CHANGES IN AGRICULTURE

ON

THE SIX NATIONS INDIAN RESERVE

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THE SIX NATIONS INDIAN RESERVE

By

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A Thesis

Submitted to the Faculty of Graduate Studies

in Partial Fulfilment of the Requirements

for the Degree

Master of Arts

McMaster University

May, 1968

ACKNOWLEDGMENTS

The author wishes to acknowledge the assistance given by the following people:

Dr. R. L. Gentilcore, Dr. L. G. Reeds, and Dr. A. F. Burghardt for their constructive criticism and advice during the writing of this thesis.

The staff of the Agricultural Census, Dominion Bureau of Statistics, Ottawa, without whose help this thesis would not have been possible.

The staff of the Indian Agency, Brantford, whose help in a variety of ways was very much appreciated.

Miss Lois Bird, for sparing a great deal of her time and patience to type this thesis.

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MAPS AND DIAGRAMS

INTRODUCTION

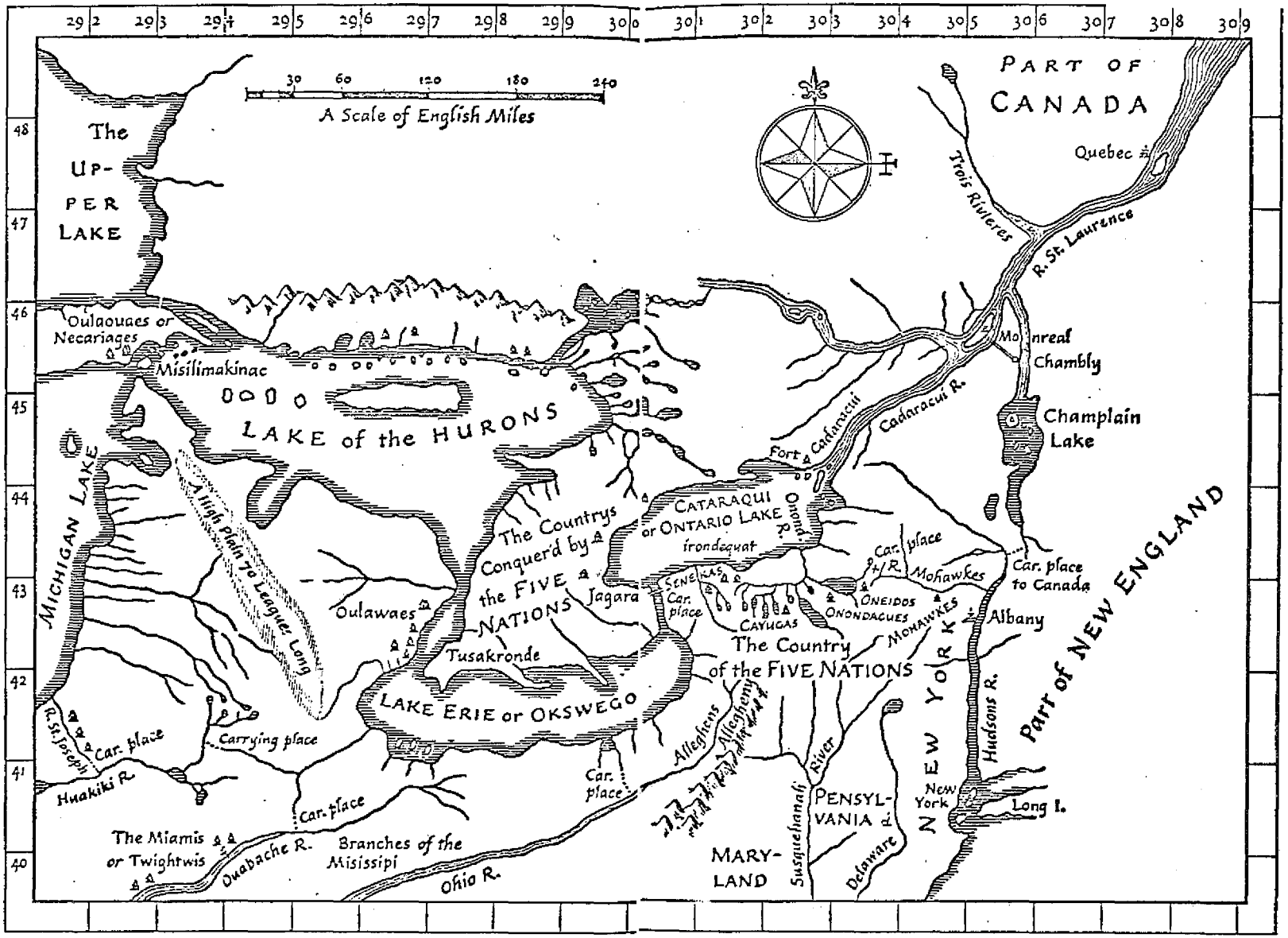
The Grand River and its tributaries drain an area of over 2,000 square miles, in south-western Ontario between Lakes Huron, Erie, and Ontario. The area includes the present-day counties of Brant and Waterloo, and the adjoining parts of Wellington, Oxford, Wentworth, Haldimand, and Halton. It is one of the most fertile regions in Ontario, with a variety of soil types, mostly clay loams and a relatively mild climate.

In Brant county, about 11 miles south of the town of Brantford, lies the township of Tuscarora, the Reserve of the Six Nations Indians, and all that remains of their original land grant, which extended almost the whole length of the Grand River. The type of agriculture and land use in Tuscarora presents a striking contrast to the conditions in the surrounding townships, which have been settled by non-Indian people. Large areas of the Reserve lie unused and are under either rough grass, scrub, or woodland, and little land is being used for agriculture.

This study is an enquiry into the poverty of the Reserve, as reflected in the land use. The enquiry has three aims. First, the history of settlement and land use on the Reserve since the end of the eighteenth century is considered, to discover whether the present day poverty has its roots in the past. Secondly, a comparison is made between the trends in agricultural development in Tuscarora and those

in the neighbouring townships of Oneida, to see whether these conditions have persisted since the Reserve was first established. Thirdly, an investigation is made of soil conditions as a contributing factor to the present day poverty of the Reserve.

Figure 1



A Map of the Country of the Five Nations, belonging to the Province of New York, and of the Lakes near which the Nations of Far Indians live, with part of Canada. (Redrawn from the map in the 1747 edition of Colden's *History*.)

Chapter 1

HISTORICAL BACKGROUND

The earliest recorded inhabitants of the Lower Great Lakes area were the Iroquois Indians[1], a linguistic group consisting of a number of different tribes; the Hurons, the Neutrals, the Petuns or Tobacco People, and the Six Nations Confederacy, which had been formed in the late sixteenth century. This Confederacy originally consisted of five tribes; the Mohawks, Senecas, Cayugas, Oneidas and Onondagas; the Tuscaroras, originally from North Carolina, joined later. The first white men to visit the area were the French fur traders, explorers and missionaries in the seventeenth century, and at this time the Hurons lived on the southeast shores of Georgian Bay; the Neutrals, along the fringes of Lake Erie and Ontario; and to the west on the shores of Bruce Peninsula lived the Petuns. The Six Nations at this time inhabited the area to the south of the Great Lakes, around the Finger Lakes, and Hudson and Mohawk valleys, in what is now New York State. (fig. 1).

The Jesuit missionaries in the seventeenth century described the Five Nations groups of Iroquois as:

> The craftiest, most daring and most intelligent of North American Indians,... they were the terror of every native band east of the Mississippi before the coming of whites. There were five principal tribes, all stationed in pallissaded villages, south and east of the Lakes Erie and Ontario, and formed a loose confederation. They firmly held the waterways connecting the

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[1] The term Iroquois originally referred to the linguistic group of Indians, including all the above mentioned tribes, but it was also used more specifically as an alternative name for the Six Nations Group.

> Hudson, Ohio and Great Lakes. Their entire population was not over 1700, a remarkably small number, considering the active part they played in American History, and the control they exercised through wide tracts of wilderness.[1]

The Jesuit Relations occasionally mention the agricultural activities of the Iroquois living south of the Great Lakes:

> The Iroquois tribes are stationary because they till the soil, whence they gather maize wheat (or Buckwheat), beans and edible roots.[2]

> Certain of these tribes, the Iroquois, practice agriculture, but unskilfully, and plant Indian corn and the Brazilian bean.[3]

But according to Carrier, in The Beginnings of Agriculture in the United States, the Iroquois methods of farming, before they became modified by contact with whites were never adequately described, although the diaries kept by soldiers during Sullivan's raid into the Iroquois country in 1779 have numerous statements to the effect that the corn which they destroyed was the best they had ever seen.[4]

However, from various scattered descriptions and accounts of the time, an idea is gained of the type of agriculture carried out by the Five (or Six) Nations Indians in the seventeenth and eighteenth centuries. Wentworth Greenhalgh's Journal of a Tour to the Indians of Western New York, May 1677 to July 1678,[5] describes the situation of the various Iroquois villages, their population numbers, and the extent of their corn crops:

> The Onyades (Oneidas) have but one town which lies about 130 miles westward of Maques...the town is newly settled and double stockaded, but little cleared ground, so that they are forced to send to the Onondagoes to buy corn. The town consists of about 100 houses, they are said to have about 200 fighting men, their corne growes round about the towne.

> The Onondagoes have but one town but it is very large consisting of about 140 houses, not fenced, it is situated

> upon a hill that is very large, the Bank on each side extending itself at least 2 miles, all cleared land, whereon corn is planted...They plant aboundance of corne which they sell to the Onyades. The Onondagoes are said to be about 350 fighting men...
>
> The Caiougos (Cayugas) have three townes about a mile distant from each other... they are not stockaded, they consist all of about 100 houses... they have abundance of corne... Have 300 fighting men.
>
> The Senecques have 4 towns... they have abundance of corne. None of their towns are stockaded...Tiotehatten contains about 120 houses, being the largest of all houses we saw - 50-60 ft. long, with 13 or 14 fires in one house, they have good store of corne growing about a mile to ye northward of the Towne.
>
> Canoenada... contains about 30 houses, well furnished with corne.
>
> Keint-he contains about 24 houses well furnished with corne.
>
> The Senecques are counted to be about 1,000 fighting men. (July 1677).[5]

The Iroquois method of growing corn is described in the Documents Relative to the History of the State of New York:

> They (the Indians) make heaps like mole hills, each about 2½ feet from the others which they sow or plant in April with maize in each heap, 5 or 6 grains, in the middle of May when the maize is the height of a finger or more they plant in each 3 or 4 Turkish beans, which then grow up with and against the maize, which servies for props, for the maize grows on stalks similar to sugar cane.[6]

Louis Hennepin mentions in the late seventeenth century that the Iroquois "Manure a great deal of ground for sowing their Indian Corn in, of which they reap ordinarily in one harvest, as much as serves 'em for 2 years".[7]

The importance of corn in the economy of the Six Nations is indicated in an account by a commanding officer of a French expedition in 1687, against the Iroqois Indians of Western New York:

> Then we spent five or six days in cutting down the Indian corn with our swords. From thence we marched to the two little villages of Garonhues and the Danoucaritaoui which lay about two or three leagues off. Having done the like exploits there,

> we returned to the lake side. In all these villages we found plenty of horses, black cattle, fowl and hogs.[8]

The success of the Iroquois as farmers is also shown by the statistics given of the destruction of their stores by American troups at the close of the Revolution. In Sullivan's expedition in 1779, the Americans destroyed in the villages of the Iroquois, 160,000 bushels of grain, and in one orchard, 1,500 fruit trees, some of them of great age. In this expedition, no less than 40 Indian towns were burnt, of which Genesee, the largest contained 128 houses.[9]

So, at the time of contact with white people, the Six Nations were a semi-agricultural people, living in permanent fortified villages. When soil or firewood became exhausted, they shifted these villages to another location. They depended greatly on wild fowl, deer, bear, and other animals which they could hunt over their extensive territory, the main hunting season occupying the winter months. But their primary dependence was on raising crops, a task which occupied most of the summer, and was carried out by the women. Much of their territory was densely forested, and clearing the land was often necessary before cultivation. Each family group possessed a tract of land on which the crops were grown, mainly corn, but also beans, squash, pumpkins, melons and even orchard fruits. The first two could be planted in the same field, with the corn stalks serving as supports for the bean vines. The relative importance of agriculture varied from one locality to another; for example the Seneca lived in a more densely wooded area than the Cayuga, with the result that game was more available to the Seneca and farming was harder.

In the vicinity of Iroquois villages, small garden plots were often held in severality, each family having exclusive rights to cultivate the bit of ground allotted to it. But hunting lands, which were by far the larger part of the tribal domain, were held by the nation as a whole for the use of all its members.[10]

However, the political and economic life of the various Iroquois tribes began to break down when the white man arrived in the area, as the Indians soon became involved in the struggles and rivalries between the different European Powers in North America. Towards the end of the eighteenth century, the Six Nations became involved in the American War of Independence, (1775-1783), and a group of them, under their powerful Mohawk Chief, Joseph Brant, fought on the side of the British. Much of the war was fought over Six Nations territory, leading to extensive devastation. Britain lost the war, and when the Peace Treaty was concluded in 1783, no definite provision was made for the territorial rights of the Six Nations. The American officials took the view that they were "now in the same situation with the Loyalists, who left us, their lands forfeited in the same manner."[11] However, the British felt some commitment towards their allies, and realised they needed to be recompensed for their loss of agricultural and hunting lands in New York State and Pennsylvania.

As a result, in 1784, General Haldimand, the Governor of Quebec at that time, made arrangements to purchase a tract of land in the Grand River Valley from the Mississauga Indians, who now occupied the land between Lakes Erie and Huron and Ontario. At a meeting held at Niagara

on May 22, 1784, the territory was sold for the sum of £ 1180/7/4, to the British Crown for the use of the Six Nations Indians.[12] General Haldimand in his proclamation granting the Six Nations land in the Grand River Valley, stated that they authorised to "settle upon the Banks of the River, commonly called Ouse or Grand River running into Lake Erie, allotting them for that purpose Six Miles Deep from each side of the River beginning at Lake Erie and extending in that proportion to the Head of the said River."[13]

In 1784-85, the Six Nations moved from Niagara where they had been congregating, onto their new lands in the Grand River Valley. As they had lost their lands during the war, and as it would be some time before the new settlement would improve and agriculture become profitable, Brant suggested that they needed Government assistance until they were well established.[14]

About 1,600 Indians migrated to the Grand River Valley, of these the Mohawks, the most numerous, (450), as well as the most significant politically, settled round the site of the present day Brantford. The Onondagas and Tuscaroras settled next to the Mohawks on both banks of the Grand River; below them settled the Senecas and Oneidas. The Cayugas settled at the mouth of the river; and there were also a few representatives of other tribes such as the Delawares.[15]

Population on the Reserve 1784-85.[16]	
Mohawks. 450.	Tuscaroras. 125.
Cayugas. 380.	Senecas. 75.
Onondagas. 200.	Oneidas. a few.

These figures reflect the misfortunes which had befallen the

Six Nations during the war; the population of the tribes had been greatly reduced, as some had been killed and many remained in the United States. As a result their political organisation was disrupted.

The land granted the Six Nations in the Grand River Valley was some of the most fertile agricultural land in Ontario. As soon as they arrived there the Indians began clearing patches of land for their corn and vegetables and establishing villages. An account written by Campbell a few years later, in 1792, gives an impression of a flourishing settlement in the Grand River Valley:[17]

> "It appears to me to be the finest country I have as yet seen, and by every information I have had, none are more so in all America. The plains are very extensive with a few trees here and there interspersed, and so thinly scattered as not to require any clearing, and hardly sufficient for the necessaries of the farmer; - the soil rich, and a deep clay mold. The river is about 100 yards broad and navigable for large battoes to Lake Erie, a space of 60 miles, excepting for about 2 miles of what is called rapids. Abundance of fish we caught here in certain seasons, particularly in spring...and the woods abound in game. The habitations of the Indians are pretty close on each side of the river as far as I could see, with a very few white people interspersed amongst them, married to squaws.
>
> "I called at different villages or castles as they are called here, and saw the inhabitants have large quantities of Indian corn in every house drying, and suspended in the roofs and every corner of them."

Problems of the Reserve.

But two main problems soon arose concerning the new Reserve, namely, the exact limits of the Reserve, and land alienation. When General Haldimand made his proclamation in 1784, granting the Six Nations land in the Grand River Valley, he stated that they were authorised to settle upon the banks of the Grand River, and were alloted for that purpose a strip of land six miles wide on each side of

it beginning at Lake Erie, and extending in that proportion to its head.[18]

The question of the actual extent of the Grand soon began to cause trouble, and it was obvious that there was some doubt as to the true meaning of Haldimand's Proclamation. No precise limits were established, as at that time there were no qualified surveyors available to draw up the boundaries. The fertile land of the Grand River valley was beginning to attract white immigrants and by 1790, many of them had cleared land and formed settlements around the Indian Reserve. It therefore became necessary to establish definitely the eastern boundary of the Reserve in order to prevent European encroachment onto Indian Land. So in 1791, a survey was carried out of the Indian Lands.[19] It was based on two fixed points, the bend in the river nearly two miles east of its mouth on Lake Erie, and Mohawk village. A straight line drawn between the two points formed the centre line of the Indian Lands on the Grand River, and two parallel lines drawn six miles distant on either side formed the boundaries. (fig. 2). But it was later found that this survey did not include the actual headwaters of the Grand River, and the Indians, dissatisfied with this state of affairs, complained to the Colonial Government. Arguments over the extent of the Reserve were to continue until 1840; the Indians continued to claim the whole length of the Grand River valley; but the Government felt that the northern part of the Grand River valley was not part of the Indian Reserve purchased in 1784, and that it was quite justified in alloting it to white settlers who were arriving in the area.[20]

An even greater problem was the question whether or not the

Indians could dispose of their own lands directly and to whom they wanted. Controversy over land alienation lasted until 1841, by which time all the lands of the original grant had been sold except for a number of existing Indian farms and an additional 20,000 acre Reserve.

In the first few years after the Reserve had been set up, Joseph Brant encouraged white settlers to establish colonies on Indian Lands, one of the main reasons being to improve the agriculture and economy of the Six Nations lands. Brant realised there was too much land in the original Haldimand grant for the Indians to cultivate by themselves. At the end of the eighteenth century, the Indian population numbered less than 2,000 and very few of them were good farmers.[21] The Indians had now to rely more on agriculture for their livelihood, as the fur trade was no longer important in this part of Canada.[22] Farming had always been the occupation of the Iroquois women, and fe.. men appeared capable of doing this kind of work. So from Brant's point of view, white settlers would be an advantage as they would introduce better farming methods; he even tried to encourage white settlers to give the Indians formal instruction in agriculture and to construct corn mills, and other processing plants.[23]

But the Government officials questioned the legality of these leases to white people. Lieutenant Governor Simcoe refused to let the Indians dispose of their land to white settlers as this was a violation of the terms of Haldimand's deed, and also against the interests of the Indians themselves.[24] Brant argued that the Six Nations were in a difficult position; they could no longer carry out hunting, and the

only thing they could do was to sell portions of their land to obtain some financial compensation.[25] Brant continued his campaign when Russell became Governor General in 1795, and obtained the right to surrender blocks of land to the Crown. These lands would then be sold by the Crown to white settlers, the Indians receiving the Financial benefits. This measure would also be a protection against unscrupulous land jobbers. Thus in 1798, a formal deed allowed Brant to surrender 310,391 acres of the total 570,000 acres of the Six Nations Reserve to the British Crown. The surrendered land was divided into six large, unequal blocks, and sold to white settlers.

Although large areas had already been surrendered, the problem of white encroachment upon Indian lands became more serious by the 1830's, as large numbers of immigrants continued to arrive. Most of the settlers occupied the land without proper authority. Some were squatters with no land titles whatever; others had bought land from individual Indians. By 1840 there were over 2,000 white people on Indian land, a number almost equal to the Indian population in the Grand River valley. The Government could not expel these settlers, as they had already given money to Indians for the land, and the Indians were now incapable of repaying the money.[27]

Finally, in 1841, Indian Superintendent Jarvis wrote to the Indian Chiefs proposing a solution to the problem.[28] The Government thought it would be of benefit to the Indians if they surrendered all their remaining land to the Crown, with the exception of a tract of 20,000 acres which they could choose to occupy as a concentrated body.

This tract should be large enough to allow each head of family a farm of 100 to 200 acres and should be chosen in the most suitable part of the Grand River valley, although most of this had now been sold to white settlers. In addition, a further quantity of land was to be set aside for firewood and other uses.[28]

The Indians agreed to this Government proposition, and a final surrender was made on January 18th., 1841 at a meeting at the Onondaga Council House.[28] This brought to an end the problems of land alienation, which had lasted for over fifty years. The tract chosen as the future Reserve was situated completely on the western banks of the Grand River, and was surveyed and divided into lots in 1841. It is the present township of Tuscarora, but also includes a block of land in the neighbouring township of Oneida.

Agriculture on the Reserve from 1784 to 1844.

Between 1784, when the Six Nations Indians began to move into the Grand River valley, and 1842, when they finally congregated in the township of Tuscarora, they had established villages and cleared areas of woodland for agriculture. Various accounts written at the time give some indication of the amount of progress made on the Grand River Reserve.

Throughout this time the Six Nations frequently expressed their dissatisfaction with conditions; lands were the principal property of the Indians and the effects of losing these were serious. Before the American Revolution, they had used extensive hunting grounds stretching from the St. Lawrence to the Susquehanna and Ohio rivers, but now

deprived of these resources, they were finding it difficult to live on a reduced area of land.[29]

> "You know the extensive Range for hunting we enjoyed before the war, from the St. Lawrence and the Lakes to the Susquehanna and the Ohio, the exertions of the hunters were then rewarded with the abundance of skins to furnish their families with clothing; but in this respect we are now poor, and this poverty and the manner in which his Majesty's bounty is distributed, is the cause that many of our people are continually on the road to Niagara, in the hopes of receiving something."[29]

Hunting was rapidly declining on the Reserve, mainly because of the encroachment of white settlement, the Indians seemed unable to support themselves entirely by agriculture, and had no form of industry or commerce, as an alternative means of livelihood. Therefore, they were finding it difficult to adapt to the new conditions on the Reserve, and continuously found it necessary to ask for government aid in the way of farm implements and draught cattle.[29]

The fertile Grand River valley lands were attracting large numbers of white immigrants. John Norton, (a white man who was adopted by the Mohawks), was concerned about the Six Nations and the condition of their agriculture had suggested that the Confederacy move to the extreme western borders of Canada, where they would be away from the influences of white man, and there they would have an opportunity to improve their agriculture.[30] But, on the other hand, the Grand River lands, some selling for $5.00 and $6.00 an acre at this time, were of much higher value because of their situation than any other lands the Indians could occupy on Lake Huron. It was therefore not to the advantage of the Indians to grant such valuable land to white people.[30]

Norton also recommended reforms in land tenure,[31] particularly that communal holding should be changed to free socage, giving the Iroquois farmer a clear title to the plot of ground he occupied. This would improve agriculture as the Indian would have a sense of property and an incentive to work on his own holding. But Claus, the Deputy Superintendent insisted that the Reserve should be held in trust for the whole tribal group.

In 1804, Norton wrote,[31]

> "At present the Mohawks and other confederated tribes are rapidly improving in agriculture; but the present mode of possessing in common, and restriction on their right is a great curb to their industry and the published prohibition against leasing any of their lands; the leasing of which for a short space of time the more industrious Mohawks found aided them to improve their lands to a greater extent than otherwise they could have done; when possessed of a few cattle more than they wanted for their private use, by lending them, and by leasing a small tract of land to the indigent farmer, they received a rent, and at the expiration of the lease had a considerable portion of improved, as stipulated in terms of their agreement."

Norton suggested in 1808 how conditions could be improved by introducing industry onto the Reserve.[32] There should be a trader to deal in such articles as blankets woollens, cottons, iron, and cutlery. The Indians could purchase these in exchange for the surplus wheat, pork and skins they produced. The money the Six Nations obtained from the sale of land could be placed in a bank, and could be used to support industry; also some of the more prosperous farmers should be allowed to borrow money. But many of the customs of the Iroquois were a hindrance to the development of industry and commerce, as they had always been used to a hunting-agricultural economy. However, in 1808, Norton reported that the Mohawks were rapidly improving their agriculture, several of

them raising 300 to 400 bushels of wheat a year.[32] The best farmers were usually the best at hunting, which was carried out in winter when there was little farming activity.

However, despite the fertile land in the Grand River valley, and certain optimistic reports, agriculture on the Reserve in many ways did not appear very prosperous as the Indians were continually requesting provisions from the Government to last them until harvest, in addition to their annual supply of presents. The American War of 1812-1814 was a disrupting influence on the agriculture of the Reserve, and the Indians had to draw on Government provisions until the maize harvest.[33] In 1815 conditions were so bad that even when the Indians had the means to purchase they could hardly find anything to buy.[33] However the Government had given them some assistence in setting up the Reserve; it had rebuilt the mill, provided a blacksmith, supplied agricultural implements, draught animals and other provisions.[34]

According to a description by Hall in 1817, the Indian villages in the Grand River valley showed little sign of prosperity:[35]

> "Mohawk village stands on a little plain,looking down upon the Grand River, upon the alluvium of which the inhabitants raise their crops, chiefly of Indian corn. Their houses are built of logs, rudely put together, and exhibiting externally a great appearance of neglect, and want of comfort: some few are in better condition: the house belonging to Brandt's family resembles that of a petty English farmer... The village had been injured during the war which had put a stop to its improvements, and dispersed the inhabitants over the country."
>
> "The Cayugas seem to have made less progress than the Mohawks towards domestic accommodation, the fire is still in the middle of their dwellings: the earth or a block of wood, suffices a chair and table;...They seemed very cheerful though with little reason, for their crop of Indian corn,

> which they were now drying and husking, had been spoiled by premature frost, and in common with all the other Indians of the settlement, their only resource against starvation, was the British Commissariat. They confine themselves to the cultivation of Indian corn, because it requires little labour, and of that sort which may be performed by women; the consequence is, that a single frosty night strikes them with famine."

Hall remarked that the Indian Department spent thousands of pounds of public money annually on presents and aid to the Indians, but this would not be necessary if they could improve their harvests.[35]

Mohawk village was again described in 1824 by Howison;[36]

> "Three miles below the Grand River ferry is an Indian settlement called Mohawk village, which contains about two hundred Indians...the population of the Mohawk settlement varies at different times of the year; when the hunting season approaches, many of the inhabitants forsake their homes and agricultural occupations, and assume for a time the savage mode of life from which they have been but partially reclaimed."

In 1828 a report on the position of the Six Nations was made by Major Darling, the Inspector General of Indian Affairs.[37] The total population of the Mohawks and other tribes was still under 2,000 and they were settled close to the banks of the Grand River. At this time they retained about 260,000 acres of the original land grant; most of it was best quality land. According to this report the principal village Mohawk castle, was nothing but half a dozen miserable huts scattered around a paltry church. The settlement had formerly been more extensive and respectable, but the increasing scarcity of fuel in the neighbourhood, and the fine quality of the soil along the river gradually induced the inhabitants to move away from the village and settle along the banks of the river. There they cultivated the land in groups, with a number

of families dividing the produce of their land amongst themselves. But their knowledge of farming was exceedingly limited, and mainly concerned with the cultivation of Indian corn, beans, and potatoes. However, some of the more efficient farmers, following the example of white settlers had established separate farms where they were growing a variety of grains.

The list of Indian possessions on the Reserve in 1828, compiled by Major Darling,[37] may be compared with a census taken in 1843.[38]

	Pop.	Cult. Land	Houses.	Horses.	Cows.	Oxen.	Sheep	Swine
1828	under 2,000	6,872 acres	416	739	869	613	192	1,630
1843	2,223	6,908 acres	397	350	790	561	83	2,070

The area of Reserve land referred to by these figures was, in 1828, about 260,000 acres which the Six Nations still retained; and in 1843, an area lying on both sides of the Grand River, between the Cayuga township line and the south side of the Hamilton road. These figures show a small increase in the Indian population, (but not in houses) and in the area of cultivated land, but a decrease in all livestock, except swine, which suggests a deterioration in the agriculture on the Reserve.

An account written in 1842,[39] gives a description of conditions on the Reserve, just before the Six Nations moved onto the township of Tuscarora. The population of 2,223 were settled in small bands, according to their different tribes, most of the Indians living in log houses scattered throughout the tract, and very few lived in villages, of which

there were only three; Mohawk, Cayuga, and Tuscarora. By 1842, Mohawk village contained 24 houses few of them occupied, as all the Indians inhabitants, with the exception of four or five families, had sold their improvements to white settlers, and moved to other parts of the Reserve, where wood for fuel was still available. The village of Tuscarora, consisted of about 30 houses, but less scattered than Mohawk, and contained few or no white settlers; Upper Cayuga village was now deserted by Indians.

The area of improved land, 6,908 acres, allowed on an average 15 acres per family, but some farmers possessed larger holdings. (See table).

No.	of	Indians	holding	no improved land.....	50
"	"	"	"	under 5 acres	96
"	"	"	"	5 - 10 acres	85
"	"	"	"	10 - 20 acres	67
"	"	"	"	20 - 50 acres	68
"	"	"	"	50 - 100 acres	28
"	"	"	"	100 - 150 acres	9
"	"	"	"	150 - 200 acres	1
				Total	404

It is seen from this table that 50 Indian families had no improved land; in such cases the men generally worked out during the winter, chopping and carrying wood for fuel etc. In spring, summer and early autumn they engaged as labourers, receiving high wages. Many of the Indians found employment on the farms of white settlers during harvest time. 248 out of the total of 404 farms, had holdings of less than 20 acres, so the majority of Indians had either no improved land of their own or else very tiny holdings.

The Indians still maintained their traditional system of land tenure in 1842; the land was not subdivided into regular plots, but each farmer selected and reserved as much land as he was able to cultivate. This area was generally secure from the intrusion of other Indians, and could be transmitted to an heir, or conveyed to another Indian. The problems of the Indian lands arose from the encroachment of white settlers; the Indians had no real security over the possession of their farms, and frequently had to move because their land was being surrendered to the Government for sale to white people. Such unsettled conditions were a hindrance to progress in agriculture.

The Six Nations, by 1842, depended almost entirely on agriculture for their subsistence, and seldom resorted to hunting and fishing for a supply of food, except as sport in the winter. At least one third of them did not hunt at all, and as the game became exhausted in the surrounding townships, this activity would decline still more.

Although the Indians had improved their methods of agriculture and now grew a greater variety of grain and vegetables than formerly, the acreages of their crops had decreased and their stock numbers had declined. Two main reasons were given for this; a large portion of their cultivated land had been taken over by the white settlers; also dams had been built across the Grand River in places, flooding the marshland which the Indians had formerly made use of.

Those Indians farming larger holdings used the same methods of agriculture as the whites, except that they sowed less seed, and were not so careful in preparing it; so as a result their crops were

frequently damaged by smut.[39] Wheat oats and timothy grass were grown, and also large quantities of peas, which with Indian corn, were used for fattening hogs. But small farmers, who still used only the hoe to cultivate the land, grew little else but Indian corn and potatoes. On the larger farms agriculture was now carried out by the men, with the exception of the cultivation of Indian corn, which on farms of all sizes, was the occupation of the women.[39]

No statement was made of the quantities of produce raised in 1842, as the Indians measured only the amounts they intended to take to market, and this was but a small proportion of the quantities consumed at home. Stocks of grain were rarely held in reserve, so that when their crops failed, the Indians were obliged to buy large quantities of flour, or request Government aid to provide them with the necessary supplies.

The first detailed and statistical consideration of the condition of the Indians in Canada, was a report presented in 1844, and according to this, the Grand River valley Indians had advanced from their old methods of land tenure and now cultivated individual fields or farms.[40]

> "Owing to the peculiar title under which the Indians hold their lands, and their incapacity to alienate them, they continue as in their uncivilised state to hold them incommon.
>
> Every member has an equal right, with the sanction of the chiefs, to choose and mark off a plot of land for himself in any unoccupied part of the Reserve, and to occupy as much as he can cultivate. In their wild state they actually cultivate one large field in common, but in most of the settlements in Canada they have advanced beyond this stage and each individual cultivates his own field or farm. They are never disturbed in the possession of this, and they are generally allowed to dispose of it during their lifetime or by bequest, to any other member of the tribe. They may also dispose of their improvements in the same manner; and such as are of a moveable nature may be

transferred to persons not belonging to the tribe.
In some of the more advanced settlements, as on the Grand River...some Indians hold farms of 100 to 150 acres of cleared land, and some have aquired by inheritance or purchase two three or even a greater number of farms. The transfer of property is frequent in these settlements."

Survey of Tuscarora. 1842.

During the 1840's most of the Six Nations Indians left the east banks of the Grand River and began to congregate on the west banks, on a tract of about 50,000 acres which was just a fraction of their original grant, and included the township of Tuscarora, one block in the township of Oneida, and a few river lots in the township of Onondaga.

The township of Tuscarora was surveyed out in 1842 by Walker, and divided into 200 acre lots.[41] At the time of the survey most of the area was still uncleared woodland, consisting of maple, oak, beech, basswood, ironwood and some pine. Much of the area was black ash swamp, and there were a number of creeks crossing the township to the Grand River. The soils are described mostly as clays, and occasionally as sandy. But according to the surveyor's notes, there were on Tuscarora, a few small clearings and log cabins, mostly owned by white settlers. For example, on concession 1. lot 19, Nelson Boughner had a clearing and a house; on lot 22 John Van Loon had about 15 acres of cleared land, and had built a good log house. The soil of this lot was described as sandy. On lot 29 there was a small chopping cleared by Smith and Rogers, and situated near a sawmill.

The 1844 Inspection Returns of Canada West give a more detailed description of conditions on Tuscarora.[42] Information is given about

vegetation and soils; also the amount of cleared land, if any, on each lot; the value of the land of each lot, and the value of any improvements made.

From these descriptions taken from the Inspection Returns, it is seen that many of the lots were still vacant in 1844, although much settlement had taken place since 1842. The River Range lots appeared to be occupied predominantly by Indians, whilst many of the lots on the remainder of the Reserve were occupied by white settlers, most of whom were squatters who had moved onto the land between 1839 and 1844. Squatters were a problem for many years, and as late as 1874, steps were still being taken to remove them from the Reserve.[47]

The Inspection Returns describe the soils of Tuscarora as mainly clay loams, although some areas, especially the River Range lots, have sandy soils, and swamps frequently occurred. Although the amount of cleared and chopped land had increased since the Survey Report of 1842, most of the Reserve remained under original woodland, consisting of maple, oak, beech, basswood, pine and black ash on swampy land. On the lots which were occupied, some of the land had already been cleared and fenced ready for farming, and some was in the process of being chopped and cleared. The number and types of buildings on each lot were described, and these were mainly shanties and log houses, and occasionally frame houses. However no mention is made of the acreage of any crops grown at this time, nor any record of livestock. The land value, excluding the value of any improvements made, varied from 15s. to £1 an acre, some of the highest values being on the River Range lots.

Inspection Returns of Canada West, 1844.

Concession 1

Lot	Occupier and Date	Improvements	Soils and Vegetation	Land value per Acre	Value of Improvements	Drainage
1	Daniel H. Hazon 1843	none	clay loam ash-swamps maple oak beech basswood black ash	17/6	none	spring creek crosses northern part
2	vacant	none	clay loam some ash-swamps maple oak black ash beech basswood	17/6	none	small spring creek
5	vacant	none	clay loam crossed by high ridge oak maple beech some pine	15/-		no permanent water
10	vacant	none	clay loam oak maple beech pine some black ash swamp	16/3		no permanent water

13 N½	William Callaghan Squatter, 1843	1 shanty 6 acres cleared and fenced	clay oak ma[illegible] beech p[illegible] e flats al[illegible]ng Boston Cr[illegible]ek	18/9	£ 12/10	Boston Creek
S½	vacant	none		17/6	none	
16 W½	vacant purchased 1842	1½ acres chopped 8 acres cleared	clay loam oak maple beech some large pine	18/9	£ 31-5-0	Boston Creek
S½	Daniel Woodley and Nelson Boughner 1839	5 acres cleared now overgrown with underbrush		18/9	£ 20	
19 N½	vacant none		clay loam some ash swamps on N½	8/9		creek
S½	Nelson Boughner Stephen Shank Squatter 1839	good frame house; frame barn; 30 acres cleared and fenced 10 acres chopped and 12 acres cleared and fenced log house shanty barn	oak, maple beech basswood pine	£ 1	£ 210	

Concession 1

Lot	Occupier and Date	Improvements	Soils and Vegetation	Land value per acre	Value of Improvements	Drainage
22 N½	vacant	none	clay loam ash swamp	18/9		
23 S½	Isaac Van Loon Squatter 1842	16 acres cleared and fenced 16 acres chopped	timber-oak maple beech pine bass black ash	£ 1-0	£ 48	small creek
24 N½	vacant		clay loam black ash swamp	18/9		
24 S½	Caleb Kitchen Squatter	frame house 5 acres chopped ¾ acre cleared and fenced	oak maple beech pine black ash	18/9	£ 20	
28 N½	Cornelius Mahoney and Maurice O'Connor Squatters 1842	Shanty 20 acres cleared and fenced	clay loam oak maple beech bass and pine	£ 1-0	£ 40	Mackenzie Creek
S½	Reynolds Rogers Squatter 1841	frame house 13 acres cleared, 12 acres girded trees		£ 1-0	£ 81	

32	N½	Angus Livingstone Squatter 1842	Shanty; 10 acres cleared and fenced	clay loam some sand in parts small ash swamp oak, maple	16/3	£ 22-10
	S½	Wm. Sinclair Squatter 1843	log house 8 acres cleared and fenced 2 acres chopped	pine beech black ash	16/3	£ 22-16
36	N½	vacant	4½ acres cleared and fenced	clay loam oak maple beech basswood pine	17/6	£ 6
	S½	Peter Fober Squatter 1843	3½ acres chopped		17/6	£ 3

Concession 2

Lot	Occupier and Date	Improvements	Soil and Vegetation	Land value per acre	Value of Improvements	Drainage
30 N½	vacant	none	clay loam black ash swamps	£ 1-0	£ 56-5-0	no permanent
S½	Sam Swain 1834	Waggon house 18 acres cleared and fenced	oak maple beech pine black ash	£ 1-0		
34 N½	Jonathan and Christopher Smith Squatters, 1842	Shanty; 12 acres cleared and fenced	clay loam with some sand in parts and some ash swales	17/6	£ 25	no permanent
S½	John Walker leased in 1838	log house, 21 acres cleared and fenced	oak maple beech pine black ash	18/9	£ 47	
36 N½	Will Hamlyn Squatter 1842 Henry Staats Indian	6 acres cleared and fenced 8 acres chopped log house and 28 acres cleared	clay loam land undulating pine oak basswood beech maple	£ 1-0-0	£ 67	about 4 miles from Grand River

S½	Elias Staats 1837	log house and 18½ acres cleared and fenced log house, log barn 34 acres badly cleared Log house and 17 acres cleared and fenced..		£ 1-0-0	£ 147-10
			River Range		
2	Robert Cook-1843	2 acres chopped	clay loam, land undulating	£ 1	£ 2-0-0
3	Robert Cook-1832	Log house and 4 acres chopped	backwater caused by dam across river injured	£ 1	£ 12-0-0
4	Vacant	none	front and land is rough timber-mostly pine of poor quality	£ 1	
8	George May Squatter 2 Indians	½ acre cleared log house and 3 acres cleared and 2 acres chopped	Sandy loam along river and clay towards south; swamp which crosses these lots; backwater	£ 1-1-3	£ 10-0
9	2 Indians	Shanty and 1 acre chopped 1¼ acres cleared	caused by dam across Grand River Pine of inferior quality	£ 1-1-3	£ 4-16
10	J. Patterson-Squatter 1842	6 acres cleared small log house 1 acre cleared		£ 1-2-6	£ 16-10

From these Returns it is possible to estimate approximately the total amount of cleared land on each Concession; thus, Concession 1 had a total of 477.25 acres of land cleared and fenced, 64.5 acres chopped, 15 log cabins and 3 frame houses; Concession 2 had 145 acres chopped, 257.75 acres cleared and fenced, 17 log houses and 2 frame houses.

The following letter from the Gore District Municipal Council to Lord Elgin, Governor General in 1843, shows some of the difficulties of the settlement of the Reserve in the first few years;

> Proceedings are now in force to remove settlers from Lands over 50,000 acres in extent located in the township of Tuscarora and Oneida; of these a block of 25,000 acres in Tuscarora where most of the Indians are, and the least number of whites located, should be reserved for the exclusive residence of the Indians, and when it is known that 5,000 acres is the extent of their partial improvements, it is believed it will be seen the quantity proposed to be reserved will be ample for all purposes of agriculture for the Indian Tribes, who number about 2,500 people, and would be able to set off 50 acres each to each family to live.

Compare this with the situation in 1828, when the population was under 2,000 and the cultivated land amounted to 6,872 acres; and the 1843 census, which gave a population of 2,233 and 6,908 acres of cultivated land. Thus it is seen that the population was increasing whilst the area of cultivated land was decreasing.

The above letter continues:

> They (the Indians) should in the meantime be allowed to retain their present locations, not covered by the 25,000 acres until they sold it or exchanged it with the white settlers residing in that block; and the latter should be allowed to hold under lease at a rental until such an arrangement was affected. The remainder of the land should be sold giving the parties who have been removed pre-emption to rights to re-purchase their improvements by which means they would be able to proceed to raise bread for themselves and the thousands of their famishing brethren at home. The Indian funds would be

> augmented by the sale of lands which are of no manner of use to them and reimbursed in the sum of 10,000 or 12,000 paid out for the larger number of improved farms which are scattered over the tract waste and useless.[48]

The Six Nations Indians continued to move from other parts of the Grand River Valley and congregate on the Tuscarora Reserve, so that a map of 1859 shows nearly all the lots occupied by Indians.[44] various annual reports made by the Indian Agency during the late nineteenth century, state that, although more land was being cleared, there was still the danger of crop failure, as there had been during the early part of the nineteenth century:

> Failure of crops caused considerable distress with the consequent want for seed for spring sowing. Since the last report, more parcels of land have been cleared and fenced, with here and there, perceptible improvements, e.g. two good houses of bricks, the first of the kind on the Reserve.[45]

So even after moving into one township, the Indians continued to have difficulty in establishing a prosperous farming economy.

"It does not make a farmer out of an Indian to give him a quarter section of land. There are hundreds of thousands of white men, rich with the experience of Anglo-Saxon civilisation who cannot be transformed into cultivators by such a gift."[46]

Summary of Chapter 1

The main problems facing the Six Nations when they moved onto the Grand River Valley Reserve in 1784 from their homeland in New York State, were those concerned with land. One of the first difficulties to arise was the question of the limits of the Reserve; no precise boundaries had been established when the Reserve was first set up, due to the haste in which matters were arranged, and the lack of competant surveyors at that date. As white settlers were beginning to encroach on Indian lands, a proper survey was needed, but although this was carried out in 1791, it still left the Indians dissatisfied as it excluded the northern parts of the Grand River from the Reserve.

A greater problem was that concerning land alienation, and this was largely due to the attitude of the Six Nations towards their lands, which conflicted with the attitude of the European settlers. To the Six Nations their tract of land in the Grand River valley was; "An undistinguished and undivided property of the various tribes of the Six Nations at large, and possessed according to their ancient customs, the inconvenience of which was never felt until the selling and buying of land was introduced by Europeans."[46]

The Six Nations had their own traditions of holding lands in common, and only clearing small areas for cultivation as they needed them. Extensive areas were needed for hunting and before the American War of Independence, the Six Nations had at their disposal an area extending from the St. Lawrence and the Great Lakes to the Susquehanna and Ohio. The consequences of losing this land and moving onto a small

Reserve were serious, as the Six Nations were only partly an agricultural people, and extensive areas of hunting ground were a necessary part of their economy. They were only given enough land on the Reserve for agriculture, and although they were allowed to hunt over the land outside the Reserve, this did not meet their needs, as white settlement was rapidly taking place and game was becoming extinct. So the Indians gradually had to abandon hunting, but had great difficulty in adjusting to a European type of agricultural economy; as is seen by their lack of progress. The Six Nations did not regard land primarily as a base for agriculture as did the Europeans, and this partly explains why they wanted to sell off their land as a means of capital. A paradox is noted in this situation, which is due to the attitude of the Indians towards land; on the one hand they complained that they had not been given enough land on the Reserve, yet, on the other hand, they wanted to dispose of their land as a means of capital, explaining that their population was too small to farm all the area.

The main reason why the Indians failed to make progress in agriculture, even when living in a group in the township of Tuscarora, was because they had a different agricultural tradition to the whites and relied greatly on the resources of their hunting grounds. When they lost these extensive lands and were placed on a small Reserve, they were not equipped to make the land productive.

16. A Census of the Six Nations on the Grand River, 1785, P.A.C., Haldimand Papers, B 103, 457, vide, Johnston, op. cit., p. 52.

17. P. Campbell, Travels in North America, 1792, ed. Langton and Ganong, pp. 162-80, vide, Johnston, op. cit., p. 64-65.

18. Haldimand's Proclamation of October 25th, 1784, P.A.C., Haldimand Papers, B 222 - 1061, vide, Johnston, op. cit., pp. 50-51.

19. P.A.C. Crown Papers, Surveyor's Letters. 1766-1800, vide, Johnston, op. cit., p. 56.

20. Lord Bathurst to the Chiefs of the Six Nations, P.A.C., Claus Papers, XII, 131-6, vide, Johnston, op. cit., p. 68.

21. An Indian Census. 1810-11, P.A.C., Claus Papers, X29-30, vide, Johnston, op. cit., p. 281.

22. Indian Affairs; Records and Correspondence of the Deputy Superintendent General, XXVI (1806). P.A.C., vide, Johnston, op. cit., p. 275.

23. Johnston. op.cit., p. XIiii

24. Johnston, op.cit., p. XIiv

25. P.R.O., CO; 42. V321. pp. 49-53, vide, Johnston, op. cit., p. 81.

26. The Formal Transfer of the Grand River Tracts, P.A.C. Upper Canada State Papers, VII. 9a-9c. vide, Johnston, op. cit., p. 97.

27. Johnston, op. cit., p. 1 XViii.

28. Great Britain, Treaties and Surrenders from 1686-1896, pp. 119-120.

29. Proceedings of a Six Nations Council at Onondaga, Nov. 9th, 1806, P.A.C., Indian Affairs, Records and Correspondence of the Deputy Superintendent General, XXVI. (1806), vide, Johnston, op. cit., p. 275.

30. Norton to an Unknown Correspondent, P.A.C., Indian Affairs and Civil Control II, 1808, vide, Johnston, op. cit., p. 276.

31. Memorial of the Six Nations, Presented by John Norton, 1804. P.R.O., C.O., 42. V. 336, pp. 175-8. vide, Johnston, op. cit., p. 272.

32. Norton to an Unknown Correspondent. P.A.C., Indian Affairs, Civil Control IV, 1808. vide, Johnston, op. cit., pp. 277-278.

33. Norton to Edward MacMahon, P.A.C., Indian Affairs, Civil Control, IV, (1815) p. 71. vide, Johnston, op. cit., p. 282.

34. Petition of Six Nations for Assistance, 1815. P.A.C., Indian Affairs, Civil Control, IV, (1815) 71-81 vide, Johnston, op. cit., p. 283.

35. Hall, Travels in Canada and the United States, 1816-1817, pp. 219-26, vide, Johnston, op. cit., pp. 285-87.

36. Howison, Sketches of Upper Canada, pp. 161-4; vide, Johnston, op. cit., p. 290.

37. Major General Darling, Report on the Six Nations, Great Britain, Colonial Office, Parliamentary Paper, 1834, no. 617, Aboriginal Tribes, 28-30. vide, Johnston, op. cit., p. 291.

38. P.R.O., C.O., 42 V515. Report on the Affairs of the Indians in Canada, 1844, part ii, 142-56. vide, Johnston, op. cit., p. 307.

39. Johnston, op. cit., p. 307.

40. Report on Indian Land Tenure. 1844, P.R.O., C.O., 42, V515. Report on the Affairs of the Indians in Canada, part i, 1844. pp. 355- vide, Johnston, op. cit., p. 303.

41. W. Walker, Surveyor, Field Notes of the Survey of Tuscarora, 1842, Department of Lands and Forest, Toronto.

42. P.A.C., Inspection Returns of Canada West, 1844, vol. 729.

43. P.A.O., Grand River Settlement.

44. P.A.O., Map of Tuscarora, 1859.

45. Annual Reports of the Department of Indian Affairs, 1879. (Ottawa). Six Nations Indian Agency Archives, Brantford.

46. E. Wilson, Apologies to the Iroquois, (New York, 1959), p. 276.

47. Memorial of the Six Nations, presented by John Norton, 1804, P.R.O., C.O., 42, V. 336, pp. 175-8. vide, Johnston, op. cit., p. 272.

Chapter 2

PHYSICAL FEATURES

In a study of the agriculture of an area it is necessary to consider such aspects of physical geography as the nature of the bedrock and surface deposits, the relief, drainage, climate, and soil types, as these factors influence agricultural land use. The townships of Tuscarora and Oneida are situated adjacent to each other in the lower Grand River Valley with the river forming the N.E. boundary of both townships, and as they have a somewhat similar physical geography they afford a good basis for an interesting comparison in agricultural development.

The present day surface features of Tuscarora and Oneida are due mainly to the influence of the bedrock and the effects of the last glaciation, the Wisconsin.

Both Tuscarora and Oneida are underlain by Palaeozoic bedrocks which cover Southern Ontario and these rest upon ancient precambrian shield rocks similar to those of the northern shield area. The Palaeozoic bedrocks of Southern Ontario consist of stratified sandstones and limestones, shales and dolomites, which overlap each other and so appear in concentric belts. These stratified rocks dip slightly southward under Lake Erie at an angle of 30 feet per mile. In the Great Lakes region they have been faintly warped to form a number of domes and basins. The present day landscape of Southern Ontario depends greatly on the structure of the bedrock. Before glaciation, these Palaeozoic

rocks were subject to stream erosion for about 250,000,000 years and this resulted in the development of a scarp and vale topography. The dolomitic limestone was more resistent to erosion and was therefore left forming scarps such as the Niagara Escarpment extending from Niagara to Georgian Bay, and the Onondaga Escarpment which extends from Fort Erie to Hagersville, with the intervening lands forming valleys which gently slope to the southwest.

The Onondaga Escarpment is lower than the Niagara Escarpment, and beyond Hagersville it is buried beneath glacial drift, and east of this town several sections of the escarpment lie buried under the clays of Haldimand and Welland counties. The Onondaga Escarpment confines a lowland area, worn into the Salina formation during preglacial times. This salina formation, consisting of interbedded limestones, shales and sandstones, underlies part of Oneida and Tuscarora.

Although the Onondaga Escarpment is an inconspicuous feature of the landscape, it has a great effect upon the agriculture because of the nearness of the limestone bedrock to the surface. It also largely determines the drainage pattern of the region, as it forms the divide between the streams flowing north to the Grand River, and those flowing south directly into Lake Erie. The Onondaga Escarpment crosses the southern part of the township of Oneida, but does not extend into Tuscarora.

The present day surface features of Tuscarora and Oneida are largely due to the effects of erosion and deposition during the last glaciation, the Wisconsin. The most active erosion occurred along the

brows of the Niagara and Onondaga Escarpments, and along the lowland routes taken by the principal streams of ice. Extensive deposition of the eroded material took place, the depth of drift in Southern Ontario averaging 75 to 100 feet; however there are great local variations in this.

A till plain was deposited in the Niagara Peninsula, and in places some of this material was formed into drumlins which are today a conspicuous feature of the landscape on Oneida and Tuscarora. The drumlins usually occur in groups, and have an effect on the agriculture because of the contrast between the drier soils found on the hillsides and the marshy ground usually found between the drumlins. On the Onondaga Escarpment much of the till was swept away by the re-advancing ice-sheet, and today the thin soils are not generally suitable for intensive agricultural use.

During the retreat of the Wisconsin, glacial lakes were formed in lowland areas, for example Lake Warren which covered the area of Tuscarora and Oneida. Thick lacustrine sediments were deposited in this lake, covering the glacial till, and today this forms the extensive Haldimand Clay Plain which lies between the Niagara Escarpment and Lake Erie, with a total area of 1,350 square miles. The till towards the northern part of the Haldimand Clay Plain was not submerged, and in this area low morainic ridges occur, a confused intermixture of stratified clay and till. This results in greater relief in the northern part than in the southern part, where the typical level lake plain occurs. In the northern part of Lake Warren, the clay partly covered some of

the drumlins. The resulting landscape is one of a clay plain with partially submerged drumlins protruding, as near Caledonia, and in parts of Tuscarora.

The Norfolk Sand Plain partly extends into the northern part of Tuscarora township. This is a wedged-shaped plain which has its base along Lake Erie and tapers north to a point at Brantford. The sand and silts of this region were deposited as a delta in glacial lakes Warren and Whittlesey. A great discharge of meltwater from the Grand River area entered these lakes between the ice-front and the moraines to the northwest, so a delta was built from west to east as the glacier withdrew.

Parts of three physiographic regions, according to Chapman and Putman's classification, are found in Tuscarora and Oneida. Most of the area of the two townships is covered by the Haldimand Clay plain, but in the north drumlins occur, some of these being partially submerged beneath the clay. The Norfolk Sand Plain, extending up to Brantford, crosses the northwest corner of Tuscarora.

Climate

Climate is a significant factor in determining the land use of a region, as well as such considerations as topography and soil type. As they are both situated in the Niagara Peninsula of Southern Ontario, the townships of Tuscarora and Oneida have a climate which is modified by the proximity of the Great Lakes. Throughout the Niagara Peninsula as a whole, the average annual temperature is 47°F. but this varies from 67°F. in summer to 27°F. in winter. The average frost free period

at Brantford is 166 days. The precipitation varies according to the topography, between 27 ins. and 35 ins. annually. The rainfall is well distributed throughout the year, and there is usually sufficient each month for crop requirements. Local variations in climate in Tuscarora and Oneida are very slight because the relief features are fairly uniform throughout the two townships.

According to Chapman and Putman, Tuscarora and Oneida have a climate known as Lake Erie Counties Type. This are, situated at latitude 42 N., lies in the path of the westerly winds and cyclonic storms.

Lake Erie Counties Type Climate

Mean Annual Temperature	46°F.
Mean winter temperature	23°F.
Mean summer temperature	67°F.
Mean spring temperature	43°F.
Mean fall temperature	49°F.
Extreme low temperature	-34°F.
Extreme high temperature	106°F.
Daily range temperature	18°F.
Average last spring forst	May 10th
Average first fall frost	October 10th
Average length of frost free period	153 days
Length of growing season	203 days
Annual average precipitation	338 inches
Annual average snowfall	61 inches
Annual summer precipitation	8.8 inches
P.D. Index (summer)	12.5 inches

Soils

The present day soils represent the development that has taken place on the parent materials under certain climate and vegetation changes over thousands of years. The vegetation of Tuscarora and Oneida before settlement took place has already been described (Chap. I from surveyer's notes and land Returns of 1844). At this time the region was covered in a dense forest of hardwoods and this had a considerable effect on the climate of the soil. Dense forest slows down the wind velocity and the rain strikes the ground with much less force than on barren soil. Under such conditions the maximum amount of water soaks into the soil and percolates downward.

The importance of glacial deposition in the surface features of the area has already been discussed, and the soils of Tuscarora and Oneida have been formed on these parent materials of till and glacio-lacustrine sands and clays. The area is included in the Grey-Brown Podzolic zone of North America. All the soils have been developed under a gleying process, that is one of alternate oxidation and reduction. This is usually evident from the presence of mottling in the soil profile. It is very pronounced in sandy soils, but decreases in intensity in fine soils, and in poorly drained soils of the Haldimand plain it can only be detected in the dry season. All soils are leached to a varying depth, as determined by the location of free carbonates in the soil profile. (I)

The soils in Tuscarora have been developed on the Haldimand Clay

Plain, the Norfolk Sand Plain, and drumlin material; and those of Oneida have been developed on the Haldimand Clay Plain and drumlins. Many of the soils are fine textured, either clays or clay loams, and such materials as this have a poorly developed structure and warm up very slowly in the spring. Evaporation of large quantities of water from the soil surface further delays the warming up of the soils.

The Soil Survey Report lists seven soil types each for the townships of Tuscarora and Oneida. Tuscarora soils are 1. Haldimand Clay. 2. Brantford Clay Loam. 3. Tuscola Loam. 4. Caistor Clay Loam. 5. Berrien Sandy Loam. 6. Oneida Clay Loam. 7. Bottomland. Oneida soils are 1. Haldimand Clay. 2. Oneida Clay Loam. 3. Ontario Loam. 4. Caistor Clay Loam. 5. Farmington Loam. 6. Farmington Clay Loam. 7. Bottomland.

In Tuscarora, Haldimand Clay covers the largest single soil area and is found mainly in the centre of the township. Oneida clay loam covers a large area in the southeast of Tuscarora and this extends over into Oneida where it is the largest single soil type. In the northwest of Tuscarora is an extensive area of Brantford Clay Loam and in the southwest is an area of Berrien Sandy Loam. Smaller patches of Caistor Clay Loam are found, and Bottomland occurs along the many small creeks, and along the Grand River.

Haldimand Series.

The most widespread soils in Tuscarora and Oneida are the Haldimand series. These are clay textured soils which have developed on the glacio-lacustrine material of the Haldimand Clay Plain. The texture and composition are remarkably uniform and in general these

soils are heavy in texture, poorly drained and contain few stones.

The topography of the Haldimand series is rolling to smooth, but this is not of sufficient extent to alter normal soil development, nor its agricultural use. On the whole the surface drainage is fairly good, especially near creeks, but internal drainage is poor due to the impermeable nature of the clay, and this is a major problem in agricultural use. In early spring and after heavy rains, water accumulates at the surface and disappears very slowly.

The Haldimand soils that have not been affected by recent alluvium or lacustrine sediments have a clay loam surface. The surface soil in cultivated areas is dark grey to light brown, and is fairly friable. This horizon is rarely more than 2 ins. thick. Haldimand soils are classified as Grey-Brown Podzolic but the surface horizon is thinner than is usualy for this group of soils. Reaction is mostly acid with P.H. ranging from 5.8 to 6.2. The subsoil is friable and strongly mottled, and is bleached to a depth of 8 ins. In late summer when the soil dries out this horizon becomes almost white in roadside exposures. The B horizon is about 10 ins. thick and a brownish colour that contrasts strongly with the light grey horizon above and the olive grey colour of the parent material below. The calcareous parent material lies at a depth of 18 ins.

The main fertility needs of Haldimand Clay are organic matter and phosphates. Within the Haldimand series three different soil types are found, I. Haldimand Clay Loam. 2. Silty Clay Loam, and 3. Silt Loam. The Silty Clay Loams and Silt Loams occur in areas which have a

thin alluvium overburden on the clay till. This overburden is rarely more than 12 ins. deep, and is usually about 6 ins.

The Haldimand series are potentially fertile and the present land use is mainly general and dairy farming, with hay and grain the main crops grown, a main disadvantage of this soil type is the lack of adequate drainage, and in Tuscarora, this is added to by the effects of Indian agriculture. The Indians have not had the inclination or the capital to drain the land, or to put enough effort into cultivating these heavy soils.

Oneida Series

The Oneida series, consisting of Oneida Clay Loam and Oneida Loam, covers most of Oneida township and extensive areas of Tuscarora. The parent material is a clay-textured till with a variegated colour of red, yellow and olive clays, and containing stones and pebbles of shale and sandstone.

The topography of the Oneida series is rolling to hilly and natural drainage is good, except in the basins. These soils possess a normal Grey-Brown Podzolic development. The surface horizon is grey to light brown and has a loam texture with a coarse granular or fine angular blocky structure. The leached horizon extends to a depth of 12 to 15 ins. The B horizon is reddish brown, has a depth of 12 ins. and has a well formed blocky structure. Stones and large boulders are frequently found in the Oneida series.

The main fertility needs of these soils are lime, phosphates and organic matter, but on the whole they can be regarded as very good

agricultural soils. On sloping ground there is the hazard of erosion and this limits the agricultural use in some areas. The present land use of the Oneida series is general and dairy farming, with cereals, alfalfa, and pasture as the main crops.

Brantford Clay Loam

This soil type occurs in Tuscarora township, towards the north, and it is similar in type to Haldimand Clay, and it is also developed on glacio-lacustrine material and is stone free. A grey to light brown clay and clay loam surface horizon overlies a B horizon of yellow and grey stratified silt and clay. The land is rolling to smooth with steeper slopes occuring along the stream courses. Surface drainage in the Brantford Clay Loam is fair to good and the soil is moderately acid. The main soil deficiences are organic matter, lime and phosphate, and the present land use is similar to that found on Haldimand clay soils.

Farmington Series

Towards the south of Oneida occur the Farmington soil series, developed on limestone bedrock of the Onondaga Escarpment. Farmington loam occurs where the limestone bedrock is about 1 ft. below the surface. Here the topography is smooth to undulating and drainage is variable, depending on the depth but usually well drained. The surface soil is a light brown, shallow loam, and stone are frequently found. It is a neutral or alkaline soil, (P.H. 5.5 - 7.) The main deficiency is in organic matter, but because of the shallowness of the soil (12 ins.) it is poorly suited to cultivated crops and the main land use is pasture and woodland.

Farmington Clay occurs where the soil is 3-4 ft. deep. This is a greyish-brown clay loam over a compact grey clay. The topography is smooth to undulating, and natural drainge is fair to poor. These are heavy-textures, acid soils, and are low in phosphate and organic matter content. Farmington Clay have great inherent potential fertility, and the present land use is for general and dairy farming, the main crops being cereals, alfalfa and pasture.

Caistor Clay Loam

This soil is an association of imperfectly drained soils in wet swampy areas. It occurs in small patches in both Tuscarora and Oneida and forms a smooth to undulating landscape and low swales and pond holes occur where the natural drainage is very poor. There are few stones in Caistor Clay Loam, but silty knolls occur. The surface horizon is a dark greyish or light brown clay (P.H. 5 - 6), and the B horizon is a grey or drab gritty clay. The main soil deficiences are organic matter, lime and phosphate. Poor drainage and the occurrence of marshy areas are the chief drawbacks to agriculture, but in general land use is similar to that on the Haldimand Clay.

Ontario Loam

Patches of this soil occur scattered throughout Oneida, where they are associated with drumlin formations. The topography is therefore rolling to hilly and natural drainage is good. The surface horizon is a light brown friable loam, over a grey to reddish brown stony loam. Boulders and stones occur frequently due to the till origin of the parent

material. The soil is moderately acid and mainly lacks organic matter, lime and phosphate. Erosion can be a hazard on the sides of drumlins. But this soil type constitutes good agricultural land, and farming activities are similar to those on the Haldimand and Oneida Series.

Berrien Sandy Loam

An extensive area of this soil type, a sandy loam which has been developed on the Norfolk Sand Plain, occurs in the south of Tuscarora. It forms smooth to undulating topography, but drainage is imperfect to poor. The surface horizon is a brown sandy loam over a yellow sandy loam; the B horizon is mottled sand; and clay occurs at between three to six feet. This soil lacks organic matter, lime, phosphate and potash, and on the whole is stone free. Berrien Sandy Loam forms fair to poor cropland, but supports general farming, and also crops which are grown for canning, with woodlots on more poorly drained areas.

Bottomland

This is a low-lying area of azonal soils, found along the stream courses. Moisture is excessive and seasonal flooding occurs, so the Bottomland, poorly suited to cultivated crops, is mainly used for pasture and woodlots. The soils are of varying texture and neutral to alkaline in reaction.

So it is seen that Tuscarora and Oneida possess a variety of soil types, some of which are potentially more fertile than others. From the soil map, the percentage of each soil type in each township

was computed and it was found that Tuscarora contains 53.69% Haldimand Clay, 11.58% Berrien Sandy Loam, 10.53% Brantford Clay Loam; 9.47% Oneida Clay Loam and 2.1% Caistor Clay Loam. In Oneida, 64.18% of the area is Oneida Clay Loam, 16.43% is Haldimand Clay; 10.45% Farmington Series; 1.6% Ontario Loam, and 0.67% Caistor Clay Loam. Thus Tuscarora contains a large area of wet, heavy soil, including Haldimand Clay, Brantford Clay Loam, Caistor Clay Loam, and Berrien Sandy Loam, which together make up 75.79% of the area than Oneida where the proportion of heavy poorly drained soils is only 27.5%, including Haldimand Clay, Caistor Clay Loam and the Farmington Series. Oneida Clay Loam, a soil which is better drained and less difficult to work than Haldimand Clay, comprises 64.18% of Oneida township. In contrast, Tuscarora only contains 9.47% of Oneida Clay Loam, but 53.69% of Haldimand Clay.

The large area of wet heavy soils in Tuscarora, in addition to the technically less advanced agriculture of the Indians may help to explain the present day low level of agriculture on the Reserve. The Indians may have found the heavy clay soils difficult to cultivate by their methods, and yet not had the capital to have soil drainage installed.

The following table shows the soil rating for principal crops, for the two main soil types of Oneida and Tuscarora, Haldimand Clay and Oneida Clay Loam.[1] There are six rating categories: good, good-fair, fair, fair-poor, poor, very poor.

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[1]As soil rating for Haldimand and Brant counties were not available, the above rating for Lincoln County was used. It was thought to be reasonably accurate for the purpose here: i.e. as a comparative rating for the two principal soil types in Oneida and Tuscarora townships.

	Winter Wheat	Oats	Corn	Cult. Hay	Pasture
Haldimand Clay	F	F	F-P	G-F	G-F
Oneida Clay Loam	G	G	G	G	G

From this it is seen that the Oneida Clay Loam soils are more suitable for growing these crops than Haldimand Clay; it follows that the Indians were at a disadvantage in attempts to make the land productive in Tuscarora compared with Oneida, because of the higher proportion of heavy, poorly drained soils.

TUSCARORA SOILS

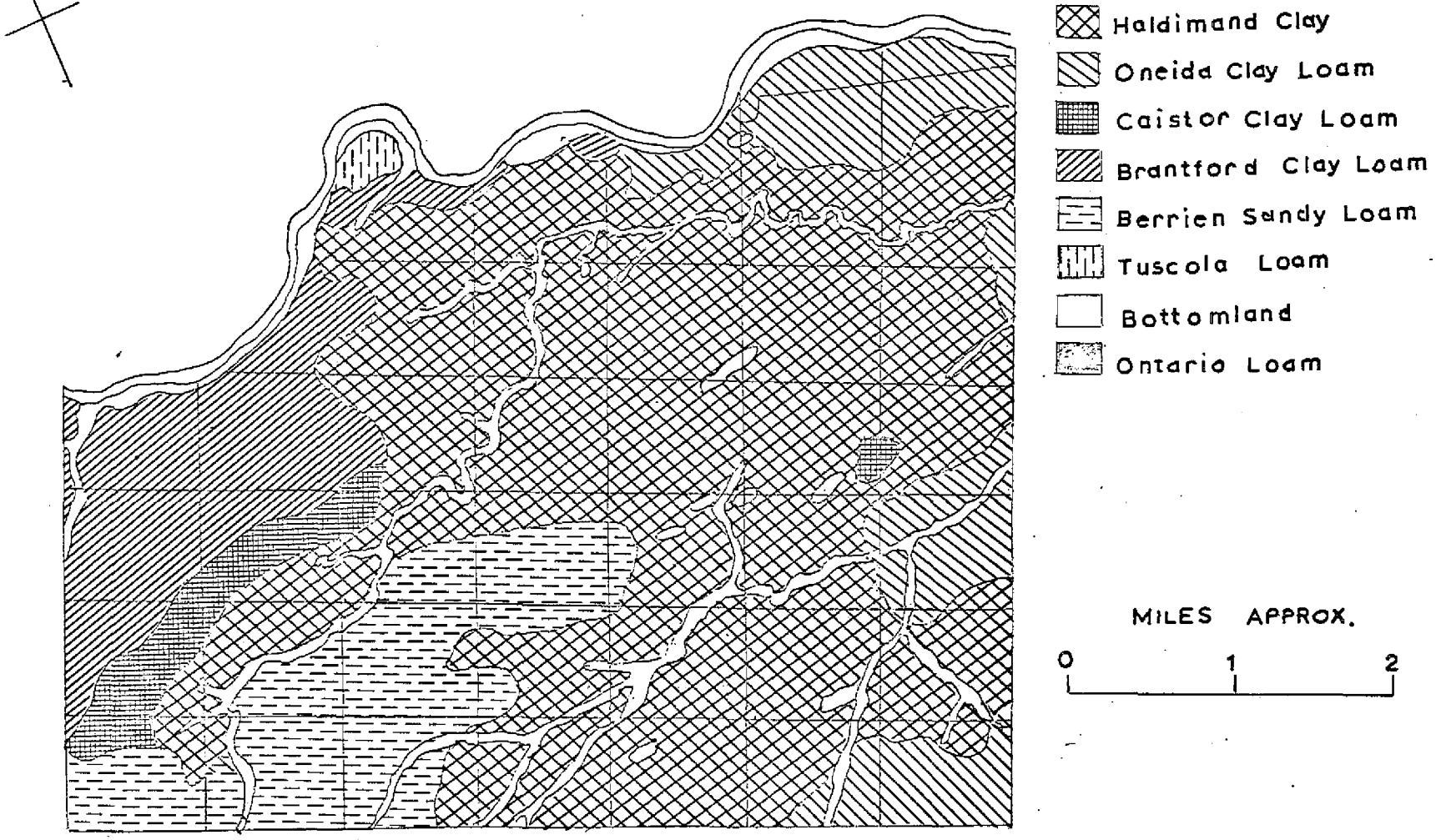


Figure 5

ONEIDA SOILS

MILES
1 0 1 2

- Oneida Clay Loam
- Haldimand Clay
- Caistor Clay Loam
- Farmington Clay Loam
- Farmington Loam
- Ontario Loam
- Bottomland

Summary of Chapter Two

The physical features of Tuscarora and Oneida were considered as these are basic to a study of the land-use and agriculture. It was necessary to discover whether the contrasts in agricultural progress, which have been noted over the last hundred years in the two townships, are due to some variation in the physical conditions of the land.

The surface features of the whole of southern Ontario are the result primarily of the effects of the last glaciation; and these are found to be similar in both townships. But local variations occur due to the type of deposit; and the different thickness of glacial drift; for example, very thin soils occur on the summit of the Onondaga escarpment, and this is a disadvantage for arable farming in the southern part of the township of Oneida. Although there are no very prominent relief features in the area to cause marked differences in the agricultural economy, where drumlins occur a variation is found between the drier soils on the slopes, and the wetter areas between the drumlins. The slopes of the drumlins many also be difficult to plough and soil erosion is a slight hazard.

The climate, of the Lake Erie Counties Type, is similar in both Tuscarora and Oneida, and there is little local variation, because of lack of relief.

Originally the area was covered in a dense woodland vegetation, consisting of a variety of species, including oak, ash, maple, beech and basswood. Over the last 150 years most of this has been cleared, but in Tuscarora woodland and scrub still cover an extensive area.

Various historical accounts (see chapter 1) described the soils of the Grand River Valley as very fertile. The soils of the area belong to the Grey-Brown Podzolic Type, and mainly consist of clays or clay loams, but there are slight local variations, which could partly account for the contrasts in agricultural prosperity. Tuscarora contains a larger area of Haldimand Clay (53.6%) than Oneida (16.43%), and the proportion of poorly drained and heavier textured soils amounts to about 75.79% of the total area of the Reserve; thus the Indians may have had difficulty in cultivating this land. However, these differences are not sufficient to explain the striking contrasts in agricultural land-use and production in the two townships, and human factors must therefore have a great influence. It is probable also that the soils in Tuscarora are today less fertile than those in surrounding townships, as the Indians have never had the capital to apply sufficient fertiliser and in many parts of the Reserve the soils have been cropped continuously, so that they lack,particularly,lime. But on the other hand, the large areas which have been abandoned, and are no longer being farmed may over the years have regained some of the lost soil fertility. Also, according to several Indian farmers interviewed, the wetness of the soil in Tuscarora can easily be corrected by providing drainage ditches and tile drains.

Chapter 3

CHANGES IN LAND USE AND AGRICULTURE 1851 - 1951

In 1851, the first agricultural census of Canada was taken, and from a study of these at ten yearly intervals, from 1851 to 1951, the changes in agriculture and land use on the Six Nations Indian Reserve may be traced. To give these changes in Indian agriculture more significance, a comparison was made with agriculture outside the Reserve, and for this purpose the township of Oneida was chosen. Oneida lies below Tuscarora, adjacent to it on the Grand River. It was once part of the Six Nations Reserve, but had been sold off to white settlers by the 1830's, and was surveyed into lots at the same time as Tuscarora, in 1842.

From the census figures, a series of graphs were drawn to show the changes which have occurred in the various aspects of agriculture in Tuscarora and Oneida, and many contrasts between the two townships were revealed. Gaps exist in the graphs because some of the census are incomplete, in particular that for 1901.

In addition, some of the Annual Reports of the Department of Indian Affairs state the conditions of agriculture on the Six Nations Reserve, in particular, whether any improvements had taken place during the previous year, the amount of land under cultivation, and the quality of the harvest of the previous year. The Reports for the 1890's also state that at that time, as today, there was always the difficulty of obtaining the required information from the Indians.

a) Changes in the Number of Farms and Rural Population. 1851-1951.

Figs. 4i, 4ii show the changes in the number of farms operators and rural population between 1851 and 1951. In 1843 (see chapter 1), the population of Tuscarora was 2,233, but during the following ten years it had declined to 1,821, but suggesting a high death rate or that many of the Indians had decided not to remain under Reserve conditions, and had moved elsewhere. But after 1851, according to the census figures, the population began to increase to a peak in 1891. But it is seen from the table that the Reports of the Indian Agent, in the years for which these are available, record a higher population than the census data, as they enumerate the actual resident population. After the turn of the century the rural population began to decline, although between 1931 and 1951, the numbers remained fairly static. The number of farm operators or the number of farm holdings also rose from 1851 to a peak of 691 in 1891, but since the turn of the century, there has been a continual decline in the number of farms on the Reserve, with this trend appearing particularly marked from 1891-1911 and 1931 to 1941, and 1951 to 1961, suggesting that at these times the Indians were moving away from farming into other occupations. This trend away from farming may be a long-standing feature of the Reserve. The problem of Indians finding employment outside the Reserve was causing great concern in the 1890's. The Indian Agent reported that a number of Indians did not cultivate their land, but found work off the Reserve during the harvest, and berry and hop picking season, when some hundreds of them were employed by white farmers.[1] The result was, that it was often

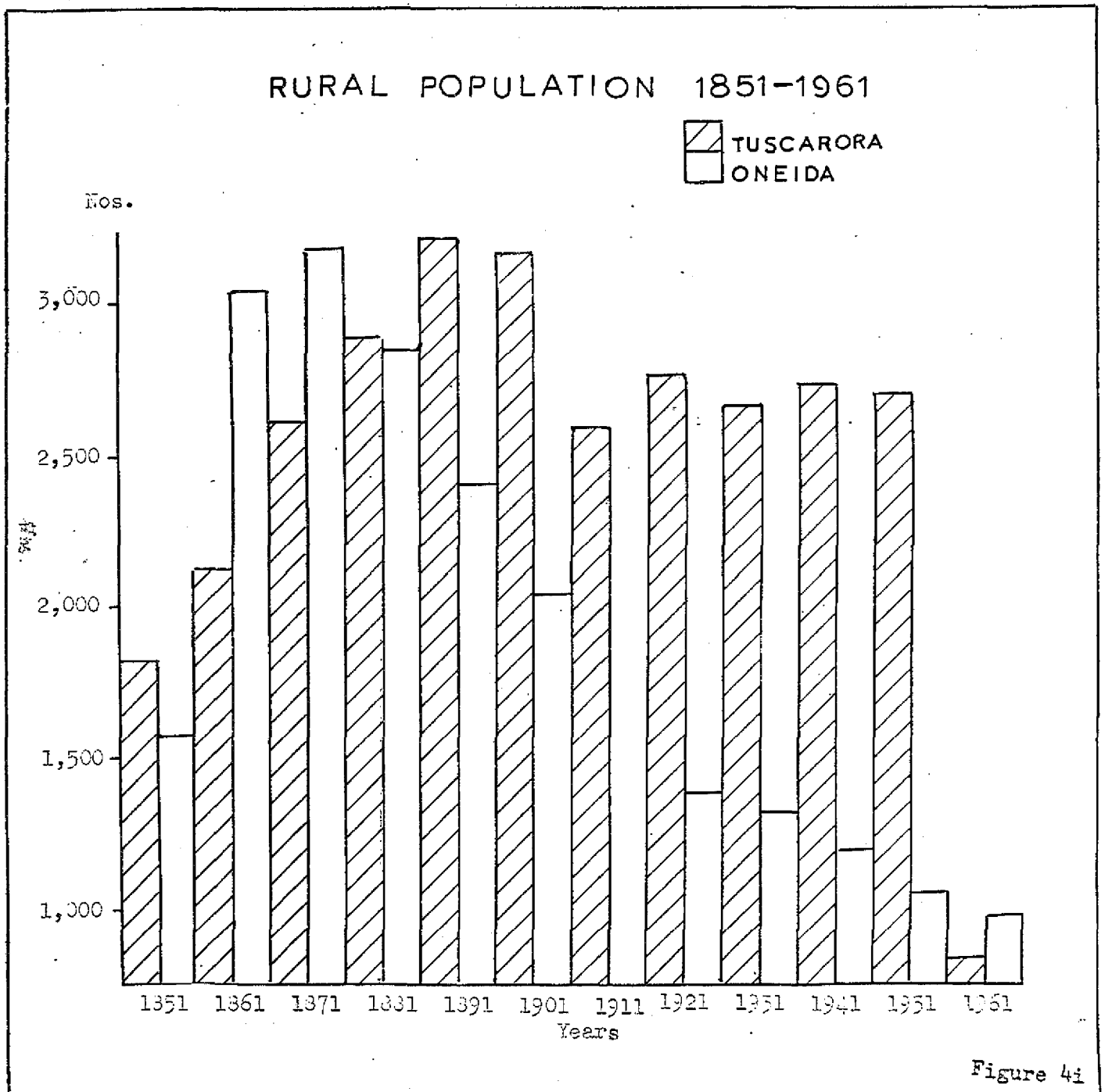

RURAL POPULATION 1851-1961
TUSCARORA
ONEIDA
Nos.
3,000
2,500
2,000
1,500
1,000
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
Years

Figure 4i

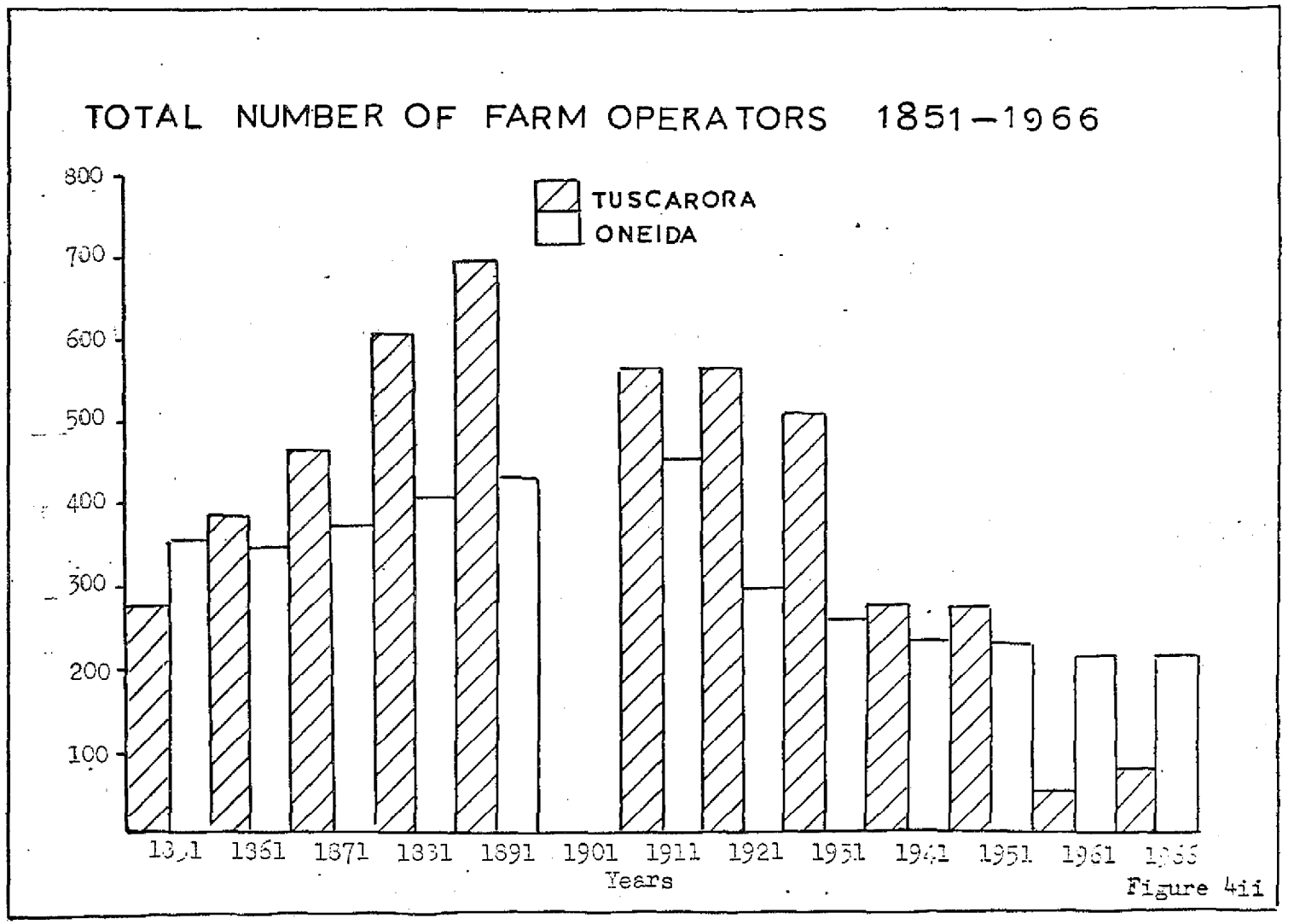

TOTAL NUMBER OF FARM OPERATORS 1851–1966
TUSCARORA
ONEIDA
800
700
600
500
400
300
200
100
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
Years

Figure 4ii

difficult for Indian farmers on the Reserve to get help during harvest time. In 1894, the Chiefs of council, anxious to encourage the Indians to cultivate their own farms, frequently refused assistance to those who neglected their own agriculture and sought employment off the Reserve. The number of non-farm jobs available to the Indians were also increasing, and in 1900, it was stated that many of the young people of the Six Nations were not wanting to farm and were finding employment in factories in Brantford and other towns. Since that time the employment opportunities for the Indians outside the Reserve gradually increased, this being the case especially during the last 25 years. The trend has continued to the present day, as is reflected by the enormous decline in the number of farms now on the Reserve.

Comparing this with the situation in Oneida, it is seen that in 1851, this township contained a greater number of farms than Tuscarora, but the number expanded more slowly, and the peak was not reached until 1911. Although there has been a continual decline in the number of farms in Oneida since that date, this has been less dramatic than in the case of Tuscarora. In Oneida, the period of greatest reduction of farm numbers occurred between 1911 and 1931, which could have been due to a period of less prosperous farming such as the depression. The peak years for rural population in Oneida were the 1860's to 1880's, but since that time there has been a steady rural depopulation. It is seen that between about 1861 and 1951, Tuscarora contained more farm holdings than Oneida; and the rural population was also greater in the former township between about 1890 and 1951. This suggests that,

although many of the Indians were employed off the Reserve, during this time the cultivation of the land was the main occupation of the people on the Reserve, whereas in Oneida since the turn of the century, farming was becoming a relatively less important occupation.

b) Changes in Agricultural land-use, 1851 to 1951.

Fig. 4 iii shows the changes in the total number of acres held in farm land from 1851 to 1951, in Tuscarora and Oneida. Up until the 1890's, the amount of farmland continued to increase, and the reports from the Indian Agent state that more land was being broken up for cultivation each year. It is seen from the graph that in 1891 more land was held as farmland on the Reserve than at any other time, and this corresponds to the maximum number of farm operators and rural population in Tuscarora. But the area of farmland has been gradually decreasing since 1891, and much land has reverted to scrubland as people gave up farming and found employment elsewhere.

In Oneida there was a steady increase in the total amount of farmland from 1851 to a peak in 1911, corresponding with the peak year of farm operators. There was a big decline in the number of acres held in farmland between 1911 and 1921, but since that date the amounts have not changed a great deal, and there is on the whole, less farmland in the township today, than at the end of the nineteenth century. However, as the number of holdings has continued to decrease, this suggests that the farm size is increasing. It is seen that the amount of land held as farmland is greater in Oneida than Tuscarora, in all years with the exception of 1921 and 1931, when there was little difference in the

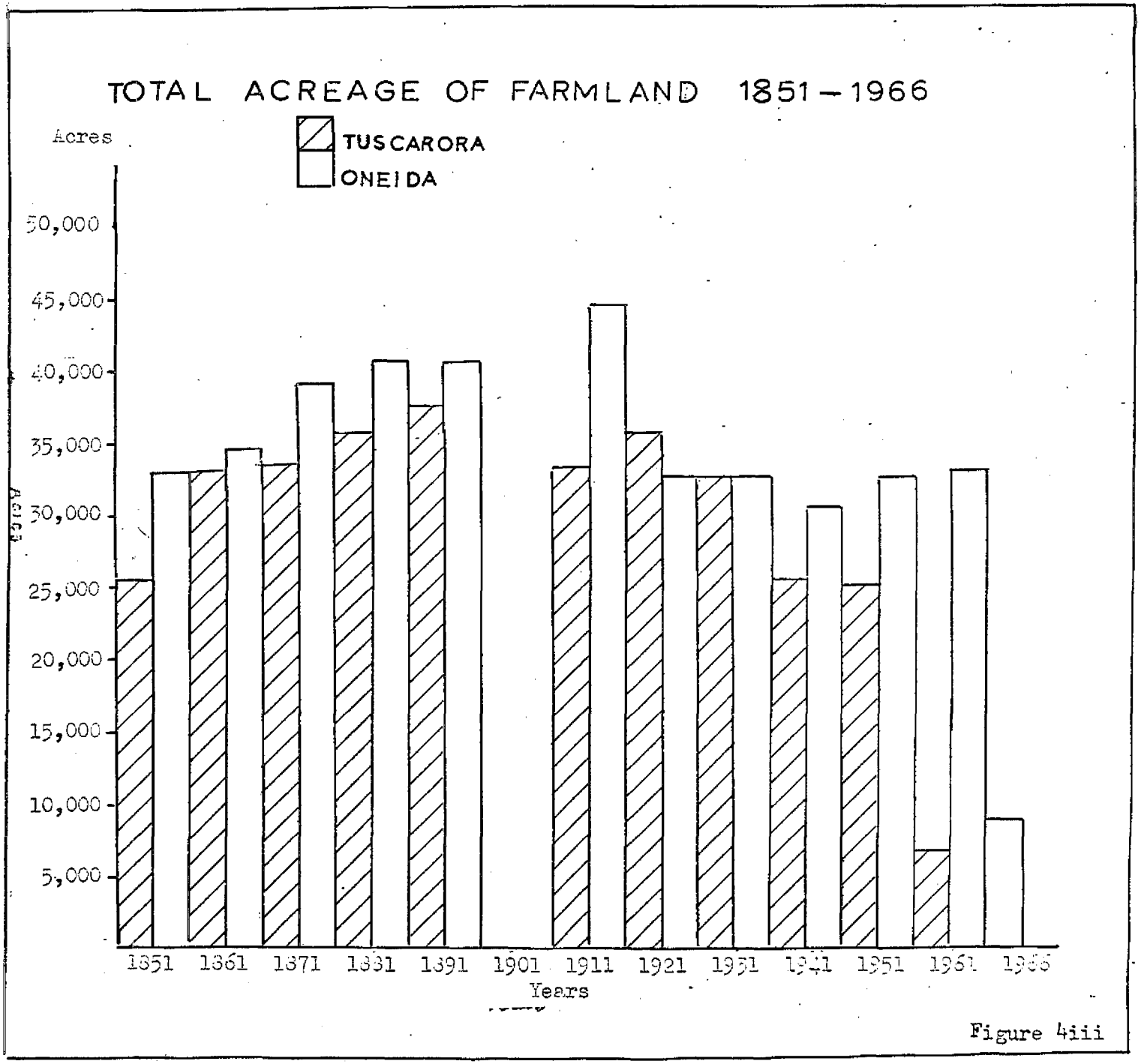

TOTAL ACREAGE OF FARMLAND 1851 – 1966
Acres
TUSCARORA
ONEIDA
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
1966
Years

Figure 4iii

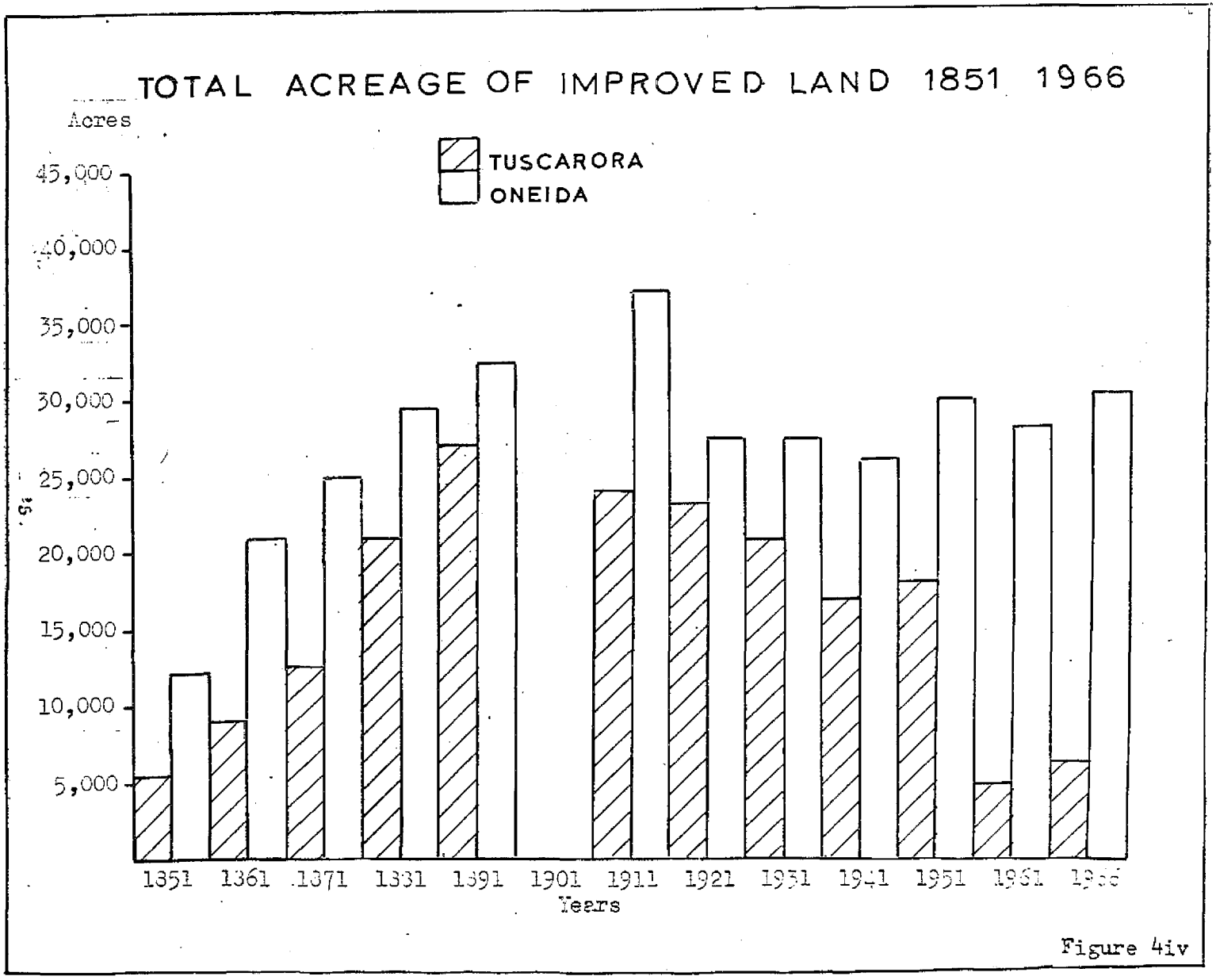

TOTAL ACREAGE OF IMPROVED LAND 1851 1966
Acres
TUSCARORA
ONEIDA
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
Years

Figure 4iv

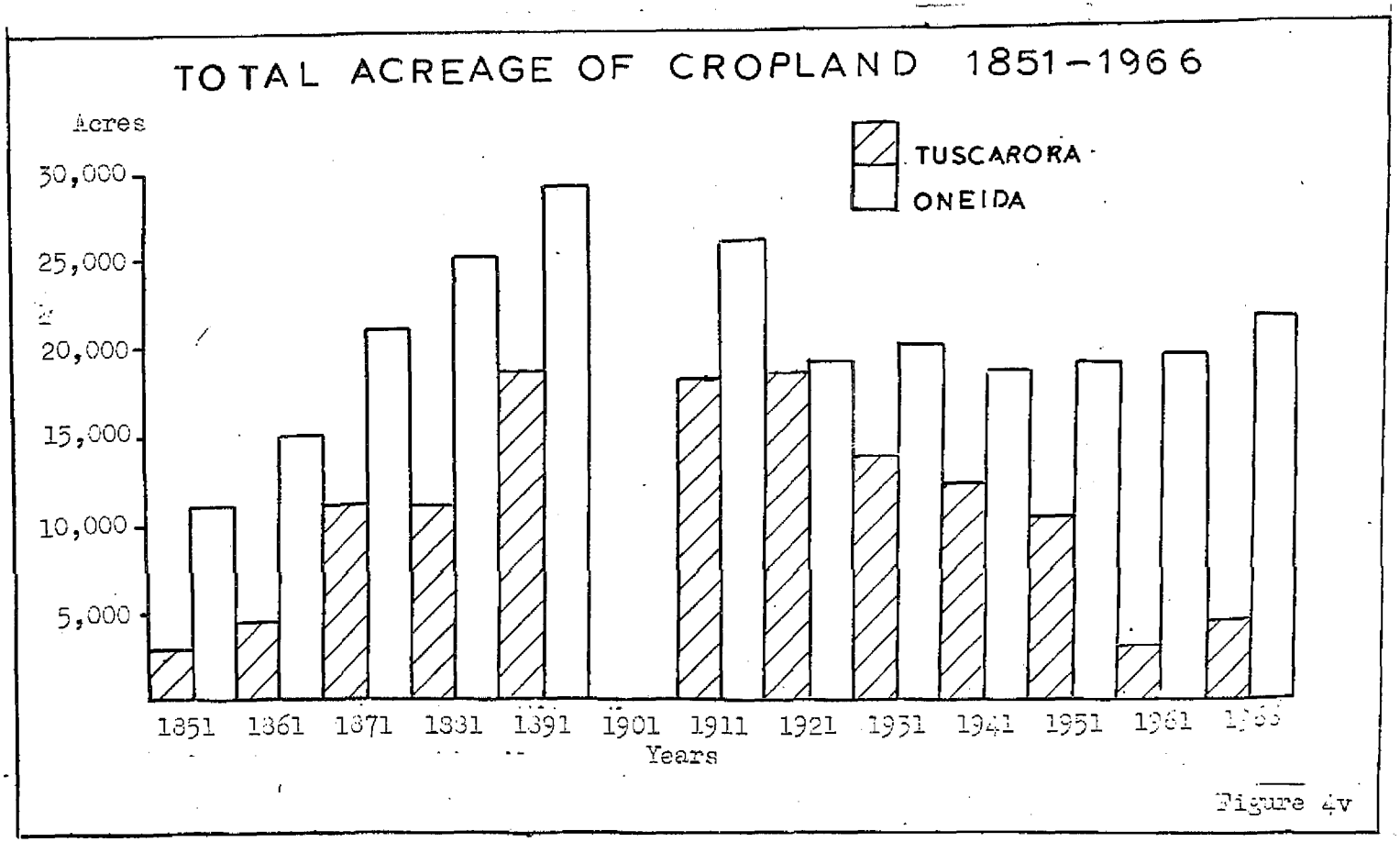

TOTAL ACREAGE OF CROPLAND 1851–1966
Acres
30,000
25,000
20,000
15,000
10,000
5,000
TUSCARORA
ONEIDA
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
Years

Figure 4v

amounts in the two townships.

According to the census definition, improved land from 1851 to 1891 included crops, pasture, orchards and gardens; after 1911, it also included fallow as a separate category. From 1921, improved land is composed of four categories; cropland, pasture, summer fallow, and other or idle improved land. Remarkable changes have taken place in the amount of improved land in the two townships, (fig. 4iv). On Tuscarora, the acreage rose from a very small amount in 1851, 5,883 acres out of 25,646 total acres held in farmland, to a peak number of 27,488 acres out of 37,986 total acres held in 1891; but since the turn of the century, the total amount of farmland has declined continuously.

The acreage of improved land was greater at all times in Oneida, where the peak of 37,494 acres out of 44,909 total acres of farmland was reached in 1911. Very little change in the amount of improved land has taken place since 1921, although over the last 20 years, a slight increase is noticeable.

Fig. 4v shows the amounts of improved land used for growing crops. In Tuscarora, as with the improved land, and total farmland, the acreage rose from very small amounts in 1851 when the Indians had only recently moved into the township, to a peak of 18,609 acres in 1891. The pattern follows that of the other aspects of farming described, that is, continual decline since 1891.

In Oneida, the amount of land in crops also increased from 1851 until the turn of the century, but in every census, this township

showed considerably greater acreages of cropland than Tuscarora. It is seen that since about 1921, there has been little change in the amount of cropland in Oneida, in contrast to Tuscarora, where the pattern is one of a continual decline since the beginning of this century.

c) Changes in Crop Acreages, 1851 to 1951.

Figs. 4vi show the changes which have occurred in the amounts of the various crops grown in Tuscarora and Oneida. In both townships the main crops grown are hay, oats, and wheat, but the relative importance of these has changed. In both townships the wheat acreage has decreased considerably since the end of the nineteenth century. In Oneida large quanti ties of wheat were grown in the period 1861 to 1891, and it is noted that this was the time when the total amount of cropland and the number of farm operators were at their highest, and farming in the township was most extensive. Various outside factors could have influenced this; the world economic situation at this time must be considered, in particular, Britain had begun importing large quantities of wheat from the colonies; urbanisation was taking place in Southern Ontario at the end of the nineteenth century, and large quantities of grain would be needed to feed the growing urban population. But this was followed by a decline in wheat growing, partly because Western Canada became established as the main wheat growing area.

Although the Reserve would not be affected to such an extent as Oneida by these influences, a similar trend in farming is apparent, so it is probably that these factors has some effect on production on the

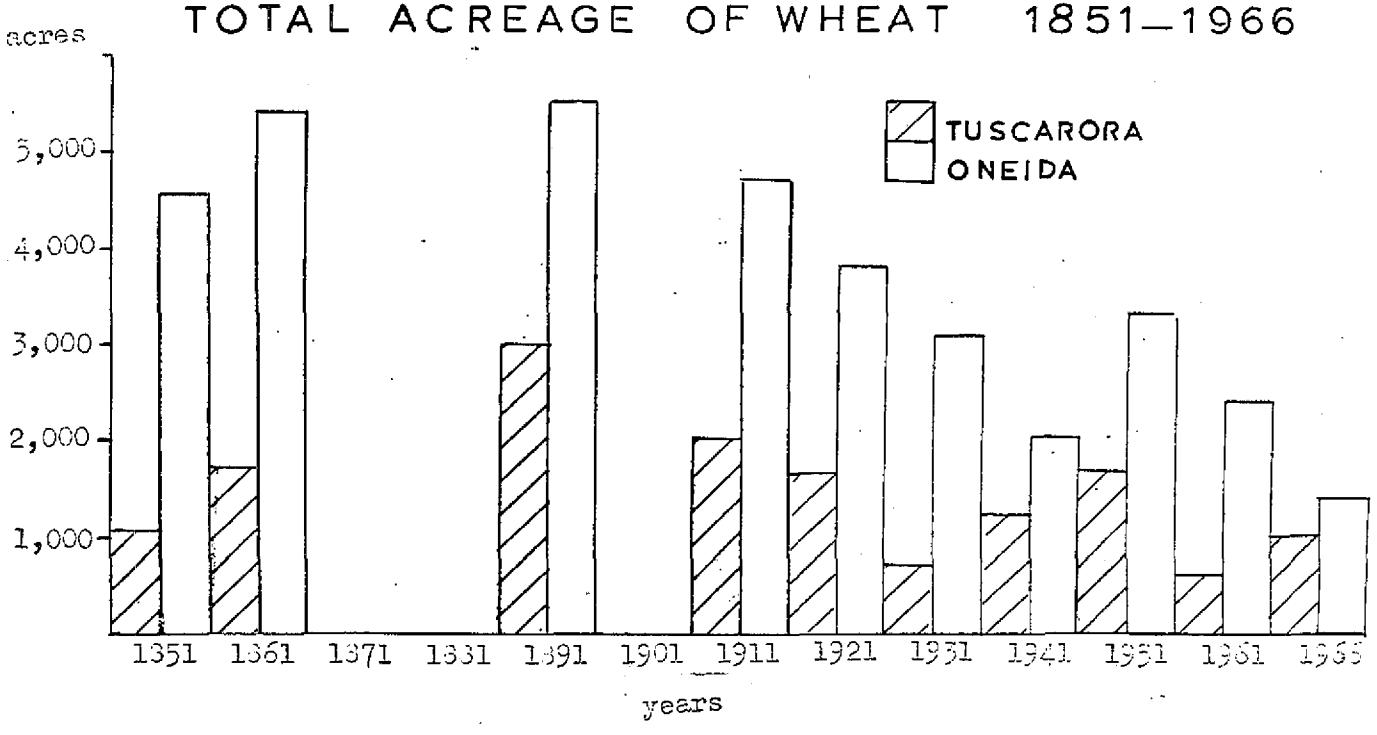


Figure 4vi

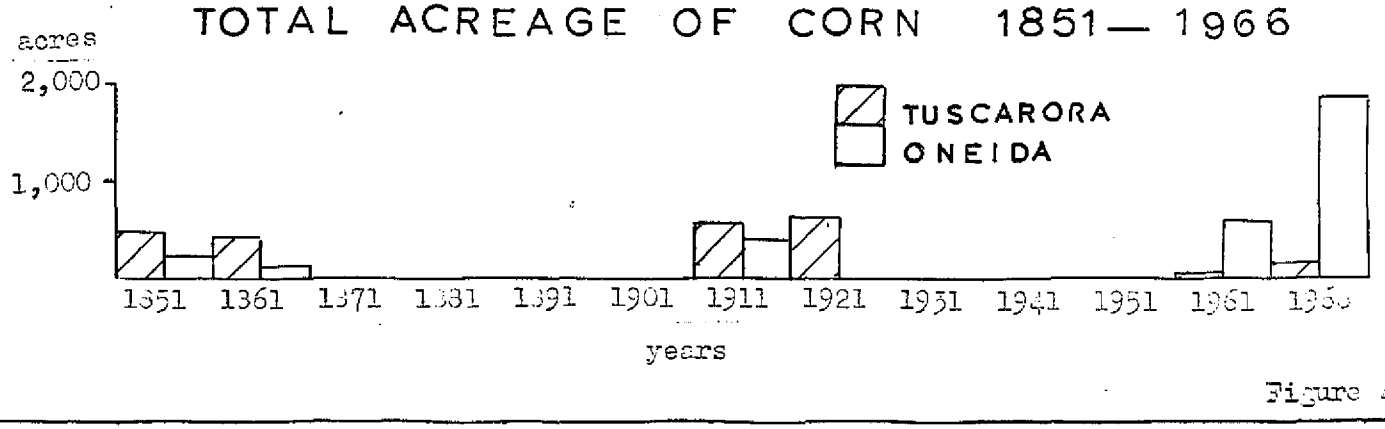


Figure 4vii

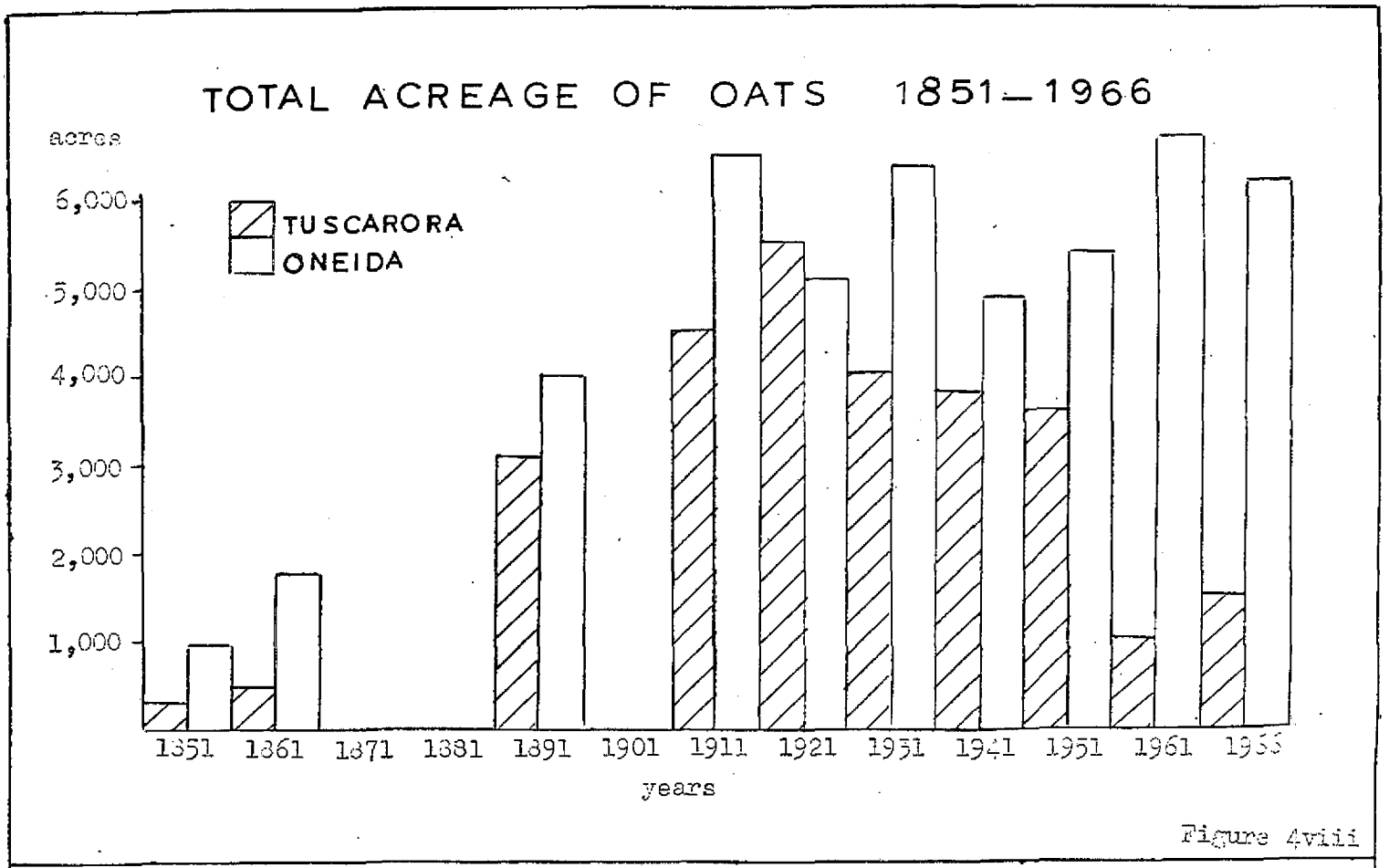


Figure 4viii

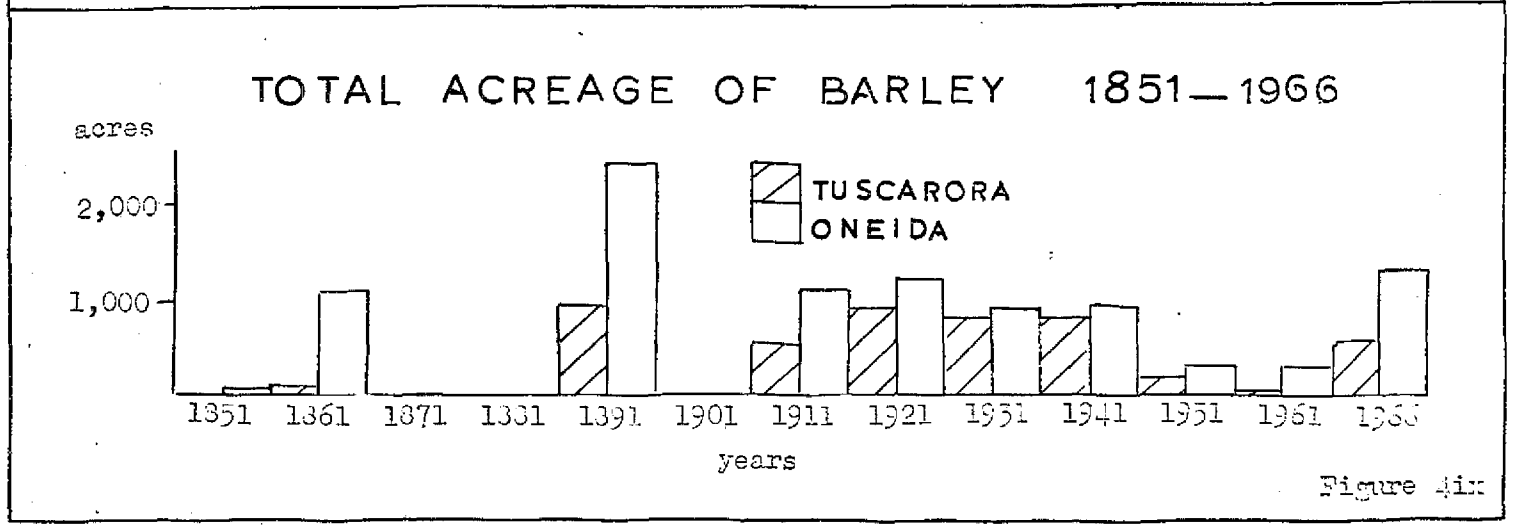


Figure 4ix

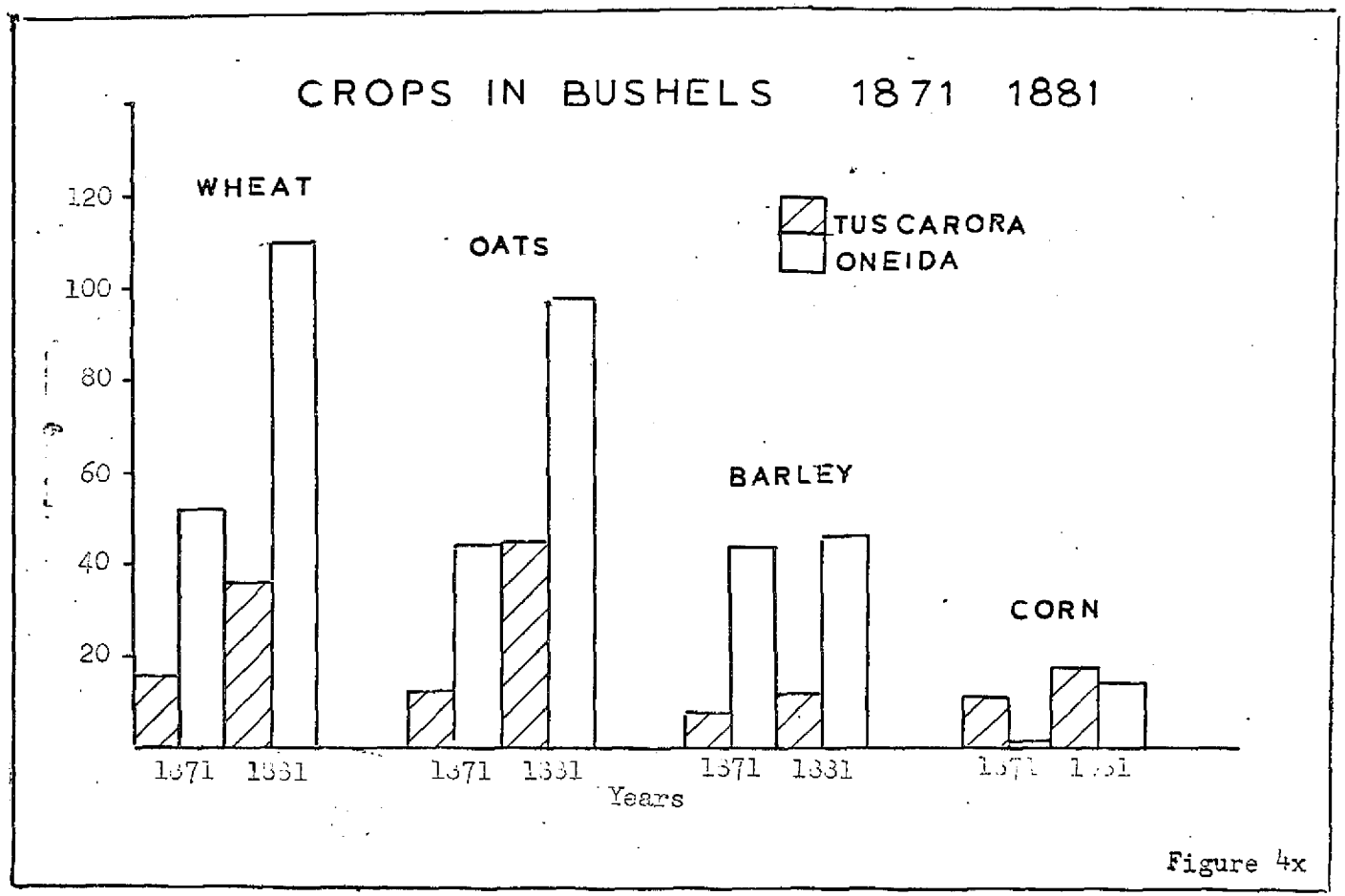

CROPS IN BUSHELS 1871 1881
WHEAT
OATS
BARLEY
CORN
TUSCARORA
ONEIDA
120
100
80
60
40
20
1871 1881
1871 1881
1871 1881
Years

Figure 4x

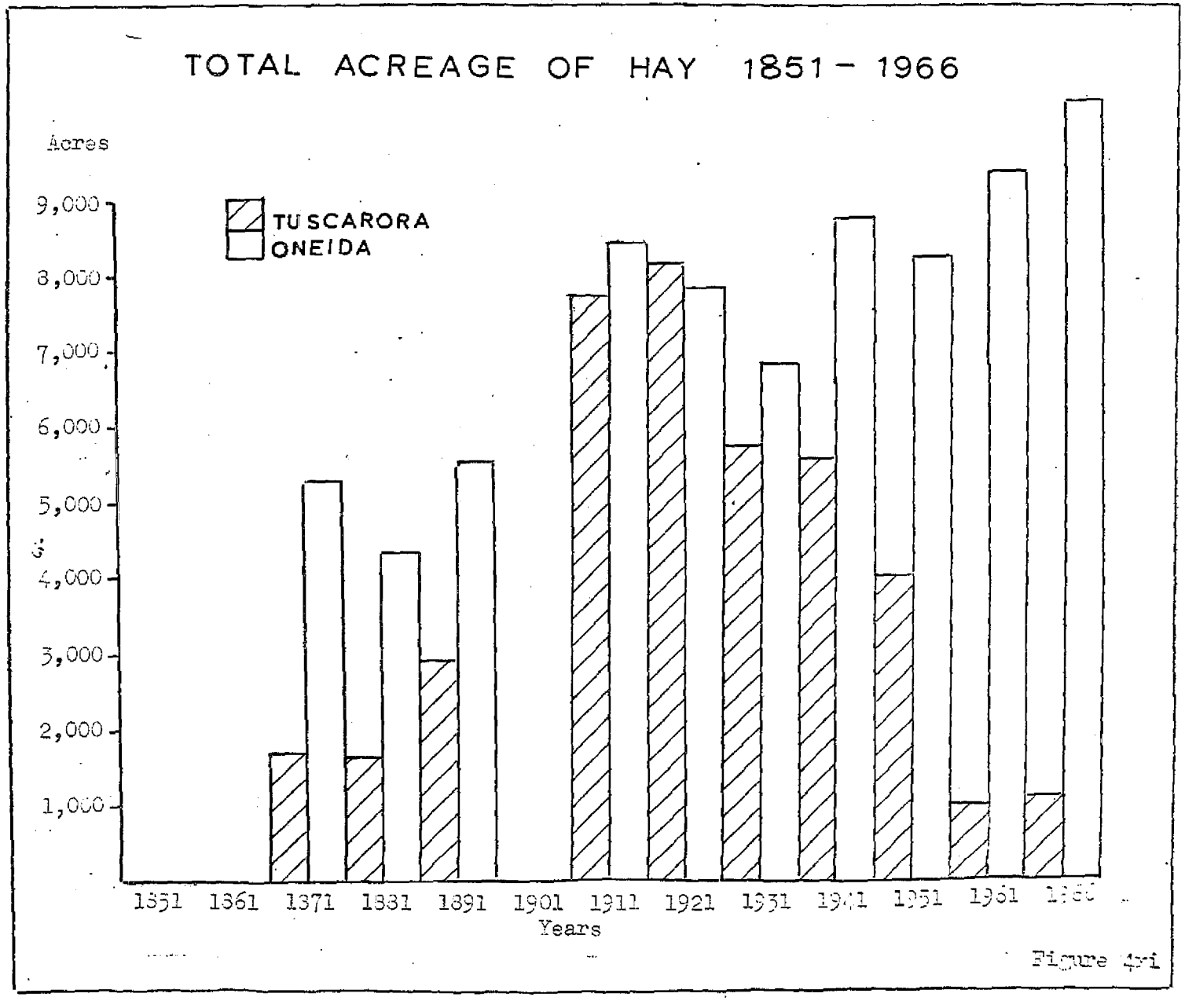

TOTAL ACREAGE OF HAY 1851 - 1966
Acres
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
TUSCARORA
ONEIDA
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
Years

Figure 4ri

Reserve. But also at this time was the peak year for rural population on the Reserve, so it is probable that much of the grain was for subsistence.

The growing of oats shows a different trend to that of wheat. In both townships the acreage of oats increased until 1921, but, whereas in Tuscarora the amount has continued to decline since, in Oneida the acreage has remained high, and since 1941, has been increasing, much of the oats being used for silage as part of the cattle rearing economy.

The predominance of the hay crop in both townships is noticed. Since 1931, this is classified in the census as cultivated hay; before that time no specification was made as to the type of hay, and it is probable that it included much wild hay or hay from meadowland. In Oneida the amount of cultivated hay has increased since 1931, also associated with the cattle rearing economy; but in Tuscarora, the hay acreage has continued to decline since about 1921. In both townships the period 1911 to 1921 stands out as having large amounts of hay; in Oneida this corresponds to a period of decreasing acreages of wheat and oats, and also in the total cropland acreage.

It is noted that on the Reserve, only small amounts of corn are grown, a crop which previously had been the basis of the Iroquois agricultural economy.

So it is seen that, according to the census figures, the period of greatest crop acreages was in the 1890's, and certain improvements in the farming methods of the Indians were reported by the Indian Agent

at that time.[1] The Indians were now endeavouring to plant and sow in the right season, and to harvest their crops when matured, instead, as was formerly the case, of beginning to plant when white farmers had finished, and to postpone their harvest until much of the grain had been destroyed by being left standing in the fields. But poor harvests were a frequent danger, as they had been during the early part of the nineteenth century, (see chapter 1), and this always meant insufficient food for the winter, and scarcity of seed for spring planting. At such times the aid of the Indian Department was resorted to. According to the Indian Agent, the Indians, with few exceptions, were not good farmers, which partly accounted for the frequent occurrence of poor harvests. A draw-back to the improvement of conditions on the Reserve was that the majority of the Indians did not look ahead; they could live on very little during the warm weather, and made no preparations for the approaching winter. Poor drainage in parts of the Reserve was also an added difficulty to cultivation, but in 1899, the Chiefs were encouraging drainage of swamps on the Reserve by having large ditches dug along the public roadways, and supplying tiles to individuals free of cost. However, many of the Indians did not carry out drainage of their land, and today much of the Reserve has waterlogged soils.

d) Changes in Livestock Numbers 1851 to 1951.

Figs. 4vii show the changes in livestock numbers in Oneida and Tuscarora from 1851 to 1951, but gaps occur in the graphs because some of the census do not enumerate livestock on a township basis. The graphs show that the total number of cattle in Tuscarora have declined since

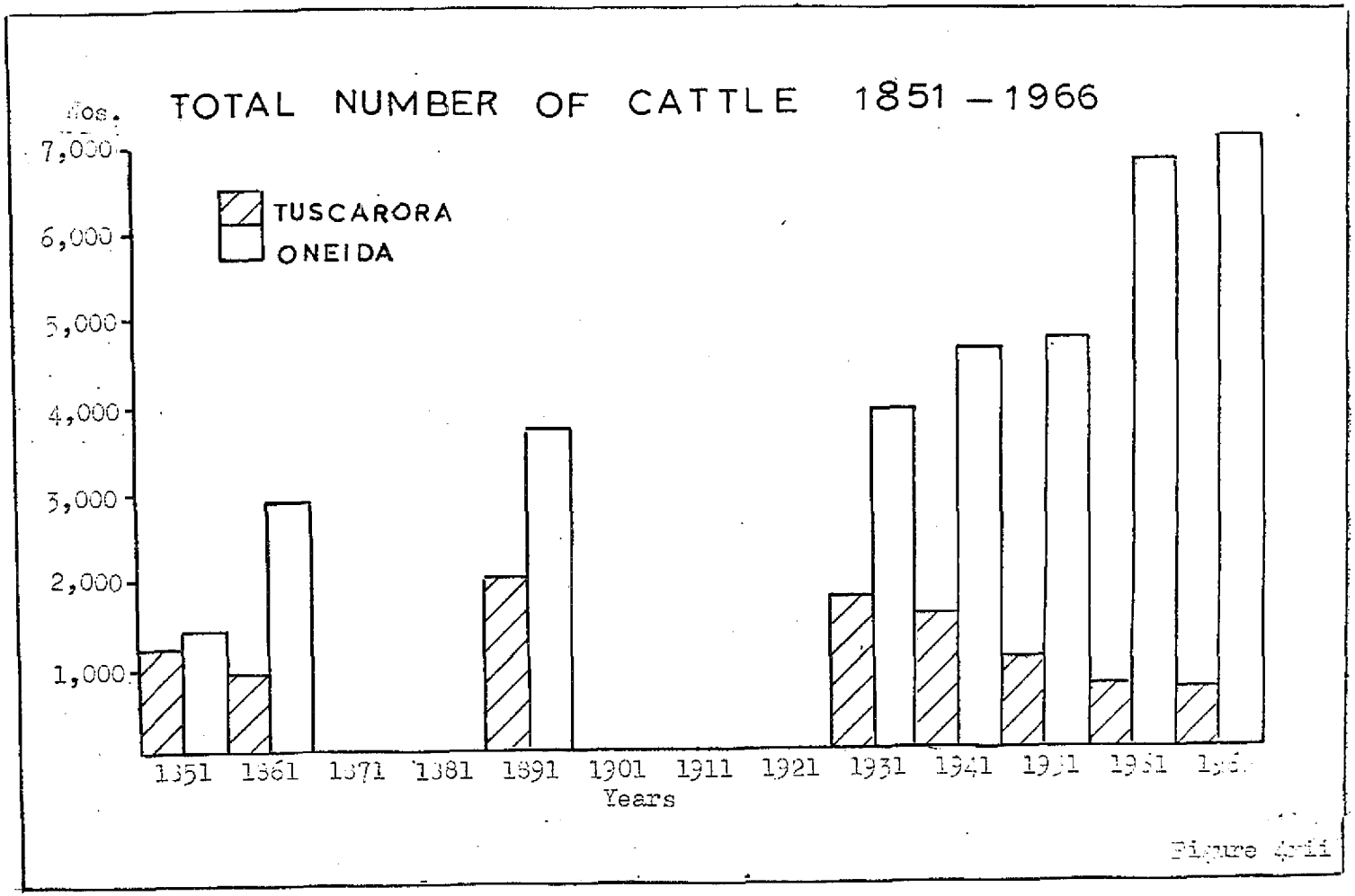

TOTAL NUMBER OF CATTLE 1851 – 1966
Nos.
7,000
6,000
5,000
4,000
3,000
2,000
1,000
TUSCARORA
ONEIDA
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
Years

Figure 4-11

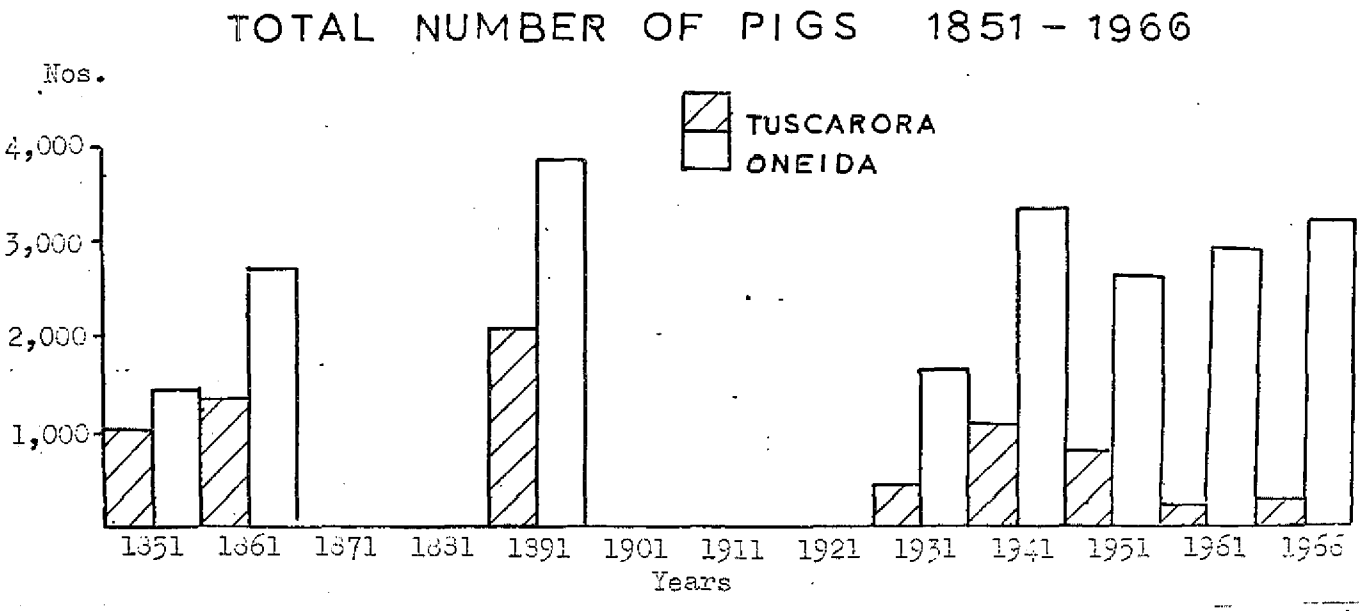


Figure 4xiii

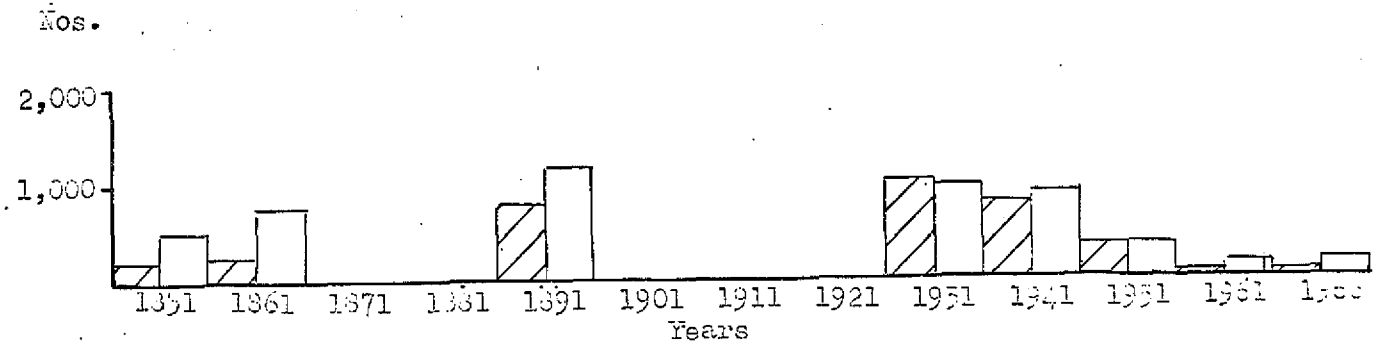


Figure 4xiv

1891, whereas, in Oneida they have continued to increase. This points to a farming activity concentrating more on cattle rearing for dairy and beef purposes. This trend is also seen in Oneida with the increase in acreages of oats and hay for cattle feed. On Tuscarora, farming has always been of a more general type, although in 1911, the Indian Agent reported that there had been a considerable increase in livestock raising, and Indian farmers were supplying milk to factories off the Reserve.

In both townships the maximum number of pigs kept was in 1891. Tuscarora has decreased considerably since then but in Oneida the number of pigs has increased again since 1931. Sheep rearing on the Reserve has never been an important activity because of the large number of dogs. As would be expected, the number of horses in both townships has declined since the turn of the century due to the increased mechanisation of farming.

d) Changes in Average Farm Size, 1851-1951.

In order to study the changes in farm size which have taken place between 1851 and 1951, the average size of farm for each census year was calculated by dividing the total amount of land held in farmland by the total number of farms. This was calculated for both Tuscarora and Oneida, and a comparison made of farm size. (fig. 4viii).

It would appear that between 1851 and 1891, in Tuscarora, and between 1871 and 1891 in Oneida, the average farm size decreased; this would seem an unusual feature, unless there had been continual subdivision of the existing farmland, with new land clearance not keeping

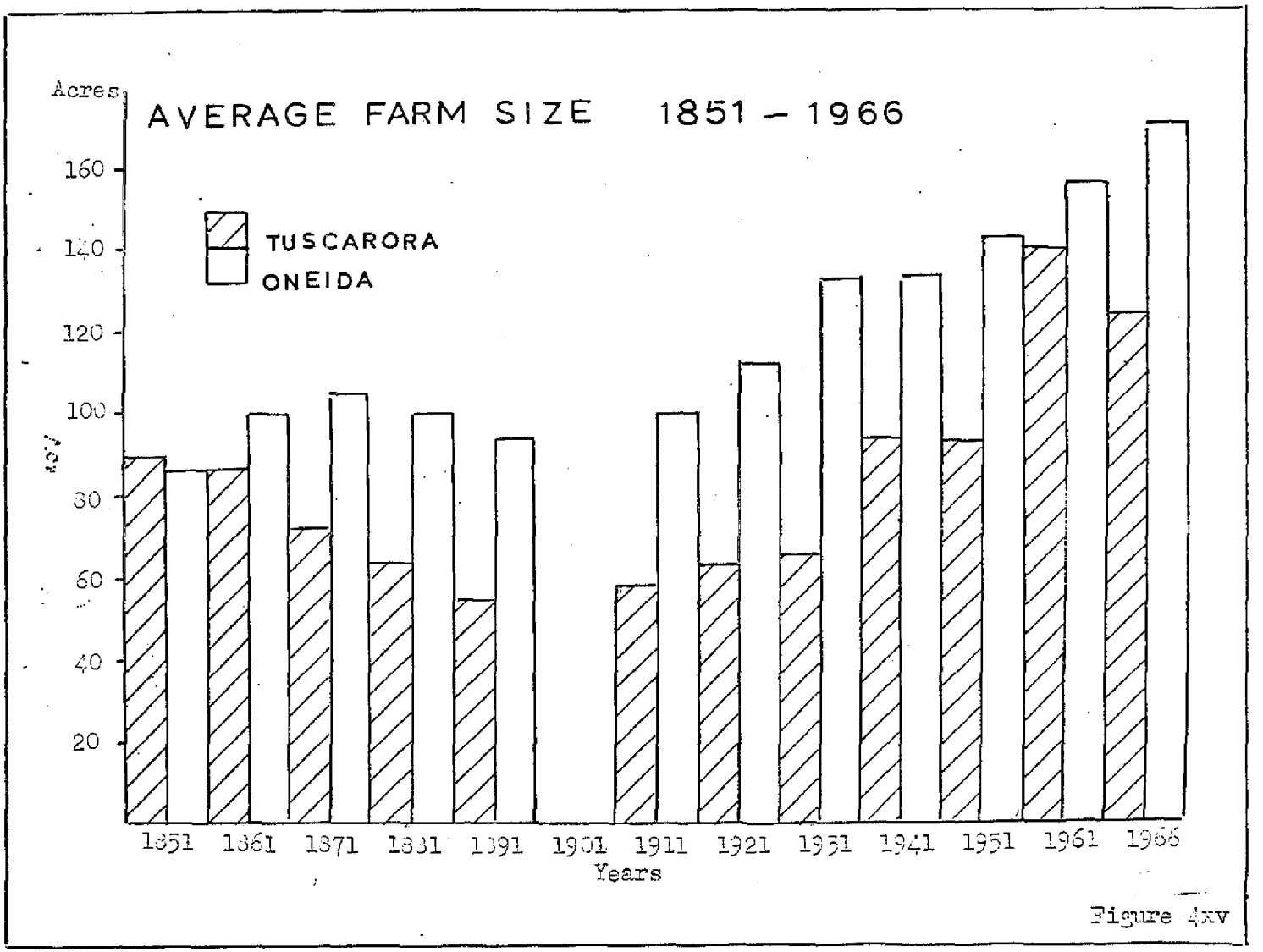

AVERAGE FARM SIZE 1851 – 1966
Acres
160
140
120
100
80
60
40
20
TUSCARORA
ONEIDA
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
1966
Years

Figure 4xv

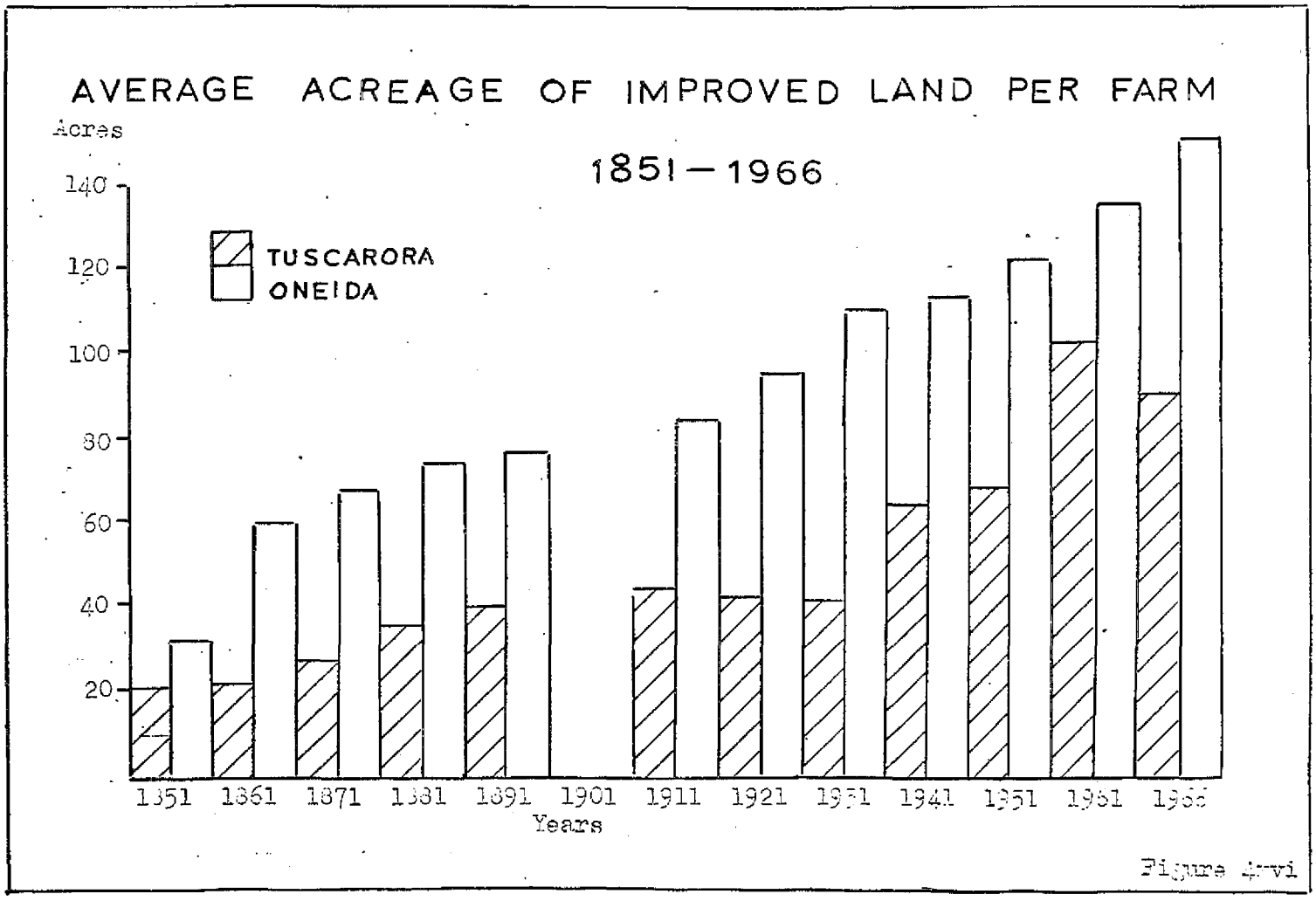

AVERAGE ACREAGE OF IMPROVED LAND PER FARM
1851 — 1966
Acres
140
120
100
80
60
40
20
TUSCARORA
ONEIDA
1851
1861
1871
1881
1891
1901
1911
1921
1931
1941
1951
1961
1966
Years

Figure 4-vi

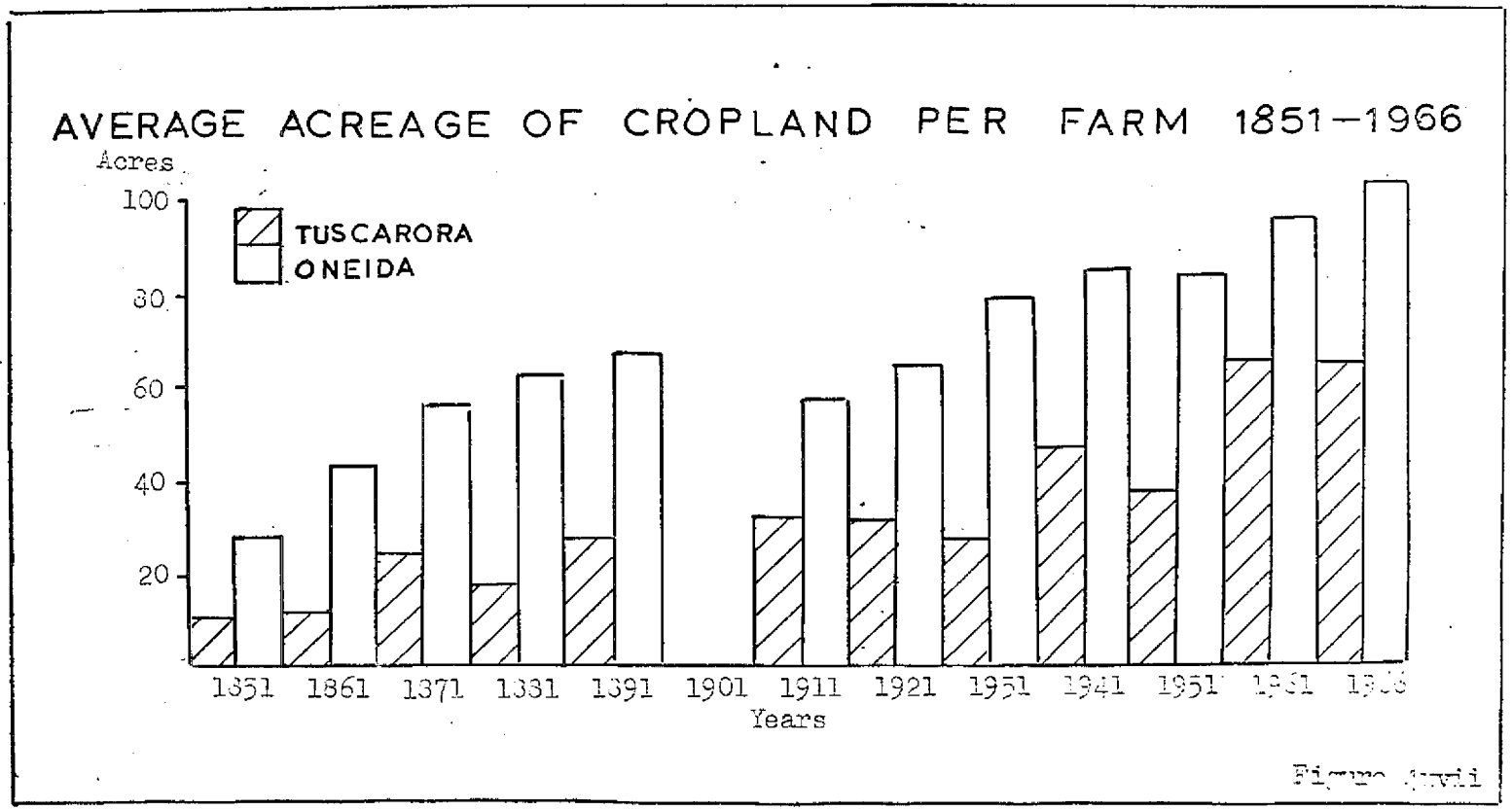


Figure xxvii

pace with the increase in farm operators. Comparing this graph with that showing population change, (fig. 4i), it is seen that the peak of rural population, and also the peak of farm operators, occurred in 1891 in Tuscarora. This would appear to suggest that as the Reserve was becoming more populated, more farms being established, the existing farmland was being subdivided, so that the average farm size decreased until 1891. But figs. 4ix, 4x show that even though the total area of farmland was decreasing, the proportion of improved land per farm was increasing. Therefore, although the average farm in 1891 was smaller than in 1851, it had a greater acreage of improved land and of cropland. Similar trends are seen in Oneida, with the average farm size decreasing between 1871 and 1891, but at the same time, the average acreage of improved land and cropland per farm was increasing, suggesting agricultural progress, with more land being cleared for cultivation.

In Tuscarora, in 1851, 70.3% of the farms had acreages of between 50 and 100; 23% were between 10 and 50 acres; but in 1891, 56.3% of the farms had acreages between 10 and 50, and 23% were between 50 and 100 acres. The average size of farm on Tuscarora decreased from 92 to 55 acres between 1851 and 1891; but after 1891, it has continued to increase until in 1961, it was 141 acres. The trend in Oneida has been similar, but the average acreages of total farmland, improved land and cropland per farm, were always much greater than in Tuscarora.

Summary of Chapter Three

From the graphs it is seen that since 1851 the amounts of total farmland, improved land and cropland, and average size of farm, have always been greater in Oneida than Tuscarora. This suggests that in Oneida the land has always been farmed on a more intensive basis than on the Reserve. From very small amounts of cultivated land in 1851, when the township of Tuscarora had recently been surveyed, the acreage increased rapidly to 1891, which was the period when farming was most extensive, wheat being the main crop at this time.

But since the end of the nineteenth century, farming has declined on the Reserve, with this trend becoming more rapid during the last 25 years. But in Oneida, although the number of farm operators and the amount of farmland has decreased since the turn of the century, the decline has not been so great as in Tuscarora, and during the last 25 years, there has tended to be a slight increase in the total acreage of farmland in Oneida.

However, the averages per farm for Tuscarora, show that since 1891, farm size has increased steadily, even though the total amount of farmland in the township has declined. The trend in Oneida has also been towards larger farms. There have also been changes in the relative importance of crops grown; the wheat acreage has decreased, whilst there has been an increase in oats and hay acreages.

The most striking feature shown on these graphs is the tremendous decline in farming which appears to have taken place since 1951 on the

Reserve; particularly in the case of the number of operators, and the amount of improved land. These changes on the Reserve during this ten year period need to be considered in more detail, and the conditions compared with those in Oneida township, where the decline appears to be less marked. The physical aspects of the township were considered, as these, especially soils types, and climate, have a great influence on the agriculture; it was seen that Tuscarora contains slightly larger areas of heavy and poorly drained soils than Oneida, and this would partly explain the lack of progress in agriculture on the Reserve. But these differences were not thought great enough to account for the vast differences in agriculture between Tuscarora and Oneida.

Footnotes

[1] Annual Reports of the Department of Indian Affairs, 1890 - 1900. (Ottawa). Six Nations Indian Agency Archives, Brantford.

Rural Population 1851 - 1966.

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	1821	2144	2606	2891	3228	--	2595	3760	2654	2739	3705	313	--
Oneida	1575	3050	3183	2863	2400	--	--	1377	1319	1182	1039	970	--

Farm Operators 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	277	385	465	605	691	--	563	562	505	267	271	49	73
Oneida	358	348	372	403	429	--	449	294	254	229	228	209	209

Resident Population (Indian Agents Report)

1873	1891	1895	1901	1911
3207	3695	3871	4236	4730

Total Farmland (Acres) 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	25,646	33,333	33,577	35,547	37,986		33,031	35,385	32,644	25,158	25,274	6,950	8,916
Oneida	33,216	34,927	39,258	49,445	40,405		44,909	32,883	32,687	30,774	32,680	32,969	34,653

Total Improved Land (Acres) 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	5,883	8,396	12,919	21,464	27,488	--	24,492	23,937	20,929	17,179	18,647	5,022	6,545
Oneida	12,664	20,894	25,448	29,935	32,578	--	37,494	27,974	27,965	26,474	27,923	28,238	30,418

Total Cropland (Acres) 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	3,250	4,665	11,199	11,267	18,609	--	17,861	18,547	13,775	12,380	10,100	3,161	4,716
Oneida	11,064	15,021	20,844	25,167	28,778	--	25,836	18,867	20,009	18,776	19,069	19,864	21,648

Total Unimproved Land (Acres) 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	19,763	24,936	20,658	14,083	10,497	--	8,539	11,448	11,715	7,979	6,627	1,928	2,371
Oneida	20,572	14,633	13,810	10,510	7,827	--	7,415	4,909	4,722	4,300	4,757	4,731	4,235

Cultivated Land (Indian Agent's Report)

1891	1895	1900	1911	1920
22,800	34,133	13,672	30,225	31,016

Wheat Acreage 1851 - 1966

Bushels

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	1,065	1,744	16,137	36,820	2,893	--	2,028	1,649	728	1,245	1,694	608	1,014
Oneida	4,449	5,396	51,953	109,149	5,511	--	4,690	3,783	3,137	2,050	3,328	2,441	1,393

Oats Acreage 1851 - 1966

Bushels

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	279	487	12,694	45,420	3,144	--	4,529	5,548	4,011	3,828	3,605	1,039	1,686
Oneida	958	1,769	43,940	98,379	4,009	--	6,487	5,132	6,361	4,927	5,397	6,711	5,796

Barley Acreage 1851 - 1966

Bushels

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	22	131	8,308	12,184	941	--	531	933	831	971	248	53	572
Oneida	85	1,122	44,571	47,230	2,399	--	1,418	1,209	874	931	255	288	1,275

Corn Acreage 1851 - 1966

Bushels

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	446	413	12,451	18,319	--	--	603	581	--	--	--	89	151
Oneida	233	126	2,629	15,190	--	--	416	2	--	--	--	706	1,870

Hay Acreage 1851 - 1966

1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
		1,703	1,650	2,871	--	7,715	8,160	5,743	5,567	4,028	1,030	1,107
		5,272	4,354	5,554	--	8,392	7,805	6,797	8,708	8,199	9,297	10,259

Crop Acreage 1900. (Indian Agent Report)

Wheat	Oats	Barley	Corn	Peas	Rye	Potatoes	Hay
2305	2184	178	395	331	260	183	2062

Total No. Cattle 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	1,199	963	--	--	2,038	--	--	--	1,753	1,564	1,048	764	701
Oneida	1,401	2,883	--	--	3,704	--	--	--	3,917	4,620	4,718	6,756	7,001

Total No. Pigs 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	1,024	1,362	--	--	2,057	--	--	--	466	1,054	770	231	304
Oneida	1,459	2,685	--	--	3,789	--	--	--	1,643	3,313	2,586	2,881	3,176

Total No. Horses 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	200	266	--	--	784	--	--	--	1,050	852	410	59	31
Oneida	508	749	--	--	1,188	--	--	--	1,005	951	395	147	189

Total No. Hens Poultry 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	--	--	--	--	11,993	--	--	--	14,678	18,346	14,605	2,365	1,051
Oneida	--	--	--	--	15,439	--	--	--	72,108	67,857	62,451	60,492	127,802

Total Cattle (Indian Agent Report)

1891	1900	1911	1920
3,031	850	1,966	3,047

Average Farm Size (Acres) 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	92	86.8	72.2	68.4	55	--	58.6	63	64.6	94.2	93.2	141.8	122.1
Oneida	85.6	100.3	100.5	100.3	94	--	100	112	128.6	134.3	143.3	157.2	165.8

(Acres) Improved

Average Area of Cultivated Land per Farm 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	21.2	21.8	27.7	35.5	39.7	--	43.5	42.2	41.04	64.3	68.8	102.5	89.6
Oneida	32.6	60	68.4	74.2	76	--	83.5	95.1	110.1	115.6	122.4	135	145.5

Average Area of Cropland (Acres) per Farm 1851 - 1966

	1851	1861	1871	1881	1891	1901	1911	1921	1931	1941	1951	1961	1966
Tuscarora	11.7	12.1	24	18.6	26.9	--	31.7	31.5	27	46.3	37.2	64.5	64.6
Oneida	28	43	56	62.4	67	--	57.3	63.5	78.2	84	82.7	95	103.5

Farm Size 1851 - 1921

Acres		1851	1961	1871	1881	1891	1901	1911	1921
Under	T	3	7	15	49	94	--	77	40
10	O	7	6	18	39	91	--	26	18
10	T	64	113	235	347	389	--	273	292
50	O	54	82	68	74	56	--	117	34
50	T	195	245	183	158	159	--	159	168
100	O	185	186	178	157	133	--	151	112
100	T	11	17	30	49	43	--	40	51
200	O	69	72	88	110	124	--	138	117
over	T	4	3	2	2	6	--	14	11
200	O	9	2	20	3	25	--	17	13

Farm Size 1951 - 1966

Acres	1 - 3	3 - 9	10 - 69	70 - 129	130 - 179	180 - 239	240 - 399	400 - 559	560 - 759
1951 T	--	4	105	98	41	15	8	--	--
0	--	4	30	77	52	43	17	4	1
1961 T	--	--	8	19	9	7	6	--	--
0	--	4	20	61	45	54	21	--	4
1966 T	--	2	22	22	14	7	4	2	--
0	3	7	21	54	46	42	27	5	4

Chapter Four

LAND USE AND AGRICULTURE IN TUSCARORA IN 1951 AND 1961

It has been seen in Chapter 3 that there has been a continual decline in farming on the Reserve since about the end of the nineteenth century, and from the graphs it is seen that the most striking changes took place on the Reserve between 1951 and 1961. In this chapter the situation during this ten year period is looked at in more detail. Using the census figures, the general position of agriculture on the Reserve in 1951 was compared with the situation in 1961 and 1966, and the same study was made for the township of Oneida; it was then possible to make a comparison between Tuscarora and Oneida. Finally, in order to gain a more detailed picture of farming in the two townships in both 1951 and 1961, a number of sample blocks were studied in each township, and the changes between 1951 and 1961 were noted.

a) A General Description of Agriculture in Tuscarora

Striking changes took place in Tuscarora between 1951 and 1961, as seen from the graphs (chapter 3). A large number of farms disappeared, and this was accompanied by an enormous drop in the acreage occupied. In 1951 there were 271 farms in Tuscarora, but by 1961, only 49 farms remained. Although the census definition of a farm had changed between 1951 and 1961, this was not the predominant reason for the decline in farm numbers. The criteria for the definition of a farm were much stricter in 1951 than 1961. In 1951 a farm was defined as: a holding

on which agricultural operations were carried out; the holding might consist of a single tract of land, or a number of separate tracts held under different tenures. It had to be (a) three acres or more in size, or (b) from one to three acres in size with agricultural production valued at $250 or more. In 1961 the definition of a farm was more inclusive: it was an agricultural holding of one acre of more, with sales of agricultural products during the past 12 months of $50 or more.

Although there were 222 more farms in Tuscarora in 1951 than in 1961, these were mostly very small, 38.3% of them had an acreage of between 10 and 69. The average farm size for the entire township was estimated to be 93.2 acres, but many of the farms were less than 50 acres. In 1951, wheat covered the greatest acreage of all crops grown, and oats the second largest acreage. Small amounts of barley, rye and mixed grain and potatoes were also grown. Total livestock numbers in 1951 were small; using the census figures for the whole Reserve, it was estimated that each farm had on an average 3.8 cattle, 1.53 horses, 2.9 pigs and 53.8 poultry. Sheep rearing has never been an important feature of farming on the Reserve, owing to the large number of dogs, and the total number in 1951 was only 24. The total number of horses, 410, was comparatively large, as these were probably still used for draught purposes.

Thus, the farming on Tuscarora in 1951 was carried out on quite a small scale; the farms on the whole were small; the most important crops grown were hay, oats, mainly fodder, and wheat but acreages were low, and the numbers of livestock per farm were also very small. A

striking feature of the Reserve was the large proportion of woodland and unimproved land, which was equal to approximately one third of the total area of farm land in 1951. Much of this land was formerly cultivated, but during the present century has been abandoned and has gradually reverted to scrubland.

Although the total amount of farmland on the Reserve has been decreasing since the end of the nineteenth century, the most marked decline occurred between 1951 and 1961, leaving only 6,940 acres of farmland, which was less than at any other time. The land use figures show that all categories of farmland, both improved and unimproved had decreased between 1951 and 1961, because of the great decline in the number of farms, much of the land in Tuscarora is not classified at all in the 1961 census; about 18,325 acres of farmland had been abandoned between 1951 and 1961, and was now disused. A tremendous decline took place in the amount of improved farmland from 18,647 acres in 1951 to 5,022 acres in 1961, which was less than the amount of improved land in 1851, (5,883 acres - see chapter 3). There was also a very marked decline in the cropland from 1951 to 1961, leaving only 3,161 acres which was only about one sixth of the cropland area in 1891, the time of most extensive farming on the Reserve. Although the amount of unimproved land in the census had decreased from 6,627 acres to 1,928 acres, much of it was not classified, as unimproved land was still a very noticeable feature of the landscape of the Reserve in 1961.

Acres	Farm Pop.	Total Operators	Total Occupied land
1951	2,705	271	25,274 acres
1961	313	49	6,950 acres
1966		73	8,916 acres

Use of Farmland (acres)

	Improved					Unimproved		
	Total	Crop	Summer Fall.	Pasture	Other	Total	Woodland	Other
1951	18,647	10,100	1,644	5,758	1,145	6,627	3,731	2,896
1961	5,022	3,161	546	1,040	275	1,928	750	1,178
1966	6,545	4,710	773	773	289	2,371	1,365	1,007

However, despite the fact that the total amount of farmland on the Reserve had decreased by 1961, the average farm size had increased to 141.8 acres. Between 1951 and 1961, many of the smaller farms had ceased to operate, as they had become increasingly uneconomic, and could no longer compete with the larger farmers. Many of those remaining in 1961 had increased their size by buying or renting land from the small farms that had gone out of business.

The total crop acreages for the Reserve show a decline by 1961 because of the great decline in the total amount of cropland, but hay, oats and wheat were still the main crops grown, used for cash grain and livestock feed. Small amounts of barley, rye, mixed grain and potatoes were also still grown. The total number of livestock also shows a decline from 1951 to 1961, but the average number per farm increased to 15.6 cattle, or which 5.5 were milking cows; 4.9 pigs; 3 horses and 81 poultry.

The census figures show that between 1961 and 1966 the number of farms had increased to 73, and the amount of farmland had increased

by 2,000 acres to 8,916 acres. There had also been a slight increase in crop acreages, especially in the acreage of wheat, from 608 to 1,014, but the 1966 figures were still well down on those of 1951, and the average farm size, and average acreage of improved land per farm had actually declined slightly. There had also been a slight decline in the total number of cattle on the Reserve between 1961 and 1966.

Size of Farm

Acres	0-3	3-9	10-69	70-129	130-179	180-239	240-399	400-559	560-759
1951	--	4	105	98	41	15	8	--	--
1961	--	--	8	19	9	7	6	--	--
1966	--	2	22	22	14	7	4	2	--

Crops (acres)

	Wheat	Barley	Oats	Rye	Mixed Grain	Cult. Hay	Potatoes
1951	1,694	248	3,605	50	272	4,028	62
1961	608	53	1,039	--	114	1,030	9
1966	1,014	572	1,500	--	70	1,107	14

Livestock

	Total Cattle	Milk Cows	Sheep	Pigs	Horses	Poultry
1951	1,048	714	24	770	410	14,605
1961	764	261	20	231	59	3,975
1966	701	--	--	304	31	1,051

	Average Farm Size	Average Improved Land	Average Cropland
1951	93.2 acres	68.8 acres	37.2 acres
1961	141.8 acres	102.5 acres	64.5 acres
1966	122.1 acres	89.6 acres	64.5 acres

Summary

Thus the farming on Tuscarora in 1951 was carried out on quite a small scale; the farms were on the whole small, about 38.3% of them were between 10 and 69 acres. By 1961, a large number of farms had disappeared, and this was accompanied by an enormous drop in the acreage of occupied land. But the farms remaining in 1961 were much larger than the average farm in 1951, and 90% of them were over 70 acres, (compared with 60% in 1951). By 1966, farm numbers and the total amount of farmland on the Reserve had increased slightly, but the average farm size was slightly lower than in 1961. A very striking feature of the Reserve is the large proportion of woodland and unimproved land; this was equal to 1/3 of the total area of farmland in 1951; although in the 1961 census the total acreage of unimproved land had decreased, this just meant that it was not classified, and wasteland is still a dominant feature of the landscape of Tuscarora.

There are various reasons for the declining acreage and number of farms. A feature of the Reserve has always been the predominance of small farms; these have become increasingly uneconomic to operate, and so have gradually been abandoned, the land reverting to scrub, or in some cases, rented to larger operators. The Indians lack capital of their own, and also have difficulty in obtaining it from other sources, so are unable to improve their land, and develop farming. But it seems that amongst the Indians on the Reserve, there is a general lack of interest in farming and lack of knowledge of modern methods, (see Chapter 3).

In addition, during the last 15 to 20 years, opportunities for non-agricultural employment outside the Reserve have increased, so that more and more Indians depend on this for a living, rather than on farming; many of them still have small farms which they work part-time.

b) A General Comparison between Tuscarora and Oneida

The poor state of agriculture on the Indian Reserve becomes more obvious when conditions are compared with those on the adjacent township of Oneida. It has been seen that Oneida possesses similar features of physical geography and soils, and yet there is such a marked contrast in the farming of the two townships.

In 1951 there were a similar number of farms in both townships; 271 in Tuscarora, and 228 in Oneida. But the number in Oneida decreased only slightly to 209 in 1961, whereas Tuscarora had an enormous drop to 49 farms and over 18,000 acres of land abandoned.

A great contrast, especially in 1951, was in the average size of farm in the two townships. The farms in Oneida were much larger than those in Tuscarora; (cf. 143.3 acres in Oneida and 93.2 acres in Tuscarora). The size of farm did not change a great deal from 1951 to 1961 in Oneida, whereas in Tuscarora it increased from 93.2 acres to 141.8 acres. So in 1961 the average farm size in Tuscarora was almost equal to that of Oneida, whereas in 1951 it had been much smaller.

1951	Farm Pop.	Total Operators	Total Farmland
Tuscarora	2,705	271	25,274
Oneida	1.039	228	32,680

1961	Farm Pop.	Total Operators	Total Farmland
Tuscarora	313	49	6,950
Oneida	970	209	32,969

1966	Farm Pop.	Total Operators	Total Farmland
Tuscarora	--	73	8,916
Oneida	--	209	34,653

Size of Farm 1951

Acres	0-3	3-9	10-69	70-129	130-179	180-239	240-399	400-559	560-759
Tuscarora	--	4	105	98	41	15	8	--	--
Oneida	--	4	30	77	52	43	17	4	1

Size of Farm 1961

Acres	0-3	3-9	10-69	70-129	130-179	180-239	240-399	400-559	560-759
Tuscarora	--		8	19	9	7	6	--	--
Oneida	4		20	61	45	54	21	--	4

Size of Farm 1966

Acres	0-3	3-9	10-69	70-129	130-179	180-239	240-399	400-559	560-759
Tuscarora	--	2	22	22	14	7	4	2	--
Oneida	3	7	21	54	46	42	27	5	4

The following figures show the farm values for the two townships in 1951 (fig.). In 1951 the total value of farms on Tuscarora was only one quarter that of Oneida; the mean value was only $6,554 in Tuscarora compared with $20,402 in Oneida.

$ Farm Values in 1951

	Total Value	Land and Buildings	Machinery	Livestock
Tuscarora	1,776,240	1,075,030	325,069	376,141
Oneida	4,651,628	2,375,795	882,905	1,392,928

Condition of Occupied Farmland, 1951

	Improved					Unimproved		
	Total	Crop	Summer Fall.	Pasture	Other	Total	Woodland	Other
Tuscarora	18,647	10,100	1,644	5,758	1,145	6,627	3,731	2,896
Oneida	27,923	19,069	1,134	6,799	921	4,757	2,638	2,119

Condition of Occupied Farmland, 1961

	Improved					Unimproved		
	Total	Crop	Summer Fall.	Pasture	Other	Total	Woodland	Other
Tuscarora	5,022	3,161	546	1,046	275	1,928	750	1,178
Oneida	28,238	19,864	1,000	6,600	774	4,731	2,725	2,006

Condition of Occupied Farmland, 1966

	Improved					Unimproved		
	Total	Crop	Summer Fall.	Pasture	Other	Total	Woodland	Other
Tuscarora	6,545	4,710	773	773	289	2,371	1,364	1,007
Oneida	30,418	21,648	2,060	5,627	1,083	4,235	2,600	1,035

Comparing the above figures showing the use of farmland on Tuscarora and Oneida in 1951 and 1961, it is seen that, whilst the total amount of farmland in Oneida remained about the same, in Tuscarora the total area of farmland left in 1961 was only one third the amount there had been in 1951. But, the average size of farm had increased.

Farm Averages, 1951

	Size	Improved Land	Cropland
Tuscarora	93.2 acres	68.8 acres	37.2 acres
Oneida	143,3 acres	122.4 acres	82.7 acres

Farm Averages, 1961

	Size	Improved Land	Cropland
Tuscarora	141.8	102.5	64.5
Oneida	157.2	135	95

Farm Averages, 1966

	Size	Improved Land	Cropland
Tuscarora	122.1	89.6	64.5
Oneida	165.9	145.5	103.5

In both townships cropland was the most important form of land use. The main crops grown in both townships were winter wheat, oats and hay, and there was little change in the relative importance of these crops between 1951 and 1961.

Field Crops (acres) 1951

	W. Wheat	Barley	Oats	Rye	Flax	M. Grain	Cult Hay	Potatoes
Tuscarora	1,694	248	3,605	56	--	272	4,028	62
Oneida	3,328	255	5,397	55	24	1,144	8,199	5

Field Crops (acres) 1961

	W. Wheat	Barley	Oats	Rye	Flax	M. Grain	Cult Hay	Potatoes
Tuscarora	608	53	1,039	--	--	114	1,030	9
Oneida	2,441	288	6,711	4	5	329	9,297	5

Field Crops (acres) 1966

	W. Wheat	Barley	Oats	Rye	Flax	M. Grain	Cult Hay	Pots.	Corn
Tuscarora	1,014	572	1,500	--	--	70	1,107	14	151
Oneida	1,393	1,275	5,723	--	--	831	10,259	4	1,870

From the above tables showing crop acreages for the two townships, it is seen that the total crop acreages in Oneida did not change noticeably from 1951 to 1961. There was an increase in the acreage of oats, cultivated hay, and barley, but a decrease in the acreage of winter wheat, mixed grain, and rye. On Tuscarora, all the crops showed a decrease in acreage, due to the decrease in the area of land classified as farmland in 1961.

Livestock 1951

	Total Cattle	Milk Cows	Sheep	Pigs	Horses	Poultry
Tuscarora	1,048	714	24	770	410	14,605
Oneida	4,718	2,695	549	2,586	395	62,451

Livestock 1961

	Total Cattle	Milk Cows	Sheep	Pigs	Horses	Poultry
Tuscarora	764	261	20	231	59	2,365
Oneida	6,756	2,869	658	2,881	147	60,492

Livestock 1966

	Total Cattle	Pigs	Horses	Poultry	Sheep
Tuscarora	701	304	31	1,051	--
Oneida	7,001	3,176	189	137,802	630

There were much larger numbers of livestock in Oneida in both 1951 and 1961, but these numbers had not changed a great deal; there had been only a slight increase in the numbers of cattle and pigs; and sheep rearing is more important in Oneida than Tuscarora. On the Reserve, total livestock numbers show an enormous decrease, due to the disappearance of a large number of farms; but the average number of cattle per farm had actually increased.

Summary of Chapter Four

Between 1951 and 1961, there had been a great change in the farming on Tuscarora, and by studying the census figures for the whole Reserve, certain trends can be seen. A striking feature is the disappearance of a great number of farms, only one fifth of the 1951 number remaining in 1961. Connected to this is the drop in the area classified in the census as farmland; between 1951 and 1961, over 18,000 acres of farmland had been abandoned, and thus extensive areas of previously cultivated land have reverted to scrubland, which is now virtually disused.

But, in spite of the great reduction in farm numbers and total area of land being farmed, the averages for individual farms give the impression of improvements amongst those farms remaining in the Reserve in 1961 as between 1951 and 1961, there had been a considerable increase in farm size, crop acreages and livestock numbers. It appears that the trend is towards fewer, but larger farms on the Reserve and most of the smaller, less productive farms have ceased to operate, or are no longer classified as farms.

To see how much progress has been made in agriculture on the Reserve, a comparison was made with the township of Oneida, and from this it is seen that whilst in Tuscarora great changes took place between 1951 and 1961, in contrast the farming in Oneida had changed only slightly during this same period. In the latter township the pattern is one of mixed farming; oats, hay and winter wheat are the

main crops grown and cattle, pigs and poultry reared. The pattern of farming in Tuscarora had become more like this by 1961, but farm values, crop acreages and livestock numbers were still far lower than in Oneida. The 1966 census shows a slight improvement on the 1961 in Tuscarora, but the numbers of farms, amount of improved land, crop acreages and livestock numbers are still far lower than in 1951.

Chapter 5

DESCRIPTION OF BLOCKS IN TUSCARORA AND ONEIDA

In order to gain a more detailed picture of farming in Tuscarora in 1951 and 1961 than can be obtained from the census figures, a number of sample blocks were studied using farm returns, and the changes between 1951 and 1961 were noted. Seven blocks were chosen on the Reserve, to represent, as far as possible, different soil types. The figures given here are the averages for all the farms situated in the block described, but as three farms is the minimum number that can be used for obtaining the averages, a problem arises. In 1951, six blocks are described in Tuscarora and one block in the strip of the Reserve in Haldimand county. But in 1961, four of these seven blocks had less than three farms on them, and so could not be used for the comparison. However, this situation itself has significance as it reflects the great decline in farm numbers between 1951 and 1961. It was thought valuable to describe all seven blocks in 1951 to obtain an idea of any variations throughout the Reserve. A further disadvantage was found in using average figures; in 1951 in particular, a tiny holding of about 20 acres might be situated next to a farm of about 100 acres. But, as the figures given for each block are an average of all farms in that block, these differences are hidden.

As has already been discussed, a further difficulty arises because of the change in the census deffinition of a farm, between 1951 and 1961.

LOCATION OF SAMPLE BLOCKS IN TUSCARORA

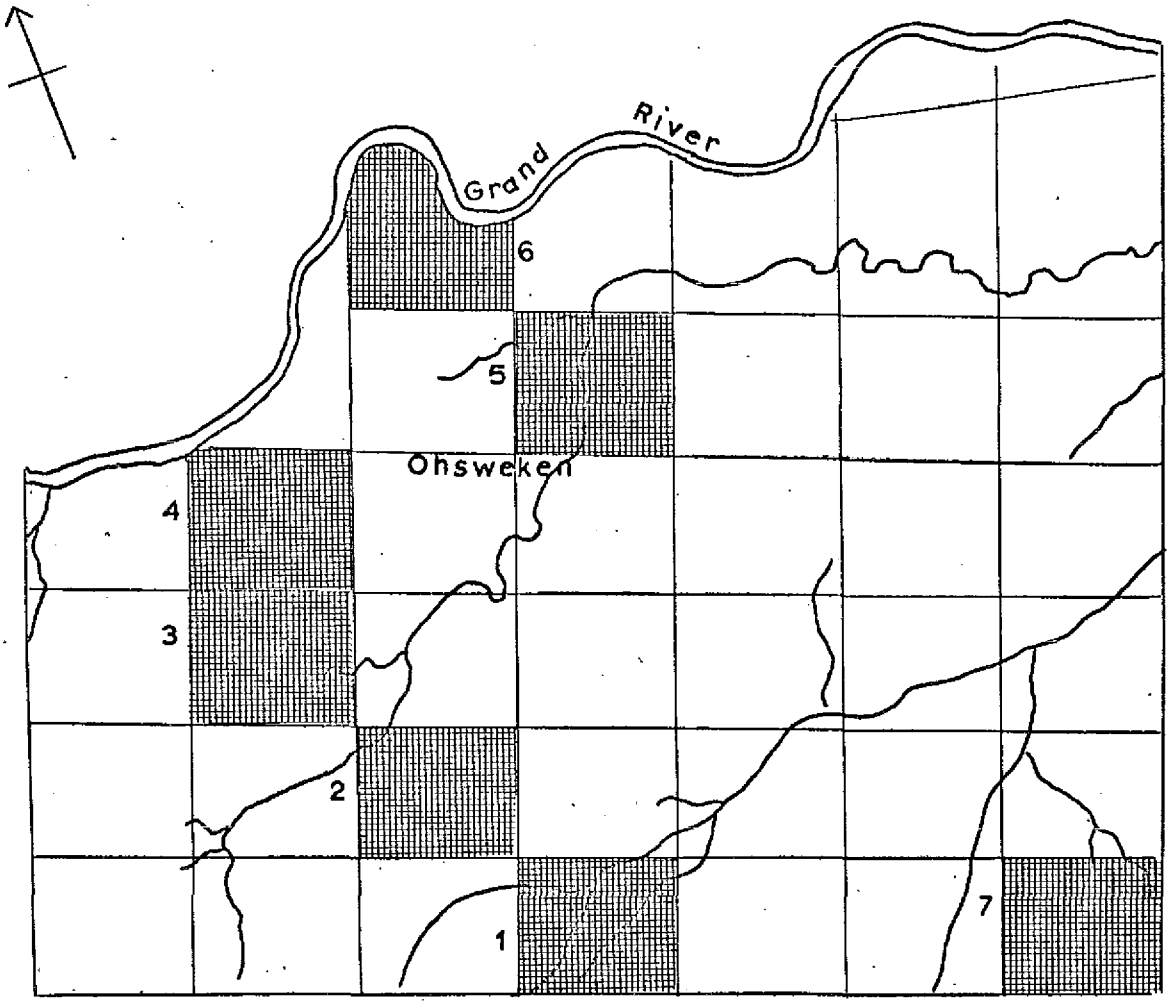


Figure 7

LOCATION OF SAMPLE BLOCKS IN ONEIDA

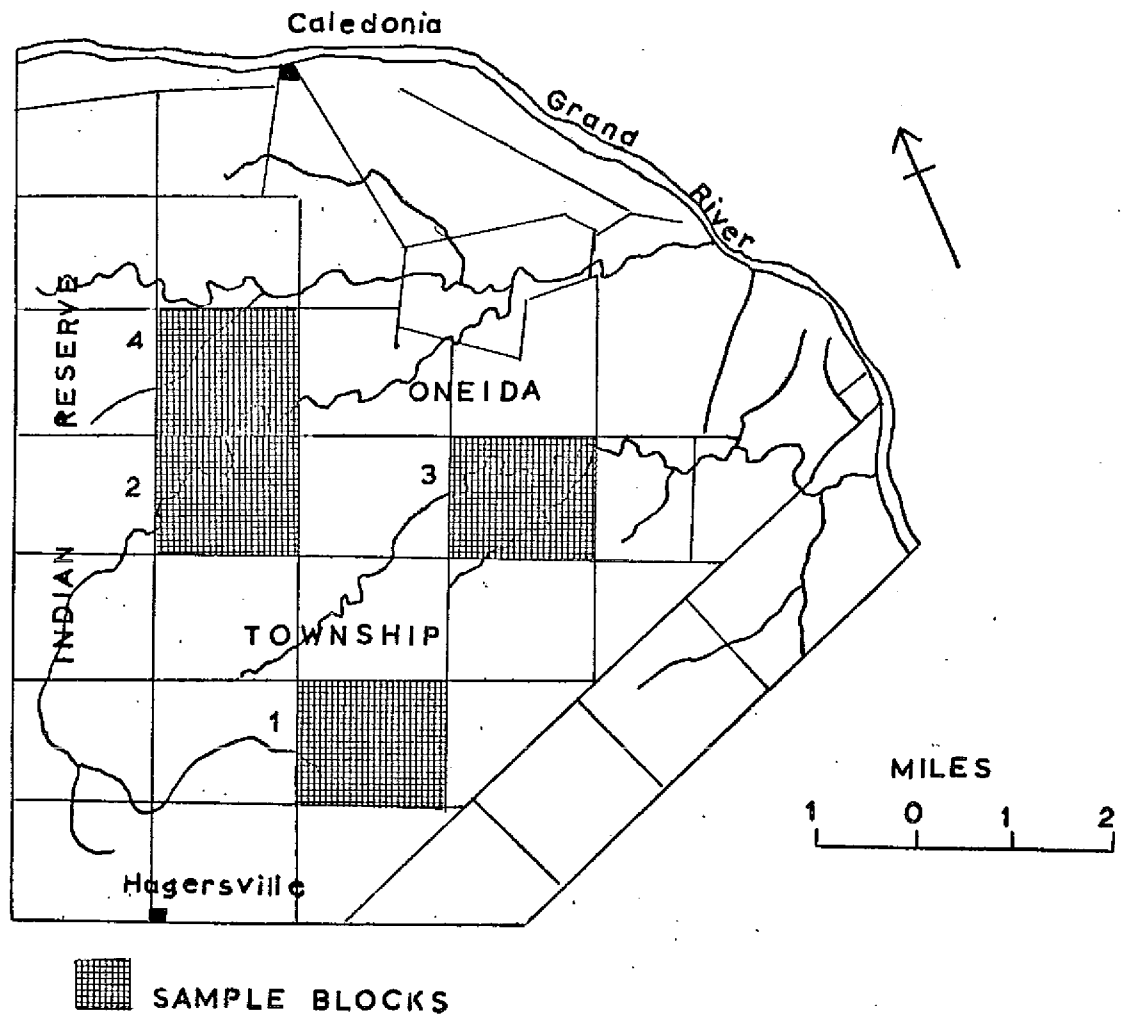


Figure 3

Block 1. Concession 1, lots 13-18.

Block 1 lies at the southern edge of the Reserve at a height of 625 to 700 feet above sea level, and is drained by Boston Creek. The soils are mainly Haldimand Clay, with Bottomland along the creek. In 1951 there were 6 farms on this block, with an average acreage of 103.16, but by 1961 the number of farms had dropped to 3, but the average acreage had increased to 168. During this time the value of the farm and the farm machinery had increased greatly.

	Area Acres	$ Farm Value	$ Machinery Value
1951	103.1	3,366.6	926
1961	168	9,325	3,388.3

In both 1951 and 1961, cropland was the main form of land use, followed by improved pasture. Summer fallow remained a small area, but land classified as idle improved rose nearly three times, and there was also an appreciable increase in the amount of woodland and unimproved land.

Land Use (Acres)

	Crop		Improved Pasture		s.Fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	52.16	50.5	21.16	20.5	1.86	1.7	7.16	6.9	17	16.4	4.3	4
1961	64	38	46	27.4	2.6	1.5	21	12.5	22.6	13.5	11	6.5

In 1951 the largest crop acreages were of winter wheat, hay and oats, but by 1961 the hay acreage had increased, whereas winter wheat had decreased to half the 1951 amount. In both years small quantities of alfalfa, potatoes and corn were grown.

Crops - Acres

	W. Wheat	Oats	Hay	Alfalfa	Barley	Corn	Potatoes
1951	16.5	11.16	16	7.3	--	0.66	0.33
1961	8.3	16	24.3	9.3	--	2.66	0.66

Livestock

	Cattle	Milk Cows	Horses	Pigs	Sheep	Poultry
1951	9.3	2.3	1.71	2	1.3	28.66
1961	22.66	7.3	1.66	1	6.66	--

Between 1951 and 1961, there was a great increase both in the total number of cattle reared, and in the number of milk cows, which suggests an increasing concentration on milk production and dairying. The number of horses had declined, due to increased mechanisation of farming on the Reserve; the number of pigs had also decreased, and in 1961, poultry were no longer reared on this block. The increase in the amount of hay, oats and alfalfa grown for fodder reflects the increasing concentration on cattle rearing.

$ Sales

	Grain	Cattle	Poultry	Dairy Prod.	Pigs	Sheep	Hay	Total
1951	298	128.3	72.5	258.3	33.3	18.3	55.83	865.5
1961	58.66	366.66	--	946	--	--	133.33	1504.6

The income obtained from the sales of farm products on this block also reveal a change between 1951 and 1961. The income per acre on this farm was very low, and there was only a slight increase in this from $8.40 an acre in 1951 to $8.90 an acre in 1961. In 1951 the largest single item of income was from the sale of grain, but in 1961 the sale of dairy produce had become the most important item, followed by the sale of cattle.

Thus, on this block, farming is specialising more in cattle rearing and dairing, with hay and oats being grown for fodder, and cash grain crops are becoming less important. But the prosperity of farming is very low, as is seen by the average income per acre. Also the large area of farmland covered by woodland and unimproved or idle land points to the lack of prosperity, despite the increase in farm size and farm value.

Block 2. Concession 2, lots 19-24

Block 2 lies at a height of about 700 feet and has no creeks running across it. The soils are mainly Berrien Sandy loams which are imperfectly drained. In 1951 there were 8 farms in this block, but in 1961 no farms were recorded. A comparison of farming between 1951 and 1961 cannot therefore be made, although the fact that all farms on

block 2 have fallen out of production is significant.

It is seen from the following figures that in 1951 the average farms on this block were very small, and of very low value.

Area	Farm Value	Machinery Value
51.37 Acres	$2,356.25	$381.25

Cropland was the main form of landuse, and the amount of idle and unimproved land on this was relatively high.

Landuse

Crop		Improved Pasture		s. Fallow		Idle		Woodland		Unimproved	
Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
18.25	35.5	7.25	15	--	--	10.75	20.9	2.5	4.9	10.12	19.7

Crops

W. Wheat	Oats	Barley	Hay	Corn	Alfalfa	Potatoes	Mixed Grain
3.12	4	--	8.25	1	--	1	--

In 1951, hay was the most important crop grown followed by oats and winter wheat with an acre each of potatoes and corn were also grown.

Livestock

All Cattle	Milk Cows	Pigs	Poultry	Horses
3.12	0.62	1.75	66	1.62

A few cattle, horses, pigs and poultry, were reared, and most of the farm income was from the sale of dairy produce and pigs.

$ Sales

Total	Grain	Cattle	Horses	Dairy Produce	Poultry and Eggs	Hay	Pigs
243	16.5	--	--	125	12	--	27.5

The average income from the sale of products in 1951 was one of the lowest recorded for the blocks studied in Tuscarora; a mere $4.20 per acre.

Block 3. Concession 3, lots 25-30.

This block lies at a height of over 700 feet, with no creeks draining it. The soils consist of Haldimand clay, Caistor clay loam and Brantford clay, all of which are heavy soils, developed on glacio-lacustrine material. There were only 4 farms on this block in 1951, and this number had been reduced by one by 1961. But farm size, farm value and machinery value had all shown a large increase from 1951 to 1961.

	Area	Farm Value	Machinery Value
1951	60.5	$ 3,250.	$1,200.
1961	133.3	$10,166.6	$3,548.3

Landuse

	Crop		Improved Pasture		s.Fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	31.75	52.5	14	23.1	2.5	4.1	1	1.7	11.25	18.6	--	--
1961	90.3	69	24.3	18.3	--	--	8.3	6.2	8.3	6.2	--	--

Of the total farmland in 1951, cropland covered more than 50%, and by 1961 this had greatly increased. The area of improved pasture also increased, although its percentage of the total farmland had decreased. The lack of unimproved land on this farm is an unusual feature for Tuscarora.

Crops

	W. Wheat	Oats	Hay	Barley	Corn	M. Grain	Alfalfa	Potatoes
1951	10	12	14	--	--	--	--	1.5
1961	19.6	7.3	--	1.33	2.66	25	37.6	--

The main changes which occurred between 1951 and 1961, were the increases in acreages of winter wheat, mixed grain and alfalfa; and small acreages of barley and corn had also been introduced. The total number of cattle had increased almost six times.

Livestock

	All Cattle	Milk Cows	Horses	Pigs	Poultry	Ducks
1951	4.75	2.25	2.25	4	--	--
1961	24	7.33	1.66	--	4	5

$ Sales

	Grain	Cattle	Dairy Produce	Poultry and eggs	Horses	Pigs	Hay	Total
1951	--	80	142.5	--	--	--	150	372.5
1961	1,444.	1,801.3	866.6	--	58.6	--	23.3	4,194

The products sold off the farm in 1951, were cattle, dairy produce and hay, giving a total annual income of only $372.50. A larger range of products were sold in 1961; the main ones were cattle and grain, and the total income was now $4,194. The income per acre from the sale of farm products in 1951 was only $6.10 but this had risen to $31. in 1961, which was the highest income per acre of any of the farms studied in Tuscarora.

Block 4. Concession 4, lots 25-30

This block lies at a height of 625 to 700 feet, and extends up to the Grand River in the northern corner. It is drained by a small tributary of McKenzie Creek and the soils consist of Brantford clay loam, which is rather similar to Haldimand clay. In 1951 there were only three farms on this block, a low number compared with other blocks studied; in 1961 there were only 2 farms remaining so a comparison could not be made, but the picture in 1951 can be described.

	Area	Farm Value	Machinery Value
1951	90 acres	$5,000	$1,013.3

In 1951 the largest proportion of the land was taken up by improved pasture, in contrast to the other farms described, where

cropland covered the largest area. The area of woodland was very small and no other unimproved land was recorded.

	Crops		Improved Pasture		s. Fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	31.6	35.2	46.6	51.8	8.6	9.6	1.3	1.5	1.6	1.8	--	--

Oats was the most important crop grown in 1951, followed by almost equal amounts of winter wheat, hay and barley, and livestock numbers were very low.

Crops (acres)

	W. Wheat	Oats	Hay	Barley	Corn	Potatoes	Alfalfa
1951	9.33	13.6	8.6	8.3	--	0.13	--

Livestock

	All Cattle	Milk Cows	Horses	Pigs	Poultry	Ducks
1951	3.66	1.33	0.66	1	11.66	4.66

$ Sales

	Total	Grain	Cattle	Dairy Produce	Poultry and Eggs	Potatoes
1951	316.6	166.6	41.6	100	--	8.3

The total income from the sale of farm produce was very small, and the largest proportion of this was obtained from the sale of a little grain and dairy produce. The average income per acre of $3.5 was the lowest of any of the blocks studied on the Reserve in 1951.

Block 5. Concession 5, lots 13-18

This block, lying at a height of 650 to 675 feet, is drained by the McKenzie Creek, and has Haldimand clay and Bottomland soils. The village of Ohsweken, the main settlement on the Reserve, is situated at the crossroads at the south-west corner of this block. As on the other blocks, there was a great decrease in farms; in 1951 there were 7 farms, but in 1961 only one farm was situated on this block, although some of the land was farmed by operators living on other blocks.

Area	Farm Value	Machinery Value
105	$3,500	$567.14

Landuse

Crops		Improved Pasture		s.Fallow		Idle		Woodland		Unimproved	
Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
48.4	46	24.3	23	8.85	9.4	1.3	1.2	13.85	13.2	7.43	7.1

In 1951 cropland took up the largest acreage of the farm, and improved pasture was the second most important form of land use. There

was also a fairly large proportion of woodland on the farm.

As had been found on the other blocks described, in 1951 hay, oats, and winter wheat were the main crops grown, and the only other crops were small areas of barley and potatoes. Livestock numbers were low, and no pigs or milk cows were recorded in 1951.

Crops 1951

W. Wheat	Oats	Barley	Corn	Hay	Alfalfa	Potatoes
9.43	20.3	3.57	--	10.57	--	0.43

Livestock

All Cattle	Milk Cows	Horses	Pigs	Poultry
2.57	--	1.57	--	4.57

$ Sales

Grain	Cattle	Dairy Produce	Poultry and Eggs	Horses	Total
300	108	--	--	10.85	418.85

The average income per acre from the sale of farm products was only $3.90 and the largest proportion of the income was from the sale of grain. It is probable that this block is influenced by the nearness to Oshweken, so that many of the farm people are now finding employment in the village. This could help to explain the great drop in the number of farms.

Block 6. River Range, lots 37-48.

The River Range is a series of long narrow lots, each with a frontage along the Grand River. The soils on the block studied are Haldimand clay, Brantford clay loam, and bottomland, and the land is 625 to 675 feet above sea level. In 1951 there were 8 farms on this block but by 1961 the number had been reduced to 5. In many ways the average farm on the River Range block is different from the farms already described on other parts of the Reserve. In both 1951 and 1961 the size of farm was larger than usual for Tuscarora, and the acreage of 162.75 was especially large for 1951. The average farm size on this block had only increased by 5 acres between 1951 and 1961, but during this time farm value and machinery value had greatly increased.

	Area	Farm Value	Machinery Value
1951	162.75	$ 7,608.75	$2,700.62
1961	167.8	$15,300.	$3,569.2

Landuse

	Crop		Improved Pasture		s. Fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	82.5	50.7	28.25	17.4	13.8	8.6	4.62	2.8	22.8	14.1	9.8	6.1
1961	85.4	50.1	32.4	19.3	12.2	7.3	7.4	4.4	10.4	6.2	18	10.7

There was very little increase in the amount of cropland or improved pasture between 1951 and 1961. Two main changes occurred; woodland decreased to half the 1951 amount, and the area of other unimproved land almost doubled.

Crops

	W.Wheat	Oats	Hay	Alfalfa	Corn	Barley	Potatoes	Raspberries
1951	16.5	29.37	28.75	3.1	2.1	--	--	--
1961	12	32	4	23	9.2	5	0.1	0.1

The pattern of crop cultivation follows that of the other farms described but acreages are higher. The main changes were a great increase in the amount of alfalfa grown, and the decrease in other types of hay. Also in addition in 1961 the farm grew small areas of barley, potatoes, and raspberries, an unusual feature.

Livestock

	All Cattle	Milk Cows	Horses	Pigs	Poultry
1951	8.75	--	2	6.87	345
1961	30	10.6	5	16	282

The average farm on this block had in 1951 a larger number of cattle than was general for farms on the Reserve, and by 1961 there was an extensive increase in all livestock numbers except poultry.

$ Sales

	Total	Grain	Hay	Cattle	Poultry & Eggs	Dairy Produce	Fruit	Pigs
1951	2492.5	275	134.38	799.38	407	528.75	86	262
1961	3528.8	11.2	7.2	1100.4	1420	140	80	670

The average income per acre from the sale of farm products ($15.3) was the highest in 1951 of any farm studied on the Reserve, but this increased only slightly to $21 per acre in 1961. There had been changes in the relative importance of the different items sold off the farm: in 1951 cattle and dairy produce accounted for the largest proportion of the income, but in 1961 poultry and eggs, and grain had become the main items, although the sale of cattle was still an important source of income.

Of the blocks studied in Tuscarora, the River Range block is the one which had the most prosperous farming 1951, and the one which changed least between 1951 and 1961. It had the largest acreage, the highest sales per acre, and was more comparable with the kind of farms found in Oneida township. In 1961 the average farm of the River Range block still had one of the largest acreages, and its income per acre from sales remained among the highest. The soils on this block do not differ markedly from those found on some of the other blocks studied, and so the anomaly in farm size and production must be explained by the greater efficiency of the farm operators on the River Range Block.

Haldimand Block. Concession 1, lots 1-6

The soil of this block is predominately Oneida clay loam, with a small area of Haldimand clay in the northern ¼ of the block. In 1951 there were 8 farms of small size and low value, but the situation in 1961 cannot be compared as the number of farms had dropped to 2.

Area	Farm Value	Machinery Value
78.87	$1,925.	$532.

Landuse

Crop		Improved Pasture		s. Fallow		Idle		Woodland		Unimproved	
Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
37	46.9	12.37	15.7	--	--	1	1.2	9.37	11.8	21.37	27

Although in 1951 cropland was the most important form of land use on this average farm, there was also a very large proportion of unimproved land. The cropland consisted mainly of hay and oats, with small amounts of wheat, barley, alfalfa and potatoes also grown.

Crops

W. Wheat	Oats	Mixed Grain	Barley	Hay	Alfalfa	Potatoes
3.25	10.37	--	1.12	20.75	3.25	0.5

As was found on the other farms in 1951, livestock numbers were low.

Livestock

Cattle	Milk Cows	Horses	Pigs	Sheep	Poultry
3.12	0.5	0.75	1.37	--	28.25

Similarly the total income from the sale of farm products was very low, only $450; and this gave an average income per acre of only

$5.70. As was the case on most farms studied in 1951, grain constituted the main item sold off the farm, with dairy produce the second largest.

$ Sales

Grain	Cattle	Dairy Produce	Poultry Eggs	Pigs	Horses	Total
168.75	50	97.5	18.75	62.5	52.5	450

5 b Description of Four Blocks in Oneida Township

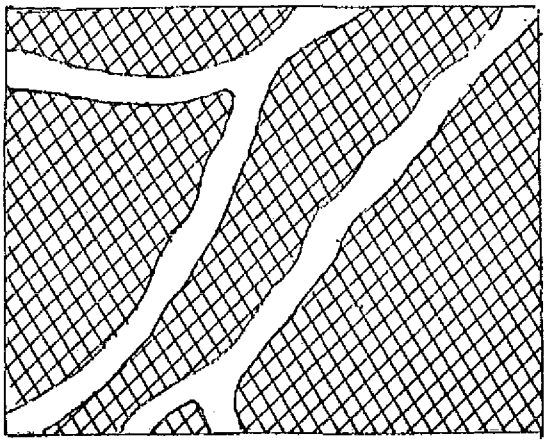
A study was made of the agriculture on four blocks in Oneida township, and these blocks were chosen, as in the case of Tuscarora, to represent as far as possible, the different soil types. The figures given are the mean of all the farms found within that particular block. After studying the farming of four sample blocks, an impression is obtained of the position of farming and land use throughout Oneida township, and a comparison could then be made between Oneida and Tuscarora.

Block 1. Concession 2, lots 13-18

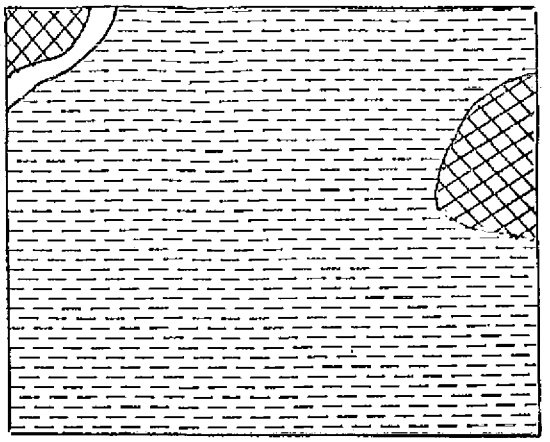
The soils of this block consist mainly of Oneida Clay Loam, but towards the Onondaga escarpment in the south is Farmington Clay Loam and Farmington Clay. In the north is an area of Caistor Clay Loam, and a patch of Ontario Loam also occurs.

The number of farms in this block decreased from 8 to 7 between 1951 and 1961, and the average farm size also decreased slightly.

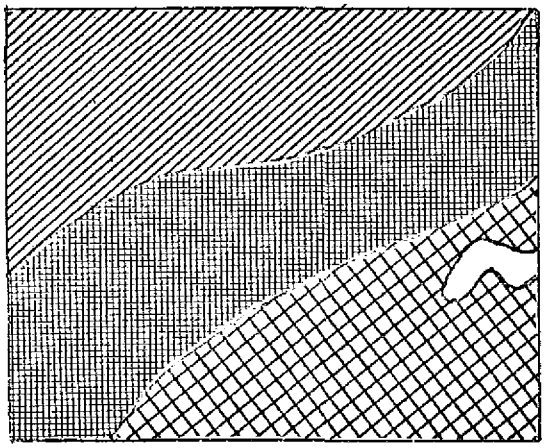
TUSCARORA SOILS



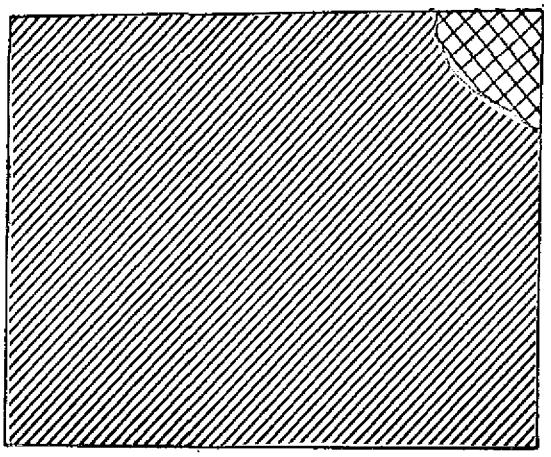
BLOCK 1



BLOCK 2



BLOCK 3



BLOCK 4

KEY FOR FIGURES 9 & 10

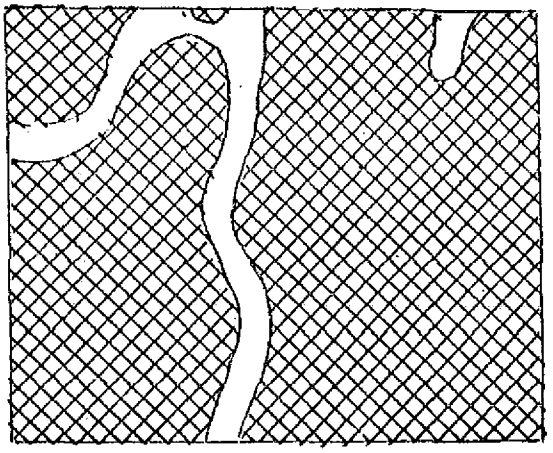
MILE

0 1

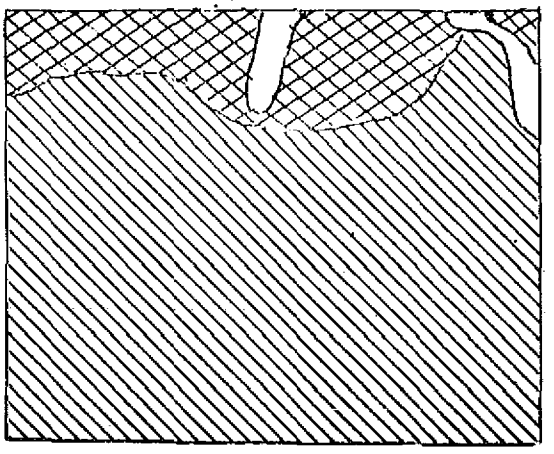
- Haldimand Clay
- Oneida Clay Loam
- Caistor Clay Loam
- Brantford Clay Loam
- Farmington Clay Loam
- Farmington Loam
- Ontario Loam
- Berrien Sandy Loam
- Tuscola Loam
- Bottomland

Figure 9a

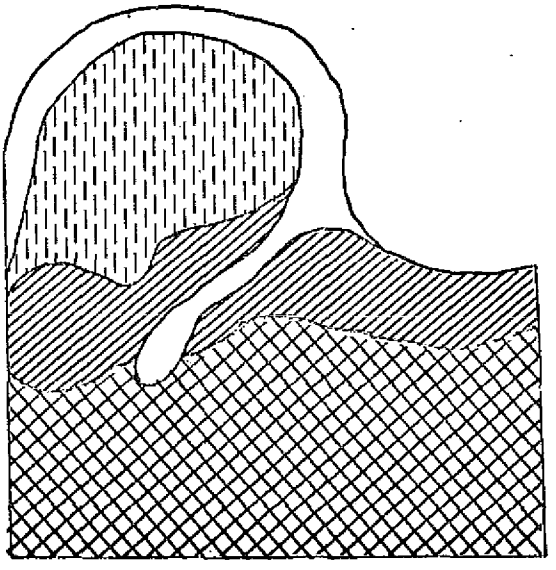
TUSCARORA SOILS



BLOCK 5



BLOCK 7



BLOCK 6

Figure 9b

	Area	Farm Value	Machinery Value
1951	227 acres	$16,788.	$5,655.66
1961	190 acres	$24,428.57	$7,619.3

In both 1951 and 1961, cropland covered the largest percentage of farmland (62.8 and 62.4), and improved pasture was the second largest area of farmland.

	Crop		Improved Pasture		S.Fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	143.6	62.8	47	20.7	5	2.2	11	4.8	13	5.7	12.66	5.3
1961	118.6	62.4	33.1	17.4	9	4.7	2.85	1.5	22.6	11.9	--	--

In 1951 the main crops grown were hay, oats, small quantities of alfalfa; mixed grain and corn were also grown. In 1951, alfalfa covered the largest acreage and although this is a form of hay crop it was recorded separately from other hay crops. The acreage of oats still remained high, but the acreage of hay other than alfalfa, and winter wheat had declined. The crops grown in both years were for use mainly as fodder in a cattle rearing and dairying type of farming.

Crops

	W. Wheat	Oats	Barley	Alfalfa	Hay	Corn	Mixed Grain
1951	25.3	37	--	4.66	43.3	2	1
1961	13.3	43.43	--	42.85	16	3	--

Livestock

	Cattle	Milk Cows	Pigs	Poultry	Horses
1951	31	13	11.3	1,099.3	1.66
1961	40.85	20.3	18.57	180	0.3

In both 1951 and 1961, the farms on block 1 mainly concentrated on cattle rearing and dairying, with pig rearing also an important activity. Large numbers of poultry were kept in 1951, but these had decreased to 180 by 1961.

$ Sales

	Grain	Cattle	Dairy Produce	Poultry & Eggs	Pigs	Horses	Hay	Total
1951	166.6	1896	2637	2415.3	837	15	3	7217
1961	645.1	1699	--	4565.5	703.4	--	21.4	7634

There had been very little increase in the total income from the sale of farm products between 1951 and 1961, although the 1961 income per acre was slightly higher, ($40.2 compared with $31.8 in 1951). The relative importance of the sales of different items had changed. In 1951 the largest proportion of the income was from the sale of poultry and eggs, and dairy produce. In 1961, although poultry and eggs were still important, no income from the sale of dairy produce was recorded. In both years the sale of cattle was an important part of the income.

Block 2. Concession 4, lots 11-15

The soils of this block consist of a Haldimand clay in the south-west and north Oneida clay; and Bottomland along the course of Boston Creek, which crosses the middle of the block. The total number of farms decreased from 11 in 1951 to 9 in 1961, but the average size and the value of the farms increased.

	Area	Farm Value	Machinery Value
1951	134.25	$10,804.	$5,392.
1961	170.55	$26,777.2	$7,718.1

Landuse

	Crop		Improved Pasture		s. Fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	86.6	65.2	17.5	13.8	6.75	5	4.5	3.4	9	6.7	6	4.5
1961	106.4	62.3	28.3	16.8	9.1	5.3	4.1	2.4	12.5	7.4	10	5.9

In 1951 cropland was the main land use, taking up 65.2% of the farm area; and improved pasture was the second important. There was a very low % of idle land, summer fallow, woodland and unimproved land and in 1961 the pattern was approximately the same.

Of the crops grown, in 1951, hay and oats were the most important, followed by winter wheat. By 1961 the acreage of alfalfa had increased enormously to 46.2 acres from 6.4 acres, whereas the acreage of other kinds of hay had decreased.

	W.Wheat	Oats	Barley	M.Grain	Hay	Alfalfa	Corn	Potatoes
1951	14.5	27	2.4	4.75	25.25	6.4	3.25	0.03
1961	15.9	35.4	4	1.9	0.66	46.2	2.1	--

As with the mean farm on block 1., cattle, pigs, and poultry were reared, and by 1961 the number of cattle had increased.

Livestock

	Cattle	Milk Cows	Pigs	Horses	Poultry
1951	20.75	8.83	18.66	2	294.5
1961	32	9.55	15.33	0.66	590.2

The total income from the sale of farm produce increased between 1951 and 1961, and this gave a small increased in the income per acre from $58.5 to $64. In both 1951 and 1961 the main source of income was from the sale of poultry and eggs, but in 1961 the sale of dairy produce was becoming a more important source of income than the sale of cattle.

$ Sales

	Total	Grain	Cattle	Dairy Prod.	Poultry & Eggs	Pigs	Horses	Hay
1951	7854	696.3	1905	1196.6	2640.5	1203.6	3.25	208.6
1961	10880	484.3	1319.5	2545.5	5652	814	--	66.6

Block 3. Concession 4, lots 19-24

Most of this block has Oneida clay loam soils, but Ontario loam occurs in patches in the east where there are drumlins, and bottomland is found along the creeks. The number of farms had decreased

from 9 in 1951 to 7 in 1961, the average farm size had also decreased, and the value of the farm and machinery had increased only slightly.

	Area	Farm Value	Machinery Value
1951	145	$10,900.	$5305.6
1961	129	$16,428.57	$5554.7

Landuse

	Crop		Improved Pasture		s. fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	102.4	70.5	26.2	18	2.5	1.8	5.4	3.7	4.6	3.2	3.6	2.5
1961	72.7	55.6	36.3	28.1	3.85	3	3.85	3	6.57	5.1	5.7	4.8

The pattern of land use was similar to that on the other two blocks studied in Oneida, with cropland taking up the largest area but by 1961, the cropland had decreased in area, but the improved pasture had increased.

Of the various crops grown, the main change between 1951 and 1961, was the increase in the amount of alfalfa, and the decrease in other kinds of hay and winter wheat.

Crops

	W.Wheat	Oats	Barley	Hay	Corn	Mixed Grain	Alfalfa
1951	23.6	30	3.9	31.4	2.6	3.55	5.1
1961	11.4	29.1	--	14	2.3	--	15.85

Livestock

	Cattle	Milk Cows	Horses	Pigs	Poultry	Sheep
1951	21.8	10.4	3.5	14.4	595	2
1961	26.3	9.3	0.3	14	157.1	11.7

As on the other blocks studied in Oneida, the livestock consisted predominantly of cattle, with also some pigs and poultry, but very few horses. On the whole livestock numbers had changed little; there had been a decline if anything, between 1951 and 1961.

Sales

	Total	Grain	Hay	Cattle	Dairy Prod.	Poultry & Eggs	Pigs	Sheep
1951	8077.1	700	275	1549	2779.3	1769.6	978.1	25
1961	8102.4	220.5	159.4	1157.1	2283.1	398.7	755.4	137.5

Between 1951 and 1961 there was only a very slight increase in the amount of income from the sale of farm products, but the income per acre had increased from $55.5 in 1951 to $64.8 in 1961. In both years the largest proportion of the income was from the sale of dairy produce, poultry and eggs and cattle.

Block 4. Concession 5, lots 6-10

The soils of this block consist mainly of Oneida clay loam, with patches of Ontario loam in the east where drumlins occur. An area of Haldimand clay extends from Tuscarora into the north-east corner of this block, and bottomland occurs along Boston Creek and Mckenzie Creek.

In 1951 there were 8 farms on this block but this number had decreased to 7 in 1961 and the average acreage of the farm had decreased slightly.

	Area	Farm Value	Machinery Value
1951	170.9	15,211.1	6097.3
1961	152	27,285.7	6189.3

Cropland covered the largest proportion of farmland, improved pasture was the next most important form of land use and the amounts of summer fallow, idle, woodland and unimproved land were quite small.

Landuse

	Crops		Improved Pasture		s. fallow		Idle		Woodland		Unimproved	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1951	94.7	56.6	33.5	19.7	9.5	5.5	7.6	4.5	11.2	6.6	12	7.1
1961	103.4	68	24.8	16.6	1.1	0.75	6.1	4.0	11	7.2	5.7	3.8

Crops

	W.Wheat	Oats	Hay	Corn	Barley	Mixed Grain	Potatoes	Alfalfa
1951	13.1	19.9	31.9	10.2	1.2	10.5	0.016	7
1961	11.3	25.8	--	7.4	1.4	0.7	0.05	58

Livestock

	Total Cattle	Milk Cows	Horses	Pigs	Poultry	Geese
1951	32.5	14.5	2	11.1	14.4	--
1961	41	22.4	0.85	2.4	20.2	5.7

The pattern of crop production and livestock rearing was similar to that of the other blocks studied in Oneida; cattle, pigs and poultry being kept and oats and hay being grown mainly for fodder. The main

change between 1951 and 1961 was the increase in the number of cattle.

$ Sales

	Grain	Hay	Cattle	Dairy Prod.	Poultry & Eggs	Pigs	Horses	Total
1951	509.1	285.4	2469.3	3277.9	210.3	845.3	11.6	7669.3
1961	327.3	81.8	1638	6837.3	--	57.1	--	8941.5

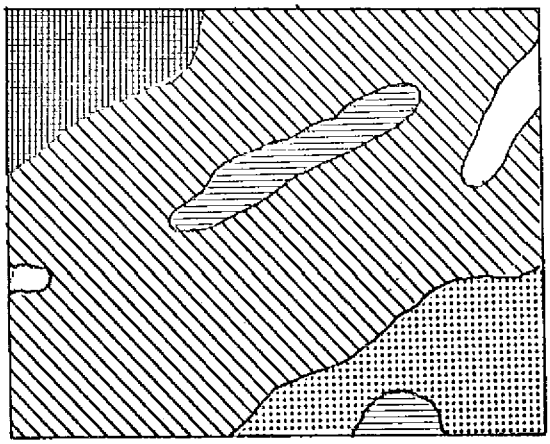
The total farm income from the sale of farm products rose slightly between 1951 and 1961, and the income per acre rose from $44.5 to $58.8 during this time. In both years the main items sold off the farm were dairy produce and cattle. The sale of grain was also quite a large source of income.

c) Comparison of Farming Changed in Tuscarora and Oneida

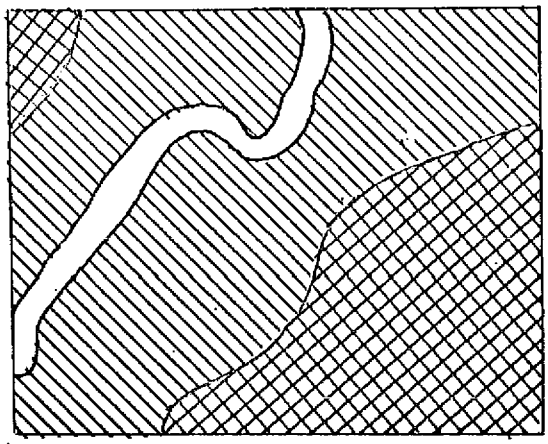
From a study of sample blocks in both Tuscarora and Oneida in 1951 and 1961 the changes in farming in the two townships can be compared, and many contrasting features of their agriculture are apparent.

One of the most striking changes between 1951 and 1961, also seen from the census figures, was the decrease in the number of farms on Tuscarora. This decline is emphasised in the study of the blocks, because four out of the seven blocks, on which there had been seven or eight farms in 1951, contained less than three farms in 1961. In contrast, in Oneida, the number of farms on each block had decreased only slightly.

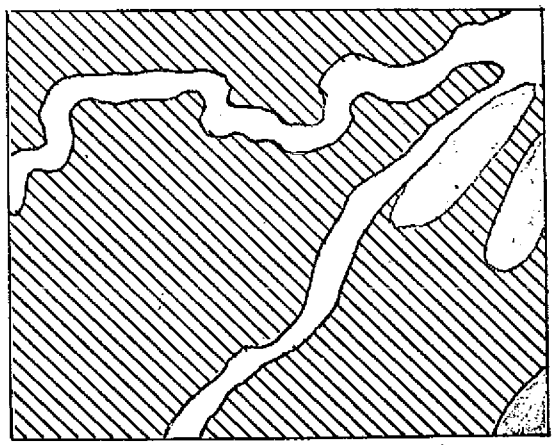
ONEIDA SOILS



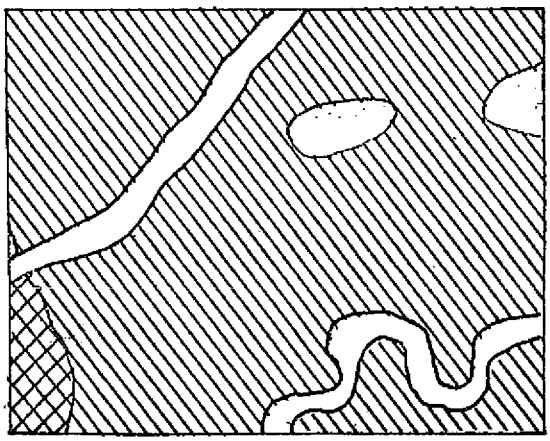
BLOCK 1



BLOCK 2



BLOCK 3



BLOCK 4

Figure 10

Farm Size

In 1951, the size of farm on all blocks studied in Tuscarora (with the exception of the River Range block which showed many features atypical of farms on the Reserve), ranged from 105 acres on block 5, consisting of Haldimand clay soils, to 51.37 acres on block 2 which consisted of Berrien Sandy Loam soils. However, as these are only average figures for the particular blocks described, the great variation in farm size from one lot to another is not apparent; for example a holding of about 20 acres may be situated next to a farm of over 100 acres. As is seen later, this variation in size does not appear to be primarily a factor of variation in soil type, although in the case of block 2 it may reflect very poor soils, (Berrien Sandy Loams), especially as in 1961, this block no longer contained any farms. The average size of all farms on the sample blocks in 1951 was 93.1 acres, and by 1961, the average size of farms on those blocks which still retained a minimum number of three farms, had increased to 159.3 acres. This increase in size as well as the great decrease in farm numbers, suggests that between 1951 and 1961 many of the smaller holdings had been eliminated and as the increase in farm size was not due to a clearance of more land, there must have been consolidation of holdings, the land of the less productive farms being taken over by more efficient operators.

In comparison, all the blocks studied in Oneida showed only a slight decrease in farm numbers, and in all cases, these still contained between seven and nine farms in 1961. A remarkable contrast was in the

size of farm in the two townships in 1951. The average farm size of blocks in Oneida was 169.29 acres in 1951, compared with 93.1 acres in Tuscarora, and there was less variation in the size between one farm and another in the former township. Whereas in Tuscarora, the average farm size had increased to 159.3 acres between 1951 and 1961, the size of farm in Oneida did not change greatly, and three out of the four blocks showed a slight decline, which gave an average farm size in 1961 of 160.38 acres. So it is seen that by 1961 the average farm size on the sample blocks in Tuscarora had shown such an increase that it was now more comparable with that of Oneida, whereas in 1951 it had been much smaller.

Farm Value

The value of the farms and buildings in Tuscarora in 1951 was very low, the average of all blocks studied was only $3,858.3 compared with an average of $13,423.2 for all the blocks studied in Oneida. The value of machinery and implements was also very low on the Reserve, and on many farms, the greater part of this value was accounted for by an automobile. But by 1961, there had been a great increase in the values in Tuscarora; the average value of farms had risen to $11,597.2, compared with an increase in Oneida to $23,745.9. The value of machinery and implements had also increased considerably in both townships between 1951 and 1961; from an average of $1031.5 to $3501.9 in Tuscarora, and from $5612.6 to $6770.3 in Oneida. Although these increases would mainly be due to the general rise in farm values in Southern Ontario, it is seen that the values in Tuscarora increased

by a greater amount (0.67%) than those in Oneida (0.43%) over this period, thus the increase in the value of Tuscarora farms suggests some improvement in farming in that township. But the value of farms and machinery is still much higher in Oneida than in Tuscarora, despite the improvements which have taken place on the Reserve.

Land-Use

In 1951 in Tuscarora, there was a considerable variation in the proportion of each land use category between the different blocks described, but certain features incommon could be observed. On most blocks cropland covered the largest proportion of farmland, between 30% and 50%, and the second largest form of land use was improved pasture. A very noticeable feature of all the Tuscarora blocks was the large amount of unimproved land and woodland. By 1961 all the blocks studied had shown an increase in the amount of cropland to between 40% and 70% of the total farmland, but for the other land use categories, no consistent trend could be seen, some farms had shown an increase in improved pasture, some a decrease; similarly, in the case of woodland, some blocks had an increased acreage, whilst others had a decrease.

In contrast the sample blocks in Oneida had about 60% of their total farmland in crops and there was little change in this proportion between 1951 and 1961. Improved pasture was the next most important form of land use, accounting for about 20% of the farmland. The farms in Oneida also had small acreages of their land classified as summer fallow, idle, improved, woodland and unimproved land, and the proportions of these remained more or less the same in 1951 and 1961, with slight

variations between the different farms studied. So, on the sample blocks in both townships, cropland was the most important form of agricultural land use, but in Tuscarora the proportion varied more between the different farms. There was also more variation between the Tuscarora farms in the amounts of other land use categories, and no deffinite trend was apparent.

On all farms studied on Tuscarora in 1951, the main crops grown were hay, oats and winter wheat, but most farms also had small acreages of a variety of other crops, including barley, mixed grain, corn and potatoes. In 1961 the outstanding feature on all farms studied was the increase which had taken place in the acreage of alfalfa, but at the same time the amounts of other kinds of hay had decreased considerably, probably because its place was being taken by alfalfa, which was classified in the census as a different fodder crop. Most of the farms studied also showed an increase in the winter wheat and oats. The increase in the amounts of fodder crops grown reflects the increasing interest in cattle rearing and dairy production in Tuscarora, some of the oats, alfalfa and corn being used for silage. Most of the farms in 1961 still grew small acreages of potatoes, barley, corn and mixed grain.

As in the case of Tuscarora, the main crops grown in Oneida, on all farms in 1951 were oats, hay and winter wheat, with very small acreages of other crops, and by 1961 there was little change in the relative importance of these crops. The main change which occurred was the enormous increase in the amount of alfalfa grown, whilst there

was a decrease in other types of hay. In both years the individual crop acreages tended to be larger on Oneida farms than on those in Tuscarora; however, there had been on the whole a much greater increase in crop acreages per farm in Tuscarora than in Oneida.

Livestock

In Tuscarora in 1951, all farms studied had a few horses, cows, pigs and poultry, but there was no specialisation in any particular kind of livestock rearing, and none of the farms had a large herd of cattle. Most of the farms studied had about three cattle, except for the River Range block which had 8.75 cattle, and Block 1 with 8.33. But by 1961, all farms studied had herds of over 20 head of cattle, but there had been a decline in the number of horses on each sample block, and the number of pigs was low in both years, most of the farms having only two or three. The average number of poultry varied, some farms showed an increase, some a decrease between 1951 and 1961, and only the River Range block reared over 200 poultry.

Whereas in Tuscarora there was no specialisation in 1951 and little in 1961, in Oneida cattle rearing was the main livestock enterprise in both years, with a concentration on the production of dairy produce. The average size of herd had increased from 26.48 cattle in 1951 to 35.04 in 1961. On most farms pigs were reared but no trends were apparent in this activity, as some farms showed an increase, some a decrease. The average number of pigs per farm on all the blocks studied decreased slightly from 13.86 to 12.57. Most farms also kept a considerable number of poultry and the sale of eggs was an important source of income.

Farm Income

The total income from the sale of farm produce was extremely low on all blocks studied on the Reserve in 1951, the average annual income from this source for all seven blocks was only $679.8, compared with an average of $7,704.3 in Oneida. Although the agricultural census for 1951 states in the deffinition of a farm that the minimum income should be only $250, this is generally accepted as being too low. On all blocks studied the sale of grain was the highest single item of income, with the exception of the River Range block, which obtained most of its income from the sale of cattle and dairy produce. The average annual income per acre was less than $10 on all blocks studied except the River Range block with an income of $15.3 per acre. Some of the blocks had an income as low as $3 to $4 per acre, but on the majority of farms the sale of farm produce was not the only source of income, and most operators worked off the farm for part of the year, many of them in "High Steel" construction. Between 1951 and 1961, the income per acre from the sale of farm produce had greatly increased; the average income for all blocks had increased from $6.7 to $20.3, and most of this was now obtained from the sale of dairy produce, poultry and eggs, whereas in 1951 on most farms the main income was from the sale of grain. This increase could be connected to more specialisation on those farms remaining in Tuscarora.

Incomes from the sale of farm products were found to be much higher on the blocks studied in Oneida than in Tuscarora, and although there had been an increase from 1951 to 1961 in both townships, the

amount of increase had been greater in Tuscarora than Oneida. The average income per acre was $47.57 for the blocks in Oneida, compared with an average income of $6.7 on the Reserve in 1951. By 1961 the average income per acre for the Reserve had increased to $20.3 whereas that of Oneida had increased by a smaller amount to $56.95. In both years in Oneida the main products sold off the farm were dairy produce, poultry and eggs and cattle. Compare this with the situation in Tuscarora (in 1951) where grain was the most important item sold off all farms studied except for the River Range, on which the main items were cattle, dairy produce, poultry and eggs. Thus it appeared that the farms with the highest incomes per acre tended to be those which specialised in dairying and poultry.

There appeared to be little significant relationship between soil type, the type of farming, and income per acre on the Reserve and the human factor seems to have more influence than the physical factor. On the Reserve most of the incomes were very low, and there was little specialisation in any particular farming activity, the majority of farms studied obtaining their income from the sale of small amounts of grain and dairy produce. The Berrien Sandy loam block was one of the poorest farms of those studied in 1951. It was only 51.3 acres, with very small crop acreages, and had one of the lowest incomes per acre, $4.2. In 1961, this block no longer contained any farms. This could be a reflection of the quality of the soil, which is very poorly drained. But farms with below the average income per acre in 1951 were found to exist on several different soil types; Block 2 on

Berrien Sandy Loam had an income of $4.2 an acre; Block 4 on Brantford Clay Loam had an income of $3.5; Block 5, on Haldimand Clay had an income of $3.9; and Block 7 on Oneida Clay Loam and Haldimand Clay had an income per acre of $5.6. By 1961, all these blocks contained less than three farms. So low incomes per acre were found throughout Tuscarora, irrespective of soil type. Also in 1951, whatever the soil type there was the same lack of specialisation in any type of farming on all blocks, with the exception of the River Range Block. This latter had an income considerably larger than any other block, and the major part of its income was from the sale of dairy produce, cattle, poultry and eggs, not grain, as in the case of other Tuscarora blocks. This appears to suggest that the highest incomes are obtained from farms specialising in poultry, dairying and cattle rearing, a feature which is seen from the study of blocks in Oneida township. This would partly account for the increase in incomes per acre between 1951 and 1961 on the Reserve, as farms remaining in 1961 were obtaining their income from the sale of cattle, dairy produce and poultry, rather than from small quantities of cash grain.

A very revealing comparison can be made between Block 7 on Tuscarora and Block 4 on Oneida, both consisting of the soil types Haldimand Clay and Oneida Clay Loam. Thus in 1951, the Tuscarora block had an income per acre of only $5.7, compared with an income of $44.5 per acre for the Oneida block, i.e. eight times as great. As the soils are the same in each block, it must be concluded that the great differences in productivity are due primarily to human factors.

The striking contrasts in all aspects of farming are seen from the following table.

Comparison between Block 7, Tuscarora and Block 4, Oneida (1951).

	Area	Farm Value	Machinery Value
Tuscarora	78.87 acres	$ 1,925.	$ 532.
Oneida	134.25 acres	$10,804.	$5,392.

Land Use (Acres)

	Crop	Imp. Past.	s. fallow	Idle Imp.	Woodland	Other Unimp.
Tuscarora	37	12.37	--	1	9.37	21.37
Oneida	86.6	17.5	6.75	4.5	9	6

N.B. The large acreage of unimproved land on the Tuscarora block.

Crops (Acres)

	W.Wheat	Oats	Barley	M.Grain	Hay	Alfalfa	Corn	Potatoes
Tuscarora	3.25	10.37	1.12	--	20.75	3.25	--	0.5
Oneida	14.5	27	2.4	4.75	25.25	6.4	3.25	0.3

Livestock

	Cattle	Milk Cows	Horses	Pigs	Sheep	Poultry
Tuscarora	3.12	0.5	0.75	1.37	--	28.25
Oneida	32.5	14.5	2	11.1	--	14.4

$ Sales

	Grain	Cattle	Dairy Prod.	Poultry & Eggs	Pigs	Horses	Total
Tuscarora	168.75	50	97.5	18.75	62.5	52.5	450
Oneida	509.1	2469.3	3277.9	210.3	845.3	11.6	7669.3

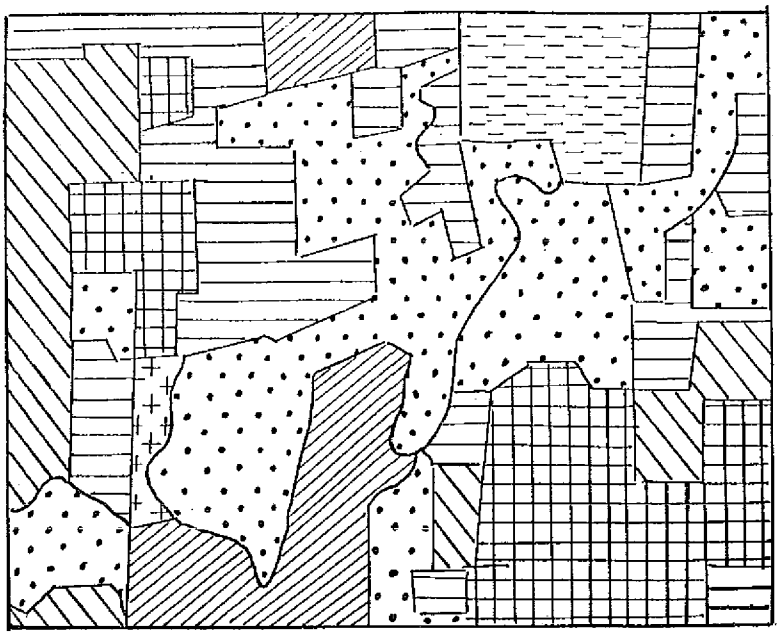
Income per Acre

Tuscarora $5.7

Oneida $44.5

Today, according to the Indian Agent, there are less than a dozen full time farmers on the Tuscarora Reserve, and five of these were interviewed. All these farmers stated their intention of turning to beef rearing in the near future, as dairying needed too much capital outlay. The Indian Agency is planning to introduce a "Rotating Herd" of beef cattle, which will be available to a farmer for two years. The farmer will pay a deposit of $10 per head of cattle, but will keep all the calves it produces during the two years. The herd will then be passed on to the next farmer on the waiting list. This should enable Indians who cannot afford to buy their own cattle, to build up a beef herd at low cost. The Indians have always had difficulty in improving their farming, because they cannot borrow money, and have no capital of their own. Their small low income holdings have become increasingly uneconomic to run, and so many of them have ceased to operate, or only farm part time.

BLOCK 1



TUSCARORA LAND USE

KEY FOR FIGURES 11 & 12

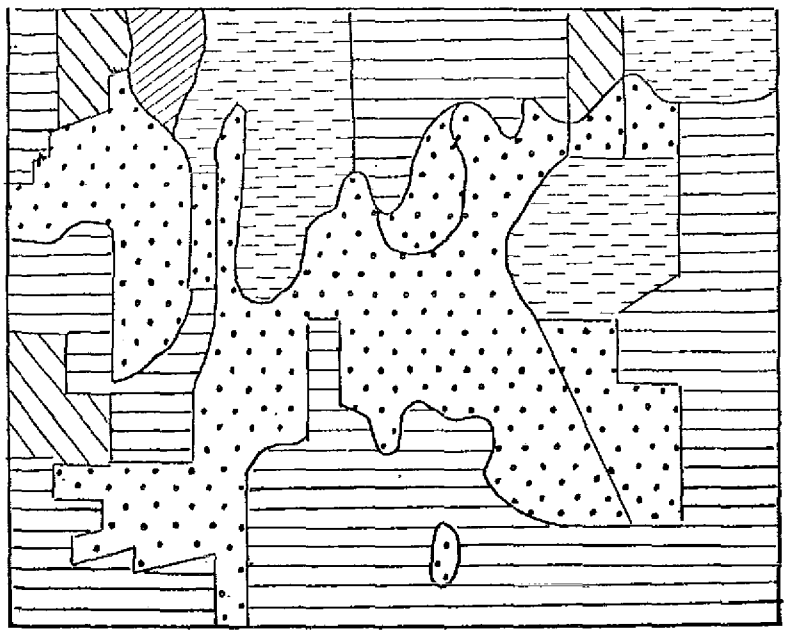
- Grain
- Hay
- Horticulture
- Improved Pasture
- Rough Grassland
- Scrub Grassland
- Woodland
- Commercial Areas

MILES

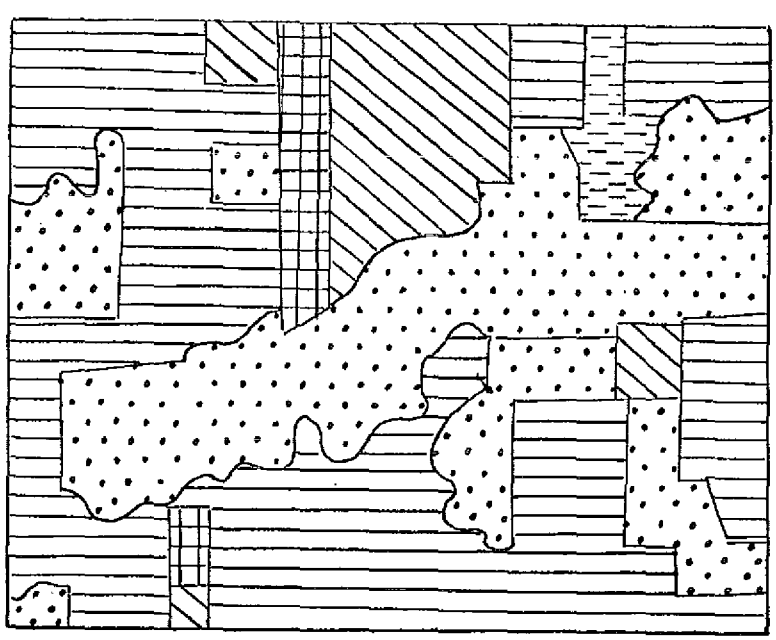
0 — 1

Figure 11a

BLOCK 2



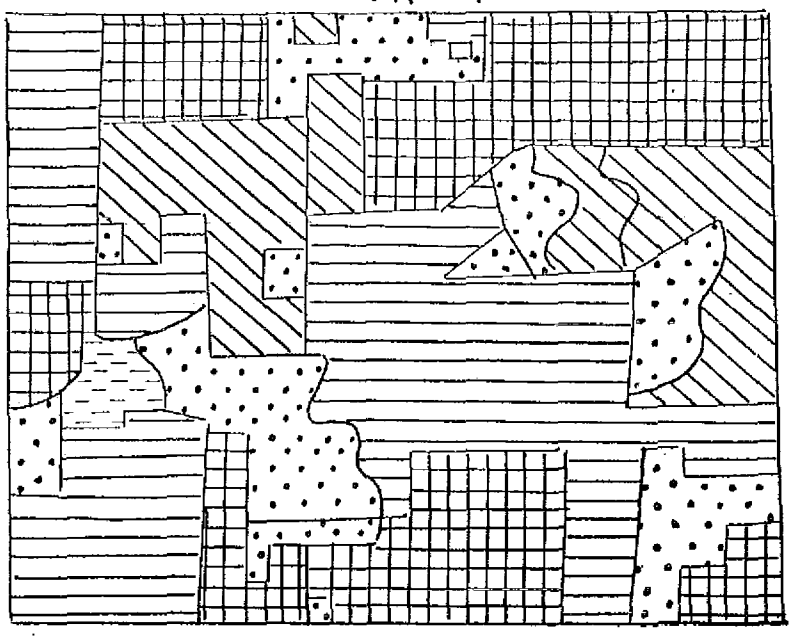
BLOCK 3



TUSCARORA LAND USE

Figure 11b

BLOCK 4



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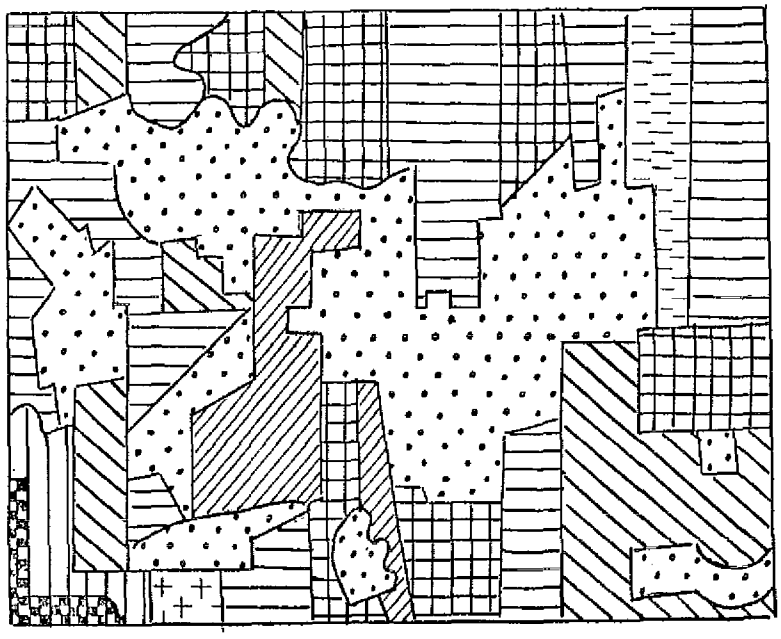
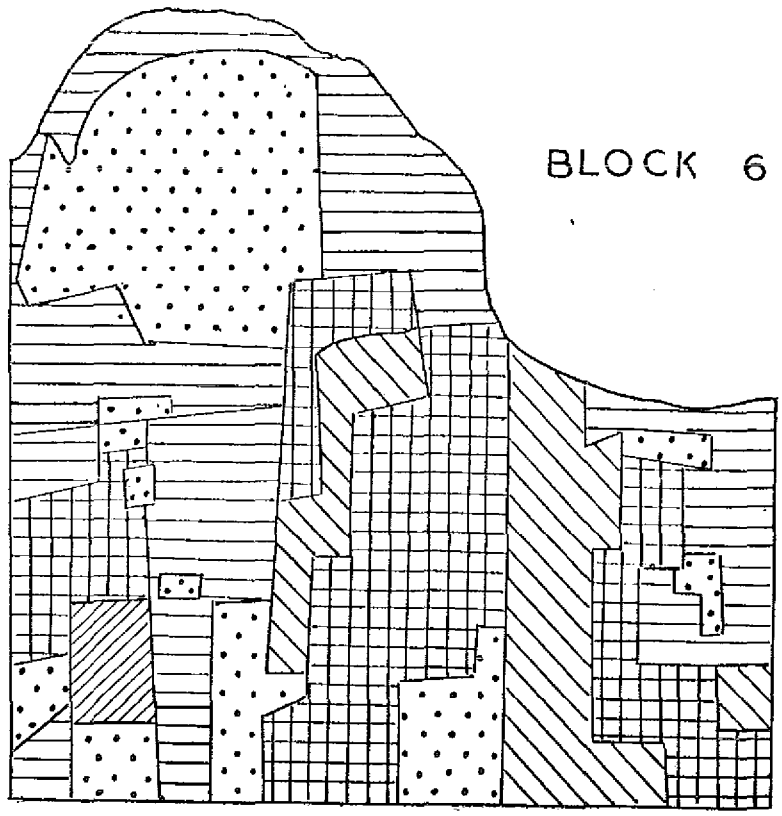
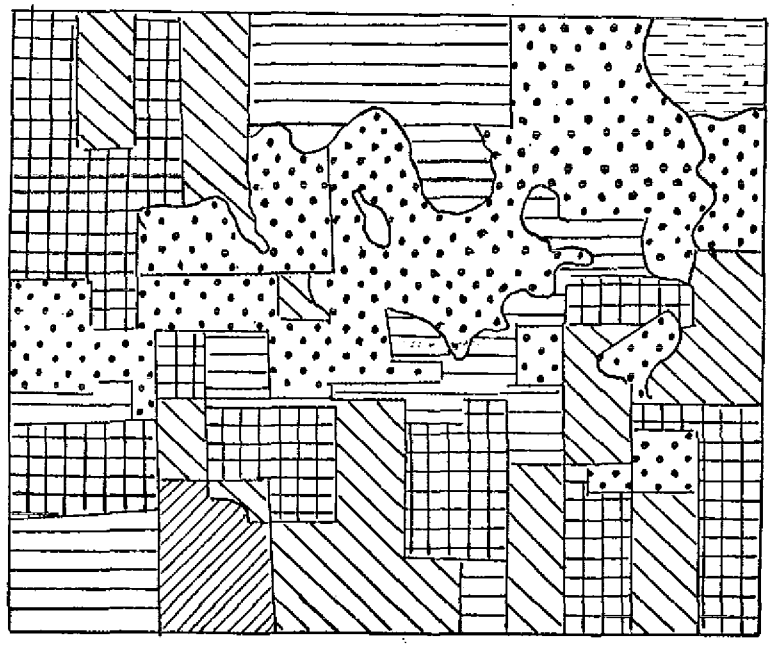


TUSCARORA LAND USE

Figure 11c



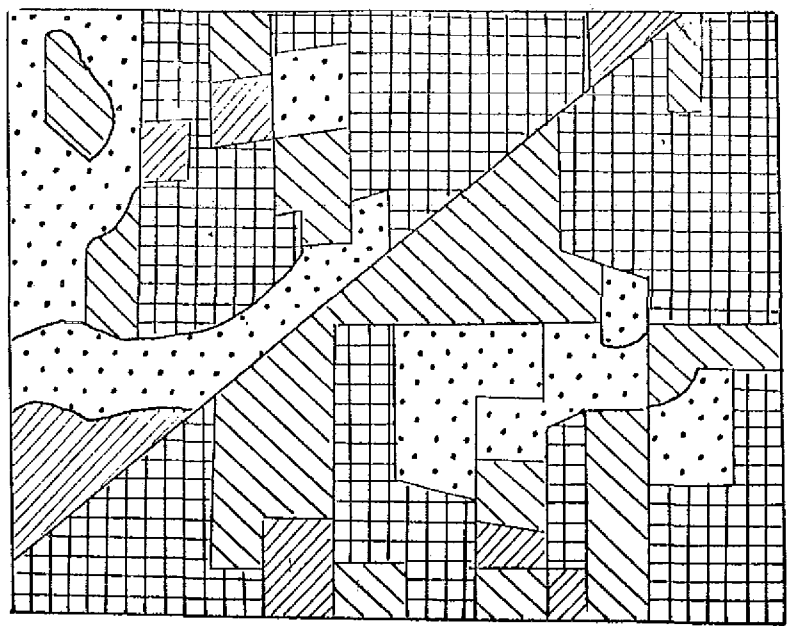
BLOCK 7



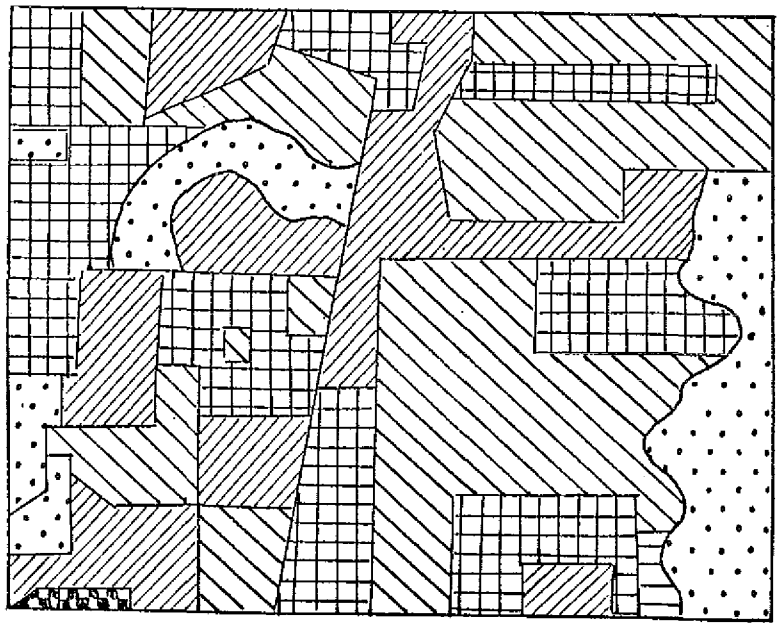
TUSCARORA LAND USE

Figure 11d

BLOCK 1



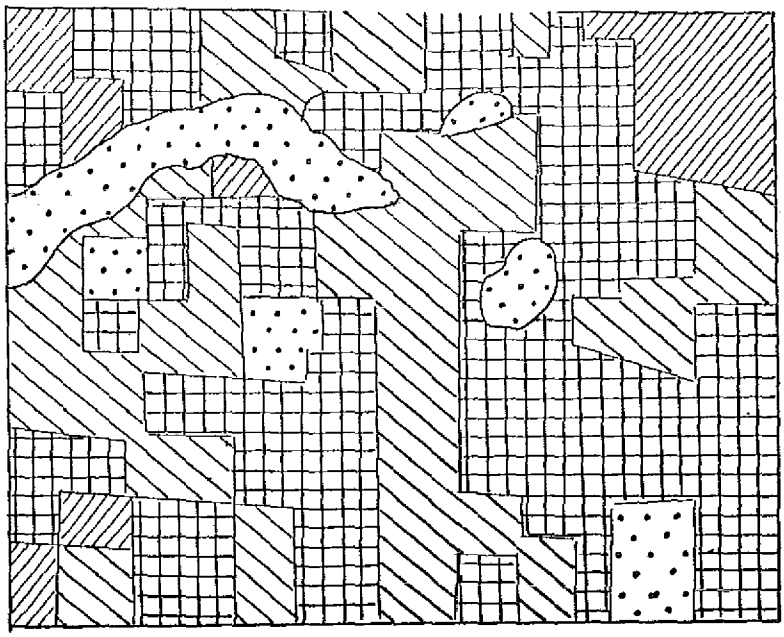
BLOCK 2



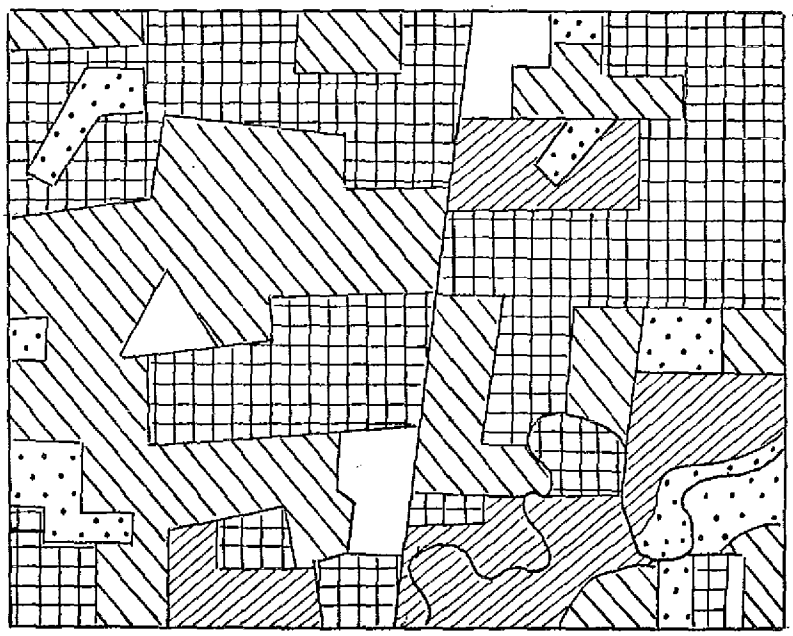
ONEIDA LAND USE

Figure 12a

BLOCK 3



BLOCK 4



ONEIDA LAND USE

Figure 12b

Summary

From the study of sample blocks it is seen that, whereas between 1951 and 1961, the farming in Oneida changed very little, in Tuscarora, considerable changes had taken place. In 1951 the farms on the Tuscarora blocks were quite small compared with those of Oneida. There was little specialisation on the Tuscarora farms; a few livestock were reared, and although a variety of crops were grown, acreages were very small. The annual income from the sale of farm produce on Tuscarora, mainly a little grain and dairy produce, was sub-marginal.

Between 1951 and 1961, those farms remaining in Tuscarora showed considerable increase in size , and more of a pattern of farming was now apparent. Similar features could be observed on the different farms studied; for example a trend towards more specialisation in growing oats and alfalfa to feed cattle. But although the farms remaining in 1961 were more productive than those in 1951, the average income per acre was still extremely low compared with that of Oneida.

This study did not reveal a significant relationship between soil type, type of farming and income per acre on the Reserve. All soil types showed examples of low income and little specialisation, and when a block in Tuscarora was compared with a block in Oneida, having similar soil types, the Oneida block showed an income of over eight times great as the Tuscarora block.

DIVIDED CIRCLES TO SHOW LAND USE ON BLOCKS IN TUSCARORA IN 1951

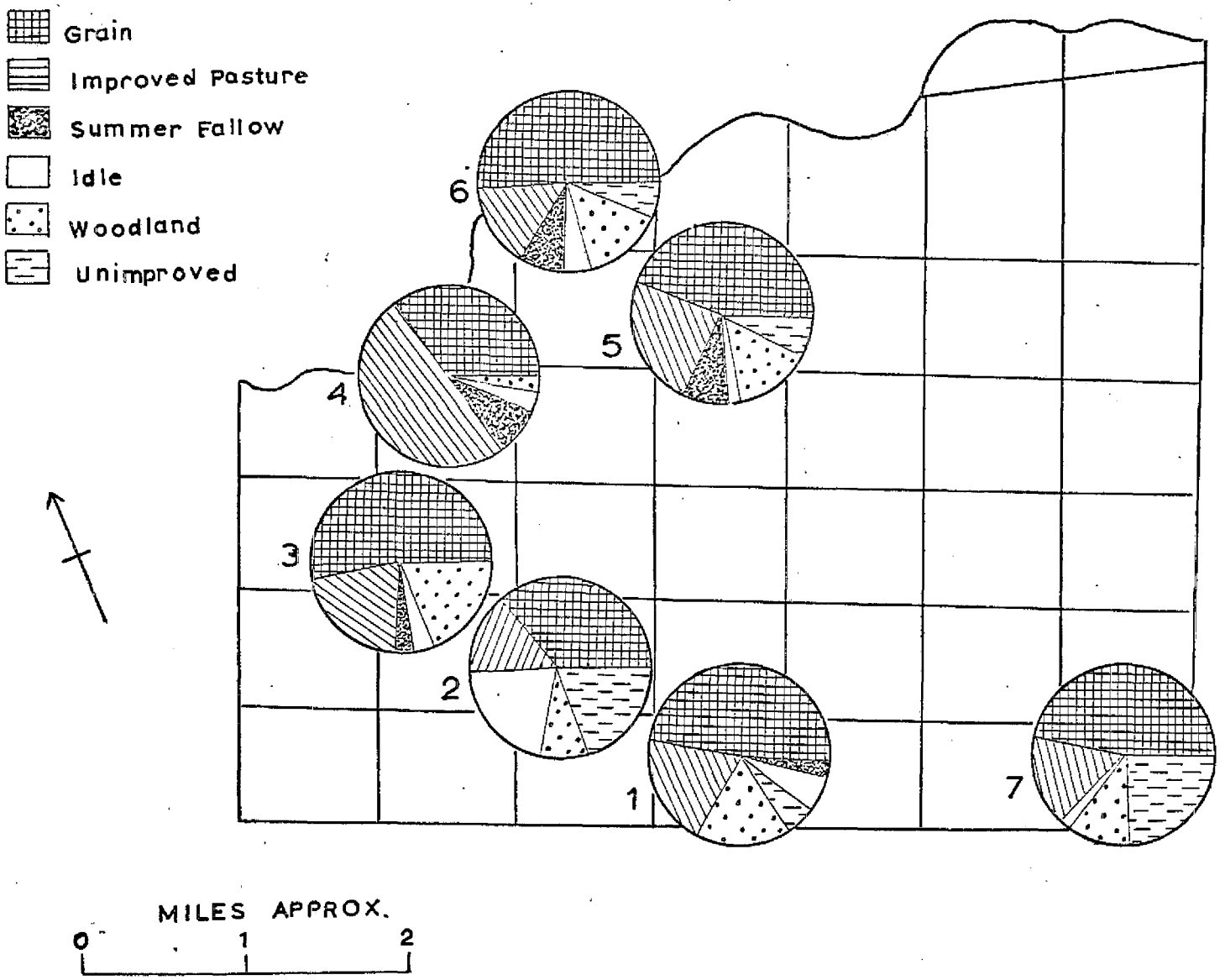


Figure 13

DIVIDED CIRCLES TO SHOW LAND USE ON BLOCKS IN TUSCARORA IN 1961

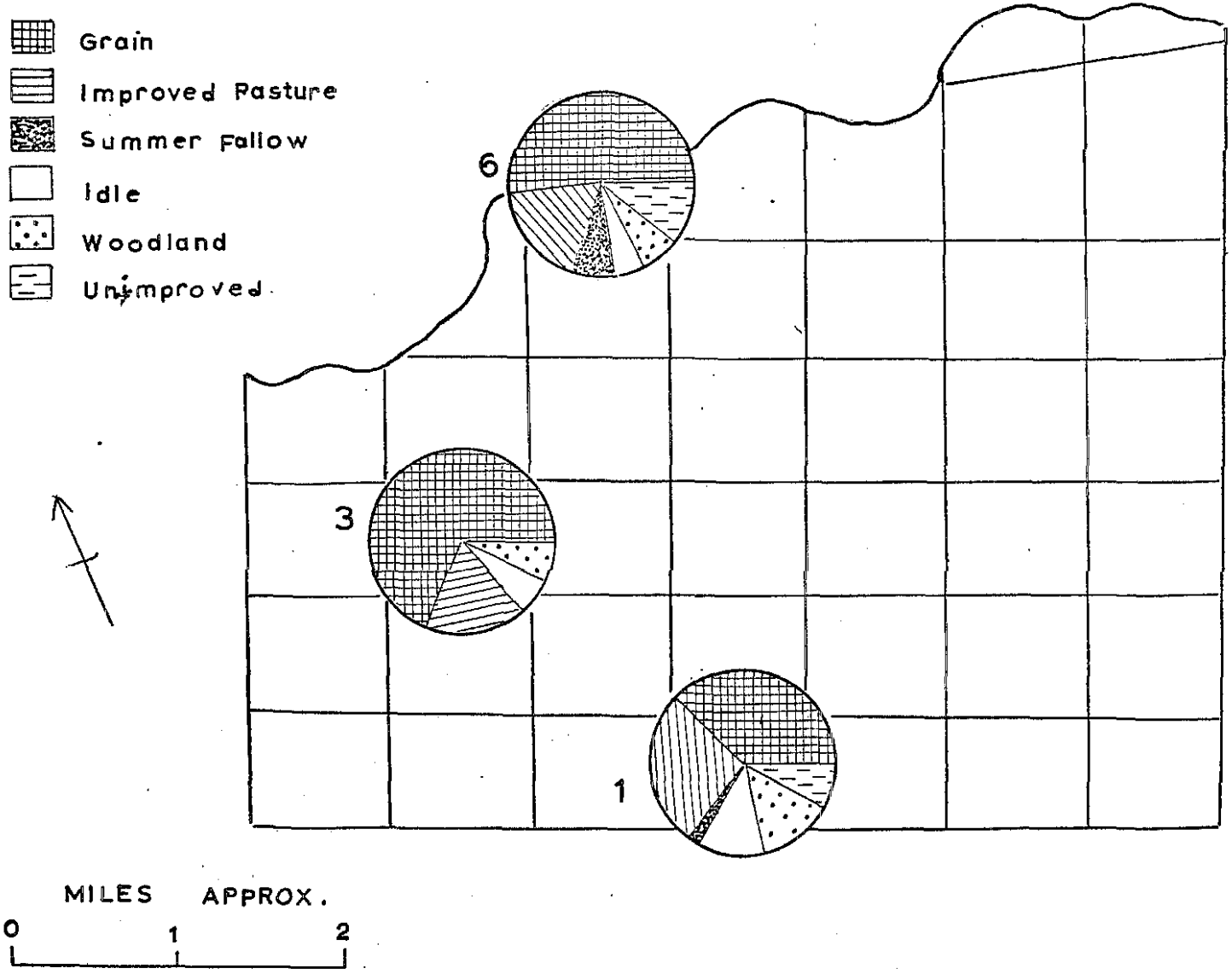


Figure 1.

DIVIDED CIRCLES TO SHOW LAND USE ON BLOCKS IN ONEIDA IN 1951

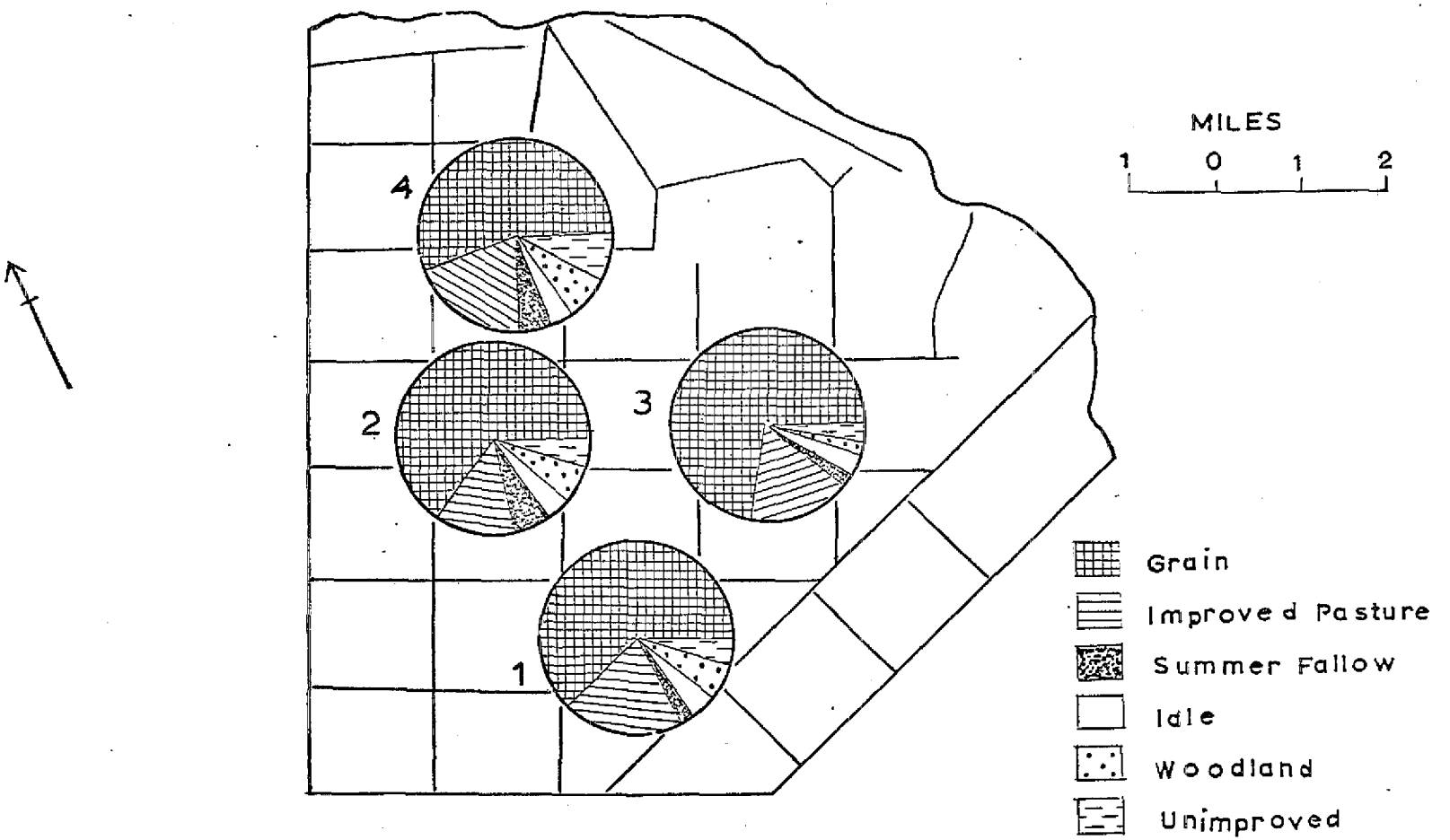


Figure 15

DIVIDED CIRCLES TO SHOW LAND USE ON BLOCKS IN ONEIDA IN 1961

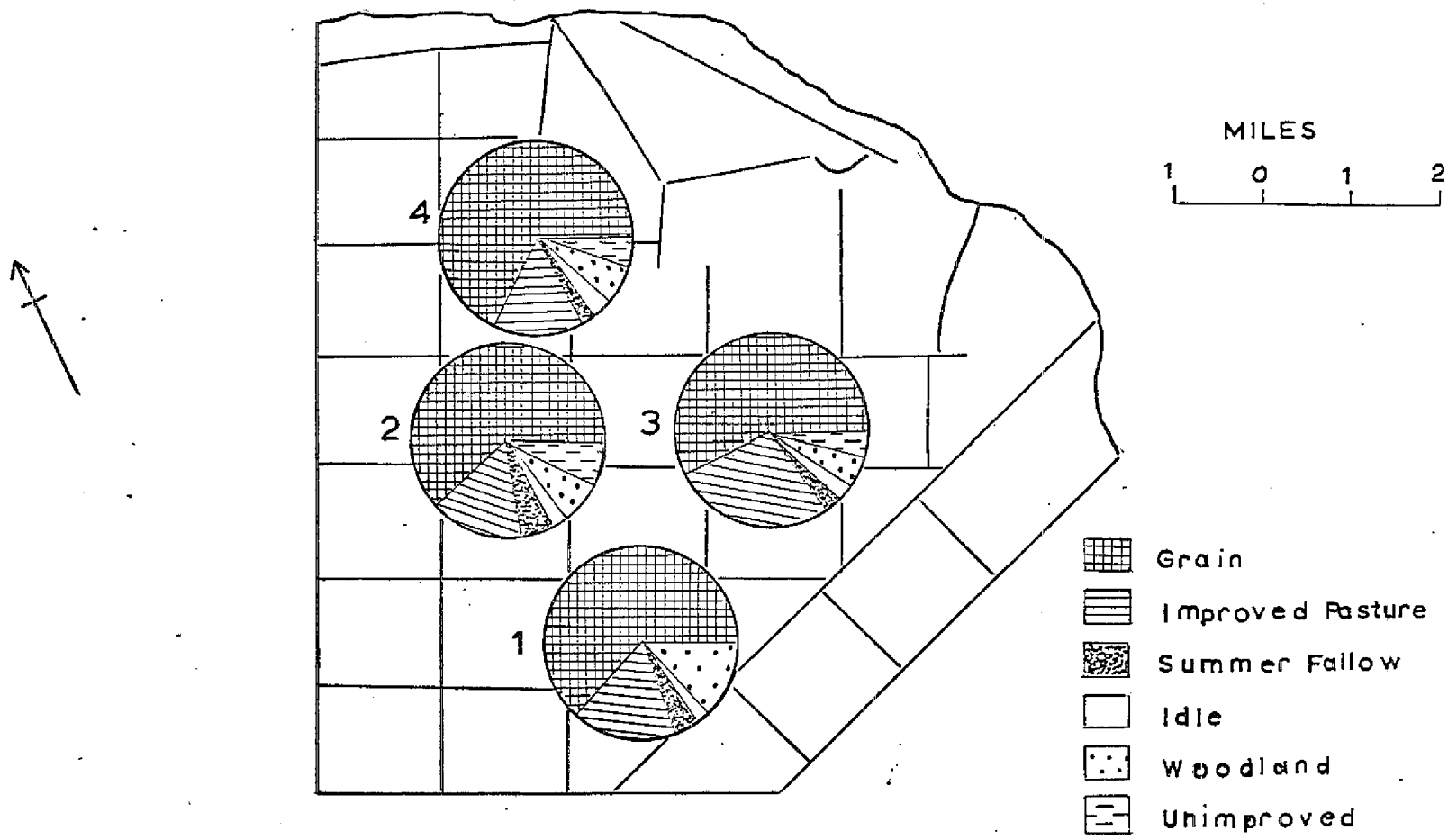


Figure 15

CONCLUSION

At first it appears an unusual phenomenon that the two townships of Tuscarora and Oneida should present such diverse trends in agriculture. They are both situated in the lower Grand River Valley; land forms and climate are similar, and they were cleared and settled about the same time. Also, it may seem surprising that the agriculture on the Reserve is so poor today when it is considered that the Six Nations were an agricultural people at the time of contact with the white man. When white men first arrived in the area to the south of the Great Lakes, the Six Nations had a well developed economy based on the cultivation of maize and a variety of vegetable crops were grown as well, but methods were primitive compared with those of Europeans. Hunting, the occupation of the men of the tribe, was an extremely important part of the economy and the Six Nations had vast tracts of land for this purpose.

But this semi-agricultural economy began to break down after contact with the white man. When the loyalist Indians were granted land in the Grand River Valley, they faced great difficulties in re-establishing their old type of economy and way of life. The tribes had been split, some remaining in the United States, and their population had been so much reduced by warfare that the number which moved to the Grand River Valley was under 2,000.

Difficulties arose because their philosophy of land use was different to that of white men; the Indians were accustomed to holding

land in common for hunting purposes and only clearing small areas for cultivation when needed; they did not look upon their land solely as a basis for cultivation; nor did they understand the buying and selling of land as introduced by white settlers. On the one hand the Six Nations found themselves too confined on the Reserve without the resource of hunting, but on the other hand they complained continuously because there was too much land for them to cultivate by their methods, and they wanted to sell it off as a source of income. Joseph Brant, realising the difficulties of adjusting to new conditions on the Reserve, advocated that the Indians be given instruction in modern methods of farming by whites, but this was not carried out. Eventually, however, they adopted the same methods as white farmers, but they had no trades or industry as an alternative source of livelihood. All evidence points to an agricultural poverty from the early days of the Reserve, and thus the present day conditions have their roots in the past.

In 1842, when almost all the original land grant had been surrendered, the Six Nations moved into the township of Tuscarora, where they were to live as a group and where it was hoped they would eventually improve their agriculture. But even after moving into one township the poverty persisted and the Indians made slow progress in agriculture compared with the surrounding townships such as Oneida. The contrast is revealed by a study of the census figures from 1851 to 1966. Although the trends in Tuscarora, as shown by the graphs, approximately followed those of Oneida, the agriculture on the Reserve was always far less productive than that of the white townships. The

end of the nineteenth century was the time of most extensive farming on the Reserve, but since then there has been a continual decline in the area of cultivated land and the number of farm operators, this being particularly marked between 1951 and 1961. In comparison, in Oneida, only a slight decline has taken place in the amount of farmland and the number of farm operators in the last 50 years.

To reveal in more detail the changes which had taken place between 1951 and 1961, a number of sample blocks in the two townships were studied. Between 1951 and 1961 the number of farms on the Reserve decreased from 271 to 49, and over 18,000 acres of farmland were abandoned. Crop acreages and livestock numbers decreased correspondingly. In 1951, farms in Tuscarora were mostly small; the average was only 93.2 acres, compared with an average of 141.3 acres in Oneida. There was little specialisation and the average income per acre was extremely low, only $6.7 compared with $47.56 in Oneida.

However, between 1951 and 1961, despite the great reduction in the total area of cultivated land and the total farm numbers, some improvements had taken place on those farms remaining in Tuscarora. The average farm size had increased to 141.8 acres, and the income per acre increased to $20.3; whereas, in Oneida, the increase had been only slight. So, by 1961, most of the smaller farms on the Reserve had ceased to operate as they were becoming increasingly uneconomic, and could not compete with the increasing scale and cost of farming today. The 49 farms remaining in Tuscarora in 1961 were larger and more efficient and there was also more specialisation in dairying and poultry

than in 1951. But, although there had been an increase in the average income per acre for all blocks studied, this was still sub-marginal, or below the minimum required for a viable operation. Thus, conditions of poverty, which were present when the Reserve was first established, have persisted up until the present day.

An investigation of soil conditions was made to see if this was a contributing factor to the present day poverty on the Reserve. Differences in soil types were found to exist between Tuscarora and Oneida; Tuscarora contains a larger area of Haldimand clay, a heavy soil, than Oneida, (53.6% : 16.4%), whereas, Oneida contains a larger area of a less heavy soil type, Oneida clay loam, (64.18% : 9.47%). However, these differences in soils are not thought to be sufficient to account for the present day striking contrasts in agricultural land use and production between the two townships. The study of sample blocks in the Reserve reveals that a wide range of farm size exists within the same soil type. Comparisons made between farms, in Oneida township and in Tuscarora, situated on blocks containing Haldimand clay and Oneida clay loam, showed some sharp contrasts, particularly in income. The much lower figures for Tuscarora suggest that differences in soils are not the main contributing factors to the underdevelopment of agriculture on the Reserve.

The poverty of the Reserve is bound up with the whole complex of social and political conditions that are a part of the history of Indian - white relations in Canada. This study has isolated a small part of these conditions, namely those which are reflected in land

use and agricultural productivity in Tuscarora township. It has established that the poverty of this Reserve is a long-standing feature, that it has persisted to the present day and that it is not related in any significant way to soil conditions.

BIBLIOGRAPHY

Books

Carrier, Lyman, The Beginnings of Agriculture in America. 1st. ed. New York, McGraw-Hill, 1923.

Chadwick, Edward Manon. The People of the Long House. Toronto, The Church of England Publishing Co. Ltd. 1897.

Chapman and Putman. The Physiography of Southern Ontario. University of Toronto Press, 1951.

Colden, Cadwallader. The History of the Five Indian Nations. Cornell University Press, Ithaca, New York, 1958.

Cork, Ella. The Worst of the Bargain. San Jacinto, California; Foundation for Social Research, 1962.

Great Britain, Treaties, Indian Treaties and Surrenders from 1680 to 1890. 2 vols., Ottawa, Dawson, 1891.

Hewitt, J. N. B. Handbook of American Indians North of Mexico. Bulletin No. 30. Bureau of American Ethnology, Washington, 1907-1910.

Howison, John. Sketches of Upper Canada., Domestic, Local, and Characteristic to which are added practical details for Information of Emigrants of every Class. Edinburgh, 1821.

Hunt, G. T. The Wars of the Iroquois. University of Wisconsin Press, Madison, 1940.

Hyde, George. The Indians of the Woodlands, from Prehistoric times to 1725. University of Oklahoma Press, 1962.

Johnston, Charles M. ed. The Valley of the Six Nations. The Champlain Society for the Government of Ontario. University of Toronto Press, 1964.

Morgan, L. H. The League of the Ho-De Ho-De-No-Sau-Ne or Iroquois, New York, Dodd and Mead, 1922 rev. ed.

O'Callaghan, Edmund. ed. Documents Relative to the Colonial History of New York State. 10 vols. Albany, 1853-87.

Thwaites, Reuban Gold, ed. The Jesuit Relations and Allied Documents 1610 - 1791. 73 vols. Cleveland, Burrows Bros. Co., 1896-1911.

Trelease, A. W. Indian Affairs in Colonial New York in the Seventeenth Century. Cornell University Press, Ithaca, New York, 1960.

Waugh, F. W. Iroquois Food and Food Preparation. Mem. 86 of the Anthropological Series. No. 12. Geological Survey of Canada. Ottawa. 1916.

Weatherwax, P. Indian Corn in Old America. New York, Macmillan, 1954.

Wilson, Edmund. Apologies to the Iroquois. New York. Farra, Straus and Cudd Cudahy. 1959.

Wrong, G. M. ed. and H. H. Langton, trans. Sagards Long Journey to the Huron Country. Toronto, the Champlain Society, 1939.

Papers, Pamphlets and Documents.

Annual Reports of the Department of Indian Affairs, Ottawa.

Census of Canada 1851 - 1966. Dominion Bureau of Statistics, Ottawa.

Chapman and Putnam. "Climate of Southern Ontario". Scientific Agriculture. April 1938.

Farm Returns for Oneida and Tuscarora Townships 1951 and 1961. Dominion Bureau of Statistics, Ottawa.

Inspection Returns of Canada West. 1844. Land Inspection Returns for Oneida and Tuscarora Townships. Vol. 729. Public Archives of Canada, Ottawa.

Johnston, Charles M. "An Outline of Early Settlement in the Grand River Valley". Ontario History VIV 1962.

Kroeber, A. L. "Native American Population". American Anthropologist. New Series, vol. 36. Jan. - March 1934. No. 1, pp. 1 - 25.

Lee, C. "Land Utilisation in the Middle Grand River Valley". Economic Geography. XX 1944.

Ontario Soil Survey Maps and Reports. Haldimand, Lincoln and Wellington Counties. Ontario College of Agriculture. Guelph, and Canada Department of Agriculture, Ottawa.

Trigger, B. G. " Settlement as an Aspect of Iroquois Adaption at the time of Contact". American Anthropologist LXV, 1963.

Vicero, R. Oneida Township. B.A. Thesis, McMaster University, 1953.