3	21.5
$2,500—9,999	36.7	37.0	54.7	50.0	34.3
Under $2,500	5.7	5.2	4.5	6.4	9.4
Total Commercial	58.1	65.5	81.3	82.7	65.2
Other Farms					
Part-Time	30.6	23.5	12.5	11.7	23.8
Part-Retirement	11.3	11.0	6.2	5.6	11.0
All Farms	100.0	100.0	100.0	100.0	100.0

Source: Census of Agriculture Reports.

On the other hand, Wisconsin and Minnesota had considerably more farms with $2,500 to $9,999 sales. Thus, of Michigans farms, only 58 percent were classed as commercial farms, while the other states ranged from 66 to 83 percent. Of particular note also is the 31 percent of Michigan farmers who were part-time farmers, which was markedly higher than in the other states. Likewise, a higher percentage of Michigan's farms were part-retirement farms.

From the standpoint of level and sources of income, Michigan's farmers are less strictly agricultural than those in these other states, and for that matter as an average of the entire country. While being in a state with high factory wages makes it more difficult to hire farm labor, it does, on the other hand, provide good employment opportunities for many farmers, especially those with farms that are small or are of low productivity. In fact, according to some estimates we made for 1959, the income from work off the farm by farmers themselves (family excluded) averaged over $1,600 per farm for all farms in the state that year, or about 85 percent as much as the *"realized" net farm income.*

Now let us turn to a consideration of the farms having product sales of $10,000 or more and compare those in Michigan with those in the three states mentioned earlier (Table 5). In 1949, average sales of products per farm in Michigan was higher than in the other three (about $1,100 as an average). In

Table 5—Sales per farm by those having $10,000 or more, selected states 1949 and 1959(A)

State	1949	1959	Increase Dol.	Increase Percent
Michigan	$17,868	$19,555	1,687	9.4
Indiana	17,753	20,918	3,165	17.8
Wisconsin	15,966	17,243	1,277	8.0
Minnesota	16,496	19,215	2,719	16.5
U. S. Average	23,254	27,821	4,567	19.6

(A)Calculated from Census Data.

1959, Michigan's average was exceeded by Indiana and we were only about $400 above the average of the three. Thus, the improvement in the average sales of these farms in Michigan was about $700 less than the average of the three states. Compared with the U.S. average of such farms, Michigan's increase during this decade was only one-third the national average.

Summary

Table 1 presents a summary of trends in *total production and income measures* in Michigan vs the United States. Table 6 has been prepared to summarize the *per farm and per acre trends and the situation in* 1959-63 *in Michigan and the U.S.*, to show our competitive position from this point of view. Detailed comments on the various measures are shown in the table. In general, compared with the U.S. average, our farmers had a higher income per acre, and it increased even faster. Thus, our much smaller farms and the slower increase in size made our net income per farm compare less favorably in 1959-63 than 10 years earlier.

This comparison of *trends and the 1959-63 situation in farm size* and, income, based on an *average of both the commercial and non-commercial* farms, does not paint a very rosy picture for Michigan. It says that as an average for all products and for all farms, there are many that are not very competitive. Although for some products and for part of the farms this is not the case. If to remain competitive with farmers elsewhere means higher product sales per farm, and we think this is generally true, then a real challenge faces farmers and everyone concerned with their welfare, to do whatever is necessary to promote higher sales of products per farm and greater efficiency of operation.

Fortunately, the opportunities for well-paying off-farm work and income, even though the desired data are not available for analysis, is generally far more favorable in Michigan. In fact, probably among the best in the nation. Many of our farmers, especially those with small or low productive farms, have considerably more comparative advantage in off-farm employment than in farming. Thus, the combined farm and nonfarm earnings per farm are much more favorable than the farm earning situation above.

Table 6—Summary Comparisons of Michigan and U.S. Trends, and the 1959-63 Situation

Item	Michigan Trends 1949-53 to 1959-63 compared with U.S. average: Mich.	U.S.	Mich. vs U.S.	Percent Mich. Farms were of U.S. av. in 1959-63
Changes in Per Farm Averages				
Size	+18A.	+ 87A.	20% of U.S.	43
Sales of products	+$2016	+$3,586	56% of U.S.	70
Production expenses	+2433	+3,363	72% of U.S.	77
Sales over expenses	−417	+220	Decrease vs Increase	45
"Realized" net farm income(A)	+111	+614	18% of U.S.	77
Expense per dollar income(B)	+12¢	+7¢	About twice the increase	109
Changes in Per Acre Averages				
Sales of products	+$ 9.96	+$4.38	Over twice the increase	163
Production expenses	+ 14.70	+5.98	2½ times the increase	179
Sales over expenses	− 4.74	− 1.60	Much greater increase	105
"Realized" net farm income(A)	− 1.72	− 1.32	About same decrease	165
Changes in Income Level and Source	(1949 to 1959)			
Farms with sales of $10,000+				
Percent of all farms	4 to 16	9 to 22	About same % pts. increase	73
Av. sales per farm	+$1,687	+$4,567	About ⅓ the increase	69
Farms with sales under $2,500-				
Percent of all farms	61 to 48	62 to 44	Slower decrease	89
Off-farm income more than farm		62 to 44		
Percent of all farms	34 to 46	29 to 36	About twice % pts. increase	128

(A)Includes farm perquisites.
(B)Income includes only sales and government payments received (not perquisites).

Michigan's Agricultural Production and Income

"What are the economic prospects of Michigan farmers in 1980, *in the natural course of events?*" In trying to answer this question, keep in mind their competitive position, just discussed. In addition, projections had to be made on the expected acreage in farms and crops in the state, livestock numbers, crop and livestock yields and total production, prices received and paid, and total agricultural income, expenses and earnings.

Some of the state total projections have been made by other committees. Then estimates had to be made on the probable number of farms, so that per farm averages on size, investment, income, expenses and earnings could be made.

Physical Production Factors

Land in Farms

Let's look at past trends in the land in farms to help project 1980 acreage. Figure 3 shows that the acreage in farms in Michigan has been declining since 1940. From 1950-64, there was a decline of about 800,000 acres for the years 1950 to 1954, or about 1.0 percent a year; from 1954 to 1959, a decline of 1.7 million acres, or 2.0 percent a year; and from 1959 to 1964, a decline of 1.2 million acres, or 1.6 percent a year.

Projecting 1930 acreage on the basis of the actual acreage decline from 1959 to 1964, the answer is about 9.8 million acres in farms. Using the 1.6 percent decline per year for that period, indicates 10.5 million acres by 1980. Extending the actual acreage decline per year from 1950 to 1965 to 1980, would show 9.6 million acres for 1980. From these extensions, a 1980 projection of around 10 million acres is about what can be expected. This is about 26 percent less than the 13.6 million reported for 1964.

Cropland Harvested

The acreage of cropland harvested in Michigan declined from 7.8 million acres in 1950 to about 6.7 million in 1964 (Fig. 3). Some 414,000 acres of this decline occurred from 1959 to 1964, (compared with 504,000 in the previous five years). The 14-year decline averaged about 1 percent a year.

How many acres of cropland will be harvested in 1980? If we lose as many acres each year as we did from 1959 to 1964 (83,000), we would have about 5.4 million acres in 1980. If we lose as many per year as we did from 1950 to 1964, then we would have around 5.5 million by 1980. However, figuring the decline on a percentage basis to 1980, using the average for 1950 to 1964, indicates about 5.8 million acres (14% less than 1964). The last projection is probably the best, although it may be a bit on the high side.

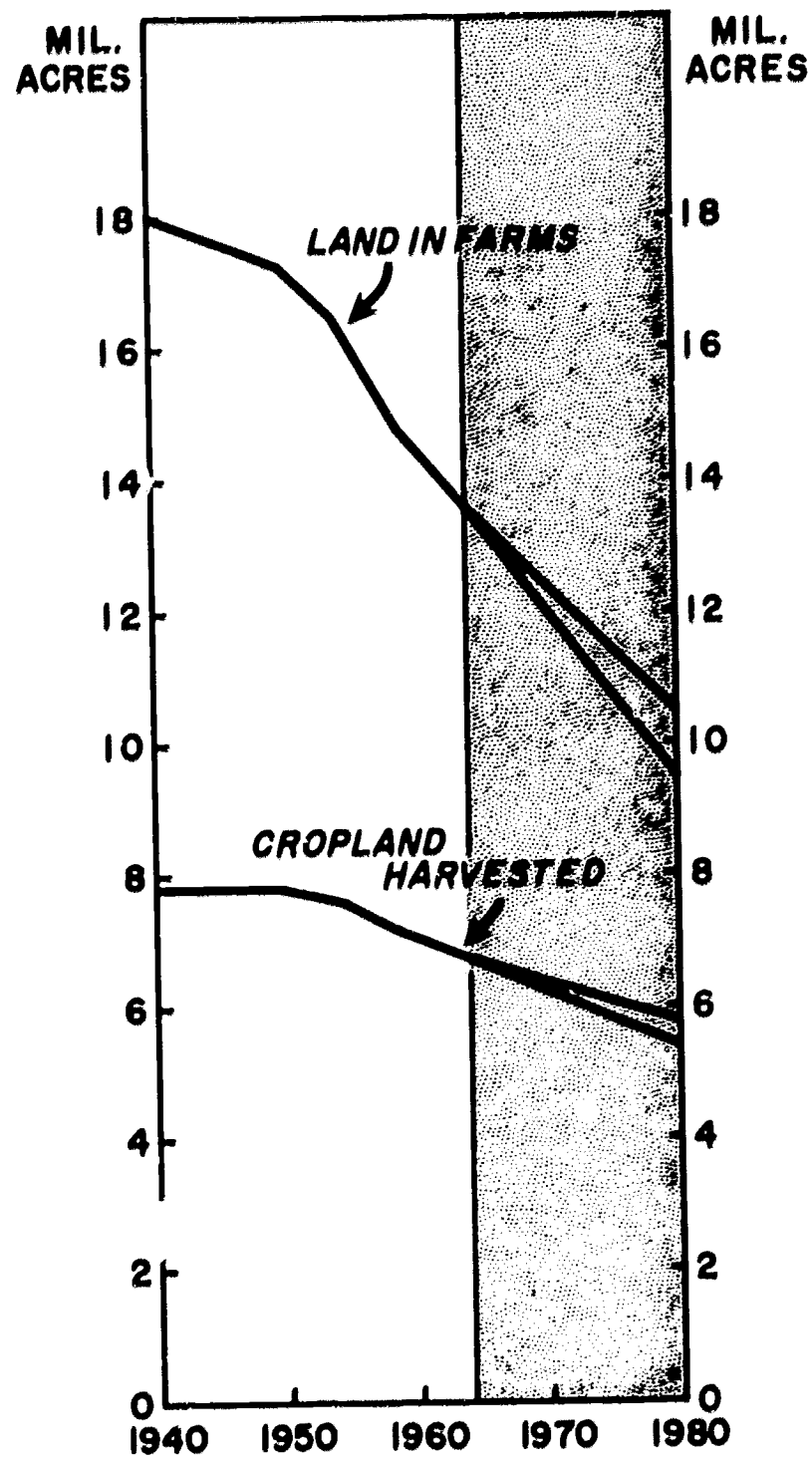


Fig. 3. Land in farms and cropland harvested, Michigan.

Crop Yields

Crop yields in Michigan, based upon a crop yield index including the 10 leading field crops (not fruits and vegetables), have increased an average of 3 percent a year from 1949-53 to 1959-63 (Fig. 4). A linear projection on the basis of the 10 years, 1954-63, yields would be 54 percent higher in 1980 than during the five years 1959-63. The Crops Committee made projections for the individual crops, and if their projected yields are weighted, as was done in calculating the previously mentioned crop yield index, their projections give a 55 *percent increase* by 1980. Thus, it would appear that crop yields probably will continue to rise at about the same rate as in the past 10 years.

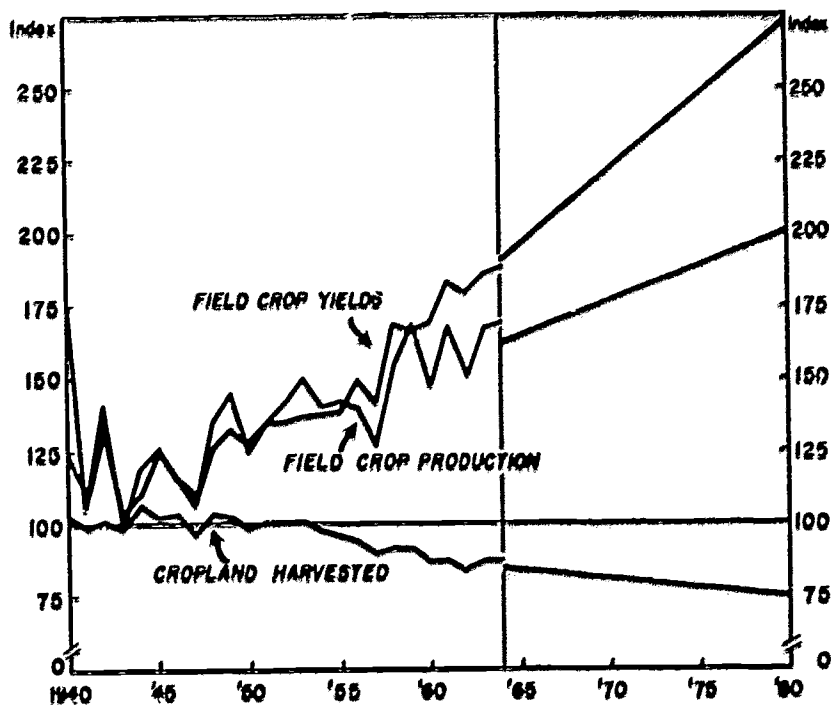


Fig. 4. Indexes of crop acreage harvested, field crop yields and total field crop production in Michigan, 1940-63 and projections to 1980 (1930-39 = 100).

Total Crop Production

For many years a composite index of total "field crop" production, based upon the total production of each of the 10 leading field crops, has been computed in this office (Fig. 4).

An extension of the trend in the last 10 years to 1980 gives an increase in field crop production of about 26 percent over 1959-63. If the projected increase in field crop yields multiplied by the projected acreage in cropland harvested for 1980, the result is a projected increase of 25 percent in total field crop production. This does not include the production of fruit or vegetables which have been increasing somewhat faster, so total crop production is projected to *increase about 30 percent.*

Livestock Production

The number of dairy cows has been declining for a number of years. The total production of milk has remained relatively constant, although it reached a record level in 1964, and has declined since then. The number of beef cows has been slowly increasing for the last 10 or 15 years. The number of beef cattle fed out also has increased. Hog marketings have shown no marked trend up or down. The number of layers has been declining since 1944 and the production of eggs, even though production per hen has increased, has declined rather rapidly since 1955.

A composite index of total livestock production, including all the major kinds of livestock, also has been computed for a number of years (Fig. 5). Total livestock production reached a peak in 1953 and 1954, then declined rather sharply to 1958 and has been relatively constant since then.

During 1940-44, livestock and livestock products provided 64 percent of Michigan's cash farm marketings compared with 61 percent in 1950-54 and 54 percent during 1960-63, a decline of 10 percentage points during this period of time. It would appear that some farmers in Michigan do not feel that livestock provide as good a use of their resources as crops, which implies reduced livestock production relative to crops.

Considering recent trends in production of various livestock products, and making projections in line with what has been happening, by 1980 the total production of all livestock products in this state might range from 5 *percent less to* 5 *percent more* than during 1959-63.

Combining both crop and livestock production to get *total agricultural production* for the state, by 1980 it probably will be between 15 *and* 20 *percent higher* than during 1959-63, even with 19 percent less land expected in crops at that time.

Prices Received and Paid by Farmers

To make projections on total farm income in Michigan in 1980, one needs not only the projections on probable production, but also probable prices.

Making future projections on prices received by farmers is a most uncertain business, as there are so many unknown variables. One possibility is to look at what has been happening and assume that past trends will continue, unless it is known that something will happen to change those trends. Another possibility is to make projections on both the probable production and probable demand of the various farm products, in order to get an indication of the strength or weakness of the prices of each product. If farm products prices are likely to be affected by the general price level of all commodities, this too must be considered.

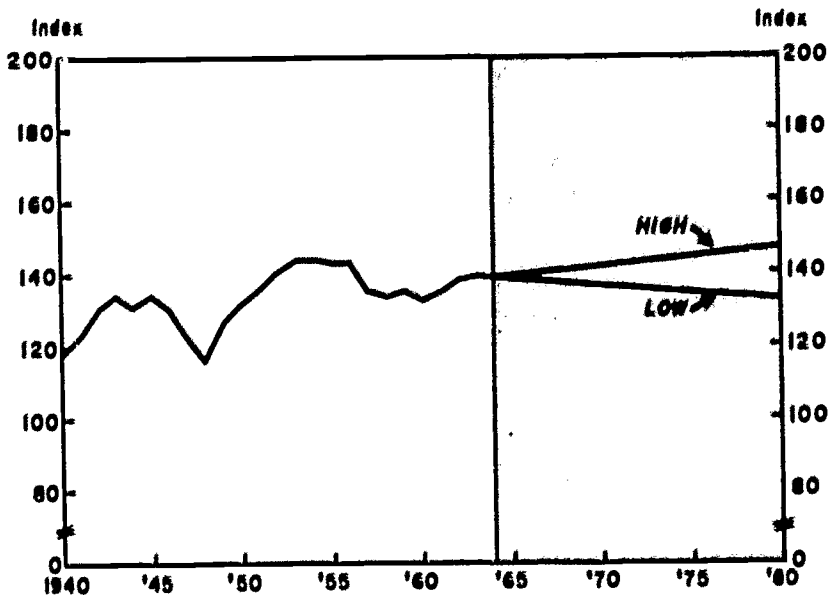


Fig. 5. Indexes of total livestock production in Michigan 1940-63 (1930-39 = 100 and 1958-62 weighted).

Prices Received

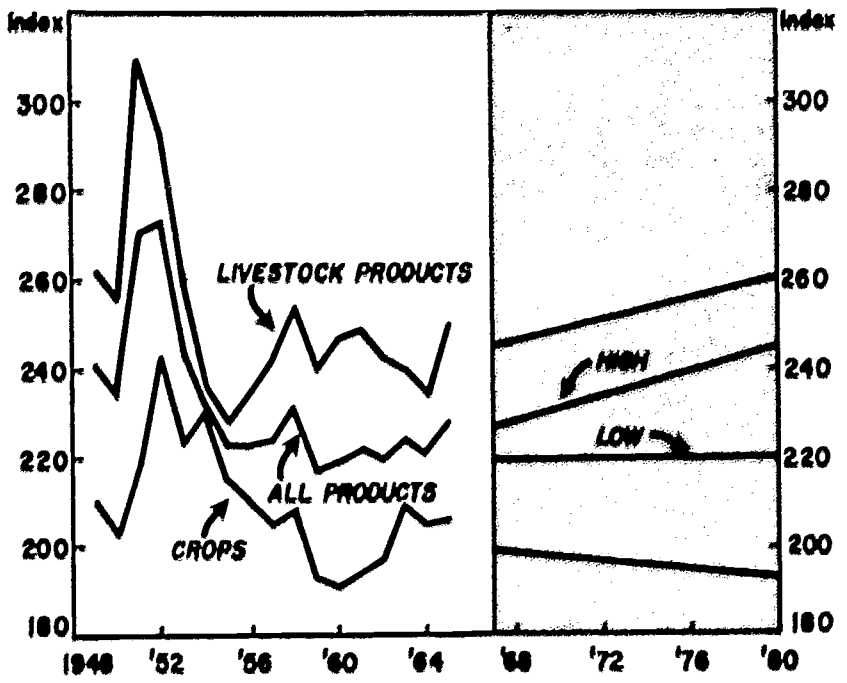


Fig. 6. Prices received by farmers in Michigan (1910-14 = 100).

Indexes of prices received for farm products in Michigan have been computed for many years. Figure 6 shows the annual price indexes of livestock and livestock products, crops and all farm products from 1949 to 1965. Since 1955, the price trends of livestock and crops have been quite dissimilar. Livestock prices rose rather sharply for three years, then weakened some with more decline from 1961 to 1964, with a sharp rise in 1965. On the other hand, crop prices continued to decline to 1960, then showed a fair recovery. As a result of these divergent trends, the average price index of all products had varied a relatively small amount in the past decade, with 1958 and 1965 being peak years.

If one projected 1980 prices on the basis of past trends, what he got would depend to a large extent on the past period he used (Fig. 7). For instance, if one took 1960-64, he would project sharply falling prices for livestock products and sharply rising for crops. If he took the last 10 years, then he would project gradually rising livestock prices and some decline in crops. If one was projecting the average price of all farm products, the 1960-64 period would indicate a somewhat higher level in 1980 than during that five years. Prices in 1965 indicate what happens when a war develops and certain farm products are in short supply. (The directions for Project '80 were to assume no major war.)

A study of probable demand and supply responses and likely prices for farm products in the U.S. in 1980 was made by the USDA.[2] According to this study (also under the assumption of no major war), livestock product prices were projected to be about 4 percent higher in 1980 than in 1962-63, while crop prices were expected to be about 9 percent lower, and the average prices of all products 1 percent lower. In other words, about the same as Michigan projections, based on trends during the years 1955-64.

Considering further the probable agricultural product supply and demand situation by 1980, one can look at the probable increase in total agricultural production and the probable demand, based on population projections and exports. Based upon index numbers computed by the USDA (1950=100) agricultural production during 1954-58 was 12 percent over 1950, while population was up 11 percent. As an average for 1959-63, agricultural production was 25 percent above 1950 and population up 21 percent, and for 1964-65, 32 and 27 percent respectively. This means agricultural output has been increasing slightly faster than population.

It seems likely that farm output will continue to increase at least as rapidly as population, and therefore supply will press on prices. On the other hand, exports of agricultural products last year were approximately double 10 years earlier and had a value of approximately 15 percent of our total production. It is quite possible that the federal government will modify its food export policy and that exports will

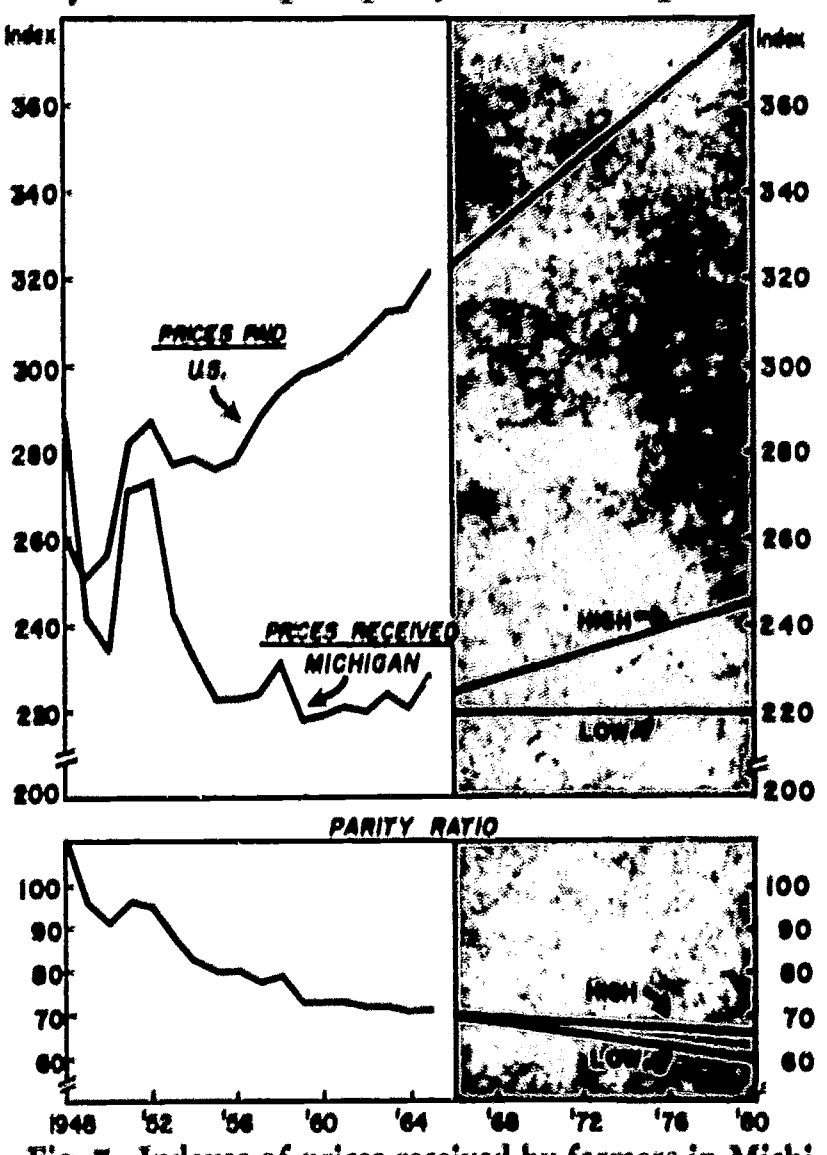


Fig. 7. Indexes of prices received by farmers in Michigan, prices paid in U.S. and parity ratio (1910-14 = 100) 1940-65 and 1980 projections.

[2]Daly, R. F., mimeograph of talk, January 1964 entitled "Agriculture in the Years Ahead."

increase considerably, exerting an upward pressure on farm prices. From this, farm prices should be higher than their 1955-64 levels.

Looking at prospects from the point of view of general price levels, what might be expected for farm prices? From 1949 to 1953, wholesale prices of non-farm products rose 12 percent, while farm products rose 5 percent. From 1954 to 1959, wholesale prices of non-farm products rose 14 percent, but farm products declined 7 percent. From 1960 through 1964, nonfarm product wholesale prices showed no change, but farm product prices dropped about 3 percent. (In 1965 wholesale prices of nonfarm products rose over 3 percent.)

Putting it another way, wholesale farm product prices were 92 percent of nonfarm during the five years 1954 through 1958, and 84 percent in 1959-63 (Fig. 8). If the trend from 1955 to 1964 continues to 1980, the ratio then would be about 70 percent. If one thinks that wholesale prices of nonfarm products will increase 0.5 percent a year to 1980, this would be about 10 percent over 1959-63. If the farm products ratio is 70 percent, then one would project 7 percent increase in average farm product prices.

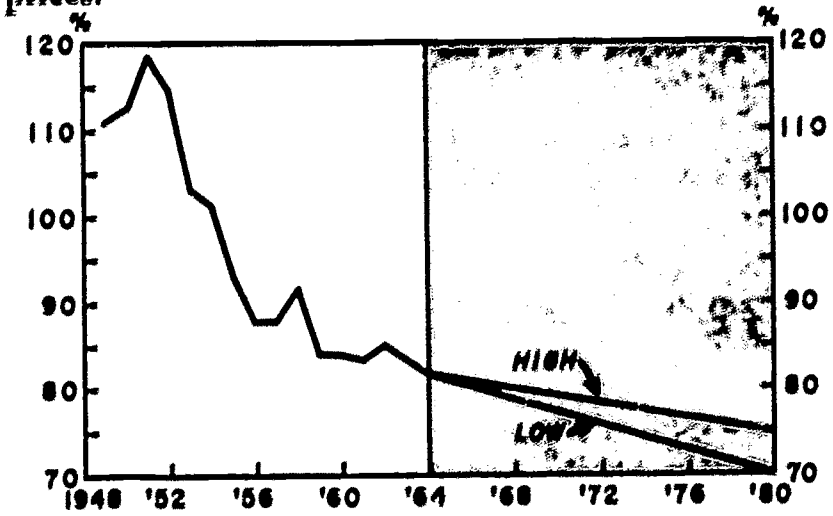


Fig. 8. Ratio of wholesale prices of farm products to nonfarm products, U.S. 1949-64 (1910-14 = 100)

Whether this occurs or not depends to a large extent upon (a) the farm product demand-supply balance, which will be affected by agricultural policies, both here and abroad, and our own marketing organizations; (b) the rapidity of the adoption of improved technology on farms, with the resultant relatively lower cost of production; (c) the farm labor supply and wage rates; and (d) farmers' response to higher farm product prices. Taking into account these factors, and the assumptions given, the farm product price index will be between the 1959-63 level of 220 (1910-14=100) and 245.[3] (Naturally price changes among the various farm products will vary considerably from this overall average, with better chances for an increase in some livestock products and strong chances of declines in some crops.)

[3]An alternative projection of 245 was made by L. V. Manderscheid in Section 1 Report on Domestic Demand for Food.

Prices Paid

No index of prices paid by farmers is computed for Michigan alone, only for the U.S. Figure 7 shows that prices paid have been increasing every year since 1955, increasing from an index of 276 to 313 in 1964 (1910-14=100). This nine year increase amounts to 1.4 percent a year, and if the estimated 321 for 1965 is taken into account, the average increase for 10 years is 1.5 percent a year. If one uses 1.5 percent a year increase from 1965 to 1980, the index of prices paid by 1980 would be 390. Making extensions from the graph could give as low as 370 (1959-63 extension). A prices paid index of no less than 380 can be expected by 1980, or 25 percent above the 1959-63 average.

The ratio of prices received for farm products by Michigan farmers to prices paid by farmers in the U.S. averaged 80 for 1954-58 (1910-14=100) and 72 for 1959-63. During this latter period it varied only from 73 in 1959 to 71 in 1964 and 1965. What about 1980 prospects? If prices received rise 10 percent to 245, and prices paid rise only to 370, then the ratio would be 66. This appears as high as can be expected. If prices received rise 5 percent to about 235, and prices paid to 380, then the ratio would be about 60. I believe that the ratio will be between 60 and 65, barring significant changes in U.S. agricultural policies or world developments affecting agricultural prices. This would mean more of a cost-price squeeze than now.

State Total Farm Income, Expenses and Earnings

Farm Income

We will first have a look at past trends, then make 1980 projections, considering first the crop marketings, and then livestock marketings, in order to get the total cash income.

Annual *marketings of crops* in this state from 1940 to 1964, shown in Fig. 9, have shown a general upward trend for the entire period. For the period 1949-53, crop marketings averaged $260 million (Table 7). During the 1954-58 period, this had risen to $300 million, and for the years 1959-63 to $337 million. This was an increase of 40 million in the first five years, and 37 million in the second five years. (A 10 percent decline in crop prices occurred from 1949-53 to 1959-63.)

Five different methods of making 1980 projections were used, with the first four being projections of past trends. One of these was a projection of total income from crop marketings. If one makes a linear

Table 7—Total Michigan Farm Income, Production Exp. & Net Farm Income: Past Years & Projections

Item	5-year averages			Annual data		1980 projections	
	1949-53	1954-58	1959-63	1963	1964	Median Amount	% Change from 1959-63
				(million dollars)			
Crop marketings	260	300	337	355	382	460	+37
Livestock marketings	425	385	393	407	409	455	+15
Total marketings	685	685	730	762	791	915	+25
Production expense	483	550	636	674	687	820	+29
Mktgs. over prod. exp.	202	135	94	88	104	95	+ 1
Gov't. payments rec'd.	7	13	31	37	41	25	−19
Value of perquisites	124	132	133	134	133	83	−38
"Realized" net farm income	333	280	258	259	278	203	−21
Number of farms (thous.)	156	139	112			45	−60(A)

Source: Past data on marketings and government payments received from Michigan Agricultural Statistics. Production Expenses and Value of Perquisites from "Farm Incor —State Estimates, 1949-63," FIS-199 Supp., U.S.D.A., ERS. Number of farms reported by the Census in 1950, 1954 and 1959.

(A) Percent change from 1959.

extension of the trends for either the 10 years 1954-63 or the 5 years 1959-63, he gets a projected cash farm marketings from crops in 1980 of $462 million.

A second method was to calculate the state average crop marketings per acre for the past 10 years, then project the acre figure and multiply it times the projected acreage of crops. This gave a projection of $456 million.

A third method was to project the index of total physical crop production. Extending the 1954-63 trend would indicate crop marketings of $475 million, while the 1959-63 projection gave a total of $426 million. A further projection was the crop yield index projection times the projected 5.8 million acres of cropland, and this gave crop marketings of $416 million.

The fifth projection, which should be the best, was to take the projected crop production of all the crops in 1980, based on 5.8 million acres of cropland, times the projected individual crop prices. This gave $390 million for crop marketings in 1980, with average prices 9 percent lower than 1959-63. If crop prices average the same as during 1959-63, this is changed to $429 million.

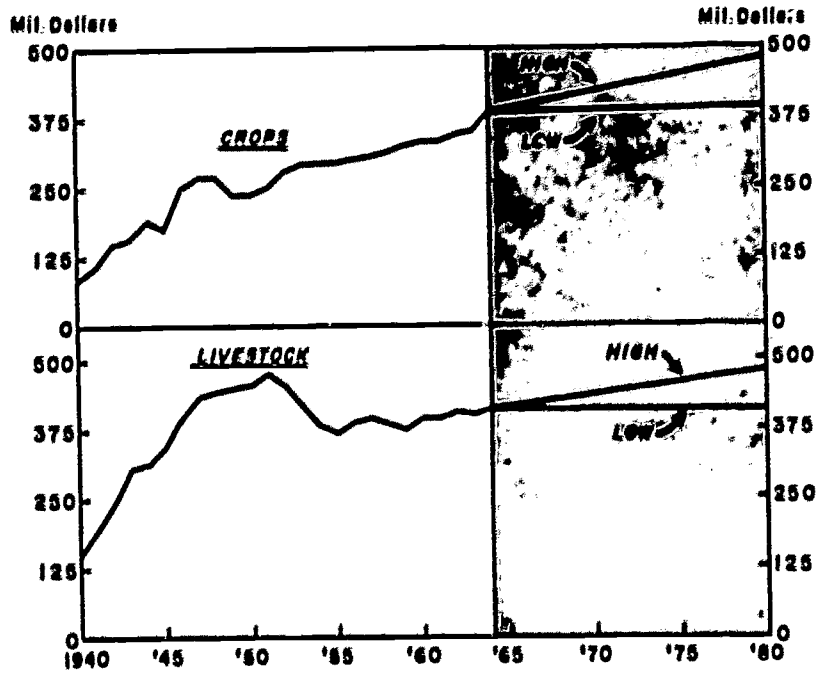


Fig. 9. Annual cash farm marketings of crops and livestock in Michigan, 1940-64 and 1980 projections.

These different projections give a range of $390 to $475 million for crop marketings in 1980. I believe that a projection of around $460 million is realistic. This is about $125 million, or 37 percent more than during 1959-63, from 19 percent less cropland.

Figure 9 shows that there has been somewhat more year to year variation in the cash income from livestock marketings than from crops. Part of this was due to price changes. Again, turning to the 5-year averages, cash income from livestock marketings during 1949-53 averaged $425 million (Table 7). This was during the Korean War when livestock prices were quite favorable. In the next 5 years this dropped to $385 million, and then showed some recovery to $393 million for 1959-63.

Three projections were made. The first was an extension of the total cash marketings of livestock products. Making a projection based on 1954-63 trends gives a 1980 figure of $445 million, while a projection based on 1959-63 trends, with a little higher prices, $485 million. The second method, based on the index of total livestock physical production, gave projected marketings of $415 to $425 million. The third method, which was taking the projected livestock production times the projected prices, gave total livestock marketings in 1980 of $480 million. After considering our competitive position and other factors relative to livestock production, the median projection is $455 million. This is $62 million or 15 percent more than in 1959-63.

During 1949-53 total cash marketings in Michigan averaged $685 million for 1954-58 and $730 million for 1959-63. What about total cash farm marketings in 1980? The *low* projections on crops and livestock

indicate $805 million, and the *highs*, $955 million. The two median figures for crops and livestock, give an answer of $915 million. Prices received in this projection average about 5 percent above the 1959-63 average. This is $185 million, or 25 percent greater than the 1959-63 average, and amounts to an average annual increase from 1959-63 to 1980 of $9.7 million, compared with $8.6 from 1954-58 to 1959-63 and no increase in the previous five years. (See Fig. 10 for per acre trend.)

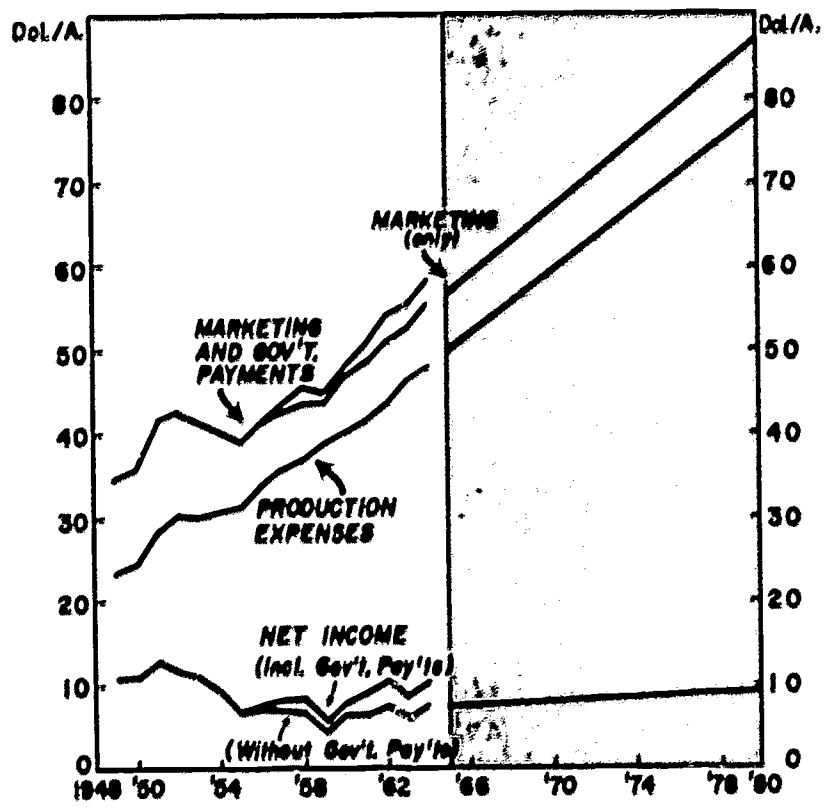


Fig. 10. Per acre average cash income, production expenses and net income in Michigan, 1949-64 and 1980 projections. (a)

This projected income is an attempt to approach what appears most likely, under the "natural course of events" concept and the assumptions given. If there is a change from the assumptions, such as a change in government policy regarding food for needy nations, with acreage restrictions removed on the 10-15 percent of the cropland in government programs, then this projection would be too low by about this percentage, assuming no reduction in prices.

Farm Production Expenses

Attempting to project farm expenses is also a problem because they depend upon not only prices paid by farmers, but also what and how much they buy, as well as upon the size and type of farm and the efficiency of operation. We will, however, attempt to make some projections.

The Economic Research Service of the U.S.D.A. has made state estimates of production expenses for every state for the years beginning with 1949.[4] Inasmuch as this is a uniform series for the past 15 years, it will be used to show past trends and future projections.

The estimate of total production expenses for all farmers in the state increased from an average of $483 million for 1949-53, to $550 million for 1954-58 and to $636 million for 1959-63 (Table 7). This is an increase of nearly 32 percent in 10 years.

Production expenses per acre, based on the preceding estimates and the average acreage in farms, was $27.40 for 1949-53 and $42.10 for 1959-63. This was an increase of $14.70 or $1.47 per acre per year for this period (see Fig. 10). The increase from 1954 to 1959 averaged $1.67 per acre per year and from 1959 to 1964, $1.82. With rising prices, increased inputs, and higher technological development, expenses per acre have been increasing quite rapidly.

What about 1980? Three methods were used in trying to arrive at realistic projections. The first method was to extend the per acre expense trend during 1954-64 to 1980. This gives a projected expense, at that time, of $76.11 per acre. Applying this projected rate to the projected acres of land in farms gives a projected total expenditure of $800 million. Using the rate of increase in expenses for the years 1960-64 shows a projected production expense of $79.79 per acre and a total of $838 million.

For the second projection, we plotted each of the 11 expense items for 1949 to 1963 and made extensions to 1980. Projections made from the 1959-63 trends are $77.45 per acre, or a total of $813 million.

The third method used was to calculate the percentage that the total production expenses were of total cash marketings, then make 1980 projections. This averaged 69.9 percent for 1949-53, 79.9 for 1954-58 and 84.5 for 1959-63. If this trend continues, it will be about 89 percent by 1980. If cash farm marketings total $915 million, then production expenses, according to this method, would amount to $814 million.

Looking at all of these methods, and considering recent trends, the author makes a median estimate of $820 million in 1980. This amounts to $78.09 per acre in farms — an average annual increase from the 1959-63 average to 1980 of $1.89 per acre, which compares with $1.82 for the years 1959 to 1964.

Farm Earnings

Table 7 shows that during 1949-53, cash income from marketings exceeded production expenses by an average of $202 million. This dropped sharply in the next five years to $135 million and during 1959-63 declined to $94 million. (It was $104 million in 1964.)

In considering earnings we must take into considera-

[4] Their production expenses include all cash operating expenses, interest paid on borrowed money and depreciation on farm capital. No charge, however, has been included for interest on the farmer's own investment, nor any charge for his labor or that of his family.

tion government payments that farmers received, as well as the estimated value of perquisites; namely, the estimated rental value of the house and farm products used by the farm family. Adding these to the above figures to get what the U.S.D.A. calls "realized" net farm income, the 1959-63 average was $333 million, compared with $280 million in the next five years and $258 million for 1959-63. This is not quite as bad as it sounds, inasmuch as the number of farms declined.

The 1980 projections will be discussed in three parts: (a) income from marketings over production expenses, (b) government payments, and (c) estimated value of perquisites. The 1980 projection for income from marketings over production expenses varies, depending on which projections are used. The median projections given for income and expenses, ($915 minus $820 million) indicate a net of $95 million which is approximately the 1959-63 average on 19 percent less cropland and 29 percent less land in farms. This projection amounts to $9.05 per acre of land in farms, compared with $6.87 for 1959-63 (Table 12).

Making a logical projection on probable government payments that will be received by farmers is almost impossible. I have arbitrarily reduced the average receipt of $31 million a year during 1959-63 by the same percentage as the projected reduction in cropland harvested (19 percent), which gives a projected government payment of around $25 million by 1980. This depends upon political factors which aren't known.

For estimated value of the perquisites it has been assumed that they will increase at the same rate per farm as they have for the past 15 years. This means an increase from $1,158 during 1959-63 to $1,850 by 1980. If this is multiplied by the 45,000 farms projected, the answer is about $83 million for the estimated value of perquisites of farmers in Michigan in 1980.

The median estimates of these three parts of "realized" net farm income, the $95 million in marketings over production expense, plus $25 million in government payments, and the $83 million for value of perquisites, give a total of $203 million for the "realized" net farm income for Michigan farmers in 1980. This assumes about 5 percent higher prices received than 1959-63 and 25 percent higher prices paid (5 percent higher prices received would add about $45 million). The $203 million is 21 percent less than the $258 million for 1959-63. (On a per acre basis it is $19.33 compared with $17.10 for 1959-63.) Any change in government policy would, of course, change this projection.

The above earnings are based upon projections of 29 percent less land in farms, 19 percent less cropland, 55 percent higher crop yields per acre, with about 30 percent greater total crop production, and the same total livestock production as in 1959-63.

Two other points should be kept in mind. First, it was projected that there will be about 48 percent as many farms in 1980 as in 1964, so the net income would be shared by far fewer; second, the above figures do not include income farmers obtain for off-farm work and income from other nonfarm sources, which it is estimated amount to about one-half as much as total income from farm marketings.

Number, Size and Type of Farms

Past trends and future projections on the number of farms will now be considered. This will include projections on the total number of farms and their average size by 1980, as well as the prospective number of farms of different sizes, income levels and types. We can then take the total farm income, expenses and earnings for Michigan, projected in the previous chapter, and divide by the number of farms to get average "per farm" figures on pages — of this report.

Total Number and Average Size

In considering the number of farms, it must be clearly defined what a farm is. We'll use the census definition.[5] There were about 188,000 farms in Michigan in 1940, 156,000 in 1950, 112,000 in 1959, with a preliminary estimate of 93,500 for 1964, according to the census (Fig. 11).

In making projections on the number of farms by 1980, three or four different approaches were used. First, the annual decline in number every five years since 1940 was calculated and is presented in Fig. 12. The rate of decline increased from about 2,500 a year from 1940-1945, to 4,700 a year from 1954 to 1959, then fell to about 3,600 during 1959-64. If Michigan continued to lose farms at that rate (3,600) until 1980 there would be only 35,000 left. This is plotted as the low projection on Fig. 11, even though the actual average annual decline from 1950-1964 has been greater than this, because it does not seem likely that the actual number will decline that fast (even at the 3,600 rate, there would be no farms in 1990).

Along with the above calculations, the annual percentage decline in number was calculated for each census period since 1940 (Fig. 12). The average annual percentage decline rose from 1.3 for 1940-1945 to 3.4 percent for 1954-1959 and 3.3 percent a

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5"Places of less than 10 acres in 1959 were counted as farms if the estimated sales of agricultural products for the year amounted to at least $250. Places of 10 or more acres in 1959 were counted as farms if the estimated sales of agricultural products for the year amounted to at least $50." This definition was further qualified by a statement that places were included that had less than the minimum sales mentioned, if they normally could be expected to produce agricultural products in sufficient quantity to meet the requirements of the definition.

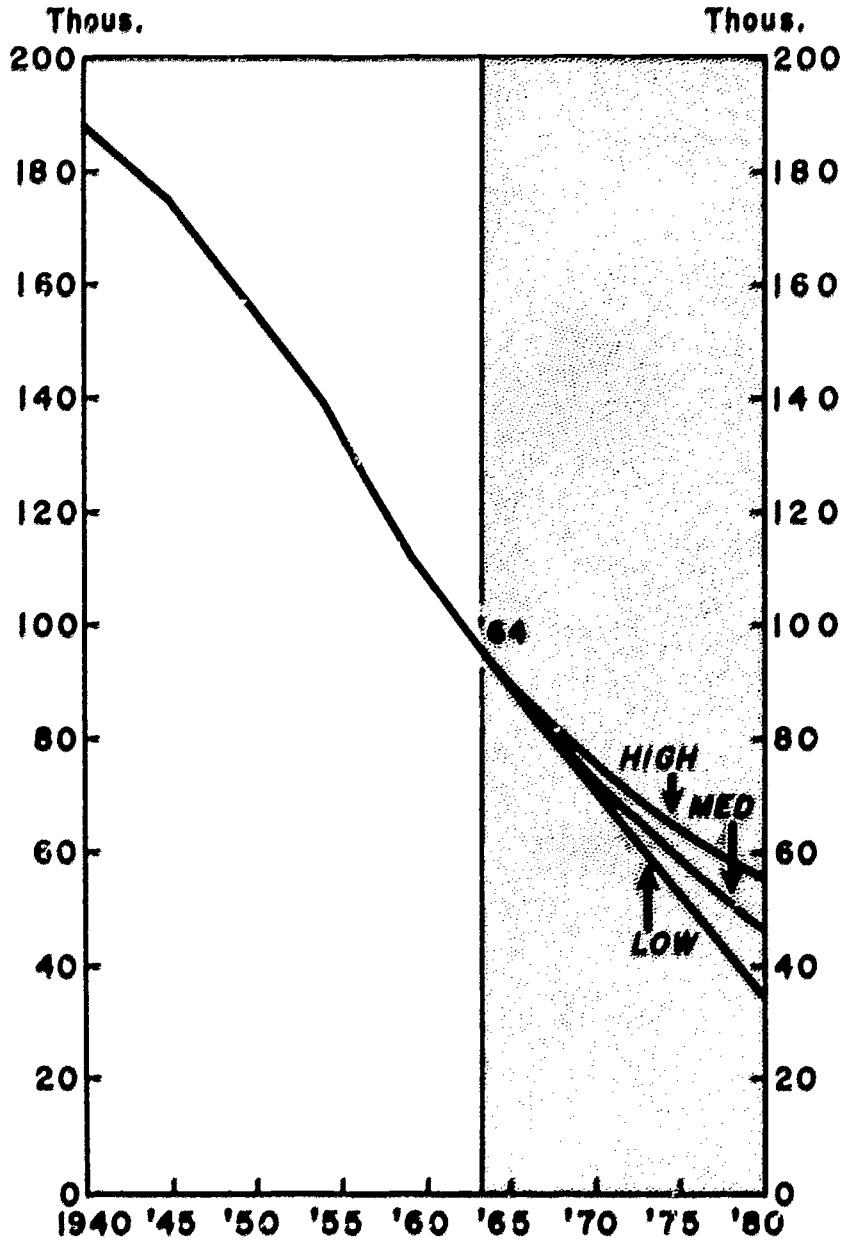

Fig. 11. Number of farms in Michigan, 1940-80.

year from 1959-1964. If farm numbers should decline the same *percentage* every five years as in the past five, there would be about 55,000 in 1980 (the high projection in Fig. 11).

Projecting to 1980 the change in numbers that took place from 1959 to 1964 for each of the six size groups reported, and using the actual change in number, we get 35,000 farms. But using the percentage change during the 1959-64 period, we get about 55,000.

The actual number of farms lost each five years in the future will decline and the percentage lost will rise (see Fig. 12). According to these two projections (number and percentage) which give practically the same number of farms each five years to 1980, there will be about 76,000 farms in 1969, 60,000 in 1974, 47,000 in 1979 and 45,000 in 1980 (assuming the same definition of a farm as currently used). This is the most likely projection.

If the preceding projections on land in farms and the number of farms are correct, then the average size of farms will increase somewhat faster than it has in the past, increasing from 142 acres in 1964 to about 220 acres by 1980 (Fig. 13).

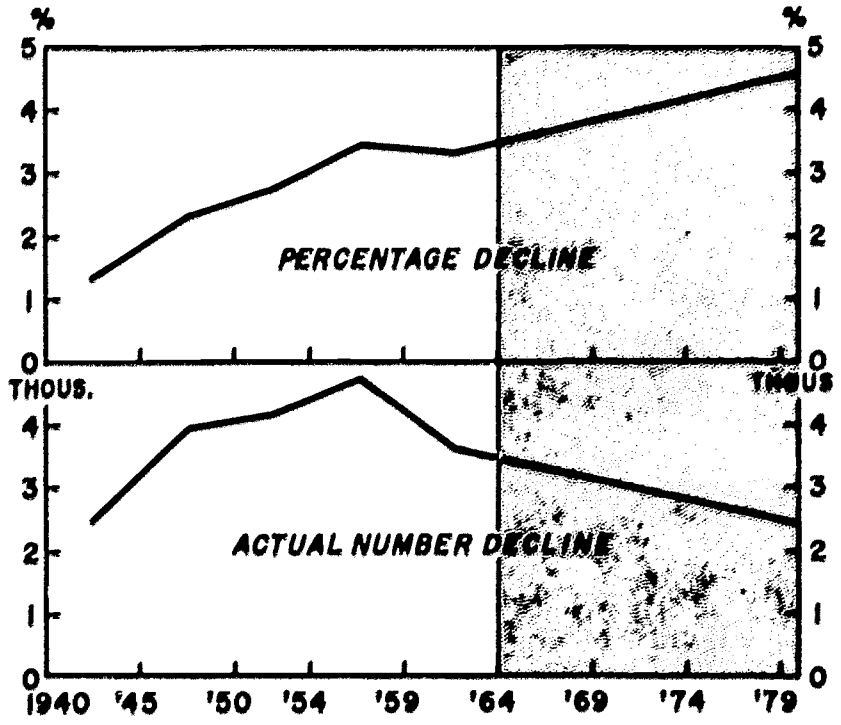

Fig. 12. Annual change in number of farms in Michigan by 5-year periods, 1940-80.

Number of Farms by Crop Reporting Districts

The percentage decline from 1959 to 1964 in the number of farms in the nine crop reporting districts ranged from 13 percent in district 8 to 21 percent in

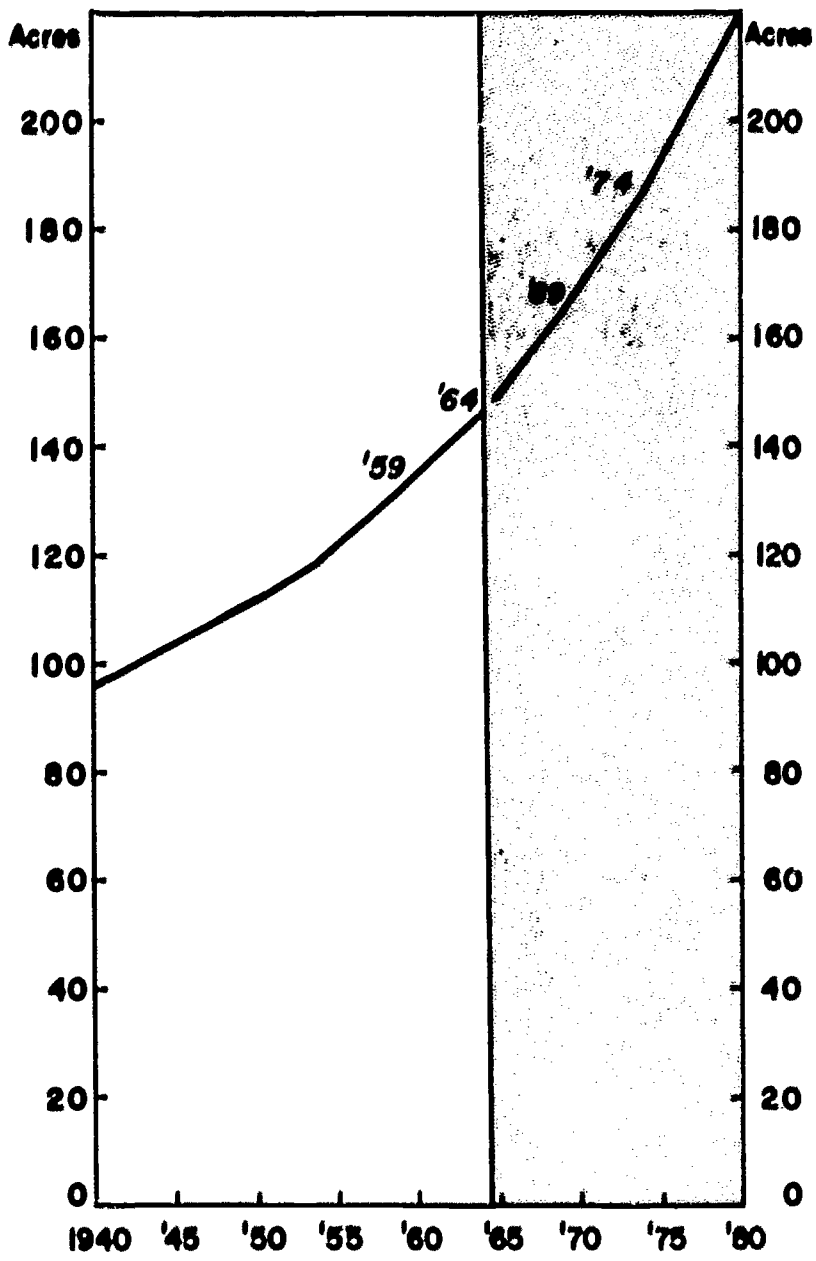

Fig. 13. Average size of farm in Michigan.

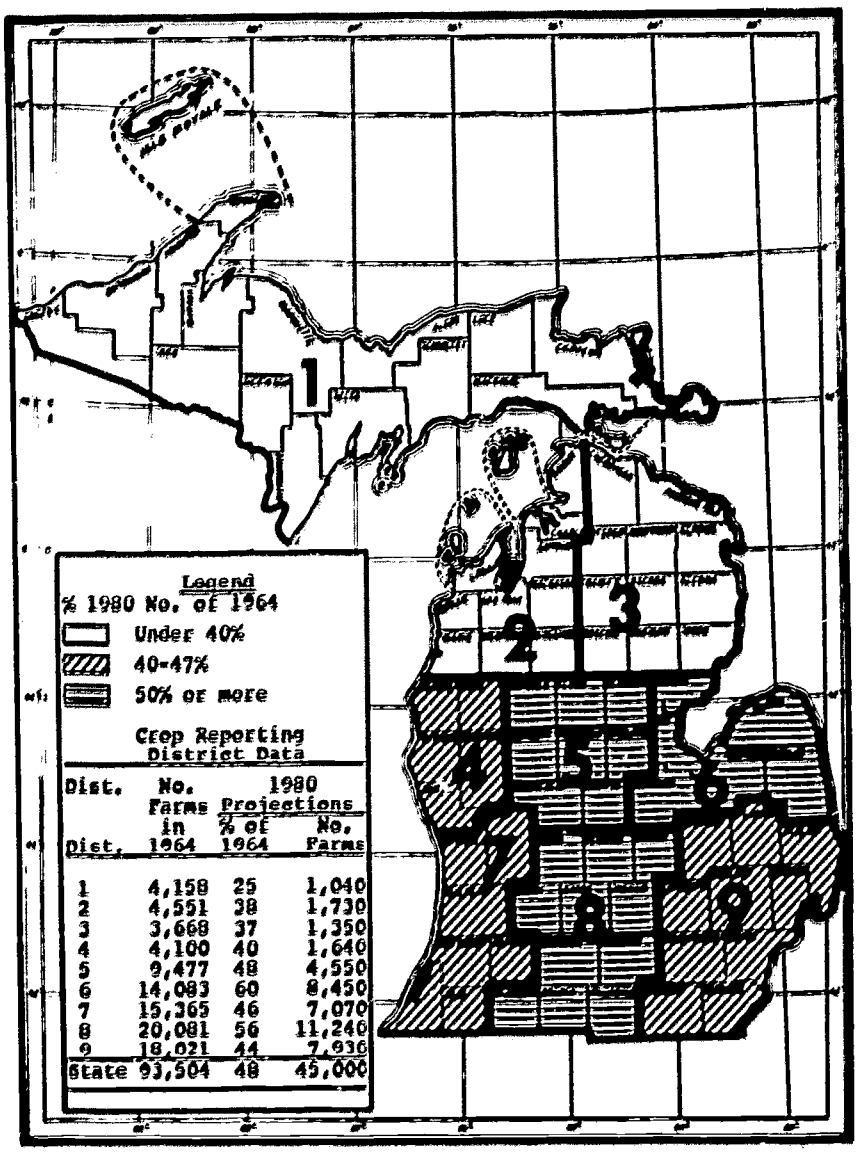

Fig. 14. Number of farms projected for 1980 as a percentage of 1964 by crop reporting districts.

district 1 (Fig. 14), and during 1954-59 from 11 percent in district 6 to 31 percent in district 1.

It seems likely that there will continue to be quite a difference in the rate of decline in the future. In making projections on the probable number of farms for 1980 the following factors were considered: percent change in the two periods mentioned above, the percentage of the farms having sales of $10,000 or more in 1959 and 1964, the average sales of products per farm in 1959 and the increase by 1964, and the author's judgment.

From these factors it appears that the projected number of farms by 1980 in districts 1, 2 and 3 will range from 25 to 38 percent of the 1964 number. (This is the Upper Peninsula and northern lower Peninsula). On the other hand, it is projected that the 1980 percentage of the 1964 number of farms will be highest in districts 5, 6 and 8 (the Thumb and central Michigan). These are presented to give district generalizations. It is quite likely that the 1980 farm number percentage of 1964 will differ considerably in some counties from their district average projection.

Number of Farms by Size

Marked changes in the number of farms of different sizes have occurred in recent years. For instance, in 1950 there were about 87,000 farms of less than 100 acres in size, but by 1959 the number had declined to approximately 56,000, and by 1964 to about 44,000, or a drop of 21 percent (Table 8). The number with 100-179 acres also declined, but less rapidly in

Table 8—Michigan Farms by Size: Number, Change and Percent of Total, 1950-64 and 1980 Projections

Item	Size of farm (acres) 1000+	500-999	260-499	180-259	100-179	100—	Total or Av.
Number of farms							
1950	221	1,232	8,795	15,564	42,227	87,480	155,519
1959	208	1,664	10,341	13,863	29,945	55,744	111,765
1964	223	2,129	10,565	12,391	24,298	43,898	93,504
1980(A)	300	4,100	11,300	8,200	9,400	11,700	45,000
Change: 1959-64 (5 yrs.)							
In number	+15	+465	+224	−1,472	−5,647	−11,848	−18,261
In percent	+7.2	+27.9	+2.2	−10.6	−18.9	−21.3	−16.3
Change: 1964-80(A) (16 yrs.)							
In number	+77	+1,971	+735	−4,191	−14,898	−32,198	−48,504
In percent	+34.5	+92.6	+7.0	−33.8	−61.3	−73.3	−51.9
Percent of all farms							
1964	.2	2.3	11.3	13.2	26.0	47.0	100.0
1980(A)	.7	9.1	25.1	18.2	20.9	26.0	100.0
Percent of total acres							
1964	3.0	10.1	26.4	19.8	24.2	16.5	100.0
1980(A)	5.1	24.8	36.0	16.7	11.9	5.6	100.0

Source: Census Reports for 1950-64 data.
(A)Projected

actual number (19 percent from 1959 to 1964). The number having 180-259 acres also declined, but less rapidly. The number of farms in the groups larger than this all increased from 1959 to 1964 — 2 percent for those of 260-499 acres, 28 percent for those of 500-999 acres, and 8 percent for those having 1,000 acres or more. (The total number of farms in 1964 was 16 percent less than in 1959.)

To arrive at the projected number for each size group by 1980, the same method was used as for the total number of farms, namely a blend of the change in actual number and percentage. It is projected that the number of farms of less than 100 acres will decline from about 44,000 in 1964 to approximately 12,000 by 1980 (Table 8). This decline of 32,000 and 86 percent is more than would be indicated by the rate of decline in actual numbers from 1959-64 and less than by the percentage decline.

It is estimated that the number having 100-179 acres will decline about 15,000, or 61 percent from 1964 to 1980. Thus, a decline of about 47,000 is projected from 1964 to 1980 in the number of farms of less than 180 acres. It is also estimated that the number having 180-259 acres will decline about 4,200, or one-third. On the other hand, it is projected that the number having 260 acres or more will increase about 2,800.

These projected changes in number of farms by sizes will have a considerable impact on the size composition of the farms and the acreage in farms by sizes. For instance, in 1964, 73 percent of the farms (as counted in the census) were less than 180 acres, and 27 percent above that acreage. The projected comparable figures for 1980 are 47 and 53 percent, respectively.

From the standpoint of the total acreage in farms, in 1964 about 41 percent was in the farms of less than 180 acres and 59 percent in those above that acreage. By 1980, it is projected that the percentages will be 18 and 82, respectively.

A look at the farms of 260 acres and larger may be of interest. In 1964 they made up 14 percent of all farms and contained about 40 percent of the total land in farms. It is projected that by 1980 farms of this size will constitute 35 percent of all the farms and that two-thirds of all farm land will be in such farms. They would average about 420 acres in size.

Number of farms by Income Level

Since both the productiveness of land and type of farming conducted vary greatly, the income on farms of the same size also varies widely. This was not taken into account in the preceding section. Therefore, data on trends and projections on the number of farms by level of income from the sales of products per farm should be helpful in considering the economic prospects of farmers of Michigan.

Census reports show the number of farms by economic class, or income level. In the 1959 and 1964 reports, Class I farms were those with farm product sales of $40,000 or more; Class II, $20,000-39,999; Class IV, $10,000-19,999 and so on, as shown in Table 9.[6] Average prices received by farmers in Mich-

[6]Class VI ($50-2,499 sales) farms were classed as commercial if the operator was under 65, did not work off the farm 100 days or more and the income that he and other members received from nonfarm sources was less than the value of farm products sold. **Class VII**, part-time farms, were those of the same income level and operator age, but the operator worked off the farm 100 days or more, or nonfarm income exceeded the value of farm products sold. **Class VIII**, part-retirement farms, also were those with sales of $50-2,499, but the operator was 65 years old or over. **Class IX**, abnormal farms, were mainly institutional farms.

Table 9—Michigan Farms by Economic Class: Number and Percent of Total, 1950-64 and 1980 Projections

Economic Class (Sales dollars)	No. of Farms			% of all Farms			% of Total Sales		
	1959	1964	1980(A)	1959	1964	1980(A)	1959	1964(E)	1980(A)
Commercial Farms									
I—$40,000 & over	1,068	2,413	7,000	.9	2.6	15.6	11.9	23.5	41.6
II—$20,000-39,999	3,823	7,023	15,000	3.4	7.5	33.3	15.7	24.1	40.0
III—$10,000-19,999	12,779	13,374	10,000	11.4	14.3	22.2	28.0	24.3	14.1
Total	17,670	22,810	32,000	15.7	24.4	71.1	55.6	71.9	95.7
IV—$5,000-9,999	19,363	15,298	4,000	17.3	16.4	8.9	22.4	14.6	3.0
V—$2,500-4,999	21,647	15,848	1,000	19.4	17.0	2.2	12.8	7.8	.4
VI—$50,2,499	6,362	6,231	0	5.7	6.6	.0	1.5	1.2	.0
Total Com.	65,042	60,187	37,000	58.1	64.4	82.2	92.3	95.5	99.1
Other Farms									
VII—Part-time	34,149	23,683	5,000	30.6	25.3	11.1	5.4	3.1	.6
VIII—Part-Retirement	12,511	9,603	3,000	11.2	10.3	6.7	2.1	1.3	.3
IX—Abnormal	63	31	0	.1	.0	.0	.2	.1	.0
Total other	46,765	33,317	8,000	41.9	35.6	17.8	7.7	4.5	.9
Grand Total	111,765	93,504	45,000	100.0	100.0	100.0	100.0	100.0	100.0

Source: Census Reports for 1959 and 1964 data.
(A)Projected. (E)Estimated.

igan in 1959 and 1964 were practically the same (217 and 221 percent of 1910-14, respectively).

In discussing the change in numbers of farms from 1959 to 1964, it seems desirable to first combine the nine economic classes into three groups: (a) Classes I-III, or those with $10,000 product sales or more, (b) Classes IV-VI, or the so-called commercial farms with less than $10,000 sales, and (c) Classes VII-IX, which were mainly part-time and part-retirement farms.

During this 5-year period, even though the total number of farms declined 18,200, the number in Classes I-III ($10,000+) increased nearly 5,200 (Table 9). The number in Classes IV-VI decreased nearly 10,000 while the number in the third group declined about 13,500. Over three-fourths of the decline in the third group was the decrease in the number of part-time farmers. However, off-farm work is not declining that rapidly. About 47,000 farmers worked off their farms 100 days or more in 1959, and over 41,000 in 1964.

Of particular note in the Classes I-III group is the more than doubling in the number of Class I ($40,000+) farms from 1959 to 1964, and the nearly doubling of those with $20,000-39,999 (Class II). The estimated net farm earnings by economic classes, shown in Table 10, help to explain the trends indicated above.

Table 10—Estimated Income and Earnings per Farm by Economic Classes, Mich., 1959

Economic Class	Cash Farm Income(A)	Net Farm Income(B)	Off-Farm Work Inc.(C)	Operator's Earnings
Commercial Farms				
I	$71,589	$12,887	$ 389	$13,276
II	26,299	4,735	432	5,167
III	14,042	2,528	528	3,056
IV	7,396	1,331	1,019	2,350
V	3,795	683	1,627	2,310
VI	1,505	271	199	470
Average	$ 9,092	$ 1,637	$ 999	$ 2,636
Other Farms				
Part-Time	$ 1,006	$ 181	$3,421	$ 3,602
Part-Retirement	1,059	191	373	564
Average	1,050	189	2,603	2,792
Average of All Farms	$ 5,731	$ 1,032	$1,669	$ 2,701

(A)Sales of products and government payments.
(B)Cash farm income less production expenses.
(C)Includes only that by farm operator.

What can be expected for the number of farms by economic classes, or income level, by 1980, if prices received for farm products are about the same as now, or somewhat higher? Certainly the farms in Economic Class I ($40,000 sales or more), assuming reasonable management, should be in a very strong position, and it is projected that the number of such farms will increase from the 2,500 in 1964 to around 7,000 in 1980, and make up about 16 percent of all farms (Table 9).

Similarly, those in Economic Class II ($20,000-39,999), again with reasonable management, should have no problems in meeting competition, and it is projected that the number of farms of this income will more than double the 1964 number to about 15,000 and make up one-third of all farms.

The farmers in Class III ($10,000-19,999) probably will find profitable operation more difficult, and it is projected that the number will decrease from over 13,000 in 1964 to around 10,000 in 1980, and constitute about 22 percent of the farms. It is, therefore, projected that there will be 32,000 farms with sales of $10,000 or more by 1980, and that they will account for 71 percent of all farms vs. 16 percent in 1959 and 24 percent in 1964.

Particularly significant is the percent of the total product sales of the state coming from the farms of the various economic classes (Table 9). In 1959, the nearly 16 percent of all farms in Classes I-III produced 56 percent of all sales. It is estimated that in 1964, the 24 percent in these classes produced 72 percent of the total. By 1980, the 71 percent in these three classes will produce about 96 percent of the total farm product sales. The 16 percent in Class I at that time will account for nearly 42 percent of the total sales. The cost-price squeeze and the need for greater efficiency is the dominant force back of this projected change.

It is felt that farmers in Class IV ($5,000-9,999) will have an increasingly difficult time making satisfactory returns. The number will probably drop from over 15,000 in 1964 to about 4,000 by 1980, and at that time make up about 9 percent of all farms. Economic pressures will be even greater on farmers in Class V and it is projected that the number will drop from nearly 16,000 to around 1,000, and that they will account for only 2 percent of all farms in 1980.

There appears to be little prospect of those in Class VI staying in business, even though there was little change in number from 1959 to 1964. Thus, farmers in these three classes should either strive to move up to a higher income level, shift to part-time farming or get a full-time job in town.

Trying to project what will happen to part-time and part-retirement farms is very difficult because the earnings from the farm frequently have less influence on the decision as to what the farmer does in the future. According to our calculations for 1959, many of the part-time farmers, with their off-farm income, were in a better financial position than many of the farmers of Economic Classes IV, V and VI.

From a competitive point of view, working off the farm is a much better proposition for many farmers than trying to farm an inadequate farm. This is true

because factory wages in Michigan, at the present time, are about $30 a week higher than the national average, which, of course, makes working in a factory relatively much more attractive in this state.

Trying to make a profit on part-time farming operations will probably become more difficult and in view of 1959-64 trends, it is projected that the number of part-time farms will decline to around 5,000 by 1980. Many of the commercial farmers probably will continue to do off-farm work and it is projected that around 10,000. farmers, or possibly more, will work off their farms 100 days or more.

Projecting what will happen to the number of part-retirement farms is largely guesswork. Naturally, 15 years from now a large percentage of the farmers now classified as part-retirement will have died. Of course, other farmers will be older and retire. It is projected that the number of these farms will decline from almost 10,000 in 1964 to about 3,000 by 1980.

Number of Farms by Type

In 1959 about 38 percent of the 65,000 farms classified in the census as "commercial" were dairy farms (Table 11). Cash-grain farms were next in importance with 22 percent, while farms with livestock other than dairy and poultry made up 15 percent, and general farms about 10 percent. Thus, these four types accounted for 85 percent of the "commercial" farms.

Table 11—Michigan Farms by Type: Number and Percent of Total, 1959-64 and 1980 Projections

Type(A)	Number of farms(B)			Percent of all farms(B)		
	1959	1964	1980 projection	1959	1964	1980 projection
Dairy	24,663	20,230	8,000	37.9	33.6	21.6
Poultry	2,079	1,734	400	3.2	2.9	1.1
Other Livestock	9,849	8,725	8,000	15.1	14.5	21.6
Cash-grain	14,262	15,418	13,000	21.9	25.6	35.1
Other field crops	1,235	1,027	800	1.9	1.7	2.2
Fruit	4,135	4,181	2,000	6.4	7.0	5.4
Vegetable	1,304	1,335	1,000	2.0	2.2	2.7
General	6,197	5,287	2,300	9.5	8.8	6.2
Miscellaneous	1,318	2,250	1,500	2.1	3.7	4.1
Total	65,042	60,187	37,000	100.0	100.0	100.0

Source: Census reports for 1959 and 1964.
(A) Classified as type indicated when 50 percent or more of total product sales came from the product or similar group of products.
(B) Number classified as commercial (Classes I-VI).
Products included in selected types: "other livestock" includes cattle, calves, hogs and sheep; "cash-grain" includes corn, small grains, soybeans, and dry beans; "other field crops" include potatoes, sugar beets, popcorn and mint.

By 1964 the dairy farms made up nearly 34 percent of the approximately 60,000 "commercial" farms, while cash-grain had increased to about 26 percent. "Other livestock" farms were next with a little over 14 percent and general farms followed with about 9 percent. At this time these four types made up 82 percent of the "commercial" farms.

Although there was a 7 percent decrease in the number of "commercial" farms from 1959 to 1964, the percentage change in the number by types varied considerably. For instance, the number of farms classified as cash-grain farms increased 8 percent and vegetable farms 2 percent. On the other hand the number of dairy farms declined 18 percent, with poultry farms and "other field crop" farms decreasing 17 percent and general farms 15 percent.

Making projections for 1980 on the number of farms by type is very risky because of the large number of physical and economic factors involved. There are many factors affecting an individual farmer's decision as to what type of farming he will be doing in the future, and all of these individual decisions of course influence total number of farms by types. In making 1980 projections, we have looked at past trends, obtained the advice of others, and tried to evaluate future technological developments and competitive influences.

Projections on the number of farms by type in Economic Classes I-VI for 1980 are shown in Table 11. While it is estimated that there will be a 39 percent drop in the total number of "commercial" farms, the projected number by types gives changes ranging from 8 percent decrease in "other livestock" farms to 77 percent decrease in the number of poultry farms.

If the projection with respect to the number of farms of the different types are anywhere near correct, then the relative importance of the different types of farming in 1980 will be changed considerably. For instance, dairy farms will make up about 22 percent of the "commercial" farms, "other livestock" 22 percent, while cash-grain farms are projected to increase to 35 percent. It is likely that these projections on number of farms by type are probably more subject to error than any of the other projections.

Per Farm Averages — Size, Investment, Income and Earnings

Past trends have been shown and 1980 projections made, for state totals on land in farms, crop yields, total crop and livestock production, prices, farm income, expenses, earnings, and numbers of farms. These state totals indicate farmers' economic well being only in a general way.

"Per farm averages" should be helpful for greater clarity on this point. Calculating satisfactory per farm averages, however, is difficult, because of differences in points of view of what constitutes a farm. We will present per farm data on the basis of: (a) the average of all farms, as enumerated in the census, (b) the average of the "commercial" farms, even though these include many farms that many would not consider a farm, and (c) some averages on the better commer-

cial farms. The first two will be presented because more complete and comparable data are available on these two bases.

Average of all Farms

By including both the commercial and the part-time and part-retirement farms, as is done in the census, per farm averages are much smaller than many people expect; especially in Michigan where there are a relatively high percentage of the last two types. Such averages in size, investment, income and earnings, however, will be presented because they should be comparable over time.

The average size of all our farms increased from 114 acres during 1949-53 to 132 acres in 1959-63 (Table 12). Average investment, which we could not get for the first period and had to estimate for the second, apparently was approximately $33,700 at that time. Product sales per farm increased from an average of about $4,400 during 1949-53 to approximately $6,400 in 1959-63. During the same period, production expenses increased from about $3,100 to $5,600.

Table 12—All Farm Averages—Size, Investment, Income, Expenses, and Earnings, 1949-53, 1959-63 and 1980 Projections

Item	1949-53	1959-63	1980 Projections Amount	1980 Projections % change from 1959-63
Per Farm Averages				
Size of farm	114A.	132A.	220A.	+ 67
Investment (estimated)	N.A.	$33,700	$110,000	+226
Farm Product sales	$4,426	6,384	19,170	+200
Production expenses(A)	3,123	5,557	17,180	+209
Sales over expenses	$1,303	$ 827	$ 1,990	+141
Government payments received	45	272	524	+ 93
Perquisites(B)	798	1,158	1,850	+ 56
"Realized" net farm income	$2,146	$ 2,257	$ 4,364	+ 93
Per Acre Averages				
Farm product sales	$38.82	$ 48.36	$ 87.14	+ 80
Production expenses	27.40	42.10	78.09	+ 85
Sales over expenses	$11.42	$ 6.26	$ 9.05	+ 45
Government payments received	.39	2.06	2.38	+ 16
Perquisites	7.00	8.77	8.41	— 4
"Realized" net farm income	$18.81	$ 17.10	$ 19.84	+ 16

Sources: Computed from data in "Farm Income-State Estimates," 1949-64 USDA, ERS, FIS-199 Supp. Aug. 1965.

(A) Includes all current operating expenses, taxes on farm property, interest paid, and depreciation on buildings and machinery. It does not include interest on the farmer's own equity nor a charge for his and family labor.

(B) Estimated value of house rent and farm produce used.

Consequently, sales over expenses declined from about $1,300 per farm to approximately $800 in 1959-63. By adding to this government payments received and the estimated value of perquisites, both of which were higher in the latter period, the "realized" net farm income was approximately $2,100 during 1949-53 and $2,200 in 1959-63. (This does not include nonfarm income.)

Comparable income, expense and earning figures on a "per acre" basis are also presented to show the change on this basis.

What about 1980 projections? It was projected earlier that the average size of all farms will be about 220 acres, or nearly 90 acres more than in 1959-63. Investment per farm, with a 3 percent annual increase in real estate prices, plus increases in other items, is expected to be in the order of $110,000 per farm, or more than three times the 1959-63 figure. This is twice as much per acre. (Personal and nonfarm assets are not included.)

Product sales per farm are projected at $19,170, or nearly $12,800 higher than in 1959-63, while expenses are expected to rise about $11,600. Thus, sales over expenses are projected to increase almost $1,200 to about $2,000.

With the increase projected in government payments and value of perquisites per farm, "realized" net farm income is expected to rise from about $2,250 to $4,350, an increase of 93 percent. (Percentage changes on each item are shown in Table 12). If prices received should rise 10 percent above 1959-63, rather than the approximately 5 percent figured here, the "realized" net income per farm would be raised nearly $1,000. If government acreage restrictions are removed, this should increase net farm income.

Per acre income and expense are both projected to rise about 80 percent over 1959-63 averages. "Realized" net farm income is projected to rise about $2.70 per acre or 16 percent. Thus, the projected improved earnings per farm come about largely from the decrease in the number of small farms with a resulting increase in average size.

Commercial Farm Averages

The term "commercial farms," which is used in the census, may be misunderstood to mean larger farms. Actually "commercial farms" include all the farms other than part-time and part-retirement, and include many farms with less than $10,000 sales (see Table 9). The commercial farms made up 58 percent of all farms in 1959, but produced 92 percent of all the farm product sales.

These farms averaged 175 acres in size in 1959, or about 45 acres more than all farms that year (Table 13). Product sales per farm averaged nearly $8,900 in 1959 or over $3,000 more than the average of all farms. Their expenses, of course, also were higher, but their "realized" net farm income of nearly $3,000 was about $1,100 higher than that of all farms in 1959.

What will the commercial farms be like in 1980? Before commenting about any average figures, it is well to recall that it was projected that there will be a sharp reduction in the number of noncommercial

Table 13—Commercial Farms—Average Size, Investment, Income, Expenses and Earnings, 1959 and 1980 Projections

Item	1959(A)	1980 Projections Amount	1980 Projections % change from 1959
Per Farm Averages			
Size of farm	175A.	275A.	+ 54
Investment (estimated)	$49,000	$150,000	+206
Farm product sales	8,893	26,000	+192
Production expenses	7,455	23,150	+211
Sales over expenses	$ 1,438	$ 2,850	+ 98
Government payments received	199	650	+227
Perquisites	1,319	2,300	+ 74
"Realized" net farm income	$ 2,956	$ 5,800	+ 96
Per Acre Averages			
Farm product sales	$ 50.82	$ 94.65	+ 86
Production expenses	42.60	84.18	+ 98
Sales over expenses	$ 8.22	$ 10.47	+ 27
Government payments received	1.14	2.36	+107
Perquisites	7.54	8.36	+ 11
"Realized" net farm income	$ 16.90	$ 21.19	+ 25

(A)Annual figures for 1959-63 are not available. 1959 income and expense figures were lower than the 1959-63 average, so the percent change is not entirely comparable with that on all farms.

and low income commercial farms. Thus, the commercial farms are projected to be 82 percent of all farms by 1980. And it was projected that the number of farms having sales of $20,000 or more would more than double the number in 1964, making up nearly one-half of all the farms, compared with 10 percent in 1964. There will be sharp reductions in the number selling less than $10,000 of products. Consequently, by 1980 there should be a much higher proportion of the commercial farms in the higher income brackets.

By 1980, these farms will average about 275 acres, or 100 acres more than in 1959. Investment per farm is expected to average around $150,000 or about three times the 1959 amount. This would be about $550 per acre, or approximately twice that in 1959. Product sales by 1980 are projected to average $26,000 on these farms or about $17,000 above that of 1959. Expenses are expected to average $23,150 or about $15,700 over those of 1959. Thus, sales and expense are both being projected at about three times the 1959 average.

The net of sales over expenses in 1980, however, would be $2,850 or approximately double that of 1959. "Realized" net income per farm is expected to increase from nearly $3,000 in 1959 to about $5,800 in 1980. Roughly 60 percent of this increase would be due to having a larger acreage and 40 percent to a higher net per acre. (It should be remembered that all these figures are averages, with wide variations among farms on each side of the average).

Higher Income Commercial Farms

In 1964, about 23,000 of the approximately 60,000 so-called "commercial farms" had sales of $10,000 or more, and about 37,000 less than $10,000. By 1980, it is projected that about 32,000 farms will reach the $10,000 level, with only 5,000 farms in the "commercial" category below that income level.

It was projected that by 1980 (with farm prices 5 percent above 1959-63) there will be about 22,000 farms in Economic Classes I and II (having sales of $20,000 or more). It is estimated that these farms will average about 320 acres, have an investment of around $200,000, cash marketings of around $36,000, and expenses of about $31,000, leaving a net of $5,000. Adding to this estimated government payments and rental value of dwelling and farm produce used, should give a "realized" net farm income of around $8,000. (This does not include any nonfarm income.) This again is an average, and the better farmers in Class II and most of those in Class I ($40,000+ sales) should do better than this.

For those who can get control of adequate farm resources and who have the needed managing ability to operate farm businesses with sales of around $50,000 or more per year, there are good opportunities for excellent earnings. For those who can attain average sales in the order $30,000, the net earning opportunities are good. Because of the expected price-cost squeeze and narrowing profit margin, those farmers whose annual sales do not reach $20,000 will probably have a difficult time making satisfactory earnings from the farm.

The successful farms in 1980 no doubt will generally be relatively large businesses; they probably will be more specialized than now; some probably will have quite large livestock enterprises and may be an intensive operation; these large farmers will need somewhat more labor, and hired labor will probably be scarce and expensive; and we expect many family partnerships.

There will be considerably more mechanization to substitute for labor and to operate the larger business. Investment per farm will be about three times what it is now; credit needs per farm will be much greater; business-like operation will be a must; and the managerial requirements to operate the farm business successfully will be much higher.

The 1980 outlook projected for average net farm earnings may not appear very rosy to many readers. The author wishes to make three important points in this connection: 1) The earnings projected are for developments in "the natural course of events." The indicated relatively low earnings, therefore, indicate the need for actions to alter these trends; 2) the earnings shown do not include the projected 3 percent a year increase in the market price of real estate, which for farm owners is, at least, an addition

to their net worth; and 3) nonfarm earnings of farmers and their families have not been included in the farm earning figures, and in this state these, in 1964, amounted to roughly one-half as much as total sales of farm products.

As indicated in the foreword, the goal of adequate income per farm was given a very high priority among a dozen goals listed by most people responding to a survey. Most of this bulletin has been focused on projections for 1980, since the question of "goals" and "actions" must be answered by individuals and organizations. However, the success of Project '80 depends largely on what is done. What general types of actions that might be taken to improve farmers' income prospects?

Certainly the College of Agriculture has the responsibility of doing all it can in agricultural research and extension to promote improvements in the production and marketing of farm products. Farmers might wish to consider group action, to better control production and marketings, in an attempt to improve prices received for their products. Perhaps farmers, industrial leaders and others should take more aggressive action in promoting new types of processed agricultural products and in locating such factories in Michigan. No doubt, other types of group actions are possible.

Individual actions by farmers to improve their earning prospects probably are easier and faster. What are some of these types of actions which farmers might take? If the farm is small or of low productivity, and there is little chance of enlargement or changing to a better farm, may be the best alternative is to get a job in town and sell the farm. Or, alternatively, take the job in town, and either become a part-time farmer or rent the cropland to a neighbor.

If the farm is larger or more productive, the farmer could do his best to improve crop and livestock yields, and consequently enlarge total output and sales to improve his earning prospects. Maybe the organization of the farm could be changed, to have higher income crops and/or increase the size or productivity of the livestock enterprise. Maybe efficiency of operation could be improved. All of this would be directed toward increasing total sales and the ratio of sales to expenses.

Perhaps the best action for many to take would be to enlarge the acreage operated by renting or buying additional land. Many farmers have been doing this, to spread their fixed costs and attain greater efficiency, resulting in higher gross income and net farm earnings.

There are other alternatives, some of which might be more appropriate for individual farmers. The important thing is for every farmer to study his own situation, make what appears to be the best decisions, and put those decisions into effect. If the decision is to remain a farmer, he should improve the management of his farm to the limit of his ability.

Table 14—Summary of Michigan Agricultural Trends and Projections

Item	Past Trends			1980 Projections	
	1950	1959	1964	Amount or No.	% change from 1964
AGR'L. PRODUCTION AND INCOME					
Acreage and Production					
Land in farms (mil. A.)	17.3	14.8	13.6	10.0	− 26
Cropland harvested (mil. A.)	7.8	7.2	6.7	5.8	− 14
	1949-53	1959-63	1964		
Production indexes (1930-39 = 100)					
"Fieldcrop" yields	133	177	187	274	+ 47
"Fieldcrop" production	140	159	167	201	+ 20
Livestock production	136	136	139	136	− 2
Prices, Income, Expenses and Net					
Price indexes (1910-14 = 100)					
Prices received—Mich.	253	220	228	235	+ 3
Prices paid—U.S.	271	304	321	380	+ 18
		(million dollars)		(mil. dol.)	
State Income, Expenses, and Net					
Crop marketings	260	337	382	460	+ 20
Livestock marketings	425	393	409	455	+ 11
Total	685	730	791	915	+ 16
Production expenses	483	636	687	820	+ 19
Marketings over expenses	202	94	104	95	− 9
Gov't. payments received	7	34	41	25	− 39
House rent and produce used	124	133	133	83	− 37
"Realized" net farm income	333	258	278	203	− 27

(Table 14 continued on next page)

Table 14—Summary of Michigan Agricultural Trends and Projections (cont'd)

Item	Past Trends			1980 Projections	
	1950	1959	1964	Amount or No.	% change from 1964
NUMBER OF FARMS					
By Size (acres)					
1000 and over	221	208	223	300	+ 34
500-999	1,232	1,664	2,129	4,100	+ 93
260-499	8,795	10,341	10,565	11,300	+ 7
180-259	15,564	13,863	12,391	8,200	- 34
100-179	42,227	29,945	24,298	9,400	- 61
Under 100	87,480	55,744	43,898	11,300	- 73
Total	155,519	111,765	93,504	45,000	- 52
By Economic Class					
I ($40,000 and over)		1,068	2,413	7,000	+176
II ($20,000-39,999)	7,031	3,823	7,023	15,000	+112
III ($10,000-19,999)		12,779	13,374	10,000	- 25
IV ($ 5,000-9,999)	20,990	19,363	15,298	4,000	- 74
V ($ 2,500-4,999)	32,921	21,647	15,848	1,000	- 94
VI ($ 50-2,499)(A)	45,905	6,362	6,231	0	-100
Total Commercial	106,847	65,042	60,187	37,000	- 39
Part-time(B)	23,893	34,148	23,683	5,000	- 79
Part-retirement(B)	24,665	12,512	9,603	3,000	- 69
Abnormal	114	63	31	0	-100
Total "other"	48,672	46,723	33,317	8,000	- 76
Total of all	155,519	111,765	93,504	45,000	- 52
Farmers Working Off-Farm					
100 Days or More					
Number	48,348	47,161	41,384	10,000	- 76
Percent of all farmers	31	42	44	22	
By Type (C)					
Dairy	45,800	24,663	20,230	8,000	- 60
Poultry	5,266	2,079	1,734	400	- 77
Other livestock	10,857	9,849	8,725	8,000	- 9
Cash-grain	14,972	14,262	15,418	13,000	- 16
Other field crops	1,977	1,235	1,027	800	- 21
Fruit	4,736	4,135	4,181	2,000	- 52
Vegetables	2,600	1,304	1,335	1,000	- 25
General	19,021	6,197	5,287	2,300	- 56
Miscellaneous	1,618	1,318	2,250	1,500	- 33
Total (commercial)	106,847	65,042	60,187	37,000	- 39
"PER FARM" INCOME, EXPT. & NET					1959
Av. of Commercial Farms					
Size of farm		175A.		275A.	+ 54
Investment		$49,000		$150,000	+206
Cash marketings	Not	8,893	Not	26,000	+192
Production expenses		7,455		23,150	+211
Marketings over expenses		1,438		2,850	+ 98
Gov't. payments received	available	199	available	650	+227
House rent and produce used		1,319		2,300	+ 74
"Realized net farm income		$2,956		$5,800	+ 96

(A) Definition of this group in 1950 not comparable with 1959 and 1964.
(B) Definition of these farms in 1950 also was not entirely comparable with 1959 and 1964.
(C) Of the commercial farms. Type dependent upon 50 percent or more of total sales coming from products indicated.

PUBLICATIONS ON PROJECT '80

All these publications are in the Research Report Series, and bear the overall heading of "Project '80 — Rural Michigan Now and in 1980." Each publication has an additional title which indicates specific subject matter. These publications have been produced and are available from the Bulletin Office, Michigan State University, Box 231, East Lansing, Michigan or from your county Cooperative Extension Office.

RR-37 Highlights and Summary of Project '80

RR-38 Michigan Timber Production and Industry

RR-39 Rural Family Living — Rural Youth

RR-40 Food Wholesaling and Retailing

RR-41 Commercial Fisheries and Fur Bearing Animals

RR-42 Michigan's Outdoor Recreation and Tourism

RR-43 Floriculture and Nursery Industry

RR-44 Crops (including information on all forage crops, grains, beans, sugar beets, market firms and farm supply)

RR-45 The Dairy Industry

RR-46 Financing Michigan Farms

RR-47 Economic Prospects of Farmers

RR-48 Machinery, Equipment and Farm Labor

RR-49 Fruits and Vegetables (including information on marketing and bees and beekeeping)

RR-50 Livestock and Meat, Production and Marketing

RR-51 Poultry and Poultry Marketing

RR-52 Use of Land and Water Resources in Michigan

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