AN ANALYSIS OF THE AGRICULTURE OF THE UPPER PENINSULA OF MICHIGAN AS A BASIS FOR CURRICULUM CONSTRUCTION FOR THE SEVENTH AND EIGHTH GRADES

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A Thesis Prepared by

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1937

This study was conducted under the direction of

Dr. E. L. Austin, Chairman.

Acknowledgment is made for the valuable assistance given by Professor V. R. Gardner who read the manuscript and gave valuable suggestions; the staff of the upper peninsula extension service; county school commissioners of the upper peninsula; Resettlement Administration at Escanaba; George Bishop, Secretary of the Upper Peninsula Development Bureau; and Relief Administration, Iron Mountain, Michigan.

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AN ANALYSIS OF THE AGRICULTURE OF THE UPPER PENINSULA OF MICHIGAN AS A BASIS FOR CURRICULUM CONSTRUCTION FOR THE SEVENTH AND EIGHTH GRADES

I. INTRODUCTION

A. Statement and Definition of Problem.

In January, 1935, President Webster H. Pearce of the Northern State Teachers' College introduced a two year course of study in agriculture for prospective teachers. Six different agricultural subjects are offered during the school year: general agriculture, forestry, dairying, farm crops, animal husbandry, and horticulture.

In attempting to select objectives which would be of the most value to the members of the classes, the students were asked to state their reasons for enrolling in the class. This question was asked of the students enrolling in dairying, farm crops, animal husbandry, and horticulture during the winter and spring terms of 1935. Forty-six students stated that they expected to use the information in teaching some phase of agriculture or to be able to assist in 4-H club work. Two students stated that they expected to use this information in actual farming.

Because most of these students expected to teach in the upper peninsula of Michigan, it seemed necessary to determine the kind of agriculture and 4-H club work that would be expected of them in the areas in which they would teach.

Letters were written to fifteen county school commissioners (1) of the upper peninsula to ascertain what agriculture was taught in the

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(1). See Appendix.

seventh and eighth grades of each county. The high schools were omitted because agriculture, as taught under the provisions of the Smith-Hughes Act, is taught in the ninth grades and above, and the Northern State Teachers' College is not qualified to issue certificates under the Smith-Hughes law. Correspondence or conversation was carried on with eight of the fifteen school commissioners of the upper peninsula. Seven of the eight believed that there was a great need for the improvement of the teaching of agriculture in the seventh and eighth grades and especially in the content of the course. One believed that a course in science should be given in these grades similar to the Science of Living Things by Walpole (1). He believed the agriculture should be adapted to the upper peninsula conditions.

The text books used in these grades as reported by the county school commissioners are as follows: - (2)

1. Waters, "Elementary Agriculture"
2. Goff and Mayne, "First Principles of Agriculture"
3. Grim, "Elementary Agriculture"
4. Burkett, Stevens, and Hill, "Agriculture for Beginners"
5. Davis, "Productive Farming"
6. Uphan and Schmidt, "Introduction to Agriculture"
7. Walpole, "The Science of Living Things"

In comparing the material in these texts with the reports of the agricultural extension specialists (3) and 4-H club leaders (4) of the upper peninsula, as shown in TABLE IX p. 24, TABLE XII p. 29, and TABLE XXI p. 43

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(1). Walpole, B. A., The Science of Living Things. For the Department of of Public Instruction, Lansing, Michigan. Hillsdale School Supply and Publishing Co., Hillsdale, Michigan. 1935.
(2). See List of References.
(3). See Appendix.
(4). See Appendix.

it did not appear that there was a very close correlation between the subject matter contained in these texts and practical application. As an illustration, in "Agriculture for Beginners" by Burkett, Stevens, and Hill, pp. 150-159, there is a discussion on cotton. Seven pages are given to the cotton boll weevil, and approximately one-half as much space is given to potatoes, and yet the potato is the leading cash crop of the upper peninsula.

Because of an indicated need, and also because of the apparent lack of subject matter materials available for the teaching of agriculture in the upper peninsula of Michigan, it was decided to select the following topic for study: "An Analysis of the Agriculture of the Upper Peninsula of Michigan as a Basis for Curriculum Construction for the Seventh and Eighth Grades."

This thesis does not attempt to set up a program of training in agriculture for the seventh and eighth grades of the upper peninsula. Neither does it attempt to set up a program of teacher training for teachers of agriculture. The study is confined to an analysis of the agriculture of the upper peninsula. It is hoped that further work may be done to make the instruction in the field of agriculture in the seventh and eighth grades and the teacher training institution of the upper peninsula of more value to the boys and girls of this region.

There has been an increase in the number of farms and agricultural production during the last few years. It is apparent, as shown later in this study, that there will be further increase in agricultural occupations in the upper peninsula. Many boys and girls of school age will be a part of the agricultural program in a few years. It is hoped they may be guided to select the activities that will be most helpful from an economic and social standpoint.

The study of the activities is the basis of this problem. The setting up of a course of study, partly based upon the pupil's activities, is another problem.

Since beginning work on this thesis, students enrolling in the agricultural classes during 1935 and later have been asked their reasons for their selections. Including the spring term of 1937, the enrollment in the agricultural classes has been 208. The reasons, grouped into four divisions, are as follows:

TABLE I. STUDENTS' REASONS FOR ENROLLMENT IN THE AGRICULTURAL CLASSES IN THE NORTHERN STATE TEACHERS' COLLEGE.

Reasons for Choice	Number of Reasons (1)
To be used in teaching some phase of agriculture	159
To be used as a related subject	22
To be used in farming	9
To be used to meet college entrance requirements	18
	208

(1). Note - This indicates class enrollments rather than the number of individuals.

B. GEOGRAPHICAL LOCATION AND SIZE OF THE UPPER PENINSULA

The upper peninsula is nearly surrounded by water. It lies between latitudes 45 degrees W. and 47.5 degrees W., and longitudes 83.5 degrees N. and 90.5 degrees N. It is bounded by Lake Superior on the north and northwest; Lake Huron on the east and southeast; Lake Michigan and the State of Wisconsin on the south and southwest. The eastern end of the upper peninsula is approximately north of Detroit, and the western end is approximately north of Clinton, Iowa.

The map on page 20 shows the relative position and size of the upper peninsula as compared with some of the other states, and extent of the shore line.

The area of the 15 counties of the upper peninsula is exceptionally large. TABLE II, p. 6, shows a comparison of their areas and that of several states of the United States.(1)

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(1). U. S. Census of Agriculture, Part I. 1925.

TABLE II. COMPARISON OF LAND AREA OF UPPER PENINSULA WITH SELECTED STATES.

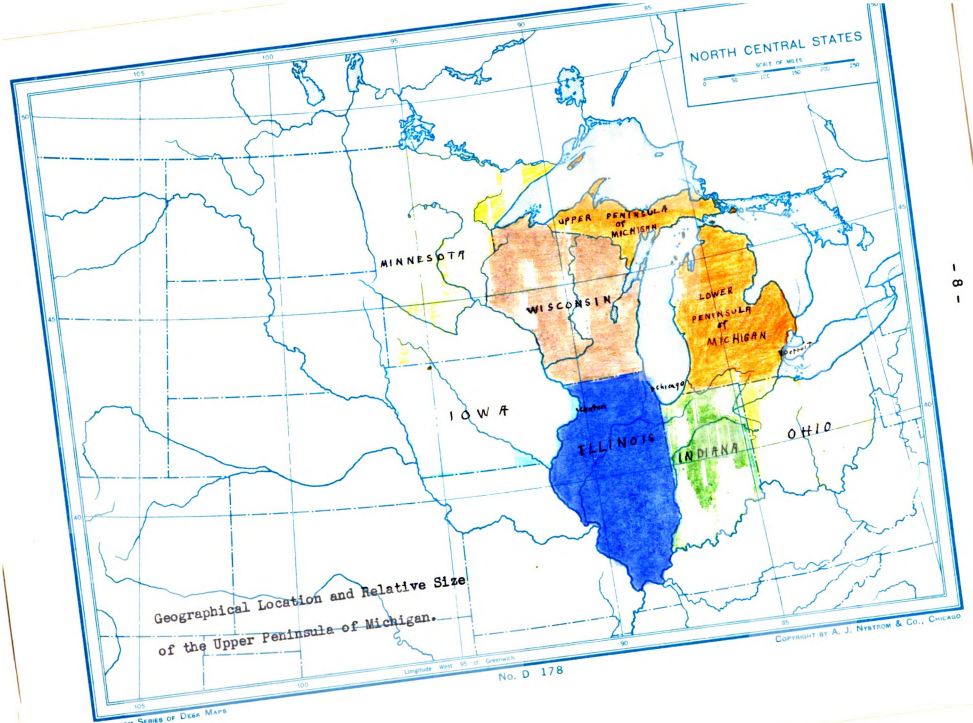
County	Approximate land area acres	Selected States	Approximate land area acres
Alger	588,800	Connecticut	5,085,800
Baraga	586,880	Delaware	1,257,600
Chippewa	1,006,720	Massachusetts	5,144,960
Delta	748,160	Rhode Island	682,880
Dickinson	496,640		
Gogebic	725,120		
Houghton	652,160		
Iron	768,000		
Keweenaw	354,560		
Luce	588,800		
Mackinaw	668,160		
Marquette	1,196,800		
Menominee	675,840		
Ontonagon	855,120		
Schoolcraft	772,480		
Total	10,682,240	Total	10,170,240

TABLE III. COMPARISON OF AREA OF THE 15 COUNTIES OF UPPER PENINSULA WITH 26 COUNTIES OF SOUTHERN MICHIGAN (1)

Name of the County Lower Peninsula	Area Acres	Name of the County	Area Acres
Berrien	364,160	Alger	588,800
Cass	515,520	Baraga	586,880
St. Joseph	321,920	Chippewa	1,006,720
Branch	318,080	Delta	748,160
Hillsdale	382,080	Dickinson	496,640
Lenawee	475,520	Gogebic	725,120
Monroe	366,720	Houghton	652,150
Wayne	396,800	Iron	768,000
Washtenaw	450,560	Keweenaw	354,560
Jackson	452,480	Luce	588,800
Calhoun	443,520	Mackinaw	668,160
Kalamazoo	359,680	Marquette	1,196,800
Van Buren	394,880	Menominee	675,840
Allegan	553,120	Ontonagon	853,120
Barry	555,840	Schoolcraft	772,480
Eaton	365,400		
Ingham	353,820		
Livingston	363,520		
Oakland	567,040		
Macomb	302,080		
St. Clair	454,400		
Genesee	419,200		
Shiawassee	356,480		
Clinton	365,400		
Ionia	360,560		
Ottawa	361,600		
Total	10,210,560	Total	10,682,240

In comparing the land area of the upper peninsula with the older and more thickly settled part of the State we find the fifteen counties of the upper peninsula are about equal in land area to the twenty-six most southern counties of lower Michigan as shown by TABLE III. This is about equal to the area lying south of a line running east west of Flint.

(1). U. S. Census of Agriculture, 1925. Part I.



Geographical Location and Relative Size of the Upper Peninsula of Michigan.

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C. THE EARLY HISTORY OF AGRICULTURE IN THE UPPER PENINSULA

In the upper peninsula, agriculture followed the mining industry. With the opening of the iron and copper mines, communities were established. These communities provided a market for farm produce. J. Russell Whitaker, writing in the Journal of Geography (1) compares the events in the upper peninsula with what had happened in Colorado and California. When the mineral resources became exhausted, land that was capable of producing crops found a more distant market for its produce.

Whitaker states (2) that over 80 per cent of the farmers of Houghton County and 75 per cent of those in the mining townships of Marquette County came into the region as miners. He describes three stages in the transition from miner to farmer.

The first stage in the transition began when the miner, perhaps an immigrant, invested some of his money in unimproved land where he could rear a family.

The second stage began when the future farmer spent the winter in the mines or woods, and the summer on the farm because he was not capable of providing a sufficient income from his farm.

The third stage began when the farmer bought equipment and depended upon farming for his source of income.

At the time the article was written the author believed that the majority of the "miner-farmers" were in the second stage. This article was written before the depression of 1929.

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(1). Whitaker, J. Russell. "The Relation of Agriculture to Mining in the Upper Peninsula of Michigan". The Journal of Geography, vol. 25, No. 1, January, 1926, pp. 21-30.

(2). Ibid. p. 24.

II. CONDITIONING FACTORS IN AGRICULTURE OF THE UPPER PENINSULA

A. Variations in Climatic Conditions in the Upper Peninsula

The length of the growing season in the upper peninsula has a very wide range in different regions. TABLE IV, p. 11, shows that the length of the annual growing season at Seney, over a six year period, is forty-eight days. At Detour, which is approximately 100 miles east and 25 miles sourth of Seney, over a twelve year period the average length of the annual growing season is one hundred fifty-three days. In making a comparison with some of the stations in lower Michigan, we find a number of regions with a shorter growing period in the lower peninsula than some of the upper peninsula stations as shown in TABLE V, p. 12. According to TABLES IV and V, there are four more days of growing season at Detour than at Lansing, fifteen more days of growing season at Detour than at Charlotte, and twenty-five more days of growing season at Detour than at Big Rapids.

Some of the weather bureau stations are situated near one or another of the Great Lakes. The Great Lakes have considerable influence upon the length of the growing season. Grand Marais, which reports a growing season of one hundred fifty-two days, is situated on the shore of Lake Superior. The Coast Guard Station, which records weather records, is less than forty feet from the water's edge. On August 10, 1935 frost killed potatoes two and one-half miles from Lake Superior at Grand Marais, but the Station at this town did not report frost until October. The writer, with R. C. Hill of Grand Marais, visited an area from Grand Marais to Shelldrake, Emerson, Eckerman, Newberry, Germfask, and Seney August 12, 1935. Blueberries and potatoes were injured or killed by the frost of August 10, where they were situated more than three miles back from the lake.

TABLE IV. LENGTH OF THE GROWING SEASON IN VARIOUS STATIONS IN THE UPPER PENINSULA (1)

Station	Length of Record in Years	Date of Last Killing Frost In the Spring	Date of First Killing Frost In the Fall	Length of Growing Season in Days
Chatham	19	June 14	Sept. 2	80
Calumet	28	May 15	Oct. 3	140
Detour	12	May 12	Oct. 13	153
Escanaba	23	May 11	Oct. 4	145
Grand Marais	18	May 16	Oct. 16	152
Marquette	48	May 13	Oct. 9	148
Menominee	21	May 12	Oct. 6	146
Seney	6	June 26	Aug. 14	48
Sault Ste. Marie	21	May 12	Oct. 6	145

(1). U. S. Weather Bureau Climatological Data Vol. 2, pp. 9, Upper Peninsula of Michigan.

TABLE V. LENGTH OF THE GROWING SEASON AT VARIOUS STATIONS IN LOWER MICHIGAN (1)

Station	Length of Record in Years	Date of Last Killing Frost in the Spring	Date of First Killing Frost in the Fall	Length of Growing Season in Days
Big Rapids	25	May 15	Sept. 19	127
Charlotte	17	May 17	Oct. 2	136
Flint	28	May 11	Oct. 5	145
Gaylord	14	May 27	Sept. 20	114
Grayling	24	May 23	Sept. 15	111
Lansing	51	May 2	Oct. 8	147
Midland	15	May 11	Oct. 5	145
Saginaw	24	May 1	Oct. 8	158

(1). U. S. Weather Bureau Climatological Data Vol. 2, pp. 10, Western Michigan and pp. 13 Eastern Lower Michigan.

Weaver and Clements [1] report that the number of heat units is more significant than the length of the growing season, and thus a plant will complete its cycle in less time in regions with a warm climate. Gardner, Bradford and Hooker [2] believe that a plant will adapt itself somewhat to a different climate, but the number of "heat units" is important for different species. This effect and the amount of heat required by plants is discussed in about the same way by Weaver and Clements.[3]

Although Detour may have a longer growing season, it does not follow that all plants will grow better in Detour than in Lansing. Different species have different requirements for the various plant activities, and there may be plants that will produce better results in Detour, e. g. the potato as explained by Smith.[4] Head lettuce, celery, rutabagas, strawberries, raspberries, carrots, parsnip, cauliflower, cabbage, rhubarb, asparagus, and garden peas are common garden plants of the upper peninsula producing a high quality product. Although corn is adapted to a warm climate, the quality and flavor of sweet corn grown in the upper peninsula is excellent because the cool weather does not cause the sugar to change to starch so readily as the same plant grown in a warmer climate.[5]

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(1). Weaver, John E. and Clement, F. E. Plant Ecology. McGraw-Hill Book Company, Inc. 330 W. 42nd St., New York.

(2). Gardner, Bradford and Hooker. Fundamentals of Fruit Production. McGraw-Hill Book Company, Inc. 330 W. 42nd St., New York.

(3). Weaver, John E. and Clement, F. E. Plant Ecology. McGraw-Hill Book Company, Inc. 330 W. 42nd St., New York.

(4). Smith, W. J. The Effect of the Weather upon the Yield of Potatoes. U. S. Department of Agriculture, Monthly Weather Review, May 1915, pp. 222-228. From 1925 U. S. Year Book, pp. 550-551.

(5). Appleman, C. O. and Eaton, S. V. Evaluation of Climatic Temperature Efficiency for the Ripening Processes in Sweet Corn. Journal Agricultural Research (U. S.) 20:1921, pp. 795-805.

Peppers, watermelon, cucumbers, tomatoes, muskmelon, pumpkins, and squash are some common garden plants not adapted to the upper peninsula on account of the cool climate.

STRAWBERRY GROWING

There has been an increased interest in strawberry growing during the last few years in the upper peninsula. This has been especially noticeable in certain sections of Houghton and Baraga Counties. Strawberries illustrate a special type of marketing problem somewhat peculiar to upper peninsula agriculture. In many sections there is very little danger of late spring frosts, and a snow covering in the winter protects the plants from winter injury. The increased interest during the summer of 1936 is shown by an organization of strawberry growers of this region, and an increase in the acreage is shown by the 1924 and 1934 census figures. According to the United States Census, 268 acres of strawberries were grown in 1924. (1) This acreage increased to 666 acres in 1934.(2)

During the summer of 1934 strawberries were shipped from Grand Marais to Chicago on July 6.(3) On that date they were sold at $2.20 per crate. Carrying charges were 60 cents per crate, or a net return of $1.60. The same year, but two weeks earlier, strawberries from Benton Harbor sold for 75 cents f.o.b. Chicago. During the summer of 1935 the writer grew Aroma strawberries to determine the date of ripening. These berries began to ripen on July 11 when very few berries were on the Chicago market competing with upper peninsula crops. The following graph shows that there is very little competition on the Chicago market during July as far as strawberries are concerned.

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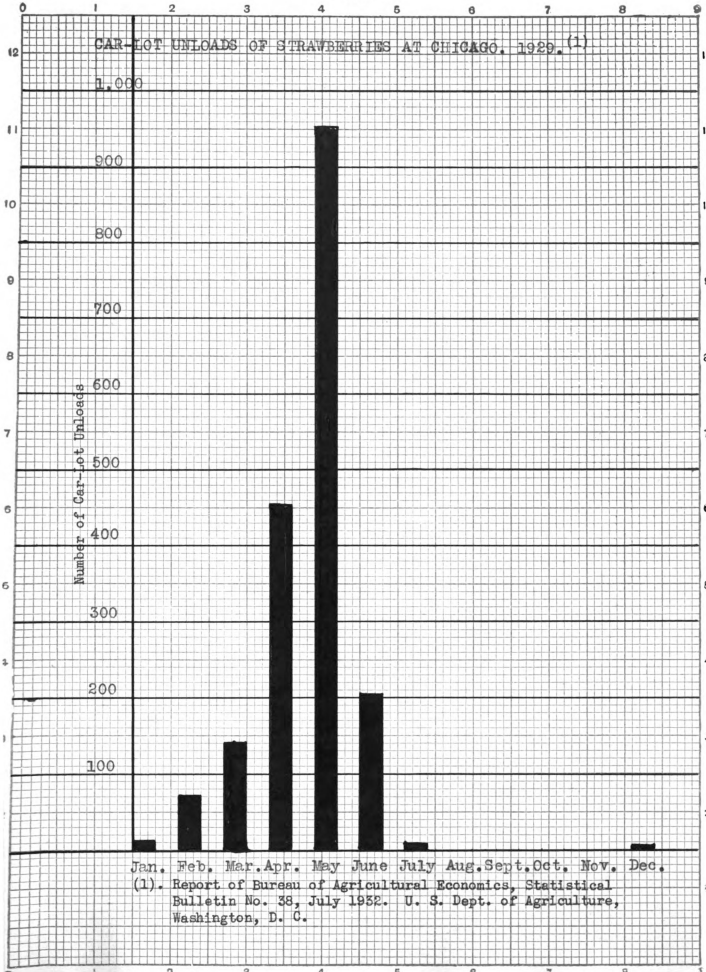
(1). U. S. Census of Agriculture, 1925. Part I, pp. 620-629.
(2). U. S. Census of Agriculture, 1935. Vol. II, pp. 200-205.
(3). See Appendix.



(1). Report of Bureau of Agricultural Economics, Statistical Bulletin No. 38, July 1932. U. S. Dept. of Agriculture, Washington, D. C.

LIGHT AS A FACTOR IN PLANT GROWTH IN THE UPPER PENINSULA

Light is a very important factor affecting plant growth. Some plants require short days to produce flowers as shown by the chrysanthemum, while others require long days to form flowers. The upper peninsula is noted as a region from which hay fever sufferers may obtain relief from ragweed pollen. This plant requires a short day to produce flowers, and because the days are long, there is very little pollen produced in most parts of the upper peninsula. (1)

Plants utilize very little of the direct sunlight, but can utilize a large amount of twilight, so the sum total of sunlight and twilight is important in its effect upon plant activities. (2)

Leo M. Geismar (3) has computed the number of hours of sunlight and twilight for latitudes 37 degrees, 42 degrees, and 47 degrees which he obtained from a Twilight Chart prepared by Dr. W. J. Hussey, Director of Observatory, University of Michigan. Thirty-seven degrees passes through Kentucky, 42 degrees is south of Detroit, or between Monroe and Trenton, and 47 degrees is near Chassel in Houghton County. Beginning April 15 and ending October 15, there are 140.78 more hours of sunlight at 47 degrees than at 42 degrees, and 217.04 more hours at 42 degrees than at 37 degrees. This is a total of 209.9 more hours of sunlight and twilight at 47 degrees than at 42 degrees and 341.6 more hours than at 37 degrees. As plants use twilight as well as sunlight, the last figure is significant.

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(1). McDougall, W. B. Plant Ecology. Lea and Febiger, 600 S. Washington Square, Philadelphia, Pa. 1931.

(2). Holman and Robbins. Elements of Botany. John Wiley and Sons, Inc. 440 4th Ave., New York. 1933.

(3). Geismar, Leo. M. Cloverland, pp. 10. U. P. Development Bureau, Marquette, Michigan. (no date)

B. Classification of the Number and Size of Farms by Counties; Crop Acres Harvested.

In many sections of the upper peninsula farming is a new occupation. Land from which the timber has been removed is low priced and is usually unimproved. A few acres are cleared each year. As a result, the number of acres of cleared land per farm is very low, as is indicated in TABLE VI, p. 18. The number of acres per farm is also small. This is due to the fact that the farm, in many cases, has not been self supporting. The owners work part of the year in the woods or mines, as has been indicated by Whitaker. (1)

The number of farms has increased in the entire section with a decrease in the size of the farm from the 1930 Census as indicated by the U. S. Census in TABLE VI, p. 18. With the closing of many copper and iron mines, many people have purchased small areas of land near the cities, especially near Marquette, Negaunee, Ishpeming, and Houghton. This has increased the number of farms but has decreased the average size per farm.

TABLE VI, p. 18, shows that there is a decided increase in the number of crops harvested between 1930 with 1935. From 1930 to 1935 the average size of the farm has decreased, but the number of crop acres harvested has increased over 10.8 per cent.

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(1). Whitaker, J. Russell. The Relation of Agriculture to Mining in Upper Peninsula of Michigan. The Journal of Geography, vol. 25, January 1926. pp. 21-30. A. J. Nystrom and Company, 2249 Calumet Ave., Chicago, Illinois.

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C. Types and Distribution of Crops Grown in Upper Peninsula

The total number of crop acres harvested in the upper peninsula is small compared with the total land acreage. According to TABLE VI, p. 462,737 acres of crops were harvested in 1935. This is 4.5 per cent of the total acreage.

Map I, P. 20, shows the location and area of crop acres harvested. Data for this map were obtained from the Michigan Land Economic Survey maps published by the State Department of Conservation (1), county agricultural agents (2), students familiar with the area studied, and from the Fifteenth Census of Agriculture of the United States for 1930 (3).

Map II, p. 21, shows the location and extent of land suitable for agricultural purposes. The data for this map were taken from the Land Situation map (4), Upper Michigan office. A comparison of the two maps shows a very small amount of crop acres harvested as compared with land suitable for agriculture.

"Cloverland" is a term used to advertise the upper peninsula during the past few years. In a bulletin entitled "Cloverland" (5) this word has been substituted for "upper peninsula". The United States Census reports of agriculture have not listed the acreage of clover separately, and it is difficult to draw the line between timothy and clover as these two have been grown together. Any one traveling about the upper peninsula will notice especially the large acreage of land in timothy. Some of the county

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(1). Conservation Department, Land Economic Survey, Lansing, Michigan.
(2). Unpublished Reports, County Agricultural Agents.
(3). U. S. Census, 1930.
(4). Resettlement Administration, Upper Michigan Office, Escanaba, Michigan. 1936.
(5). Geismar, Leo M. Cloverland. Upper Peninsula Development Bureau, Marquette, Michigan. (no date)

agricultural agents reported the number of acres of timothy and clover separately in their County Agricultural Adjustment Planning Projects, which are listed in TABLE VII, p. 22.

Hay, which is largely timothy, occupies a large acreage of cropland in the upper peninsula. This crop has a low value per acre as compared with other crops as shown by TABLE VIII, p. 23. The greatest difference in value per acre of various crops is between hay and potatoes. Hay occupies 72 per cent of the acreage and 40 per cent of the value of all crops. Potatoes represent 5.2 per cent of the acreage and 36 per cent of the value of all crops.

A comparison of the relative value of the ten leading crops is shown in TABLE IX, p. 24. The table also shows that the various crops are widely scattered with the smallest acreage of crops grown in Keweenaw County.

TABLE VII. ACREAGE OF TIMOTHY AND CLOVER HAY GROWN IN SIX COUNTIES OF THE UPPER PENINSULA(1)

County	Acres of Timothy, Other Grasses and Small Grains Cut for Hay	Acres of Clover and Annual Legumes
Delta	27,294	337
Houghton	39,331	615
Iron	15,000	175
Mackinac	10,037	476
Menominee	28,146	2,433
Ontonagon	24,504	4,712

(1). Upper Peninsula Agricultural Agents. See Appendix.

*Note - All county agents reported a larger acreage in timothy in the upper peninsula than is advisable, but many found it difficult to classify the acreage because of some clover growing with the timothy in many fields.

TABLE VIII. PERCENTAGE OF THE TOTAL CROP LAND OCCUPIED BY EACH CROP AND THE VALUE OF EACH CROP IN PER CENT OF TOTAL VALUE USING TEN YEAR AVERAGE PRICES FROM 1925 to 1935(1)

Crop	Percentage of Total Land in Crops	Percentage of Total Crop Value
Hay	72.0	40.0
Oats	10.0	8.0
Potatoes	5.2	36.0
Barley	4.6	4.2
Corn	3.6	6.8
Flax	2.0	2.4
Mixed Grain	0.9	0.82
Wheat	0.9	0.89
Rye	0.6	0.38
Sugar Beets	0.11	0.5

(1). Clanahan, D. L., Upper Peninsula Crop Extension Specialist. Letter dated Feb. 16, 1937. Marquette, Michigan.

The potato is the outstanding cash crop of the upper peninsula. With 5.2 per cent of the crop land in potatoes, and producing 36 per cent of the total value of crops, as was shown in TABLE VIII, p. 23, one may suppose this area to be well adapted to growing the crop.

W. J. Smith has described the ideal climate for potatoes as follows: "In the United States the potato has made its greatest development in the cooler sections of the country, where the mean annual temperature is between 40 and 50 degrees Fahrenheit and where the mean temperature in July is not over 70 degrees Fahrenheit. Further, the greatest yields of potatoes per acre in those States where the mean annual temperature is below 45 degrees Fahrenheit and where the mean of the warmest month is not far from 65 degrees Fahrenheit."(1)

A comparison of temperatures at some of the weather bureau stations in various parts of the upper peninsula is given in TABLE IV, p. 11. From these figures it will be seen that the temperatures closely parallel the recommendations for the best climate for potatoes as described by Smith.

The potato growers of the upper peninsula have been able to obtain good yields, as shown by the results of the State "300 Bushel Potato Club". A comparison of membership and yields with the entire State is shown in TABLE X, p. 26.

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(1). Smith, W. J. The Effect of the Weather upon the Yield of Potatoes. U. S. Department of Agriculture Monthly Weather Review, May 1915, pp. 222-228. From 1925 U. S. Year Book, pp. 350-351.

TABLE X. MEMBERS IN THE 300 BUSHEL POTATO CLUB OF MICHIGAN AND STATE YIELD (1)

Year	State	Upper Peninsula	Average Yield (State)
1922	10	-	-
1923	24	2	-
1924	36	1	373
1925	32	1	342
1926	34	-	359
1927	7	1	331
1928	61	5	360
1929	7	2	334
1930	11	5	332
1931	28	5	356
1932	43	20	410
1933	21	17	386
1934	59	36	379
1935	51	33	359

(1). Clanahan, D. L., Upper Peninsula Crop Extension Specialist. Letter to Upper Peninsula 300 Bushel Club members, dated Feb. 16, 1937.

D. Types and Distribution of Live Stock of the Upper Peninsula

The largest branch of the live stock industry in the upper peninsula is dairying. This has been brought about by natural conditions, and has made a steady and pronounced growth during the past fifteen years as indicated by TABLE XI, p. 28. In the transition stage from a miner or woodsman to a farmer, the cow was an important factor in the change. A large number of these people were Swedish and Finnish, and had been accustomed to the raising and feeding of dairy cows before coming to America.

With an increasing amount of cheap pasture, an abundance of hay, a cool summer climate, and an increasing demand for dairy products, the increase in the amount of dairy products could be expected. The agricultural agents, extension specialists in dairying, 4-H club leaders, and the experiment station at Chatham have encouraged and assisted in the development of the industry.

Other live stock raised in the upper peninsula includes beef cattle, horses, sheep, hogs, and poultry, but the numbers are small compared with dairying. A few years ago the Triangle Ranch located near Amasa owned a large number of beef cattle, but very few are found in that vicinity at the present time. A short grazing season and a long winter make feeding of beef animals uneconomical.

The comparison of the number of livestock raised in the upper peninsula and the kind of crops grown is shown in TABLE XII, p. 29. A comparison is also made with the years 1930 and 1935, which shows a large increase in corn and potato acreage.

TABLE XI. POUNDS OF DAIRY PRODUCTS MANUFACTURED IN THE UPPER PENINSULA OF MICHIGAN OVER A PERIOD OF FIFTEEN YEARS (1)

Year	Butter	All Cheese	(Italian Cheese)	Ice Cream	Condensed Milk
1921	2,883,472	597,906	- -	417,473	- -
1922	3,449,418	828,384	- -	374,786	- -
1923	4,221,499	1,433,751	- -	302,647	- -
1924	4,799,073	1,752,322	- -	440,973	- -
1925	4,872,448	1,973,804	- -	463,559	- -
1926	5,064,769	2,144,392	- -	472,749	- -
1927	5,257,003	2,468,372	- -	471,534	- -
1928	5,822,310	3,894,052	- -	591,052	- -
1929	6,205,111	5,200,700	- -	532,267	- -
1930	5,930,632	4,320,807	382,784	524,341	4,526,654
1931	6,633,343	4,065,524	255,154	409,862	8,025,654
1932	6,317,984	3,235,853	404,567	276,082	11,219,757
1933	6,370,938	4,401,275	414,744	259,439	10,188,455
1934	6,215,052	4,793,766	505,936	300,791	10,356,786
1935	4,732,244	5,915,369	947,351	290,873	10,510,380

(1). Horwood, Russell E., Upper Peninsula Extension Dairyman. Lecture before Dairy Class, Northern State Teachers' College, March 19, 1937.

TABLE XII. TYPES OF LIVE STOCK AND CROPS GROWN IN 1930 AND 1935 IN THE UPPER PENINSULA COUNTIES (1)

Types of Livestock and Crops	1930		1935	
	Total	Average Per Farm	Total	Average Per Farm
Number of Farms	13,087		16,081	
Crop Land	453,668	34.66	462,293	28.74
Dairy Cows & Heifers over 2 yrs.	71,334	5.4	73,708	4.58
Cattle*	106,257	8.1	113.651	7.06
Horses & Colts	20,442	1.6	18,543	1.15
Sheep & Lambs	11,854	.9	11,488	.7
Hens over 3 mo.	432,182	33.0	-	-
Hogs	11,413	.9	11,608	.72
Hay	305,253 A	23.3 A	332,851 A	20.7 A
Barley	25,888 A	2.0 A	23,665 A	1.47 A
Oats	46,478 A	3.6 A	47,385 A	2.88 A
Potatoes	15,558 A	1.18 A	24,039 A	1.56 A
Corn	4,668 A	-	16,643 A	1.03 A
Sunflowers	267 A	-	-	-
Value of Feed Purchased	$1,636,500	$132.69	-	-
Value of all Crops Grown (Excluding Fruits)	$6,846,211	523.13	$6,852,494	$426.11

*1935 - all cattle over 3 months. 1930 - all cattle over 1 year.

(1). Horwood, Russell E., U. P. Extension Dairyman. Lecture before Dairy Class, Northern State Teachers' College, March 19, 1937.

The Michigan Live Stock Industry Report written by George E. Taylor of the Dairy Husbandry Department, Michigan State College, and V. A. Freeman, Animal Husbandry Department of Michigan State College [1] provides some information concerning the dairy industry of the State. This report is a part of the Federal Agricultural Adjustment and Planning. They divided the State into seventeen regions as shown in Map III, p. 51.

According to the Michigan Live Stock Industry Report, Menominee County in the upper peninsula has the highest average in the State in pounds of milk per cow of 5,628 pounds and also the most pounds of fat per cow of 214 pounds. The entire upper peninsula is above the average for the State in these two factors, as shown in TABLE XIII, p. 52. In their report the authors recommend an increase of 8.5 per cent in the number of dairy cows in the upper peninsula.

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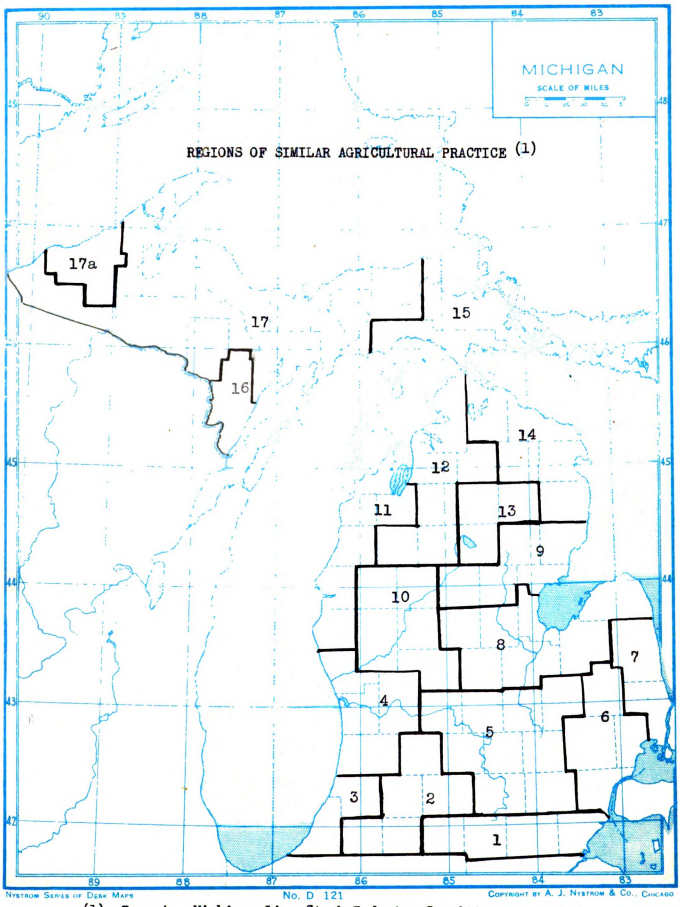
(1). Taylor, George E. and Freeman, V. A. Michigan Live Stock Industry Report.



(1). Report - Michigan Live Stock Industry Committee.

TABLE XIII. PRODUCTION OF MILK AND BUTTER FAT IN MICHIGAN BY REGIONS(1)

Region	Pounds of Milk Per Cow	Pounds of Butter Fat per Cow	Average Per Cent Butter Fat
1	5,162	196	3.79
2	4,970	189	3.79
3	4,860	185	3.80
4	5,617	213	3.79
5	5,297	201	3.79
6	5,528	210	3.79
7	5,188	197	3.79
8	4,902	186	3.79
9	4,938	188	3.80
10	5,060	190	3.79
11	4,776	181	3.79
12	5,180	197	3.80
13	5,222	198	3.79
14	4,919	187	3.80
15	5,349	203	3.79
16	5,628	214	3.80
17	5,092	193	3.79

(1). Taylor, George E. and Freeman, V. A. Michigan Live Stock Industry Report, p. 14.

E. Marketing of Upper Peninsula Products.

Many of the crops of the upper peninsula are marketed as dairy products, as indicated in TABLE XI, p. 28. The potato crop is marketed in Chicago, where a premium is paid for potatoes grown in the upper peninsula. The Marquette Mining Journal, dated February 13, 1936 (1) reports a sale of ten carloads of certified Green Mountain potatoes to a dealer in Pennsylvania, with a price of fifteen cents a hundredweight more than the dealer would have had to pay for Maine certified tubers. The paper further states, "A car of Lake Linden Green Mountains received at Chicago sold at $1.425 per hundredweight. White stock from Wisconsin and Russet Rurals from Michigan have been bringing about $1.15 to $1.20."

As far as the distance to market is concerned, no part of the upper peninsula is as far from Chicago as Idaho or Maine. There is a direct route by railroad from the central part of the upper peninsula to Chicago. These states ship large amounts to Chicago as indicated by TABLE XIV, below.

TABLE XIV. CAR LOT UNLOADS OF POTATOES ON THE CHICAGO MARKET FROM MAINE AND IDAHO, 1930. (2)

State	Unloads at Chicago, 1930
Maine	59
Idaho	4,880

(1). Mining Journal, Marquette, February 13, 1936.
(2). Car-lot Shipments and Unloads of Important Fruits and Vegetables, 1929-1930. U. S. Dept. of Agricultural Statistical Bulletin No. 38, July 1932. Bureau of Agricultural Economics.

A market condition, peculiar to the upper peninsula, is a home market which has developed at a rapid rate during the past twenty-three years, as a result of the tourist industry in this region. This large increase in the population during the summer months provides a market for many agricultural products, especially fresh vegetables, poultry, and dairy products.

The Michigan State Highway Department keeps a record of vehicles and passengers transported across the Straits of Mackinac. Many people cross on the car ferry, and many people come into the upper peninsula from the Wisconsin line (1).

A comparison of the increase in the number of vehicles and passengers during the season the State Ferry is able to operate, is given in TABLE XV, p. 35. To this number must be added the people who enter from the Wisconsin border and people crossing on the car ferry during the time the State ferry is not operating.

According to the State Highway Department, traffic volume in 1936 increased 57.9 per cent over that of 1925. This information was based on State Trunk Lines US-2, US-41, and M-28 in the upper peninsula(2).

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(1). Bishop, George, Secretary, U. P. Development Bureau, unpublished report.

(2). Lucas, C. W., Director, Public Relations Division, Michigan State Highway Department. Letter dated May 4, 1937.

TABLE XV. STATEMENT OF VEHICLES AND PASSENGERS TRANSPORTED BY AND RECEIPTS OF MICHIGAN STATE FERRY JULY 31, 1923 TO DECEMBER 15, 1936(1)

Season	Total Vehicles*	Passengers Transported
July 31 to Nov. 21, 1923	10,351	2,418
May 11 to Dec. 6, 1924	38,468	12,826
April 25 to Dec. 6, 1935	59,484	14,421
May 6 to Dec. 3, 1926	75,179	13,373
April 15 to Dec. 5, 1927	92,963	163,058
April 23 to Dec. 7, 1928	107,516	183,910
April 7 to Dec. 11, 1929	130,942	222,821
April 10, 1930 to Jan. 15, 1931	132,633	222,400
April 8 to Dec. 15, 1931	129,858	220,163
April 10 to Dec. 15, 1932	99,121	173,899
April 10 to Dec. 15, 1933	107,170	192,027
April 30 to Dec. 15, 1934	138,302	243,876
April 16 to Dec. 15, 1935	164,848	288,917
April 16 to Dec. 15, 1936	202,819	347,968

(1). Lucas, C. W., Director, Public Relations Division, Michigan State Highway Department. Letter dated May 4, 1937.

*Note - Total vehicles include passenger cars, trucks, trailers, motor cycles, buses, wagons, and special vehicles.

F. Farm Tenancy Situation in the Upper Peninsula of Michigan

In his report to President Hoover, Arthur M. Hyde, United States Secretary of Agriculture in 1931 briefly mentioned the increase in tenancy in the United States(1) and suggested that the high percentage of tenant-operated farms should receive some attention. The tenancy has increased from 25.6 per cent in 1880 to 42.4 per cent in 1930 in the United States. He stated, "The present high proportion of tenant farms may involve significant consequences to the general welfare, and attention may well be directed to the probable social effects."(2)

According to TABLE XVI, below, and TABLE XVII, p. 38, the tenancy in the upper peninsula is far below the United States average for 1880. In 1930 the number of tenants in the upper peninsula was less than twenty-five per cent of the average for the United States for the same year.

TABLE XVI. COMPARISON OF FARM TENANCY IN THE UPPER PENINSULA WITH THE ENTIRE STATE, 1935.(3)

	Michigan	Upper Peninsula
Number of farms	196,517	16,081
Number of tenants	37,334	1,742
Per cent of tenants	18.99	10.83

(1). United States Year Book of Agriculture, 1932. The Year in Agriculture. The Secretary's Report to the President. p. 42.
(2.) Ibid.
(3). United States Census of Agriculture, Vol. II, 1935.

In his report to President Roosevelt, Secretary Wallace emphasized the importance of tenancy, in which he states: "Underlying most aspects of land planning is the problem of tenure. Without a stable and continuous association with the land, farm operators have little incentive to take care of the soil or to develop cooperative forms of economic and social life. Prosperity, individual or social, consists of two forms: (1) Income, and (2) security in the possession thereof."(1) He states further that tenancy has increased since 1930, and "It is manifest that such conditions with the threat to sound farm practice and their discouraging influence on human beings, make efficient land planning extremely difficult."(2)

III. AGRICULTURAL ACTIVITIES OF RURAL BOYS AND GIRLS OF INTERMEDIATE SCHOOL AGE.

A. Importance of Activities in the Field of Education.

In our modern text books it is suggested that daily activities of children be used more extensively to assist in the processes of learning. The activities which the adult is expected to pursue should be considered while the child is in the lower grades. Bonser (3) stresses the value of present day activities as well as the desirable activities of the past in developing the curriculum.

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(1). Wallace, Henry A. Report to the President of the United States, Washington, D. C. Dec. 10, 1935. U. S. Year Book of Agriculture, 1936.

(2). Ibid.

(3). Bonser, F. G. The Elementary School Curriculum, Macmillan Publishing Co., 60 Fifth Ave., New York.

TABLE XVII. OWNERSHIP AND TENANCY ON UPPER PENINSULA FARM LANDS, 1935[1]

County	Number of Farms		Number of Owners		Number of Tenants	
	1930	1935	1930	1935	1930	1935
Alger	511	671	472	632	17	25
Baraga	713	838	683	751	15	20
Chippewa	1,446	1,779	1,087	1,406	113	151
Delta	1,384	1,554	1,231	1,321	63	93
Dickinson	513	772	450	658	31	74
Gogebic	726	913	677	822	15	38
Houghton	1,840	2,000	1,185	1,370	495	479
Iron	801	1,010	725	873	42	99
Keweenaw	102	177	19	24	73	138
Luce	178	322	140	266	13	34
Mackinac	415	618	346	529	21	46
Marquette	1,006	1,381	786	1,019	131	271
Menominee	1,961	2,186	1,658	1,876	111	136
Ontonogan	1,134	1,409	1,031	1,137	39	105
Schoolcraft	357	451	290	393	30	33

Horne [2] believes that the most important classroom instruction involves lessons which are connected with life. Caswell and Campbell [3]

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(1). United State Census of Agriculture, 1935.
(2). Horne, H. H. The Democratic Philosophy of Education, p. 205. Macmillan Publishing Co., 60 Fifth Ave., New York.
(3). Caswell, H., and Campbell, D. S. Curriculum Development, p. 185. American Book Co., 88 Lexington Ave., New York.

believe the teacher should be allowed some freedom in using the experiences of children in building her course of instruction. Kilpatrick (1) would make the needs of the community the most important factor in a course of study.

From the statements of these men who are prominent in the field of education, an analysis of the agricultural activities of the boys and girls seems advisable. The reports of the 4-H club program for the upper peninsula provides an opportunity to study these activities which cover sections in widely scattered regions of the upper peninsula. These activities are the experiences of boys and girls who will be the students of the rural teacher in many cases.

B. 4-H Club Projects as a Basis of Selecting Agricultural Activities

The 4-H club program includes boys and girls from every county of the upper peninsula. In 1936 there were 7,437 boys and girls enrolled. This was an increase of 1,537 over 1934.(2) This is shown in TABLE XVIII, p. 40. The ages of the boys and girls ranged from 10 years to 20 years. Of the 6,043 club members completing their projects 3,714 members were in the age group of 11 to 14 inclusive.(3)

The importance of dairying and potato growing is again emphasized in club work as shown by TABLE XIX, p. 41. Two more activities of considerable interest are the garden and forestry projects which have large enrollments, as shown in TABLE XIX,p.41. The canning projects are closely connected

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(1). Kilpatrick, W. H. and others. The Educational Frontier, pp. 165-170. Century Company, 35 W. 32nd St., New York.

(2). Rood, Clare A., Bird, Olga, and Meyer, Marcella. Annual Report of Assistant Club Leaders of the Upper Peninsula of Michigan. December 1, 1935-November 30, 1936. p. 53.

(3). Ibid. p. 50.

with the home gardens. This activity has shown a considerable increase during the past few years, as shown in TABLE XX, p. 42.

The interest in club work has increased gradually during the past few years. The organization for club work has had an opportunity to establish itself around the more worthwhile and important activities as shown in TABLE XXI, p.43. Forestry is one of the more recent projects, and has shown a rapid gain. The rapid increase in enrollment since 1928 is shown in TABLE XVIII, below.

TABLE XVIII. TOTAL 4-H CLUB ENROLLMENTS AND COMPLETIONS BY COUNTIES IN THE UPPER PENINSULA, 1928-1936.(1)

	1928	1930	1932	1934	1936
Number Enrolled	3863	5501	6667	5900	7437
Number Completed	3081	4412	5488	4994	6043

"Home gardens continued to play a most important part in the club program this past year. The project enrolled more boys and girls than any of the agricultural projects, and it is important that we continue to stress the worthwhileness of these projects and make the educational benefits more valuable to the boys and girls.

"The potato club continues to be one of the most important 4-H agricultural projects in the upper peninsula. The project is very closely related to the agriculture of the upper peninsula, the potato crop being

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(1). Rood, Clare A., Bird, Olga, and Meyer, Marcella. Annual Report of Assistant Club Leaders of the Upper Peninsula of Michigan. December 1, 1935-November 30, 1936. p. 50.

probably the most important cash crop grown in the upper peninsula, and with a special market for upper peninsula Green Mountain potatoes there is a real incentive for 4-H boys to continue in this market." (1)

TABLE XIX. 4-H CLUB ENROLLMENTS IN GARDEN PROJECTS, POTATO PROJECTS, DAIRY PROJECTS, AND FORESTRY PROJECTS IN UPPER PENINSULA DURING THE YEARS 1934-1936 (2)

Year	Enrolled 4-H Dairy Club	Enrolled Garden Projects	Enrolled 4-H Forestry Club	Enrolled Potato Projects
1934	451	819	201	470
1935	348	1387	190	335
1936	431	1257	285	216

"The dairy project continues to be one of the most important projects for 4-H work in the upper peninsula. Probably from an agricultural standpoint, the dairy project and the potato project are our two most important projects, both of them being most closely related to the farm problems and most directly influencing the adoption of better farm practices." (3)

"The 4-H Forest Ranger program continues to play an important part in the upper peninsula set-up. There has been increased interest in the western part of the upper peninsula where the federal forest people,

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(1). Rood, Clare A., Bird, Olga, and Meyer, Marcella. Annual Report of Assistant Club Leaders of the Upper Peninsula of Michigan. December 1, 1935-November 30, 1936. p. 42.
(2). Ibid. p. 42.
(3). Ibid. p. 43.

who have been in periodic conferences with agricultural extension workers have grown interested in this particular phase of our program." (1)

TABLE XX. 4-H CLUB ENROLLMENTS IN CANNING AND NUMBER OF QUARTS CANNED DURING THE YEARS 1931 TO 1936.(2)

Year	Enrolled	Quarts
1931	444	28,045
1932	414	31,581
1933	485	31,069
1934	610	40,369
1935	1,028	59,035
1936	746	50,553

(1). Rood, Clare, A., Bird, Olga, and Meyer, Marcella. Annual Report of Assistant Club Leaders, Upper Peninsula of Michigan. December 1, 1935-November 30, 1936. p. 45.

(2). Ibid. p. 38.

TABLE XXI. 4-H CLUB ENROLLMENTS IN VARIOUS TYPES OF ACTIVITIES IN THE UPPER PENINSULA DURING 1936.(1)

	Enrolled		Completing	
	Boys	Girls	Boys	Girls
Clothing	7	2,242	7	1,881
Girls Own Room	-	164	-	152
Hot Lunch	168	286	159	282
Food Preparation	3	359	3	316
Canning	3	743	2	568
Handicraft	1,157	9	943	9
Dairy	355	76	291	67
Poultry	35	9	21	8
Forestry	258	25	184	20
Home Garden	746	491	541	366
Commercial Garden	28	-	20	-
Potato	193	23	137	19
Beef	13	-	13	-
Sheep	14	2	12	2
Colt	10	-	7	-
Swine	15	3	10	3
Total	3,005	4,432	2,350	3,693
	7,437		6,043	

(1). Rood, Clare, A., Bird, Olga, and Meyer, Marcella. Annual Report of Assistant Club Leaders, Upper Peninsula of Michigan. December 1, 1935-November 30, 1936. p. 53.

IV. FEDERAL LAND PLANNING FOR THE UPPER PENINSULA.

In the future federal land planning will be an important factor in upper peninsula agriculture. Progress is being made in this direction, and the first reports concerning agricultural planning have been submitted by the county agricultural agents of the upper peninsula to the federal government. The following brief summary represents the progress up to date.(1) The present type of hay acreage, which is principally timothy and wild grasses, should decrease and a better grade of hay should be grown. The number of the crop acres should be increased. More alfalfa should be grown. More and better dairy cattle should be raised. The tenancy in the upper peninsula is not a serious problem.

V. SUMMARY.

The purpose of this study has been to determine the activities in the field of agriculture for the upper peninsula of Michigan, and from the data obtained provide a basis for selecting desirable activities in studying or teaching agriculture in this region.

This study is a result of a desire to provide better classroom instructional materials for the students of the agricultural classes of Northern State Teachers' College. The writer has found through correspondence and conversation with county school commissioners of the upper peninsula that the agriculture taught in the schools is unsatisfactory because of lack of materials adapted to the upper peninsula conditions.

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(1). County Agricultural Narrative Reports, Agricultural Planning Project. County agricultural agents of the upper peninsula of Michigan. See Appendix.

The text books used in the seventh and eighth grades were found unsatisfactory because in many cases the agricultural practices of the upper peninsula were different than the problems discussed in the text.

There is an increase in the agricultural industry of the upper peninsula as shown by the increase in the amount of dairy products, number of crop acres harvested, and number of farms operated. There is also an increased interest in agriculture by the children of intermediate school age as shown by the increased enrollment in 4-H clubs during the last few years.

There is a wide variation in the length of the growing season in different parts of the upper peninsula. Seney has an average growing season of 48 days, and Grand Marais, which is 26 miles north of Seney, has an average growing season of 152 days. The upper peninsula experiment station has an average growing season of 80 days.

The amount of land from which crops have been harvested in the upper peninsula is small compared to the amount of land suitable for agriculture. The total number of crop acres harvested per farm is small. Timothy is the leading grass crop and potatoes are the leading cash crop. In 1935, thirty-three of the fifty-one members of the "300 Bushel Potato Club" of Michigan were residents of the upper peninsula.

Dairying is the principal livestock industry, and the herds rank high in the state in production per cow. The number of pounds of dairy products manufactured in the upper peninsula during the last few years has increased rapidly.

There has been a large increase in the tourist traffic into the upper peninsula during the last fifteen years. During the season of 1924 the state ferry carried 58,468 vehicles across the Straits of Mackinac. During the season of 1936 202,819 vehicles were transported across the Straits. In addition to this number, many vehicles were transported on the car ferry during the winter months the state ferry was unable to operate and a large number entered the upper peninsula from Wisconsin. The increased tourist traffic provides a greater market for agricultural products.

There are more hours of sunlight and twilight in the upper peninsula during the growing season than there are in southern Michigan. This is an important factor in plant growth.

VI. CONCLUSIONS.

1. There is a desire on the part of some of the county school commissioners of the upper peninsula for an improvement in the teaching of agriculture in the seventh and eighth grades. The use of the most desirable agricultural activities that are common to the students will assist in improving instruction.

2. There are variations in the agricultural activities in different regions of the upper peninsula partially due to variations in the length of the growing season.

3. The large increase in the tourist traffic provides a home market for agricultural products during the summer. This factor provides a problem for further study.

4. There has been an increase in the enrollment of the 4-H clubs during the last ten years. These clubs are composed mostly of boys and girls of intermediate school age. The teacher should be acquainted with the activities of these boys and girls to provide more valuable instruction.

5. Some parts of the upper peninsula are well adapted to successful agricultural practices. There is a large acreage suitable for agriculture which is not under cultivation. If this land is to be developed, agricultural agencies may be asked to advise in regard to proper practices. The rural teacher should be willing and capable to assist to some extent in this development.

6. It is the unanimous opinion of the county agricultural agents of the upper peninsula that the number of crop acres harvested per farm is too small. Fewer acres of a better quality hay should be grown; more cash crops, especially potatoes, should be planted, and the dairy industry should be improved and expanded. They also report the tenancy situation is not serious.

7. With the proper training, the rural teacher may help obtain the above objectives.

8. An educational program, based partly upon student activities and future needs, is desirable. Just how much agricultural instruction in the schools should be based around the agricultural activities of the community is a problem for further study. If these activities are important in the organization of a course of study in agriculture in the upper peninsula, two problems are apparent: 1, An organization of a

course of study based upon the activities most common to the students in the upper peninsula; 2, Acquainting the teachers of the upper peninsula with the factors influencing the conditions of living in the rural areas.

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APPENDIX

UPPER PENINSULA COUNTY SCHOOL COMMISSIONERS

*Aldrich, T. B., Sault Ste. Marie - Chippewa County

Bettens, Jeremiah, Hancock - Houghton County

*Chamberlain, Miss Mary, Newberry - Luce County

Kilmer, Alfred, Greenland - Ontonagon County

*Langdon, Charles, St. Ignace - Mackinac County

Mason, John, Crystal Falls - Iron County

*Miller, Bert, Iron Mountain - Dickinson County

Nelson, Miss Elna, Baraga - Baraga County

*Peterson, Mrs. Vera, Munising - Alger County

Schuyler, Miss Ethel, Menominee - Menominee County

*Swanson, Miss Ada, Manistique - Schoolcraft County

*Watson, Mrs. John C., Ironwood - Gogebic County

*Williams, Stanley, Marquette - Marquette County

*Titus, C. P., Escanaba - Delta County

Winter, H. S., Mohawk - Keweenaw County

*Note - County school commissioners who have indicated a change is desirable in the teaching of agriculture in the seventh and eighth grades. The other commissioners did not make a reply to the letter written to them.

APPENDIX

Horwood, Russell E., U. P. Extension Dairyman, Chatham, Michigan.
Lecture before Dairy Class, Northern State Teachers' College.

Reynolds, Paul. Coloma, Michigan, formerly of Grand Marais, Michigan.
Shipped strawberries to Chicago, July 6, 1934.

Wells, J. G., Jr., Assistant County Agent Leader, Chatham, Michigan.

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Upper Peninsula County Agricultural Agents

County	Agent	Post Office Address
Alger	Kuhn, B. L.	Menominee
Baraga	Biekola, Fred	L'Anse
Chippewa	McMillan, D. L.	Sault Ste. Marie
Delta	Wenner, E. A.	Escanaba
Dickinson	Lonsdorf, Art	Iron Mountain
Gogebic	Gunderson, C. E.	Ironwood
Houghton	Roberts, Earl	Houghton
Iron	Otterbein, A. W.	Crystal Falls
Luce	Kuhn, B. L.	Menominee
Mackinac	Cargo, Wm.	St. Ignace
Marquette	Walker, L. R.	Marquette
Menominee	Kuhn, B. L.	Menominee
Ontonagon	Schubert, A. R.	Ewen