

Temiskaming District Agricultural Economic Sector Profile

December 2009



Food Security Research Network:
in and for the North



NORTHWESTERN ONTARIO
DEVELOPMENT NETWORK

Temiskaming District Agricultural Economic Sector Profile

December 2009

Funded by:

**FedNor
Ontario Ministry of Agriculture, Food and Rural Affairs
Northwestern Ontario Development Network
Food Security Research Network**

Supported by:

Ontario Federation of Agriculture

Prepared by:

HCA

Harry Cummings and Associates Inc.
96 Kathleen Street, Guelph Ontario. N1H 4Y3
Phone: (519) 823-1647 / Fax: (519) 821-0202
URL: www.hcaconsulting.ca
Email: hca@web.ca

Executive Summary

The purpose of this report is to provide a profile of agriculture in Temiskaming District and an update on the economic impact of agriculture on the wider economy. The report is intended to help the broader community better understand the nature and economic significance of the agricultural economy in terms of dollars and jobs. The findings are also intended to inform program and policy development work within northern Ontario. Only by better understanding the important role played by food related activities can the various participants in the agri-food economy work together to make decisions which are economically sound, environmentally sustainable and socially responsible.

The research in this report relies on data from the Population and Agricultural Census (1996-2006), a review of the findings from the previous agri-economic impact study conducted for Temiskaming District in 2003, and a focus group with primary producers and other agri-sector stakeholders from Temiskaming District. The study was completed as part of a larger collaborative partnership between stakeholder groups in Thunder Bay District, Rainy River District, Kenora District and Cochrane District. The focus of this report is on Temiskaming District.

The value of agricultural production in Temiskaming District is significant. In 2005, farmers in the District reported a total of \$49.8 million in gross farm receipts which is the highest value of any District in northern Ontario. With respect to jobs, the local agriculture sector directly supports about 720 on-farm jobs. Between 2001 and 2006 the agriculture sector experienced a small decline of about 25 jobs or about 3%.

It is important to note that the above job figures for agriculture do not include all part-time positions. Indeed, the employment profile of the agriculture sector is undergoing a transformation as farmers increasingly work more hours off the farm to supplement their farm income. Between 1995 and 2005, the proportion of Temiskaming District farmers working off the farm increased from 38% to 52%. Producers often link the need for a second income to a combination of factors including stagnant or shrinking commodity prices and rising production costs. The increase in off-farm work is also having a negative effect on the amount of time that farm leaders are able to volunteer for organizations and activities that have traditionally helped to promote agriculture in the region.

It is also important to emphasize that the decline in agriculture employment does not reflect trends in farm productivity. Agriculture in Temiskaming District continues to have competitive advantages and economic opportunities including a substantial farmland base that supports the growth of a variety of crops; lower land prices relative to land prices in southern Ontario, and its access to a regional market (northeastern Ontario).

Temiskaming District reported almost 206,000 acres of farmland from 471 farms in 2006. Historically, the District reported as much as 243,000 acres of farmland in 1961 which indicates the great potential for expanding local agriculture production. With respect to crop production, the climate and soil conditions in the District allow for the production of a variety of field crops including barley, wheat, oats, corn, mixed grains, soybeans, canola and hay crops. Approximately 114,000 acres or 55% of the total farmland base in the District was used for crop production in 2006. Temiskaming District is the only District in northern Ontario with more than 50% of its farmland base in crops. Based on projections from climate change models, the growing season in the District is expected to gradually increase over the next 100 years which will result in further crop production opportunities for the region.

Temiskaming District features a variety of farm types and sizes. Major farm production activities in the District include beef, dairy, and grain/oilseed and hay production as well as a range of other animal production activities including sheep, goats, horses, and bison.

The average farm size in Temiskaming District is 437 acres but there is considerable variation in farm sizes across the District. On average, farms in Brethour are the largest at 935 acres while farms in Harley are the smallest at 208 acres.

Agriculture in Temiskaming District has been greatly advanced and continues to benefit from research and other activities conducted by a number of northern Ontario institutions and organizations including the New Liskeard Agricultural Research Station, and various farmer led organizations including the Temiskaming Federation of Agriculture, the Temiskaming Soil and Crop Improvement Association, and individual local commodity groups.

Another stakeholder group that plays an important role in supporting agriculture is the agri-related business community. These businesses represent a variety of industry sectors including retail and wholesale trade, manufacturing, construction, transportation and business services. Agri-related businesses provide the support infrastructure for the agriculture sector and through their linkages to farm based activities, generate substantial economic benefits for the region.

A review of the findings from the 2003 agri-economic impact study for Temiskaming District in the context of more recent economic activity reveals that agriculture continues to make a significant contribution to the wider economy beyond the farm gate.

Allowing for a $\pm 10\%$ change in agri-related business activity since the 2003 study, we estimate that agriculture in Temiskaming District currently generates between \$91 million and \$111 million in indirect sales (agri-related business sales) and sustains between 474 and 578 indirect jobs. With respect to induced impacts, we estimate that agriculture in Temiskaming District sustains between 955 and 1,038 jobs in the public service sectors (i.e. health services, education services, public administration).

Overall, the total economic impact of agriculture in Temiskaming District amounts to between \$141 million and \$161 million in sales (direct and indirect) and between 2,149 to 2,336 jobs (direct, indirect and induced). The associated sales expenditure multiplier indicates that for every dollar generated in direct agricultural sales (farm gate sales), an additional \$2.80 to \$3.30 in sales related to agriculture is also generated in the wider economy. The associated employment multiplier indicates that for every job in the agriculture sector an additional 2.0 to 2.2 jobs are supported in the wider economy.

In general, agri-sector stakeholders believe that the amount of trade experienced by local agri-related businesses has increased over the years and Temiskaming District is continuing to develop as a major agri-related business hub in the region providing agri-business services for farmers in surrounding Districts as well as farmers in western Quebec.

However, agri-sector stakeholders recognize that more needs to be done to raise awareness about the agricultural opportunities in Temiskaming District and northern Ontario in general. In September 2009, Temiskaming District successfully showcased its agriculture sector when it hosted the International Plowing Match and Rural Expo. The event attracted support from a wide variety of organizations including federal and provincial governments, local municipal governments as well as local corporate sponsors. The Plowing Match attracted over 1,200 local volunteers to help oversee and coordinate the event and over the course of five days it drew in over 80,000 visitors from across Ontario and Quebec and elsewhere.

A common concern expressed by agri-sector stakeholders in the region is that many of the government policies and support programs for agriculture are directed at models of agri-food production that are based on larger scale operations and southern Ontario market realities. Agri-sector stakeholders see the need for more northern oriented incentive programs that encourage projects that will establish and enhance the capacity of local agri-food production and product processing. For example, there has been substantial growth in sheep and goat production in the region and producers see a role for the provincial government in collaborating with producers in promoting further research and development of this sector.

Acknowledgements

The preparation of this report was made possible through the guidance and support provided by a number of different organizations including:

- Northwestern Ontario Development Network
- FedNor
- Ontario Ministry of Agriculture, Food and Rural Affairs (Rural Economic Development Program)
- Northwestern Ontario Federations of Agriculture
- Food Security Research Network

A special thank you goes to the farmers and other agri-sector stakeholders from Temiskaming District that participated in the focus group.

HCA also acknowledges the support provided by Bob Norris, Ontario Federation of Agriculture Member Service Representative, for coordinating the agri-sector stakeholder focus group.

It is hoped that readers find the report informative and through it gain a better understanding of the important role played by agriculture and food-related activities in Temiskaming District.

Harry Cummings and Associates
December 2009

*The cover page photo is from the 2009 International Plowing Match and Rural Expo, Earleton, Temiskaming District.
(Source: www.ipm2009.net/)*

Table of Contents

Executive Summary	iii
Acknowledgements	vi
Table of Contents	vii
List of Tables, Figures and Maps	ix
1.0 Introduction	1
1.1 Background to the Study Methodology	3
1.2 The Study Area and Physical Infrastructure	4
2.0 Socio-Economic Profile of Temiskaming District	7
2.1 Introduction	7
2.2 Population and Population Change	7
2.3 Economic Profile	8
3.0 Land Base Resources in Northeastern Ontario	15
3.1 Physical Geography and Agricultural Soils	15
3.2 Climate and Crop Heat Units	16
3.3 Climate Change	19
4.0 Agricultural Community Resources in Temiskaming District	21
5.0 Census Profile of the Agriculture Sector in Temiskaming District	23
5.1 Introduction	23
5.2 Number of Farms, Farmland Area and Land Tenure	24
5.3 Farmland Use	26
5.4 Farm Types	28
5.5 Livestock and Animals	33
5.6 Field Crops	38
5.7 Fruit, Berry and Vegetable Production	43
5.8 Greenhouse Production	45
5.9 Nursery Products, Sod and Forest Related Products	47
5.10 Farm Productivity: Farm Receipts, Expenses and Net Revenue	48
5.11 Agriculture Value Added	57
5.12 Farm Capital	59
5.13 Farm Operator Characteristics	62
5.14 Temiskaming District Compared to Other Northern Ontario Districts	68
5.15 Agri-Sector Stakeholder Review of the Census Data	70
5.16 Summary of Agriculture Characteristics	73
6.0 Agri-Tourism, Agricultural Fairs, and Farmers' Markets	75
6.1 Agri-Tourism / Entertainment	75
6.2 Agricultural Fairs	76
6.3 Farmers' Markets	77
6.4 International Plowing Match and Rural Expo, 2009	79

7.0	Agricultural Related Businesses and Economic Impact.....	80
7.1	Introduction	80
7.2	Overview of Findings from the 2003 Agri-Economic Impact Study	82
7.3	Update to 2003 Agri-Economic Impact Findings	84
8.0	Challenges and Opportunities.....	87
9.0	Conclusions	93
References		96
Appendices		
A	Soil Capability for Agriculture in Temiskaming District	102
B	Economic Impact Analysis – An Overview	103

List of Tables, Figures and Maps

Chapter 1		
Map 1.1	Districts of Northern Ontario	4
Map 1.2	Communities and Major Highways in Northeastern Ontario	6

Chapter 2		
Table 2.1	Population 1996 to 2006 – Districts Ranked by 2006 Population	7
Table 2.2	Employment by NAICS Industrial Sector, 2006	11
Table 2.3	Employment by Industrial Sectors for Temiskaming District, 2001-2006	12
Table 2.4	Total Population 25 to 64 Years of Age by Highest Education Certificate, 2005	13
Table 2.5	Household Income in 2005 of Private Households	14

Chapter 3		
Table 3.1	Climate Normals for Select Areas in Temiskaming District (1971-2000)	17
Map 3.1	Average Accumulated Crop Heat Units (CHU) Available for Warm-Season Crops in Ontario	18

Chapter 5		
Map 5.1	Select Municipalities in Temiskaming District	23
Table 5.1	Number of Farms in Temiskaming District, Northern Ontario, and Ontario, 1996-2006	24
Table 5.2	Total Land Area, Workable and Non-workable, Reported by Farms in Temiskaming District, Northern Ontario, and Ontario, 1996-2006	25
Table 5.3	Land Tenure in Temiskaming District, Northern Ontario and Ontario, 1996-2006	26
Table 5.4	Farmland Use in Temiskaming District, Northern Ontario and Ontario, 1996-2006	27
Table 5.5a	Number of Farms by Farm Type for Temiskaming District, Northern Ontario and Ontario, 2001	29
Table 5.5b	Number of Farms by Farm Type for Temiskaming District, Northern Ontario and Ontario, 2006	30
Table 5.6	Number of Farms Producing Organic Products in Temiskaming District, Northern Ontario and Ontario, 2006	31
Table 5.7	Location Quotient for Farm Types for Temiskaming District, 2001 and 2006	32
Table 5.8a	Inventory of Selected Farm Related Animals for Temiskaming District, Northern Ontario and Ontario, 1996-2006	34
Table 5.8b	Inventory of Selected Farm Related Animals for Temiskaming District, Northern Ontario and Ontario, 1996-2006	36
Table 5.9a	Total Reported Acreage of Selected Field Crops for Temiskaming District, Northern Ontario and Ontario, 1996-2006	39
Table 5.9b	Total Reported Acreage of Selected Field Crops for Temiskaming District, Northern Ontario and Ontario, 1996-2006	41
Table 5.10	Number of Farms and Acreage of Selected Fruit and Berry Production, 1996-2006	43
Table 5.11	Number of Farms and Acreage of Selected Vegetable Production, 1996-2006	44

Table 5.12	Number of Farms and Production Area Associated with Greenhouse Production, 1996-2006	46
Table 5.13	Number of Farms and Production Area Associated with Nursery Products, Sod, Christmas Trees, and Taps on Trees for Maple Syrup Production, 1996-2006	47
Table 5.14	Total Gross Farm Receipts (Excluding Sales of Forest Products from Farms) for Temiskaming District, Northern Ontario and Ontario, 1995-2005	48
Table 5.15	Average Gross Farm Receipts per Farm in Temiskaming District, Northern Ontario and Ontario, 1995-2005	49
Table 5.16	Sales of Forest Products from Farms for Temiskaming District, Northern Ontario and Ontario, 1995-2005	50
Table 5.17a	Total Gross Farm Receipts (Excluding Sales of Forest Products from Farms) for Temiskaming District, Northern Ontario and Ontario by Receipts Category, 1995	51
Table 5.17b	Total Gross Farm Receipts (Excluding Sales of Forest Products from Farms) for Temiskaming District, Northern Ontario and Ontario by Receipts Category, 2005	52
Table 5.18	Average Farm Operating Expenses per Farm in Temiskaming District, Northern Ontario and Ontario, 1995-2005	53
Table 5.19a	Farm Operating Expenses by Expense Category for Temiskaming District, Northern Ontario and Ontario, 1995	54
Table 5.19b	Farm Operating Expenses by Expense Category for Temiskaming District, Northern Ontario and Ontario, 2005	55
Table 5.20	Total Net Farm Revenue and Net Revenue per Farm in Temiskaming District, Northern Ontario and Ontario, 1995 and 2005	56
Table 5.21	Value Added Agriculture in Temiskaming District, Northern Ontario and Ontario, 1995-2005	58
Table 5.22a	Total Farm Capital for Temiskaming District, Northern Ontario and Ontario, 1995	60
Table 5.22b	Total Farm Capital for Temiskaming District, Northern Ontario and Ontario, 2005	61
Table 5.23	Characteristics of Farm Operators – Gender and Age, 1996-2006	63
Table 5.24	Farm Operating Arrangements for Temiskaming District, Northern Ontario and Ontario, 1996-2006	65
Table 5.25	Number of Farm Operators by Hours of Farm and Non-farm Work, for Temiskaming District, Northern Ontario and Ontario, 1995-2005	67
Table 5.26	Agricultural Characteristics for Northern Ontario Districts, 2006 – Ranked by Total Gross Farm Receipts	69

Chapter 6		
Table 6.1	Agricultural Fairs in Temiskaming District (2009)	76

Chapter 7		
Figure 7.1	Tracking the Economic Impacts of the Agriculture Sector	81
Table 7.1	Total Direct, Indirect and Induced Impacts of Agriculture in Temiskaming District, 2003	84
Table 7.2	Total Direct, Indirect and Induced Impacts of Agriculture in Temiskaming District, 2006	86

1.0 Introduction

Agriculture is an important industry in northeastern Ontario. Unfortunately, the decline of on-farm employment across Ontario is often interpreted as a sign that the sector has limited or no growth potential. In reality, farm productivity is increasing across Ontario. Furthermore, research on the broader impacts of agriculture has shown that the sector has important linkages with other industry sectors and can play an important role in contributing to economic diversification and making communities less vulnerable to economic variability (Cummings, 2005).

One of the notable characteristics of the agriculture sector in northeastern Ontario is the diversity of the production which provides residents in the area with a range of local food options. The development of local food systems is a growing area of interest in North America and elsewhere and is viewed as a logical strategy to improve community economic vitality (Feenstra, 2007).

An agri-economic impact study was initially completed in Temiskaming District in 2003. The study determined that the local agriculture sector generated approximately \$145 million in direct and indirect agri-related sales. The related sales expenditure multiplier (3.3) indicates that approximately every dollar generated by direct agricultural sales produced an additional \$2.3 in sales related to agriculture in the wider economy. With respect to jobs, the 2003 study found that the agriculture sector in Temiskaming supported a total of 2,161 direct, indirect and induced jobs. The related employment multiplier (2.9) indicates that approximately every job in the agriculture sector supports/generates an additional 1.9 jobs in the wider economy (Cummings and Associates, 2004).

The purpose of this report is to provide an update of the 2003 report including an overview of the agriculture sector based on the 2006 Census of Agriculture and a general overview of the wider economy in the region to provide context.

The report is intended to help the broader community better understand the nature and economic significance of the agricultural economy in terms of dollars and jobs. The findings are also intended to inform program and policy development work within northern Ontario. Only by better understanding the important role played by food related activities can the various participants in the agri-food economy work together to make decisions which are economically sound, environmentally sustainable and socially responsible.

The first chapter of the report introduces the scope of the research and the collaborative approach used in completing the study.

Chapter 2 of the report presents a profile of population and employment indicators in northern Ontario with a special focus on Temiskaming District. This includes general background information on the population such as population changes experienced in

the region as compared to northern Ontario, and Ontario. This chapter also examines the employment associated with the different industry groups.

Chapter 3 of the report provides information on the land base resources in the Study Area including agricultural soils. It also features information on the local climate and growing conditions and the implications of climate change on future weather patterns.

Chapter 4 of the report provides an overview of some of the key local organizations and institutions that promote and support agriculture in the region.

Chapter 5 provides a detailed picture of the agriculture sector in Temiskaming District including a trend analysis of production activities between 1996 and 2006. Data was drawn from the Agricultural Census, to describe the farmland area, land use, number of farms, farm size, farm type, farm receipts, farm operating expenses, and characteristics of agricultural operators in the region. Comparisons are made between Temiskaming District and the agriculture sector profile for northern Ontario and Ontario.

Chapter 6 of the report examines the role and growing importance of agri-tourism and educational related activities in the region including on-farm retail activities, agricultural fairs, and farmers markets.

Chapter 7 provides a brief review of the agriculture economic impact assessment that was conducted for Temiskaming District in 2003 and provides an estimate of the current economic impacts of the sector.

Chapter 8 examines some of the challenges and opportunities associated with the agriculture sector in Temiskaming District.

Chapter 9 presents the study conclusions.

1.1 Background to the Study Methodology

The study focuses on the dollars and jobs created by agriculture in Temiskaming District.

The methodology uses an input-output like analysis as a tool for assessing the total economic impact of agriculture in the Study Area. This approach depicts the economy as a series of sectors that buy and sell goods to each other until they reach the point of consumption. The purchases of products by sectors from other sectors are the inputs; the sales to other sectors by a sector are the outputs.

Three measures are associated with the notion of economic impact:

- Direct impact (spending on goods and services by businesses involved in primary production/farming);
- Indirect impact (spending on goods and services by those businesses supplying the businesses involved in primary production); and
- Induced impact (spending of wages earned by employees of businesses involved in primary production or in businesses supplying goods and services to these businesses)

The research in this report relies on data from the Population and Agricultural Census (1996-2006), a focus group with primary producers and other agri-sector stakeholders from Temiskaming District, and a review of the results from the agri-economic impact study that was conducted for Temiskaming District in 2003. Additional details on the methods used are provided in Chapter 7 and 8.¹

¹ The research strategy for the agri-economic impact study originated in Huron County through research undertaken by Harry Cummings and colleagues in 1998. Since that time, Cummings and colleagues have applied the same basic methodology to agri-economic impacts studies in counties across Ontario including Perth, Lambton, Simcoe, Elgin, Middlesex, Oxford, Prescott, Russell, Stormont, Dundas and Glengarry, Frontenac, Lennox and Addington, Leeds and Grenville, Ottawa, Lanark and Renfrew, and Waterloo. Cummings has also completed several agri-economic impact studies in northeastern Ontario including the Blue Sky Region (Nipissing, Parry Sound, East Sudbury District, and the City of Greater Sudbury), Algoma and Manitoulin, and Temiskaming.

1.2 The Study Area and Physical Infrastructure

Northern Ontario is comprised of 11 districts in total and has a land area of 802,000 km² which constitutes about 87% of the land area of Ontario (Map 1.1).² The three westernmost districts in northern Ontario (Thunder Bay, Kenora and Rainy River) constitute northwestern Ontario and the remaining districts including Temiskaming District constitute northeastern Ontario.



Source: Modified from: Brock University Map Library. Ontario-Regional Municipalities, Counties & Districts. St. Catharines, Ontario: Brock University Map Library. 2004.

Temiskaming District is located in the northeast corner of the province of Ontario. It is bordered by Nipissing District in the south, Sudbury District in the south west, and Cochrane District in the north. The eastern boundary is Lake Temiskaming and the province of Quebec (Map 2.1). The City of Temiskaming Shores is the largest urban centre in the District with a population of approximately 10,400 in 2006.³ A number of

² The districts of Parry Sound and Muskoka are included here as part of Northern Ontario even though they are geographically in Central Ontario. In 2004, the provincial government removed Muskoka from its definition of Northern Ontario for development funding purposes, but continues to treat Parry Sound as a Northern Ontario division. The federal government retained both of these districts in the service area of its development agency FedNor. The City of Greater Sudbury is located in the District of Sudbury but is not politically part of the District of Sudbury.

³ In January 2004, the Town of New Liskeard, the Town of Haileybury, and Dymond Township were amalgamated to create the City of Temiskaming Shores.

smaller towns are located throughout the Study Area including Cobalt, Earleton, Englehart, and Kirkland Lake.

Map 1.2 provides an overview of the Districts in northeastern Ontario including select communities and major highways.

Physical Infrastructure in Temiskaming District

Major highways in the Study Area include the Trans Canada Highway 11, Highway 65 and Highway 66. The region is also accessible by railway and air transport. South Temiskaming is within a day's drive of at least seven U.S. border crossings. From the City of Temiskaming Shores area it is approximately 1.5 hours from North Bay, 2.5 hours from Sudbury and 6 hours from Ottawa, Toronto and Sault Ste. Marie.

Map 1.2: Communities and Major Highways in Northeastern Ontario



2.0 Socio-Economic Profile of Temiskaming District

2.1 Introduction

This section of the report provides a socio-economic profile of Temiskaming District. Data for the profile was drawn from the Population Census which is conducted by Statistics Canada every five years. The most recent census was conducted in 2006. Data for Temiskaming District are compared to data for the northern Ontario region as a whole and the province as a whole in order to provide detailed insights into the relative importance of the District's contribution to these economies.

Socio-economic characteristics are important to the viability and resiliency of agriculture – the general characteristics of the area which surrounds a particular farming community can impact agricultural diversity and profitability.

2.2 Population and Population Change

Between 1996 and 2006 the population of Temiskaming District declined from 37,807 to 33,283 or 12%. As shown in Table 2.1, Temiskaming District along with Cochrane District experienced the highest decline (as a percentage of total population) in northern Ontario between 1996 and 2006. During the same period the province as a whole experienced a 13% increase in population.

A notable difference between northeastern Ontario and northwestern Ontario is the size of the Franco-Ontarian population. In northeastern Ontario approximately 25% of the population speaks French as a first language, compared to just 3% in northwestern Ontario.

Table 2.1: Population 1991 to 2006 – Districts Ranked by 2006 Population

	1996	2001	2006	Percent change 1991to 2006
Ontario	10,753,573	11,410,046	12,160,282	13%
Northern Ontario Region	786,391	746,778	745,372	-5%
City of Greater Sudbury *	165,362	155,268	157,909	-5%
Thunder Bay District	157,619	150,860	149,063	-5%
Algoma District *	125,455	118,567	117,461	-6%
Nipissing District *	84,832	82,910	84,688	0%
Cochrane District *	93,240	85,247	82,503	-12%
Kenora District	63,360	61,802	64,419	2%
Parry Sound *	39,885	39,665	40,918	3%
Temiskaming District *	37,807	34,442	33,283	-12%
Rainy River District	23,138	22,109	21,564	-7%
Sudbury District *	23,831	22,894	21,392	-10%
Manitoulin District *	11,747	12,679	13,090	11%

* Northeastern Ontario Districts

Source: Statistics Canada 1991, 2001, 2006.

Although the overall population in northeastern Ontario declined by almost 6% between 1996 and 2006, the Aboriginal population increased from 28,105 to 49,265 or 75%. The Aboriginal population currently represents about 10% of the total population in northeastern Ontario. In comparison, the Aboriginal population represents approximately 2% of the provincial population (Statistics Canada, 2006).⁴

2.3 Economic Profile

Employment by Industry Sector

The North American Industry Classification System (NAICS) is an industry classification system developed by the Statistical agencies of Canada, Mexico and the United States. The classification system was created against the background of the North American Free Trade Agreement and was designed to provide common definitions of the industrial structure of the three countries and a common statistical framework to facilitate analysis of the three economies. NAICS organizes Canadian industries into distinguishable categories, or classifications. At the greatest level of aggregation, these industries are divided into 20 separate categories as shown in Table 2.2.

In 2006, health care and social services was the largest employment sector in Temiskaming District with 2,050 jobs or 13% of the total jobs in the District (Table 2.2). The other top ranking sectors in the District in terms of total jobs include retail trade with 1,935 jobs (12%), manufacturing with 1,335 jobs (9%), educational services with 1,170 jobs (7%), accommodation and food services with 1,175 jobs (7%), construction with 1,085 jobs (7%), and transportation and warehousing with 1,060 jobs (7%). Agriculture directly employed a total of 720 people (i.e. on farm jobs) or almost 5% of the total jobs in Temiskaming District in 2006.

The employment profile for Temiskaming District is fairly comparable to northern Ontario as whole with respect to the distribution of the workforce across the 20 industry sectors with the exception of the agriculture sector where there is a much higher proportion of jobs in Temiskaming compared to northern Ontario (5% vs. 1%).

The top ranking sectors at the provincial level in terms of total jobs in 2006 include manufacturing (14% of the total jobs), retail trade (11%), health care and social assistance services (9%), professional, scientific and technical services (7%), educational services (7%), and accommodation and food services (6%). At the provincial level agriculture accounts for almost 2% of the total jobs in Ontario.

With respect to the change in job numbers between 2001 and 2006, the total number of jobs in Temiskaming District increased slightly from 15,735 jobs in 2001 to 15,820 in

⁴ The Aboriginal population represents about 5.5% of the total population in Parry Sound and Temiskaming Districts, 6% of the population in the City of Greater Sudbury, 9% of the population in Nipissing District, 11% of the population in Algoma District, 12% of the population in Cochrane District, 14% of the population in Sudbury District, and 39% of the population in Manitoulin District. The Aboriginal population represents about 13% of the total northern Ontario population (Statistics Canada, 2006).

2006 (Table 2.3). The industry sectors that experienced the greatest job growth in the District between 2001 and 2006 include health care and social services (+255 jobs or 14% growth), mining (+220 jobs, 40%), forestry and logging (+145 jobs, 60%), and other services not including public administration (+130 jobs, 17%).

The industry sectors that experienced the greatest job losses in Temiskaming District between 2001 and 2006 include information and cultural industries (-125 jobs or 30% decline), educational services (-120 jobs, 9%), construction (-95 jobs, 8%), and finance and insurance (-70 jobs, 21%).

During the 2001-2006 period the number of jobs in the agriculture sector in Temiskaming District declined by only 25 jobs or 3%. In comparison, the number of jobs in agriculture at the provincial level declined from 110,475 jobs in 2001 to 101,210 jobs in 2006 or 8% (Statistics Canada, 2001 and 2006). It is important to emphasize that the decline in agriculture employment does not reflect trends in farm productivity. Farm productivity has increased in Temiskaming District and is profiled in Section 5 of this report.

Recent Labour Market Developments

In the fall of 2008, Canada began to experience a labour market decline as the economy became caught in the global economic recession. Since October 2008, total employment in Canada has fallen by 2.4% (approximately 436,000 full time jobs). Employment has fallen the most for youths aged 15 to 24 (particularly students) and men aged 25 to 54.⁵

The majority of job losses have occurred in manufacturing, construction, and transportation and warehousing. Employment in manufacturing at the national level has dropped by 11% (218,000 jobs) since October 2008 (Statistics Canada, Aug. 7, 2009).

Job losses in Ontario have been particularly high given the concentration of manufacturing activities in the province. Total job losses in Ontario between October 2008 and June 2009 amounted to approximately 232,000 of which 126,000 were in manufacturing (Statistics Canada, July 10, 2009).

Between June 2008 and June 2009, northeastern Ontario recorded a net loss of approximately 12,700 full time and part time jobs. The labour force contracted by 3,500 due to workers leaving the labour force. The unemployment rate in northeastern Ontario increased from 5.7% in June 2008 to 9.1% in June 2009. During the same period the provincial unemployment rate increased from 6.5% to 9.4%.

⁵ The national unemployment rate in July 2009 was 8.6%, the highest rate since 1989. The national unemployment rate for students aged 15 to 24 in July 2009 was almost 21% which is the highest July unemployment rate for students since comparable data was collected in 1977.

The labour market in northeastern Ontario is continuing to contract as both the labour force and the population declines (Statistics Canada, June 2009).⁶

⁶ One of the sectors particularly hard hit in the region in recent years is the forest product industry. Since 2006, a number of firms in northern Ontario have experienced contraction and/or closure. The primary reasons associated with the downturn include weak demand/poor market conditions (e.g. declining demand for newsprint, downturn in the U.S. housing market), and the rapid rise and appreciation of the Canadian dollar (Statistics Canada, June 2009; Statistics Canada, January 2009). Despite the downturn in the forestry sector, the industry remains an important element of the regional economy and experts suggest that the future potential of the sector may be linked to capitalizing on opportunities such as promoting value-added opportunities and working more closely with Aboriginal populations (Moazzami, 2006).

Table 2.2: Employment by NAICS Industrial Sector, 2006.

NAICS Industrial Sector ^a	Ontario		Northern Ontario Region		Temiskaming District	
	# jobs	%	# jobs	%	# jobs	%
All industries	6,473,735	100%	366,020	100%	15,820	100%
Agriculture	101,210	1.6%	3,070	0.8%	720	4.6%
Fishing, hunting and trapping	1,355	0.02%	375	0.1%	0	0.0%
Forestry and logging	11,780	0.2%	6,955	1.9%	385	2.4%
Mining and oil and gas extraction	25,445	0.4%	13,395	3.7%	770	4.9%
Utilities	50,215	0.8%	3,510	1.0%	150	0.9%
Construction	384,780	5.9%	22,275	6.1%	1,085	6.9%
Manufacturing	899,670	13.9%	32,525	8.9%	1,355	8.6%
Wholesale trade	307,465	4.7%	9,575	2.6%	375	2.4%
Retail trade	720,235	11.1%	46,135	12.6%	1,935	12.2%
Transportation and warehousing	307,475	4.7%	20,765	5.7%	1,060	6.7%
Information and cultural industries	172,800	2.7%	5,335	1.5%	295	1.9%
Finance and insurance	316,170	4.9%	8,355	2.3%	260	1.6%
Real estate and rental and leasing	126,440	2.0%	4,795	1.3%	145	0.9%
Professional, scientific and technical services	471,620	7.3%	12,715	3.5%	510	3.2%
Management of companies and enterprises	8,440	0.1%	105	0.03%	0	0.0%
Administrative and support, waste management and remediation services	314,005	4.9%	16,410	4.5%	500	3.2%
Educational services	433,485	6.7%	30,030	8.2%	1,170	7.4%
Health care and social assistance	611,745	9.4%	47,650	13.0%	2,050	13.0%
Arts, entertainment and recreation	140,830	2.2%	6,945	1.9%	160	1.0%
Accommodation and food services	414,975	6.4%	28,830	7.9%	1,175	7.4%
Other services (except public administration)	303,510	4.7%	18,135	5.0%	895	5.7%
Public administration	350,070	5.4%	28,185	7.7%	835	5.3%

^aThe North American Industry Classification System (NAICS) is an industry classification system developed by the Statistical agencies of Canada, Mexico and the United States. The NAICS classification system replaces the Standard Industrial Classification system which was used by Statistics Canada prior to the 2001 Census. The industry classification refers to the general nature of the business carried out in the establishment where the person worked. If the person did not have a job during the week (Sunday to Saturday) prior to enumeration (May 2006), the data relate to the job of longest duration since January 1, 2005. Persons with two or more jobs were required to report the information for the job at which they worked the most hours.

Source: Statistics Canada, 2006.

Table 2.3: Employment by Industrial Sectors for Temiskaming District, 2001-2006

NAICS Industrial Sector	2001		2006		Change 2001 to 2006	
	# jobs	%	# jobs	%	Change in jobs by #	Change in jobs by %
All industries	15,735	100%	15,820	100%	85	0.5%
Agriculture	745	4.7%	720	4.6%	-25	-3.4%
Fishing, hunting and trapping	0	0.0%	0	0.0%	0	0.0%
Forestry and logging	240	1.5%	385	2.4%	145	60.4%
Mining and oil and gas extraction	550	3.5%	770	4.9%	220	40.0%
Utilities	175	1.1%	150	0.9%	-25	-14.3%
Construction	1,180	7.5%	1,085	6.9%	-95	-8.1%
Manufacturing	1,405	8.9%	1,355	8.6%	-50	-3.6%
Wholesale trade	430	2.7%	375	2.4%	-55	-12.8%
Retail trade	1,960	12.5%	1,935	12.2%	-25	-1.3%
Transportation and warehousing	1,120	7.1%	1,060	6.7%	-60	-5.4%
Information and cultural industries	420	2.7%	295	1.9%	-125	-29.8%
Finance and insurance	330	2.1%	260	1.6%	-70	-21.2%
Real estate and rental and leasing	180	1.1%	145	0.9%	-35	-19.4%
Professional, scientific and technical services	500	3.2%	510	3.2%	10	2.0%
Management of companies and enterprises	10	0.1%	0	0.0%	-10	-100.0%
Administrative and support, waste management and remediation services	405	2.6%	500	3.2%	95	23.5%
Educational services	1,290	8.2%	1,170	7.4%	-120	-9.3%
Health care and social assistance	1,795	11.4%	2,050	13.0%	255	14.2%
Arts, entertainment and recreation	215	1.4%	160	1.0%	-55	-25.6%
Accommodation and food services	1,105	7.0%	1,175	7.4%	70	6.3%
Other services (except public administration)	765	4.9%	895	5.7%	130	17.0%
Public administration	900	5.7%	835	5.3%	-65	-7.2%

Source: Statistics Canada, 2001, 2006.

Educational Attainment

In 2005, approximately 9% of the population (25 to 64 years of age) in Temiskaming District had a university certificate or degree while a further 26% had a college or other non-university certificate/diploma. Approximately 24% of the population reported that their highest educational attainment was a high school certificate while 23% of the population reported that they did not have a certificate/diploma/degree (Table 2.4).

A slightly lower proportion of the population in Temiskaming District has a university certificate or degree compared to northern Ontario as whole (9% vs. 14%) and a much lower proportion compared to the province (26%).

Table 2.4: Total Population 25 to 64 Years of Age by Highest Education Certificate, 2005

	Ontario		Northern Ontario Region		Temiskaming District	
	#	%	#	%	#	%
Total population	6,638,330	100%	400,705	100%	17,840	100%
No certificate, diploma or degree	899,530	14%	76,170	19%	4,165	23%
Certificate, diploma or degree	5,738,800	86%	324,525	81%	13,670	77%
High school certificate or equivalent	1,660,665	25%	101,075	25%	4,305	24%
Apprenticeship or trades certificate or Diploma	581,125	9%	51,405	13%	2,715	15%
College, CEGEP or other non-university certificate or diploma	1,461,630	22%	102,635	26%	4,625	26%
University certificate, diploma or degree	2,035,370	31%	69,395	17%	2,020	11%
University certificate or diploma below bachelor level	309,945	5%	11,300	3%	325	2%
University certificate or degree	1,725,425	26%	58,095	14%	1,690	9%
Bachelor's degree	1,057,200	16%	36,230	9%	1,110	6%
University certificate or diploma above bachelor level	209,345	3%	10,615	3%	330	2%
Degree in medicine, dentistry, veterinary medicine or optometry	47,815	1%	1,650	0.4%	35	0.2%
Master's degree	351,925	5%	8,000	2%	190	1%
Earned doctorate	59,140	1%	1,560	0.4%	25	0.1%

Source: Statistics Canada, 2006.

Household Income

Table 2.5 shows the distribution of households by household income categories for Temiskaming District, northern Ontario and Ontario in 2005. The distribution is organized according to 11 different income categories, ranging from less than \$10,000 to \$100,000 or more.

In 2005, Temiskaming District had a slightly higher percentage of households with incomes under \$20,000 compared to northern Ontario as a whole (20% vs. 17%) and Ontario (13%). Although the proportion of households with incomes between \$50,000 and \$100,000 in the District (32%) was fairly comparable with both northern Ontario (34%) and Ontario (34%), the District had a lower percentage of households with incomes of \$100,000 or more compared northern Ontario and the province (12% vs. 17% and 24%). In 2005, the average household income in Temiskaming District was \$54,832 which is about \$23,000 lower than the provincial average (\$77,967).

Table 2.5: Household Income in 2005 of Private Households

Household income in 2005 of private households	Ontario		Northern Ontario Region		Temiskaming District	
	# households	%	# households	%	# households	%
All households	4,555,025	100%	305,465	100%	14,235	100%
Under \$10,000	198,235	4%	14,175	5%	700	5%
\$10,000 to \$19,999	398,830	9%	37,580	12%	2,190	15%
\$20,000 to \$29,999	408,130	9%	32,785	11%	1,830	13%
\$30,000 to \$39,999	447,475	10%	34,085	11%	1,860	13%
\$40,000 to \$49,999	419,525	9%	30,870	10%	1,365	10%
\$50,000 to \$59,999	385,555	8%	25,835	8%	1,370	10%
\$60,000 to \$69,999	356,990	8%	23,800	8%	995	7%
\$70,000 to \$79,999	324,835	7%	20,695	7%	945	7%
\$80,000 to \$89,999	282,910	6%	18,440	6%	725	5%
\$90,000 to \$99,999	238,720	5%	14,585	5%	485	3%
\$100,000 and over	1,093,810	24%	52,590	17%	1,775	12%
Median household income	\$60,455		NA		\$43,491	
Average household income	\$77,967		NA		\$54,832	

Source: Statistics Canada, 2006.

3.0 Land Base Resources in Northeastern Ontario

This chapter of the report provides an overview of the different land base and agricultural community resources in northeastern Ontario. Land base resources include soil resources and climate conditions while community resources refer to the organizations and institutions that support agriculture in the region.

3.1 Physical Geography and Agricultural Soils

The topography of northeastern Ontario is characterized by the Canadian Shield which underlies much of the area. The region features bedrock outcropping, large areas of poorly drained, swampy conditions and substantial accumulations of glacial-fluvial deposits. Deposits laid down by glacial streams and lakes have strongly influenced soil development in the region including the composition of present day forests which continue to be an important element of the local economy (Baldwin et al., 2000).⁷

The Canadian Shield also features small areas of clay deposits which are suitable for raising crops and grazing. The 'Clay Belt' in northeastern Ontario refers to a tract of fertile soil covering parts of Cochrane and Temiskaming District.

Under the Canadian agricultural land use classification system, Class 1 soils are of prime suitability for crop production while Class 2 and 3 soils are considered suitable for sustained production of common field crops if specified management practices are observed. Soils of Classes 1, 2, and 3 that are free from severe constraints and can support economically viable agricultural production are referred to as 'dependable agricultural land'. Marginal lands with Class 4 soils are also used for agricultural activity including limited crop production and permanent pasture. Although northern Ontario does not possess any Class 1 soils it does feature areas with Class 2 to 4 soils.

In Temiskaming District these soils are largely located in and around the City of Temiskaming Shores and the following Townships: Harris, Hudson, Kerns, Harley, Casey, Brethour, Hilliard, Armstrong, Charlton and Dack, Evanturel, and Chamberlain. There is also agricultural activity in the Unorganized West Part of the District. This is largely restricted to the unorganized townships that surround the townships noted above and includes: South Lorrain and Lorrain, Firstbrook, Henwood, Cane, Beauchamp, Robillard, Savard, and Marter and Ingram.

Summary descriptions of soil classes 2 to 4 are as follows (Environment Canada, 1980):

⁷ Historically, the economy of northwestern Ontario has been largely dependent on the forestry sector in contrast to northeastern Ontario which has strong linkages to both the forestry and mining sectors. Northeastern Ontario also has a significantly larger population base (five times greater in density and proximity to large urban markets) which helps sustain a more diverse economy than northwestern Ontario (Rosehart, 2008. p. 8).

Class 2: *Moderate limitations that restrict the range of crops or require moderate conservation practices.* The soils are deep and hold moisture well. The limitations are moderate and the soils can be managed and cropped with little difficulty. Under good management they are moderately high to high in productivity for a fairly wide range of crops.

Class 3: *Moderately severe limitations that restrict the range of crops or require special conservation practices.* The limitations are more severe than Class 2 soils. They affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. Under good management they are fair to moderately high in productivity for a fair range of crops.

Class 4: *Severe limitations that restrict the range of crops or require special conservation practices, or both.* The limitations seriously affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. The soils are low to fair in productivity for a fair range of crops but may have high productivity for a specially adapted crop.

A map of the soil capability for agriculture in Temiskaming District is presented in Appendix A.

3.2 Climate and Crop Heat Units

Climate conditions coupled with soil conditions play a significant role in determining the type of agricultural activity in northeastern Ontario. The southern part of Temiskaming District features a micro-climate influenced by Lake Temiskaming. As a result, the climate in the area of the Little Clay Belt is temperate which allows for a wide variety of crops to be grown including alfalfa, corn, canola, barley, spring wheat and even soybeans.

In the Earlton area of Temiskaming District average summer temperatures during 1971-2000 were about 18°C while average winter temperatures were about -16°C (Environment Canada, 2008).

At present, the last frost in spring occurs in late June in northern Ontario while the first frost generally occurs in September which results in fewer than 100 frost free days (Qian et al., 2005). In the Earlton area of Temiskaming District the average earliest planting date is May 27 while the average season ending date is September 10 (Brown and Bootsma, 1997). However, depending on the year, it is not uncommon for planting to take place at the end of April/early May.

The following table shows the climate normals for several locations in the Temiskaming District. The climate normals are based on Canadian climate stations with at least 15 years of data between 1971 and 2000 (Environment Canada, 2008).

Table 3.1: Climate Normals for Select Areas in Temiskaming District (1971-2000).

Weather Station	Month or Year	Temperature				Precipitation		
		Daily Average (°C)	Standard Deviation	Daily Maximum (°C)	Daily Minimum (°C)	Rainfall (mm)	Snowfall (cm)	Total Precipitation (mm)
Earlton A ^a	January	-16.4	3.1	-10.1	-22.6	4.4	54.1	54
	July	18.1	1.1	24.7	11.5	79.7	0	79.7
	Year	2.3	1	8.2	-3.7	553.9	247.1	785.1
Englehart A ^b	January	NA	NA	NA	NA	3.2	58.5	61.7
	July	NA	NA	NA	NA	87.5	0	87.5
	Year	NA	NA	NA	NA	600.5	255.1	855.6
Kirkland Lake ^c	January	-17.1	3.4	-10.7	-23.4	1.9	64.9	66.8
	July	17.8	1.1	24	11.6	90.5	0	90.5
	Year	NA	NA	NA	NA	NA	NA	NA

^a Earlton A: Latitude = 47° 42' N; Longitude = 79° 51' W; Elevation = 243 m.

^b Englehart A: Latitude = 47° 49' N; Longitude = 79° 54' W; Elevation = 251 m.

^c Kirkland Lake: Latitude = 48° 9' N; Longitude = 80° 0' W; Elevation = 324 m.

Source: Environment Canada, 2008

The Crop Heat Unit (CHU) system was developed in the 1960's and is used to recommend corn hybrids and soybean varieties which are best suited for production in specific CHU zones in various regions of Canada. There is a wide selection of hybrids and varieties for most crops. Most of the warm-season crops have a wide range of maturities. The CHU ratings are based on the total accumulated CHUs for the frost-free growing season in each area of the province.⁸

Crop Heat Units can fluctuate from year to year depending on weather patterns and some areas can experience higher CHU zones. Latitude, elevation and distance to the Great Lakes all affect daily temperatures and have a marked influence on the accumulated CHU across Ontario. The change between CHU isolines is gradual.

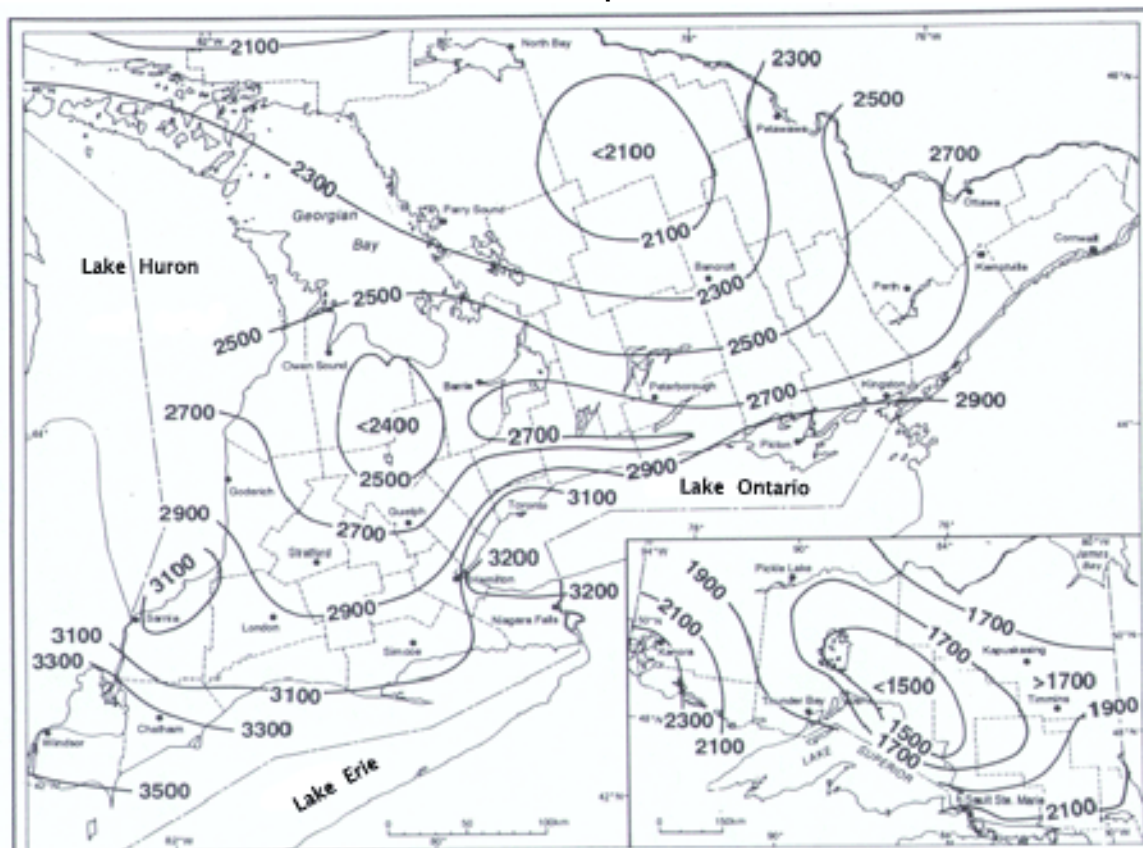
The slope and soil type in an area or site can also influence temperature. For example, south-facing slopes receive more heat than north-facing slopes, and sandy soils warm up faster than loam or clay soils. Microclimates also influence specific land situations. This makes it impossible to estimate the CHU rating closer than 50 heat units for any location.

⁸ Daily CHU are calculated from daily minimum and maximum air temperatures drawn from separate calculations taken during the day and night. The daytime relationship uses 10°C (50°F) as the base temperature and 30°C (86°F) as the optimum, because warm-season crops do not develop when daytime temperatures fall below 10°C and they develop fastest at about 30 degrees. The nighttime relationship uses 4.4°C (40°F) as the base temperature and does not specify an optimum temperature because nighttime temperatures very seldom exceed 25°C in Ontario. Daily CHU are calculated by using the average of the two daily values.

The accumulated CHU available for crops such as corn and soybeans across Ontario are shown in Map 3.1. The Study Area is shown in the insert of Map 3.1 in the lower right corner. CHU rating range from approximately 1700-1900 CHU in the northwestern part of Temiskaming District to 1900-2100 in the southeast. Statistics from Agriculture and Agri-Food Canada provide dates and accumulated heat units for both silage and grain corn at different probability levels (Agriculture and Agri-Food Canada, Yearly CHU Statistics). In the Earlton area there is a 90% probability (9 yrs in 10) that starting dates are on or before June 11 (seeding is estimated to be later than this date 1 yr in 10). As noted above, it is not uncommon for planting to take place at the end of April/early May. Season ending dates for grain corn occur after September 7 in 95% of the years and are always on or before September 11 because this is the date of occurrence of an average temperature of 12°C in that area. On average, there are 1934 heat units available for grain corn at Earlton. However, 5% of the time (1 yr in 20), CHU will be less than 1616; also, 5% of the time CHU will exceed 2238 (95% probability level).

Additional details on crop production activity in the region are provided in section 5.6.

Map 3.1: Average Accumulated Crop Heat Units (CHU) Available for Warm-Season Crops in Ontario.



Source: Agriculture and Agri-Food Canada. http://res2.agr.ca/ecorc/clim3/resu-ana_e.htm

3.3 Climate Change

Climate change including global warming is now widely recognized as a major environmental issue with economic, health and safety, security, and other dimensions (United Nations Environment Programme, 2009).⁹ Agri-food is an economic sector which could be especially sensitive to long-term climatic change.

In a climate change model used by Colombo et al. (2007) the average summer temperature in most of northeastern Ontario is expected to increase by 1 to 2°C by 2011.¹⁰ The same scenario predicts that average summer temperatures in the southern part of northeastern Ontario will increase by 3 to 4°C starting around 2071. With respect to precipitation, between 2011 and 2040, warm season precipitation will decrease by up to 10% in the area north of Hearst and Kapuskasing. However, beginning 2041, most of northeastern Ontario will receive the same or slightly more precipitation as it did from 1971-2000 (p.15).

With respect to the cold season, the same climate change scenario noted above predicts that the average winter temperature in the southern part of northeastern Ontario will be 4 to 5°C warmer by 2071. With respect to precipitation, snowfall in northeastern Ontario has historically been greatest in the snowbelt to the lee of Lake Superior, between Wawa and Sault Ste. Marie. Cold season precipitation by in this area is projected to increase by up to 20% by 2071. While snowfall in Montreal River and areas near White River, Hearst, and James Bay will increase, large parts of the northeast will receive significantly less snow than has been the historical norm. For example, the corridor running north from Espanola and Mattawa to Moosonee will get up to 20% less cold season precipitation by 2011 (p.15).

Climate change is expected to have major implications for the length of the growing season, the variety of crops grown, as well as grain yields in northern Ontario. In examining climate change scenarios for Canada, Qian et al. (2005) predict that the number of frost-free days is expected to increase by 30-45 days in northern Ontario by the middle of the century. The predicted changes for the frost dates indicate an earlier ending of frosts in spring and a later starting of frosts and killing frosts in the fall.

⁹ 'Climate change' refers to a change in the state of the climate that can be identified (e.g., using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to internal processes and/or external forcings. Some external influences, such as changes in solar radiation and volcanism, occur naturally and contribute to the total natural variability of the climate system. Other external changes, such as the change in composition of the atmosphere that began with the industrial revolution, are the result of human activity (Hegerl et al., 2007).

¹⁰ Climate models predict the effect of higher greenhouse gases based on increasing amounts of heat trapped in the atmosphere. Increased heat affects virtually all aspects of weather, including precipitation, winds, air pressure, and humidity. Many global climate models have been developed. Each climate model is unique, based on different assumptions, and produces somewhat different projections of future climate when provided the same data. The scenario presented here anticipates greenhouse gas levels by the century's end reaching 1,320 parts per million by volume in CO₂ equivalents and a total human population of 15 billion by 2100 (Colombo, McKenney, Lawrence and Gray, 2007).

CHU ratings in some parts of northern Ontario will be altered as a result of the expected climate change. For example, in the area around Fort Frances and Thunder Bay the CHU rating will increase by almost 400 units between 2010 and 2039 and almost 800 units between 2040 and 2069 (Bootsma, 2002). According to Bootsma et al (2001), grain corn yields could potentially increase by 0.64 tonnes per hectare with each increase of 100 CHU.

In conducting a regional assessment of the implications of climatic change on land resource potential for crop production in Ontario, Smit et al. (1989) reported the following effects for northern Ontario:

- Grain corn yields would increase to such an extent that it would be feasible to obtain a high return to investment on well-drained loamy soils, and on lands that have a low drought tolerance. On lands where artificial land drainage has lessened the limitations imposed by excessive moisture conditions yields would be sufficient to obtain a modest return (p.166). In northern Ontario, grain corn would become an economically viable crop on about 70% of the land base that is cleared and available for agriculture (p.168).
- The longer growing season and warmer temperatures in northern Ontario would create new opportunities for soybeans. Land which is well-drained would be especially well-suited for soybeans, and a modest return to investment could be expected on those lands where moisture imposes moderate limitations on crop production (p. 168). In northern Ontario, where current climatic conditions prohibit the crop's production, soybeans would be a profitable crop on approximately 58% of the regional resource base (p.170).
- Considerable increases in barley yields could be expected throughout the region, but lands suffering from excessive moisture would continue to be economically unsuitable for the small grains (p.167).
- Opportunities for hay production would be considerably smaller than the effects on other field crops in northern Ontario. Although the longer growing season would permit an extra growth cycle in other parts of the province, in northern Ontario the number of cutting periods would not change under the altered climate and the production prospects for hay would not differ appreciably from the present (p.168).

4.0 Agricultural Community Resources in Temiskaming District

Temiskaming agriculture has been strongly advanced through the efforts of local farm leaders and organized commodity groups to share production and farm management information and promote the industry. Some of the institutions/organizations active in the region include:

- Temiskaming Federation of Agriculture
- Temiskaming Milk Producers
- Temiskaming Sheep Association
- Temiskaming Pork Producers
- Temiskaming Cattlemen's Association
- Temiskaming Soil and Crop Improvement Association

Out of these groupings, the support infrastructure for agriculture has become well established in the form of farm supply and service businesses and cooperative marketing ventures.

For example, the North Eastern Ontario Soil and Crop Improvement Associations (NEOSCIA) in northeastern Ontario also work collectively to publish a regular newsletter, *Breaking Ground*, which informs agri-related stakeholders about upcoming professional development and training sessions, upcoming agriculture commodity group meetings, results from crop research stations, and information from government agencies. A current NEOSCIA research interest is determining the potential for farm biomass production for energy generation in every northeastern Ontario District (*Breaking Ground*. Spring 2009).

Agriculture in Temiskaming District has also been greatly aided by the research work of the New Liskeard Agricultural Research Station (NLARS). NLARS manages approximately 680 acres along with an additional 120 rented acres in and near New Liskeard. Research programs focusing on agronomy, beef and horticulture are all carried out at this central station. NLARS also operates the Verner Test Site in Nipissing District and the Emo Agricultural Research Station in Rainy River District. NLARS is managed by the University of Guelph Kemptville Campus.

In 1998, Temiskaming farm leaders formed the Temiskaming Agricultural Development Association (TADA) to administer local projects that were eligible for funding under the Northern Ontario Heritage Fund Corporation (NOHFC) agriculture program. Between 1998 and 2001 a total of 23 agriculture projects in the area were approved for funding from NOHFC including land improvement, production facility expansion, and research activities. Total project costs were estimated at \$36,783,549 with the NOHFC contribution amounting to \$6,915,936. TADA is currently inactive but can be reactivated as additional government funding becomes available.

Other important community organizations include Agricultural Societies and local farmers' markets which are profiled in greater detail under the theme of agri-tourism in Chapter 6 of the report.

Agri-Food Innovation

Northern Ontario is a source of agri-food innovation. Since the Premier's Award for Agri-Food Innovation Excellence was established in 2006, two farms in Temiskaming District have been recognized for their innovation and contribution to the community and economy.¹¹

- Ferme Blanche Rive (2007)
The Ferme Blanche Rive farm developed a monitor for cows that are about to calve. The monitor saves the farmer the time of having to constantly check on the animal by alerting the farmer when a cow is ready to give birth. The device is non-invasive and can be adapted for use in other animals.
- Terza Farms (2007)
Matthew and Carol Duke of Terza Farms established strategic alliances with other local producers, created new products and added value to their traditional products. They market their farm-based products as "northern", "natural", "humane and healthy" through a website and farm retail store. Locally produced flour and barley-fed pork have been used to produce sausage rolls, specialty sausages, hams and high-value specialty cuts of pork, all marketed under the "Northern Flavors Ontario" campaign.

¹¹The Premier's Award for Agri-Food Innovation Excellence is a five-year program that recognizes innovations that add value to existing products, create jobs and drive economic growth. As many as 55 regional awards, valued at \$5,000 each, can be presented each year. Recipients of the Premier's Award (up to \$100,000) and the Minister's Award (up to \$50,000) are selected from the regional winners. Additional details on the Award can be accessed through OMAFRA website:
http://www.omafra.gov.on.ca/english/premier_award/background.html

5.0 Profile of the Agriculture Sector in Temiskaming District

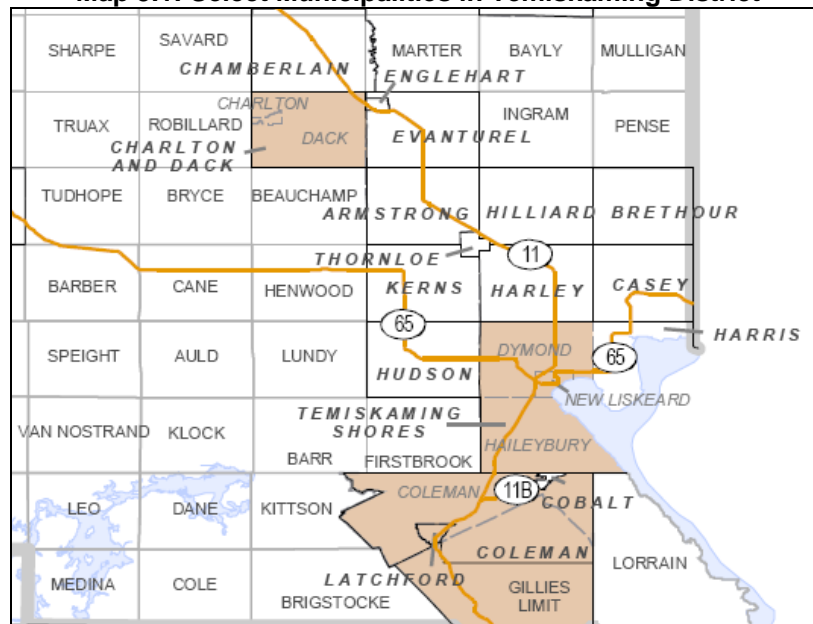
5.1 Introduction

This section presents a profile of the Agriculture Sector in Temiskaming District. Data for the analysis were drawn from the Census of Agriculture, which is conducted every five years. Agricultural activity in Temiskaming District is largely located in the following townships/towns:

- Temiskaming Shores
- Harris
- Hudson
- Kerns
- Harley
- Casey
- Brethour
- Hilliard
- Armstrong
- Charlton and Dack
- Evanturel
- Chamberlain

There is also agricultural activity in the Unorganized West Part of the District.

Map 5.1: Select Municipalities in Temiskaming District



Source: Ministry of Municipal Affairs and Housing, 2009.

An analysis of the trends and changes in farmland area and farm size, farm types, farm productivity, farm receipts, and net revenues as well as farm capital is provided for the census years 1996, 2001, and 2006. Data for Temiskaming District are further compared to data at the regional (i.e. northern Ontario region) and provincial levels to provide further insight into the relative importance of Temiskaming District's contribution to these economies.¹²

The Census data was reviewed with agri-sector stakeholders in Temiskaming District in October 2009 to identify any discrepancies in the data as well as any major

¹² The Northern Ontario Agricultural Region includes the following Districts: Nipissing, Sudbury, Manitoulin, Temiskaming, Cochrane, Greater Sudbury Division, Algoma, Thunder Bay, Rainy River and Kenora.

changes/trends in the local agriculture sector since the 2006 Census. The results are presented in section 5.15.

5.2 Number of Farms, Farmland Area and Land Tenure

In 2006, Temiskaming District reported a total of 471 farms, down from 598 farms in 1996 (Table 5.1).¹³ This represents a 21% decline across the District which is higher than the rate of loss experienced across the northern Ontario region and Ontario as a whole (15%). In 2006, 19% of all farms in northern Ontario were located in Temiskaming District.

All of the individual townships in Temiskaming District with the exception of Chamberlain reported an overall decline in farm numbers between 1996 and 2006. The highest decline occurred in the unorganized region where 38 farms were lost between 1996 and 2006.

Table 5.1: Number of Farms in Temiskaming District, Northern Ontario, and Ontario, 1996-2006

	1996	2001	2006	Change # 1996-06	Change % 1996-06
Ontario	67,520	59,728	57,211	-10,309	-15%
Northern Ontario	2,915	2,635	2,479	-436	-15%
Temiskaming District	598	532	471	-127	-21.2%
Harris	26	23	24	-2	-7.7%
Temiskaming Shores	67	55	55	-12	-17.9%
Hudson	37	32	22	-15	-40.5%
Kerns	59	51	43	-16	-27.1%
Harley	39	32	30	-9	-23.1%
Casey	33	26	28	-5	-15.2%
Brethour	21	27	20	-1	-4.8%
Hilliard	32	37	24	-8	-25.0%
Armstrong	46	34	36	-10	-21.7%
Charlton and Dack	32	34	29	-3	-9.4%
Evanturel	32	27	28	-4	-12.5%
Chamberlain	24	25	29	5	20.8%
Temiskaming, Unorganized	141	129	103	-38	-27.0%

Source: Statistics Canada, 1996, 2001, 2006.

Temiskaming District farms reported a total of 205,800 acres of workable and non-workable (e.g. woodlands, wetlands, natural pastureland) farmland in 2006 (Table 5.2).¹⁴ This represents approximately 20% of the total farmland reported in northern Ontario in

¹³ Statistics Canada defines a census farm as an agricultural operation that produces at least one of the following products intended for sale: crops (field crops, tree fruits or nuts, berries or grapes, vegetables or seed); livestock (cattle, pigs, sheep, horses, exotic animals, etc.); poultry (hens, chickens, turkeys, exotic birds, etc.); animal products (milk or cream, eggs, wool, fur, meat); or other agricultural products (greenhouse or nursery products, Christmas trees, mushrooms, sod, honey, maple syrup products).

¹⁴ Statistics Canada associates the following land uses with farmland: land in crops, land in pasture, land occupied by farm buildings and yards, land used for other farm-related activities such as farm woodlots.

2006. Between 1996 and 2006, the area of farmland reported in Temiskaming District declined by approximately 4,200 acres. Historically, the District reported a much larger area of farmland. In 1961 for example, the District reported 242,663 acres of farmland.

While farm numbers have been consistently declining over the past few census periods, farm consolidation has resulted in larger farms. The average farm size in Temiskaming District increased from 357 acres to 437 acres or 22% between 1996 and 2006. During the same period the average farm size for northern Ontario increased from 352 acres to 412 acres (17%) while the average farm size for Ontario increased from 206 to 233 acres (13%).

Within Temiskaming District there is considerable variation in average farm size. On average, farms in Brethour are the largest at 935 acres while farms in Harley are the smallest at 208 acres.

Table 5.2: Total Land Area, Workable^a and Non-workable^b, Reported by Farms in Temiskaming District, Northern Ontario, and Ontario, 1996-2006 (acres)

	1996			2001			2006		
	Total farms	Total acres	Average farm size	Total farms	Total acres	Average farm size	Total farms	Total acres	Average farm size
Ontario	67,520	13,879,565	206	59,728	13,507,357	226	57,211	13,310,216	233
Northern Ontario	2,915	1,025,190	352	2,635	1,012,026	384	2,479	1,022,060	412
Temiskaming District	589	210,033	357	532	214,835	404	471	205,800	437
Harris	26	8,535	328	23	5,284	230	24	7,542	314
Temiskaming Shores	67	17,890	267	55	18,155	330	55	28,695	522
Hudson	37	9,501	257	32	12,555	392	22	6,545	298
Kerns	59	21,732	368	51	20,289	398	43	21,411	498
Harley	39	8,957	230	32	13,332	417	30	6,246	208
Casey	33	13,765	417	26	12,791	492	28	14,559	520
Brethour	21	9,948	474	27	13,884	514	20	18,692	935
Hilliard	32	13,523	423	37	11,668	315	24	10,278	428
Armstrong	46	21,826	474	34	22,512	662	36	19,112	531
Charlton and Dack	32	14,092	440	34	15,211	447	29	12,235	422
Evanturel	32	12,034	376	27	10,669	395	28	8,084	289
Chamberlain	24	8,039	335	25	8,624	345	29	9,062	312
Temiskaming, Unorganized	141	50,191	356	129	49,861	387	103	43,339	421

^a Workable land includes all arable or cleared lands including area in hay, crops, summerfallow, and tame or seeded pasture land.

^b Non-workable land includes woodlots (sugarbushes, tree windbreaks, and bush that is not used for grazing), natural pastureland, wetlands, ponds, bogs, sloughs, etc., barnyards, lanes, etc., and land on which farm buildings are located.

Source: Statistics Canada, 1996, 2001, 2006.

Approximately 22% or 46,057 acres of the total farmland area reported by farmers in Temiskaming District is leased or rented (Table 5.3). This is lower than the provincial average of 28% and the northern Ontario average of 26%. Between 1996 and 2006 the total area of farmland reported as rented in the District increased by 7,180 acres or 18%.

Within Temiskaming District, Evantural reported the lowest percentage of rented farmland at 10% while Temiskaming Shores reported the highest percentage at 42%.

Table 5.3: Land Tenure in Temiskaming District, Northern Ontario and Ontario, 1996-2006 (acres)

	1996				2006			
	Area owned		Area rented/leased		Area owned		Area rented/leased	
	Acres	%	Acres	%	Acres	%	Acres	%
Ontario	9,764,607	70%	4,114,958	30%	9,613,544	72%	3,696,672	28%
Northern Ontario	808,816	79%	216,374	21%	755,642	74%	266,418	26%
Temiskaming District	171,156	81%	38,877	19%	159,743	78%	46,057	22%
Harris	5,153	60%	3,382	40%	5,016	67%	2,526	33%
Temiskaming Shores	15,250	85%	2,640	15%	16,765	58%	11,930	42%
Hudson	7,939	84%	1,562	16%	5,557	85%	988	15%
Kerns	17,606	81%	4,126	19%	16,178	76%	5,233	24%
Harley	7,643	85%	1,314	15%	4,826	77%	1,420	23%
Casey	12,038	87%	1,727	13%	11,677	80%	2,882	20%
Brethour	9,068	91%	880	9%	12,552	67%	6,140	33%
Hilliard	9,245	68%	4,278	32%	9,283	90%	995	10%
Armstrong	19,554	90%	2,272	10%	17,053	89%	2,059	11%
Charlton and Dack	11,277	80%	2,815	20%	10,185	83%	2,050	17%
Evanturel	8,718	72%	3,316	28%	7,272	90%	812	10%
Chamberlain	6,799	85%	1,240	15%	7,072	78%	1,990	22%
Temiskaming, Unorganized	40,866	81%	9,325	19%	36,307	84%	7,032	16%

Source: Statistics Canada, 1996, 2006.

5.3 Farmland Use

The largest single use of farmland in Temiskaming District is crop production. In 2006, 114,118 acres or 55% of the total farmland base was used for crop production (Table 5.4). Temiskaming District has a larger percentage of its farmland base in crop production compared to northern Ontario as a whole (37%) but a smaller percentage compared to the province (68%).

Between 1996 and 2006, the area reported in crop production in Temiskaming District increased by 7,697 acres or 7%. During the same period the area reported in crop production in northern Ontario and Ontario increased by 8% and 3% respectively. In 1961, the District reported 94,427 acres of farmland in crop production which indicates that farmers have been steadily transitioning more farmland to crop production over the last 45 years.

After crop production, 'other land use' was reported as the next largest farmland use in Temiskaming District at 45,937 acres or 22% of the total farmland area.¹⁵

¹⁵ Other land use includes land used for Christmas tree production, farm woodlots, wetlands, land occupied by farm buildings/yards etc. (Statistics Canada, 2006).

Table 5.4: Farmland Use in Temiskaming District, Northern Ontario and Ontario, 1996-2006 (acres)

	Total area of farms (acres)	Land in crops	Summer-fallow ^a	Tame or seeded pasture ^b	Natural land for pasture ^c	All other land ^d
1996						
Ontario	13,879,565	8,759,707	48,492	860,786	1,641,692	2,568,888
Northern Ontario	1,025,190	350,511	3,920	90,526	251,066	329,167
Temiskaming District	210,033	106,421	551	17,660	37,519	47,882
Harris	8,535	4,534	NA	448	2,467	NA
Temiskaming Shores	17,890	9,026	NA	2,613	2,647	NA
Hudson	9,501	4,321	NA	1,352	1,735	NA
Kerns	21,732	12,512	NA	1,979	2,810	NA
Harley	8,957	4,384	0	552	1,521	2,500
Casey	13,765	9,248	NA	1,056	1,746	NA
Brethour	9,948	4,120	0	422	3,081	2,325
Hilliard	13,523	8,175	NA	796	1,459	NA
Armstrong	21,826	15,371	0	1,886	2,100	2,469
Charlton and Dack	14,092	4,714	0	1,183	3,781	4,414
Evanturel	12,034	7,149	NA	1,113	2,015	NA
Chamberlain	8,039	2,869	36	580	2,006	2,548
Temiskaming, Unorganized	50,191	19,998	272	3,680	10,151	16,090
2006						
Ontario	13,310,216	9,046,383	29,394	749,719	1,112,668	2,372,052
Northern Ontario	1,022,060	380,186	2,163	96,093	222,173	321,445
Temiskaming District	205,800	114,118	256	21,365	24,124	45,937
Harris	7,542	3,391	0	640	1,737	1,774
Temiskaming Shores	28,695	16,314	NA	3,298	3,943	NA
Hudson	6,545	3,583	0	551	720	1,691
Kerns	21,411	11,642	NA	4,382	869	NA
Harley	6,246	3,352	0	320	1,393	1,181
Casey	14,559	10,788	NA	1,359	593	NA
Brethour	18,692	13,107	0	2,319	475	2,791
Hilliard	10,278	5,589	NA	977	1,288	NA
Armstrong	19,112	13,677	0	989	1,325	3,121
Charlton and Dack	12,235	4,852	0	841	2,577	3,965
Evanturel	8,084	5,036	0	340	1,220	1,488
Chamberlain	9,062	3,431	0	1,284	1,059	3,288
Temiskaming, Unorganized	43,339	19,356	0	4,065	6,925	12,993

^a Summerfallow involves keeping normally cultivated land free of vegetation throughout one growing season by cultivating (plowing, discing, etc.) and/or applying chemicals to destroy weeds, insects and soil-borne diseases and allow a buildup of soil moisture reserves for the next crop year.

^b Tame or seeded pasture includes grazeable land that has been improved from its natural state by seeding, draining, irrigating, fertilizing or weed control. Does not include areas of land harvested for hay, silage, or seed.

^c Natural land for pasture includes areas used for pasture that have not been cultivated and seeded, or drained, irrigated or fertilized. Includes native pasture/hay (indigenous grass suitable as feed for livestock and game); rangeland (land with natural plant cover, principally native grasses or shrubs valuable for forage); grazeable bush, etc.

^d All other land includes woodland, wetlands and Christmas tree area.

N/A denotes that too few farms have reported data to ensure confidentiality.

Source: Statistics Canada, 1996, 2006.

5.4 Farm Types

Temiskaming District features a variety of different farm types based on farms reporting gross farm receipts of \$2,500 or more. In 2006, a total of 125 farms or 27% of all farms in Temiskaming District were primarily engaged in producing beef cattle while 62 farms (13%) were primarily engaged in dairy production and 22 farms (5%) were primarily engaged in sheep/goat production. A further 62 farms (13%) were involved in other animal production (e.g. horses, bison, deer, elk, llamas, rabbits, bees, etc.) and 38 farms (8%) were involved in oilseed and grain production (Table 5.5).

Between 2001 and 2006, the number of beef cattle farms in the District reporting gross farm receipts of \$2,500 or more declined from 189 farms to 125 farms or 34%. During the same period the province as a whole experienced a 13% decline in beef cattle farms. About 17% of the beef farms in northern Ontario are located in the District.

The number of dairy farms in Temiskaming District reporting gross farm receipts of \$2,500 or more declined from 83 farms in 2001 to 62 farms in 2006 which represents a decrease of 25%. During the same period the province as a whole experienced a 23% decline in dairy farms. Just over 36% of the dairy farms in northern Ontario are located in Temiskaming District.

The sheep/goat sector in Temiskaming District experienced substantial growth between 2001 and 2006. The number of sheep/goat farms in the District reporting gross farm receipts of \$2,500 or more increased from 13 to 22 or 69%. As of 2006, Temiskaming District had 48% of the sheep/goat farms in northern Ontario. With respect to other livestock/poultry type farms, in 2006 Temiskaming District reported 2 hog farms (down from 4 farms in 2001) and 2 poultry/egg farms (up from 1 farm in 2001).

Temiskaming District also reported a total of 62 farms involved in other farm animal production in 2006 (up from 40 farms in 2001). This includes animals such as horses, bison, deer, elk, llamas, alpacas, wild boars, rabbits, bees, etc. Additional details on the inventory of farm animals/poultry in Temiskaming District are provided in section 5.5.

With respect to field crops, the number of oilseed/grain crop farms in Temiskaming District declined from 49 to 38 farms between 2001 and 2006 while other types of field crop farms (e.g. hay, fodder crops) increased from 92 to 144 farms. Additional details on the amount and type of crop production occurring in the District are provided in section 5.6.

In 2006, Temiskaming District reported 3 farms involved in fruit production (up from 2 farms in 2001) and 4 farms involved in vegetable production (up from 2 farms in 2001). Additional details on the amount and type of fruit and vegetable production occurring in the District are provided in section 5.7. The number of farms in Temiskaming District involved in greenhouse, nursery, floriculture production increased from 4 farms in 2001 to 7 farms in 2006. Additional details on the amount and type of greenhouse, nursery, floriculture production occurring in the District are provided in section 5.8 and 5.9.

**Table 5.5a: Number of Farms by Farm Type for Temiskaming District, Northern Ontario and Ontario, 2001
(Farms reporting gross farm receipts of \$2,500 or more)^a**

	Total farms	Dairy cattle	Beef cattle	Hog and pig	Poultry and egg ^b	Sheep and goat	Other animal production ^c	Oilseed and grain	Fruit	Greenhouse, nursery, floriculture	Other crops ^d	Vegetable
2001												
Ontario	55,092	6,414	12,738	2,491	1,614	1,017	5,428	13,371	1,739	2,430	6,434	1,416
Northern Ontario Region	2,279	239	928	16	16	36	241	75	23	125	545	35
Temiskaming District	479	83	189	4	1	13	40	49	2	4	92	2
Harris	19	2	10	0	0	0	2	2	0	0	3	0
Temiskaming Shores	51	8	21	0	0	3	7	3	1	2	6	0
Hudson	26	3	14	0	0	0	1	1	0	0	7	0
Kerns	51	9	19	0	0	1	2	14	0	0	6	0
Harley	30	2	13	0	0	1	1	3	0	0	10	0
Casey	25	7	3	0	1	0	3	4	0	0	7	0
Brethour	24	2	8	0	0	4	0	4	0	0	6	0
Hilliard	34	6	13	1	0	1	2	1	1	0	9	0
Armstrong	33	24	2	0	0	0	1	3	0	0	2	1
Charlton and Dack	30	3	14	1	0	0	2	2	0	0	8	0
Evanturel	23	8	6	0	0	0	1	4	0	0	4	0
Chamberlain	22	2	9	0	0	1	3	1	0	1	5	0
Temiskaming, Unorganized	111	7	57	2	0	2	15	7	0	1	19	1

^a Farm typing is a procedure that classifies each census farm according to the predominant type of production. This is done by estimating the potential receipts from the inventories of crops and livestock reported on the questionnaire and determining the product or group of products that make up the majority of the estimated receipts. For example, a census farm with total potential receipts of 60% from hogs, 20% from beef cattle and 20% from wheat, would be classified as a hog farm.

^b Includes ostriches and emus.

^c Includes horses, bison, deer, elk, llamas, alpacas, wild boars, rabbits, bees, etc.

^d Includes hay, fodder and other field crops excluding vegetables and fruit.

Source: Statistics Canada, 2001.

**Table 5.5b: Number of Farms by Farm Type for Temiskaming District, Northern Ontario and Ontario, 2006
(Farms reporting gross farm receipts of \$2,500 or more)^a**

	Total farms	Dairy cattle	Beef cattle	Hog and pig	Poultry and egg ^b	Sheep and goat	Other animal production ^c	Oilseed and grain	Fruit	Green-house, nursery, floriculture	Other crops ^d	Vegetable
2006												
Ontario	57,211	4,937	11,052	2,222	1,700	1,365	7,573	13,056	1,892	2,822	8,823	1,769
Northern Ontario Region	2,479	171	752	11	27	46	383	59	35	131	810	54
Temiskaming District	471	62	125	2	2	22	62	38	3	7	144	4
Harris	24	3	7	0	0	0	3	3	0	1	7	0
Temiskaming Shores	55	5	14	0	1	2	14	3	1	2	12	1
Hudson	22	3	7	0	0	1	2	2	0	0	7	0
Kerns	43	6	9	1	0	2	5	9	0	0	11	0
Harley	30	1	12	0	0	1	5	0	1	0	10	0
Casey	28	8	6	0	0	1	3	5	0	0	5	0
Brethour	20	2	6	0	0	4	0	2	0	0	6	0
Hilliard	24	4	10	0	0	2	1	0	0	0	7	0
Armstrong	36	13	6	0	0	1	4	4	0	0	7	1
Charlton and Dack	29	2	8	0	1	0	4	2	0	0	12	0
Evanturel	28	8	2	0	0	3	4	2	0	0	9	0
Chamberlain	29	1	11	0	0	1	3	2	0	1	10	0
Temiskaming, Unorganized	103	6	27	1	0	4	14	4	1	3	41	2

^a Farm typing is a procedure that classifies each census farm according to the predominant type of production. This is done by estimating the potential receipts from the inventories of crops and livestock reported on the questionnaire and determining the product or group of products that make up the majority of the estimated receipts. For example, a census farm with total potential receipts of 60% from hogs, 20% from beef cattle and 20% from wheat, would be classified as a hog farm.

^b Includes ostriches and emus.

^c Includes horses, bison, deer, elk, llamas, alpacas, wild boars, rabbits, bees, etc.

^d Includes hay, fodder and other field crops excluding vegetables and fruit.

Source: Statistics Canada, 2006.

In 2001, the first year that the Census of Agriculture began to collect data on organic farming activity, there were a total of 9 farms in Temiskaming District that reported organic farming activity. By 2006 a total of 32 farms in Temiskaming District reported that they produced organic products of which 4 farms reported that they produced products that were certified as organic.¹⁶ Additional details on organic production in Temiskaming District are provided in Table 5.6.

Table 5.6: Number of Farms Producing Organic Products in Temiskaming District, Northern Ontario and Ontario, 2006

	Total number of farms reporting organic products regardless of the certification status	Number of farms producing certified organic products	Number of farms producing transitional organic products	Number of farms producing not certified organic products	Total farms reporting organic hay or field crops	Total farms reporting organic fruits, vegetables or greenhouse products	Total farms reporting organic animals or animal products	Total farms reporting organic maple products	Total farms reporting other organic products
Ontario	3,591	593	148	2,989	1,873	934	1,748	262	364
Northern Ontario Region	240	12	3	227	110	57	144	22	22
Temiskaming District	32	4	0	28	20	4	19	0	2
Harris	0	0	0	0	0	0	0	0	0
Temiskaming Shores	4	0	0	4	2	0	2	0	0
Hudson	1	0	0	1	1	0	0	0	0
Kerns	2	0	0	2	2	0	1	0	0
Harley	3	0	0	3	1	1	2	0	0
Casey	2	0	0	2	2	0	2	0	0
Brethour	3	1	0	2	2	1	1	0	1
Hilliard	2	1	0	1	2	0	0	0	0
Armstrong	2	1	0	1	1	0	2	0	0
Charlton and Dack	2	0	0	2	2	0	1	0	0
Evanturel	1	0	0	1	0	0	1	0	0
Chamberlain	1	0	0	1	1	0	1	0	0
Temiskaming, Unorganized	9	1	0	8	4	2	6	0	1

Source: Statistics Canada, 2006.

¹⁶ Canada recently adopted a national code of practice that defines and regulates the use of the terms "organic", "organically grown", "organically raised", "certified organic" and other variations. Independent, organic certification agencies verify growing, processing, packaging, transportation, warehousing and retailing procedures. While these standards are not regulated by any government department, the Food and Drug Act requires labels to be true and factual.

A further assessment of farm type specialization in Temiskaming District can be obtained using the Location Quotient. Economic analysts have found the Location Quotient (LQ) to be a useful tool in determining which sectors of the economy are more specialized than others (Bendavid-Val, 1991, p.73). The term 'specialized' in this instance refers to the relative size or presence of an industrial activity. The LQ is essentially a ratio of ratios. In assessing farm type specialization, the regional share of a particular farm sector or type is compared to the provincial share in the sector. The LQ can be used to gauge the relative specialization of a region in various farm sectors such as dairy, beef and field crops. Using the Temiskaming District dairy sector as an example, the LQ formula for 2006 appears as follows:

$$LQ = \frac{\text{number of dairy farms in the District}}{\text{total number of farms in the District}} \div \frac{\text{number of dairy farms in the province}}{\text{total number of farms in the province}}$$

$$LQ = (62 / 471) \div (4,937 / 57,211) = 1.5$$

For the purpose of interpreting the LQ, it has a base value of one. An LQ of one suggests that the region and the province are specialized to an equal degree in the chosen industry sector. If the LQ is greater than one, it indicates that the region has a higher degree of specialization in the industry sector than the province. An LQ of less than one indicates that the industry sector is less specialized in the region than it is for the province.

Using the farm type data from Table 5.5, the 2006 LQ for the dairy sector (1.5) indicates that Temiskaming District continues to be specialized in dairy production. The LQ's for the other farm sectors are presented in Table 5.7. The LQ data indicates that Temiskaming District is also specialized in beef cattle production (1.4), sheep/goat production (2.0), and crop production (2.0). Based on comparisons with 2001 data, Temiskaming District is becoming increasingly specialized in sheep/goat production and crop production and less specialized in beef cattle production.

Table 5.7: Location Quotient for Farm Types for Temiskaming District, 2001 and 2006

Year	Dairy cattle	Beef cattle	Hog and pig	Poultry and egg ^b	Sheep and goat	Other animal prod. ^c	Oilseed and grain	Fruit	Greenhouse, nursery, floriculture	Other crops ^d	Vegetable
2001	1.5	1.7	0.2	0.1	1.5	0.8	0.4	0.1	0.2	1.6	0.2
2006	1.5	1.4	0.1	0.1	2.0	1.0	0.4	0.2	0.3	2.0	0.3

Source: Adapted from Statistics Canada, 2001, 2006.

5.5 Livestock and Animals

Temiskaming District farms raise a number of different types of livestock. In 2006, farms in the District reported a total of 7,687 beef cows, 7,231 sheep/lambs, 5,061 dairy cows, 5,081 pigs, 1,143 goats, 638 horses/ponies, and 359 bison. The District also reported 4,115 hens/chickens and 111 bee colonies in 2006 (Table 5.8a and 5.8b).¹⁷

In 2006, Temiskaming District accounted for 52% of the total sheep and lambs in northern Ontario as well as 49% of the pigs, 42% of the dairy cows, 35% of the goats, 19% of the beef cows, 15% of the bison, and 14% of the horses and ponies.

Between 1996 and 2006 the livestock inventory in Temiskaming District increased for several sectors including goats (220% increase in the total number of goats), pigs (135%), and sheep and lambs (75%). During the same period the District experienced a drop in the total number of bee colonies (89%), hens and chickens (65%), dairy cows (16%), horses and ponies (12%), and beef cows (2%).

Across northern Ontario as a whole, there was an overall decline in the number of dairy cows, hens and chickens, and bee colonies while the total number of beef cows, pigs, sheep/lambs, goats, horses/ponies, bison, deer/elk, and llama/alpaca increased.¹⁸

¹⁷ A farm may be involved in producing more than one type of livestock which explains, for example, why there are more beef farms reported here than in section 4.4 of the report which focuses on farm types by the predominant type of production on each farm.

¹⁸ The economic importance of livestock such as sheep, goats, horses, etc. to the local and regional economy is often overlooked. However, the impacts of these sectors can be substantial. A 2006 study on the equine sector in northeastern Ontario determined that the sector directly contributes \$70 million to the regional economy. This is equivalent to the economic impact of Nipissing University on the North Bay/Nipissing region. Furthermore, if the indirect and induced economic impact is added, the contribution is \$105 million annually. The figures are based on an estimated 14,000 horses in northeastern Ontario – including recreational and show horses, racing horses, and other horses including draft horses (Suthey Holler Associates. May 2006).

Table 5.8a: Inventory of Selected Farm Related Animals for Temiskaming District, Northern Ontario and Ontario, 1996

	Hens and chickens		Dairy cows		Beef cows		Pigs		Sheep and lambs		Goats	
	# farms	# birds	# farms	# cows	# farms	# cows	# farms	# pigs	# farms	# sheep	# farms	# goats
1996												
Ontario	8,295	35,596,946	10,122	404,797	19,572	441,211	6,777	2,831,082	3,592	231,087	2,521	45,258
Northern Ontario Region	451	283,388	437	18,259	1,448	37,720	144	7,606	189	10,435	124	1,462
Temiskaming District	75	11,926	112	6,027	295	7,897	38	2,134	39	4,120	20	351
Harris	4	NA	2	NA	13	NA	0	0	0	0	0	0
Temiskaming Shores	9	386	9	NA	25	NA	4	NA	12	NA	3	NA
Hudson	7	875	4	190	20	422	1	NA	1	NA	1	NA
Kerns	5	642	10	450	32	781	3	NA	2	NA	1	NA
Harley	1	NA	4	NA	25	NA	0	0	3	NA	0	0
Casey	2	NA	13	850	15	447	0	0	0	0	1	NA
Brethour	2	NA	5	214	11	318	1	NA	2	NA	1	NA
Hilliard	3	NA	7	472	17	520	2	NA	1	NA	0	0
Armstrong	2	NA	27	1967	14	359	2	NA	1	NA	1	NA
Charlton and Dack	8	203	3	135	22	543	6	482	5	220	2	NA
Evanturel	3	505	10	460	17	378	4	24	2	NA	0	0
Chamberlain	2	NA	5	166	13	330	1	NA	4	143	2	NA
Temiskaming, Unorganized	27	1,697	13	504	71	2021	14	281	6	330	8	205

NA denotes that too few farms have reported data to ensure confidentiality.
Source: Statistics Canada, 1996.

Table 5.8a: Inventory of Selected Farm Related Animals for Temiskaming District, Northern Ontario and Ontario, 1996

	Horses and ponies		Bison		Deer and elk (excluding wild deer/elk)		Llamas and alpacas		Colonies of bees	
	# farms	# horses	# farms	# bison	# farms	# deer	# farms	# llama	# farms	# colonies
1996										
Ontario	11,829	76,553	46	2,344	256	15,735	161	1,114	1,263	62,928
Northern Ontario Region	640	3,555	14	892	16	722	13	138	85	1,796
Temiskaming District	130	728	3	NA	4	200	2	NA	14	992
Harris	8	62	0	0	0	0	0	0	2	NA
Temiskaming Shores	23	196	0	0	1	NA	1	NA	1	NA
Hudson	8	20	0	0	0	0	0	0	0	0
Kerns	13	51	0	0	0	0	0	0	0	0
Harley	5	17	0	0	0	0	0	0	2	NA
Casey	7	30	0	0	0	0	0	0	0	0
Brethour	4	8	0	0	0	0	0	0	0	0
Hilliard	3	9	0	0	0	0	0	0	2	NA
Armstrong	6	58	1	NA	1	NA	0	0	2	NA
Charlton and Dack	8	25	0	0	0	0	0	0	1	NA
Evanturel	5	24	0	0	0	0	0	0	0	0
Chamberlain	8	129	0	0	1	NA	0	0	0	0
Temiskaming, Unorganized	32	99	2	NA	1	NA	1	NA	4	40

NA denotes that too few farms have reported data to ensure confidentiality.
Source: Statistics Canada, 1996.

Table 5.8b: Inventory of Selected Farm Related Animals for Temiskaming District, Northern Ontario and Ontario, 2006

	Hens and chickens		Dairy cows		Beef cows		Pigs		Sheep and lambs		Goats	
	# farms	# birds	# farms	# cows	# farms	# cows	# farms	# pigs	# farms	# sheep	# farms	# goats
2006												
Ontario	7,397	44,101,552	6,092	329,737	15,017	377,354	4,070	3,950,592	3,408	311,162	2,169	76,114
Northern Ontario Region	342	79,252	209	11,922	1,187	39,723	85	10,171	166	13,899	112	3,265
Temiskaming District	48	4,115	67	5,061	214	7,687	13	5,018	45	7,231	24	1,143
Harris	3	115	3	87	11	358	0	0	1	NA	2	NA
Temiskaming Shores	4	NA	5	334	21	1,301	1	NA	8	1,168	6	101
Hudson	0	0	4	207	11	268	0	0	1	NA	1	NA
Kerns	5	681	6	354	21	783	4	NA	6	2,020	2	NA
Harley	2	NA	1	NA	16	NA	0	0	1	NA	1	NA
Casey	1	NA	9	802	12	304	0	0	2	NA	0	0
Brethour	2	NA	2	NA	8	NA	0	0	6	1,158	0	0
Hilliard	1	NA	5	430	13	510	1	NA	1	NA	2	NA
Armstrong	4	536	15	1,602	7	204	3	NA	3	NA	1	NA
Charlton and Dack	2	NA	2	NA	19	NA	2	NA	3	298	0	0
Evanturel	3	219	8	395	9	186	0	0	3	312	4	247
Chamberlain	7	303	1	NA	19	NA	0	0	3	153	0	0
Temiskaming, Unorganized	14	921	6	491	47	1,757	2	NA	7	692	5	727

NA denotes that too few farms have reported data to ensure confidentiality.

Source: Statistics Canada, 2006.

Table 5.8b: Inventory of Selected Farm Related Animals for Temiskaming District, Northern Ontario and Ontario, 2006

	Horses and ponies		Bison		Deer and elk (excluding wild deer/elk)		Llamas and alpacas		Colonies of bees	
	# farms	# horses	# farms	# bison	# farms	# deer	# farms	# llama	# farms	# colonies
2006										
Ontario	12,333	97,285	71	4,106	238	11,581	696	4,332	981	64,591
Northern Ontario Region	630	4,507	17	2,316	24	2,179	32	250	62	752
Temiskaming District	101	638	3	359	1	x	5	7	4	111
Harris	6	36	0	0	0	0	0	0	0	0
Temiskaming Shores	21	191	0	0	0	0	2	NA	0	0
Hudson	3	13	0	0	0	0	0	0	0	0
Kerns	9	25	0	0	0	0	0	0	0	0
Harley	6	39	0	0	0	0	1	NA	0	0
Casey	6	53	0	0	0	0	0	0	0	0
Brethour	3	7	0	0	0	0	0	0	1	NA
Hilliard	3	NA	0	0	0	0	0	0	1	NA
Armstrong	2	NA	1	NA	0	0	0	0	1	NA
Charlton and Dack	5	38	0	0	0	0	0	0	0	0
Evanurel	7	59	0	0	0	0	1	NA	0	0
Chamberlain	7	52	0	0	0	0	1	NA	0	0
Temiskaming, Unorganized	23	92	2	NA	1	NA	0	0	1	NA

NA denotes that too few farms have reported data to ensure confidentiality.
Source: Statistics Canada, 2006.

5.6 Field Crops

Temiskaming District produces a variety of field crops including wheat, barley, oats, corn, soybeans, canola, potatoes and hay crops. In 2006, the largest grain crops grown in the District in terms of total acreage were wheat (16,613 acres), barley (13,422 acres), and oats (10,081 acres). The District also produced 3,816 acres of soybeans, 2,458 acres of canola, and 2,278 acres of mixed grains. With respect to forage and hay crops, the District produced 1,732 acres of corn for silage, 31,339 acres of alfalfa/alfalfa mixtures, and 29,104 acres of other hay crops in 2006 (Table 5.9a and 5.9b).

In 2006, Temiskaming District accounted for 83% of the total acreage of canola reported in northern Ontario, 78% of the wheat acreage, 56% of the soybean acreage, 53% of the barley acreage, 51% of the oat acreage, 45% of the grain corn acreage, 43% of the silage corn acreage, and 30% of the alfalfa/alfalfa mixture acreage.

Between 1996 and 2006 the total acreage of several crops increased in Temiskaming District including wheat (320% increase in the total number of acres), oats (100%), grain corn (320%), corn for silage (4%), and alfalfa/alfalfa mixtures (58%). During the same period the District experienced a drop in the total acreage of barley (35%), mixed grains (60%), canola (10%), and other hay crops (29%).

Across northern Ontario as a whole, there was an overall decline in the acreage of barley, other hay crops, and potatoes while the total acreage of wheat, oats, corn (for silage), alfalfa, and soybeans increased.

Table 5.9a: Total Reported Acreage of Selected Field Crops for Temiskaming District, Northern Ontario and Ontario, 1996

	Wheat		Oats		Barley		Mixed grains		Corn for Grain		Corn for Silage	
	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres
1996												
Ontario	15,282	778,952	4,740	98,357	8,456	332,821	8,651	279,762	20,823	1,895,650	9,927	296,029
Northern Ontario Region	70	5,416	528	15,102	463	35,733	287	13,013	24	596	47	1,665
Temiskaming District	32	3,945	120	5,027	179	20,765	105	5,809	4	200	5	261
Harris	1	NA	12	321	11	569	3	145	0	0	1	NA
Temiskaming Shores	4	372	7	NA	12	NA	4	NA	0	0	0	0
Hudson	3	86	10	337	4	203	11	583	0	0	0	0
Kerns	7	842	15	496	29	2,945	6	529	0	0	0	0
Harley	1	NA	9	279	10	793	5	158	1	NA	0	0
Casey	0	0	6	283	14	2,178	5	575	1	NA	1	NA
Brethour	1	NA	3	95	4	415	6	323	0	0	0	0
Hilliard	2	NA	9	624	9	1,595	7	432	1	NA	0	0
Armstrong	2	NA	9	396	28	5,692	9	665	0	0	2	NA
Charlton and Dack	0	0	4	113	9	457	12	650	1	NA	0	0
Evanturel	6	966	7	479	14	1,767	8	433	0	0	1	NA
Chamberlain	0	0	1	NA	5	NA	3	87	0	0	0	0
Temiskaming, Unorganized	5	420	28	1,390	30	2,236	26	899	0	0	0	0

N/A denotes that too few farms have reported data to ensure confidentiality.

Source: Statistics Canada, 1996.

Table 5.9a: Total Reported Acreage of Selected Field Crops for Temiskaming District, Northern Ontario and Ontario, 1996

	Alfalfa/Alfalfa Mixtures		Other Tame Hay/Fodder Crops		Forage Seed for Seed		Canola		Soybeans		Potatoes	
	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres
1996												
Ontario	26,521	1,479,447	18,172	1,036,399	264	11,910	757	53,304	18,743	1,918,055	1,218	39,905
Northern Ontario Region	749	66,908	1,769	195,393	55	3,531	63	5,351	5	94	143	2,065
Temiskaming District	180	19,866	368	41,146	41	3,196	45	4,229	4	NA	14	79
Harris	8	1,045	19	2,323	0	0	0	0	0	0	0	0
Temiskaming Shores	19	NA	38	3,702	1	NA	5	NA	0	0	3	NA
Hudson	15	1,494	25	1,548	0	0	1	NA	0	0	2	NA
Kerns	29	2,299	32	2,946	20	1,150	14	1,038	1	NA	1	NA
Harley	7	541	23	2,186	2	NA	3	180	0	0	0	0
Casey	14	1,857	16	2,850	1	NA	5	716	1	NA	0	0
Brethour	3	370	18	2,640	0	0	2	NA	0	0	0	0
Hilliard	12	1,219	19	2,049	4	189	3	NA	0	0	0	0
Armstrong	28	4,774	19	2,507	1	NA	4	330	0	0	1	NA
Charlton and Dack	10	789	24	2,645	1	NA	1	NA	0	0	1	NA
Evanturel	11	1,176	20	1,974	0	0	3	275	2	NA	0	0
Chamberlain	4	NA	19	2,215	0	0	0	0	0	0	0	0
Temiskaming, Unorganized	20	1,695	96	11,561	11	1,210	4	242	0	0	6	8

N/A denotes that too few farms have reported data to ensure confidentiality.

Source: Statistics Canada, 1996.

Table 5.9b: Total Reported Acreage of Selected Field Crops for Temiskaming District, Northern Ontario and Ontario, 2006

	Wheat		Oats		Barley		Mixed grains		Corn for Grain		Corn for Silage	
	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres
2006												
Ontario	14,682	1,235,390	4,362	131,952	5,139	221,029	5,400	173,454	14,304	1,577,862	8,404	320,759
Northern Ontario Region	142	21,264	455	19,839	334	25,329	181	6,768	23	1,911	113	4,021
Temiskaming District	66	16,613	123	10,081	112	13,422	45	2,278	7	856	38	1,732
Harris	1	NA	5	141	1	NA	5	198	1	NA	0	0
Temiskaming Shores	6	4,875	4	NA	7	971	5	443	0	0	5	147
Hudson	4	119	7	439	6	345	2	NA	0	0	1	NA
Kerns	13	1,750	20	1,362	20	1,779	2	NA	1	NA	7	NA
Harley	1	NA	6	167	2	NA	1	NA	0	0	2	NA
Casey	7	1,321	9	317	14	2,573	3	250	0	0	5	345
Brethour	3	NA	7	2,074	5	2,086	2	NA	0	0	1	NA
Hilliard	1	NA	9	470	5	815	5	270	0	0	1	NA
Armstrong	11	2,606	10	1,004	14	2,108	2	NA	2	NA	7	NA
Charlton and Dack	4	402	8	213	4	325	2	NA	0	0	1	NA
Evanturel	3	385	5	177	9	575	5	254	0	0	1	NA
Chamberlain	1	NA	5	NA	9	365	1	NA	0	0	1	NA
Temiskaming, Unorganized	11	1,660	28	1,790	16	1,217	10	310	3	NA	6	NA

N/A denotes that too few farms have reported data to ensure confidentiality.

Source: Statistics Canada, 2006.

Table 5.9b: Total Reported Acreage of Selected Field Crops for Temiskaming District, Northern Ontario and Ontario, 2006

	Alfalfa/Alfalfa Mixtures		Other Tame Hay/Fodder Crops		Forage Seed for Seed		Canola		Soybeans		Potatoes	
	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres
2006												
Ontario	24,427	1,662,370	13,010	900,267	312	12,323	205	18,575	17,171	2,155,884	904	38,155
Northern Ontario Region	836	103,232	1,383	175,975	25	1,745	33	4,578	35	4,385	85	1,476
Temiskaming District	218	31,339	248	29,104	13	558	23	3,816	15	2,458	7	66
Harris	9	679	10	1,489	0	0	2	NA	1	NA	0	0
Temiskaming Shores	24	3,554	29	2,699	1	NA	1	NA	1	NA	1	NA
Hudson	12	1,323	14	1,110	2	NA	0	0	0	0	0	0
Kerns	30	3,745	17	1,581	0	0	5	520	3	445	1	NA
Harley	10	1,925	15	874	0	0	0	0	0	0	0	0
Casey	18	4,325	9	872	1	NA	4	553	1	NA	0	0
Brethour	8	2,730	14	1,925	0	0	1	NA	1	NA	1	NA
Hilliard	12	1,953	13	1,546	1	NA	1	NA	1	NA	0	0
Armstrong	26	4,936	12	1,325	1	NA	4	480	2	NA	1	NA
Charlton and Dack	7	595	19	2,767	1	NA	1	NA	1	NA	0	0
Evanturel	17	1,601	14	1,765	0	0	2	NA	1	NA	0	0
Chamberlain	10	678	16	1,937	0	0	0	0	2	NA	0	0
Temiskaming, Unorganized	35	3,295	66	9,214	6	323	2	NA	1	NA	3	NA

N/A denotes that too few farms have reported data to ensure confidentiality.
Source: Statistics Canada, 2006.

5.7 Fruit, Berry and Vegetable Production

A small number of farms in Temiskaming District produce fruit and vegetables. In 2006, only 1 farm was reported producing apples, pears, plums while 4 farms reported producing strawberries and 2 farms reported producing raspberries. In general, it appears that the number of farms engaged in fruit or berry production in 2006 is down from 1996 (Table 5.10). The decline in acreage for some fruits and berries appears to be a consistent pattern across northern Ontario and the province as a whole.

Table 5.10: Number of Farms and Acreage of Selected Fruit and Berry Production, 1996-2006

	Apples		Pears		Plums and Prunes		Strawberries		Raspberries		Blueberries	
	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres
1996												
Ontario	2,482	30,524	1,356	3,305	1,065	1,622	971	5,507	789	1,250	172	639
Northern Ontario Region	33	50	6	NA	9	4	51	309	50	76	9	139
Temiskaming District	3	1	2	NA	2	NA	4	14	4	NA	2	NA
2006												
Ontario	1,223	20,169	542	2,546	376	1,231	801	4,243	613	1,153	161	732
Northern Ontario Region	17	56	5	1	2	NA	43	223	31	52	5	59
Temiskaming District	1	NA	1	NA	1	NA	4	12	2	NA	0	0

N/A denotes that too few farms have reported data to ensure confidentiality. Data at the individual municipality / township level is not reported on due to the limited number of farms and missing acreage data.

Source: Statistics Canada, 1996, 2006.

Although Temiskaming District farmers produce a large variety of vegetables the number of farms involved in this type of activity appears to be small and has declined over the 1996 to 2006 period. For example, in 1996 there were 4 or more farms that reported producing tomatoes, cucumbers, green peas, green beans, cauliflower, carrots, and pumpkins and by 2006 there were only 1 or 2 farms reporting this type of production. Due to the small number of farms, the 2006 census data does not allow us to determine if the total acreage of production has also declined since 1996. Additional details are provided in Table 5.11.

Table 5.11: Number of Farms and Acreage of Selected Vegetable Production, 1996-2006

	Sweet corn		Tomatoes		Cucumbers		Green Peas		Green Beans		Cabbage		Cauliflower		Broccoli	
	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres
1996																
Ontario	2,081	52,789	1,822	21,854	1,170	3,818	20,634	8,350	947	9,729	636	4,131	517	2,964	512	2,739
Northern Ontario Region	113	392	89	82	98	67	29	12	96	36	50	25	45	17	40	12
Temiskaming District	11	79	5	6	4	NA	5	2	8	3	4	NA	4	NA	5	NA
2006																
Ontario	1,399	38,617	1,429	20,195	964	4,146	763	21,482	852	11,879	442	3,707	327	2,025	346	3,712
Northern Ontario Region	92	181	61	15	61	23	54	21	61	29	32	28	23	6	22	4
Temiskaming District	4	NA	1	NA	1	NA	2	NA	1	NA	1	NA	1	NA	7	1

	Carrots		Rutabagas		Beets		Dry Onions		Lettuce		Peppers		Pumpkins, Squash		Asparagus	
	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres	# farms	# acres
1996																
Ontario	820	7,953	260	2,919	718	797	724	6,047	475	1,377	880	3,632	1,429	5,664	338	1,986
Northern Ontario Region	96	35	52	23	84	23	49	13	39	10	29	9	70	41	10	5
Temiskaming District	5	4	6	3	3	NA	2	NA	1	NA	0	0	7	6	2	NA
2006																
Ontario	648	9,993	204	1,814	607	1,088	648	6,930	429	955	795	4,015	1,518	9,297	391	3,245
Northern Ontario Region	56	21	25	20	52	16	28	4	35	6	21	2	69	74	11	2
Temiskaming District	2	NA	0	0	1	NA	0	0	1	NA	0	0	2	NA	1	NA

N/A denotes that too few farms have reported data to ensure confidentiality. Data at the individual municipality / township level is not reported on due to the limited number of farms and missing acreage data.

Source: Statistics Canada, 1996, 2006.

5.8 Greenhouse Production

Between 1996 and 2006, the total number of farms involved in greenhouse production in Temiskaming District declined from 9 farms to 5 farms. At least 2 of these farms are involved in greenhouse vegetable production and 4 of the farms are involved in greenhouse flower production (Table 5.12). Due to the small number of farms engaged in this activity in the District, the census data does not allow us to determine if and how the total area of production has changed since 1996.

Table 5.12: Number of Farms and Production Area Associated with Greenhouse Production, 1996-2006

	Total area under glass, plastic or other protection		Total area of greenhouses in use in May		Greenhouse flowers		Greenhouse vegetables		Other greenhouse products		Mushrooms	
	# farms	# square feet	# farms	# square feet	# farms	# square feet	# farms	# square feet	# farms	# square feet	# farms	# square feet
1996												
Ontario	2,085	63,302,565	2,085	62,609,895	1,465	36,100,406	785	22,163,817	409	4,345,672	80	3,407,376
Northern Ontario Region	138	2,130,535	138	2,074,054	104	774,835	61	92,163	31	1,207,056	1	NA
Temiskaming District	9	132,116	9	86,006	6	NA	3	NA	4	NA	0	0
2006												
Ontario	1,898	126,589,790	1,898	125,141,329	1,274	49,414,104	654	69,808,871	282	5,918,354	85	3,447,739
Northern Ontario Region	109	3,418,948	109	3,366,943	81	797,744	46	190,838	27	2,378,361	4	NA
Temiskaming District	5	NA	5	NA	4	47,754	2	NA	2	NA	0	0

N/A denotes that too few farms have reported data to ensure confidentiality.

Source: Statistics Canada, 1996, 2006.

5.9 Nursery Products, Sod, and Forest Related Products

Between 1996 and 2006, the total number of farms in Temiskaming District involved in nursery production declined from 8 farms to 3 farms.¹⁹ However, the corresponding acreage in nursery production actually increased slightly from 46 acres to 53 acres (Table 5.13).

Between 1996 and 2006 the number of farms producing Christmas trees in Temiskaming District dropped from 4 farms to 1 farm while the number of farms involved in sod production dropped from 4 farms to 2 farms.

Table 5.13: Number of Farms and Production Area Associated with Nursery Products, Sod, Christmas Trees, and Taps on Trees for Maple Syrup Production, 1996-2006

	Nursery products		Sod Grown for Sale		Taps on Maple Trees		Christmas Trees	
	# farms	# acres	# farms	# acres	# farms	# taps	# farms	# acres
1996								
Ontario	1,619	26,217	144	23,538	2,240	1,127,373	1,345	27,887
Northern Ontario Region	67	555	17	1,323	91	84,537	59	1,303
Temiskaming District	8	46	0	0	4	702	4	146
2006								
Ontario	1,209	27,079	120	32,196	2,240	1,311,599	725	15,795
Northern Ontario Region	36	733	9	1,029	100	108,464	31	697
Temiskaming District	3	53	0	0	2	NA	1	NA

N/A denotes that too few farms have reported data to ensure confidentiality.

Source: Statistics Canada, 1996, 2006.

¹⁹ Nursery production includes establishments primarily engaged in growing nursery products, nursery stock, shrubbery, bulbs, fruit stock, vines, ornamentals, etc., in open fields.

5.10 Farm Productivity: Total Farm Receipts, Farm Operating Expenses and Net Revenue

Temiskaming District reported \$49.8 million in total gross farm receipts in 2005 compared to \$36.4 million in 1995 (Table 5.14). The total gross farm receipts for Temiskaming District for 2005 represent 28% of the total for northern Ontario.

Within Temiskaming District, Armstrong reported \$10.2 million in total gross farm receipts in 2005 or 20% of the total gross farm receipts for the District. The high proportion of farm receipts in Armstrong is partially linked to the high proportion of dairy farms in the township (dairy farms make up 36% of all farms in the township). In Canada, dairy farms operate under a supply management system and they typically generate higher and more stable farm incomes compared to other farm types.²⁰

Table 5.14: Total Gross Farm Receipts (Excluding Sales of Forest Products from Farms) for Temiskaming District, Northern Ontario and Ontario, 1995-2005

	1995		2000		2005	
	Total number of farms	Total gross farm receipts	Total number of farms	Total gross farm receipts	Total number of farms	Total gross farm receipts
Ontario	67,520	\$7,778,476,483	59,728	\$9,115,454,790	57,211	\$10,342,031,229
Northern Ontario Region	2,915	\$151,786,040	2,635	\$162,099,250	2,479	\$179,177,281
Temiskaming District	589	\$36,399,900	532	\$44,163,495	471	\$49,834,957
Harris	26	\$689,528	23	\$1,050,497	24	\$796,887
Temiskaming Shores	67	\$4,263,716	55	\$4,026,433	55	\$6,077,018
Hudson	37	\$1,574,474	32	\$1,811,708	22	\$1,452,810
Kerns	59	\$3,840,079	51	\$4,371,985	43	\$4,735,916
Harley	39	\$897,254	32	\$2,084,795	30	\$1,228,843
Casey	33	\$3,777,248	26	\$4,210,569	28	\$6,120,400
Brethour	21	\$859,770	27	\$1,340,334	20	\$3,522,440
Hilliard	32	\$2,771,779	37	\$2,620,780	24	\$2,667,377
Armstrong	46	\$8,159,017	34	\$10,683,159	36	\$10,245,471
Charlton and Dack	32	\$889,343	34	\$1,543,987	29	\$1,074,646
Evanturel	32	\$2,824,055	27	\$2,936,927	28	\$2,518,063
Chamberlain	24	\$1,028,622	25	\$1,778,392	29	\$1,763,357
Temiskaming, Unorganized	141	\$4,825,015	129	\$5,703,929	103	\$7,631,729

Source: Statistics Canada, 1996, 2001, 2006.

²⁰ Supply management is a system used by certain agricultural commodity groups to ensure a stable supply of products. The system also promotes stable farm incomes. The producers control the amount of product they produce, and pay a fee (a levy) on all their production to fund the administration and marketing expenses of their provincial commodity boards and national agency. Milk, poultry and egg production all use supply management controls to regulate domestic production (National Farm Products Council, May 2003).

Average gross farm receipts per farm for 1995 and 2005 are presented in Table 5.15. Total receipts per farm in Temiskaming District are, on average, higher than other parts of northern Ontario but lower than the provincial average. Farms in Temiskaming District averaged \$105,807 in gross farm gate sales in 2005, compared to \$72,278 per farm in northern Ontario and \$180,770 per farm in Ontario. Within the District, farms in Armstrong had the highest average total sales per farm at \$284,596 followed by Casey at \$218,586, and Brethour at \$176,122.

Table 5.15: Average Gross Farm Receipts per Farm in Temiskaming District, Northern Ontario and Ontario, 1995-2005

	1995			2005		
	Total number of farms	Total gross farm receipts	Average receipts per farm	Total number of farms	Total gross farm receipts	Average receipts per farm
Ontario	67,520	\$7,778,476,483	\$115,203	57,211	\$10,342,031,229	\$180,770
Northern Ontario Region	2,915	\$151,786,040	\$52,071	2,479	\$179,177,281	\$72,278
Temiskaming District	589	\$36,399,900	\$61,799	471	\$49,834,957	\$105,807
Harris	26	\$689,528	\$26,520	24	\$796,887	\$33,204
Temiskaming Shores	67	\$4,263,716	\$63,638	55	\$6,077,018	\$110,491
Hudson	37	\$1,574,474	\$42,553	22	\$1,452,810	\$66,037
Kerns	59	\$3,840,079	\$65,086	43	\$4,735,916	\$110,138
Harley	39	\$897,254	\$23,007	30	\$1,228,843	\$40,961
Casey	33	\$3,777,248	\$114,462	28	\$6,120,400	\$218,586
Brethour	21	\$859,770	\$40,941	20	\$3,522,440	\$176,122
Hilliard	32	\$2,771,779	\$86,618	24	\$2,667,377	\$111,141
Armstrong	46	\$8,159,017	\$177,370	36	\$10,245,471	\$284,596
Charlton and Dack	32	\$889,343	\$27,792	29	\$1,074,646	\$37,057
Evanturel	32	\$2,824,055	\$88,252	28	\$2,518,063	\$89,931
Chamberlain	24	\$1,028,622	\$42,859	29	\$1,763,357	\$60,805
Temiskaming, Unorganized	141	\$4,825,015	\$34,220	103	\$7,631,729	\$74,094

Source: Statistics Canada, 1996, 2006.

Farm woodlots represent an important source of income for many farmers in northern Ontario. In 2005, farms in Temiskaming District reported approximately \$219,000 in sales of forest products (Table 5.16).

Table 5.16: Sales of Forest Products from Farms for Temiskaming District, Northern Ontario and Ontario, 1995-2005

	1995		2000		2005	
	Total number of farms	Sales of forest products	Total number of farms	Sales of forest products	Total number of farms	Sales of forest products
Ontario	3,343	\$19,717,541	2,903	\$20,587,058	2,485	\$18,568,858
Northern Ontario Region	284	\$2,122,968	272	\$2,127,631	222	\$2,544,585
Temiskaming District	21	\$186,782	37	\$263,705	36	\$219,326
Harris	0	0	0	0	1	NA
Temiskaming Shores	1	NA	2	NA	2	NA
Hudson	0	0	0	0	0	0
Kerns	2	NA	2	NA	3	\$19,520
Harley	2	NA	0	0	2	NA
Casey	0	0	0	0	1	NA
Brethour	1	NA	0	0	1	NA
Hilliard	1	NA	1	NA	3	\$16,567
Armstrong	1	NA	1	NA	1	NA
Charlton and Dack	0	0	5	\$11,646	5	\$19,790
Evanturel	3	\$17,174	2	NA	3	NA
Chamberlain	2	NA	5	\$24,348	4	\$26,720
Temiskaming, Unorganized	8	\$120,178	19	\$155,939	10	\$63,191

N/A denotes that too few farms have reported data to ensure confidentiality.
Source: Statistics Canada, 1996, 2001, 2006.

As shown in Table 5.17b, approximately 25% of the farms in Temiskaming District reported total gross farm receipts of \$100,000 or more in 2005 compared to 16% for northern Ontario and 32% for the province as a whole. Approximately 32% of the farms in Temiskaming District reported less than \$10,000 in total gross farm receipts in 2005 compared to 38% for northern Ontario and 25% for the province as a whole.

Table 5.17a: Total Gross Farm Receipts (Excluding Sales of Forest Products from Farms) for Temiskaming District, Northern Ontario and Ontario by Receipts Category, 1995

	Gross Farm Receipts Category															
	Under \$10,000		\$10,000 to \$24,999		\$25,000 to \$49,999		\$50,000 to \$99,999		\$100,000 to \$249,999		\$250,000 to \$499,999		\$500,000 and over		Total farms	
	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%
1995																
Ontario	20,306	30%	12,010	18%	8,162	12%	7,477	11%	11,642	17%	5,513	8%	2,410	4%	67,520	100%
Northern Ontario Region	1,399	48%	621	21%	268	9%	216	7%	265	9%	107	4%	39	1%	2,915	100%
Temiskaming District	231	39%	129	22%	68	12%	57	10%	62	11%	33	6%	9	2%	589	100%
Harris	14	54%	5	19%	3	12%	2	8%	2	8%	0	0%	0	0%	26	100%
Temiskaming Shores	29	43%	15	22%	6	9%	6	9%	5	7%	5	7%	1	1%	67	100%
Hudson	17	46%	8	22%	3	8%	4	11%	5	14%	0	0%	0	0%	37	100%
Kerns	19	32%	8	14%	12	20%	10	17%	6	10%	3	5%	1	2%	59	100%
Harley	20	51%	13	33%	3	8%	1	3%	2	5%	0	0%	0	0%	39	100%
Casey	5	15%	6	18%	5	15%	6	18%	5	15%	6	18%	0	0%	33	100%
Brethour	4	19%	9	43%	4	19%	2	10%	1	5%	1	5%	0	0%	21	100%
Hilliard	11	34%	6	19%	3	9%	2	6%	6	19%	4	13%	0	0%	32	100%
Armstrong	3	7%	6	13%	3	7%	9	20%	13	28%	9	20%	3	7%	46	100%
Charlton and Dack	14	44%	10	31%	3	9%	3	9%	2	6%	0	0%	0	0%	32	100%
Evanturel	12	38%	5	16%	2	6%	2	6%	7	22%	3	9%	1	3%	32	100%
Chamberlain	11	46%	4	17%	5	21%	1	4%	2	8%	1	4%	0	0%	24	100%
Temiskaming, Unorganized	72	51%	34	24%	16	11%	9	6%	6	4%	1	1%	3	2%	141	100%

Source: Statistics Canada, 1996.

Table 5.17b: Total Gross Farm Receipts (Excluding Sales of Forest Products from Farms) for Temiskaming District, Northern Ontario and Ontario by Receipts Category, 2005

	Gross Farm Receipts Category															
	Under \$10,000		\$10,000 to \$24,999		\$25,000 to \$49,999		\$50,000 to \$99,999		\$100,000 to \$249,999		\$250,000 to \$499,999		\$500,000 and over		Total farms	
	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%	# farms	%
2005																
Ontario	14,500	25%	10,828	19%	7,397	13%	6,521	11%	7,965	14%	5,589	10%	4,411	8%	57,211	100%
Northern Ontario Region	946	38%	558	23%	358	14%	236	10%	195	8%	123	5%	63	3%	2,479	100%
Temiskaming District	151	32%	86	18%	69	15%	45	10%	60	13%	39	8%	21	4%	471	100%
Harris	8	33%	7	29%	5	21%	2	8%	2	8%	0	0%	0	0%	24	100%
Temiskaming Shores	16	29%	10	18%	11	20%	2	4%	10	18%	5	9%	1	2%	55	100%
Hudson	11	50%	2	9%	4	18%	0	0%	3	14%	2	9%	0	0%	22	100%
Kerns	9	21%	2	5%	7	16%	11	26%	7	16%	6	14%	1	2%	43	100%
Harley	13	43%	9	30%	2	7%	3	10%	2	7%	1	3%	0	0%	30	100%
Casey	5	18%	5	18%	2	7%	3	11%	4	14%	5	18%	4	14%	28	100%
Brethour	5	25%	4	20%	2	10%	4	20%	2	10%	2	10%	1	5%	20	100%
Hilliard	5	21%	5	21%	6	25%	0	0%	5	21%	1	4%	2	8%	24	100%
Armstrong	5	14%	4	11%	3	8%	3	8%	9	25%	5	14%	7	19%	36	100%
Charlton and Dack	12	41%	6	21%	4	14%	3	10%	3	10%	1	3%	0	0%	29	100%
Evanturel	13	46%	3	11%	2	7%	2	7%	3	11%	5	18%	0	0%	28	100%
Chamberlain	8	28%	9	31%	4	14%	3	10%	4	14%	0	0%	1	3%	29	100%
Temiskaming, Unorganized	41	40%	20	19%	17	17%	9	9%	6	6%	6	6%	4	4%	103	100%

Source: Statistics Canada, 2006.

Temiskaming District reported \$40 million in total farm operating expenses in 2005 compared to \$31 million in 1995 (Table 5.18). Temiskaming District's total farm expenses for 2005 represent 26% of the total for northern Ontario. Total expenses per farm in Temiskaming District are, on average, higher than other parts of northern Ontario but lower than the provincial average. Farms in Temiskaming District averaged \$84,994 in farm expenses in 2005, compared to \$61,266 per farm in northern Ontario and \$154,584 per farm in Ontario. Within the District, farms in Armstrong had the highest average farm expenses per farm at \$212,939 followed by Casey at \$143,047, and Brethour at \$131,792.

Table 5.18: Average Farm Operating Expenses per Farm in Temiskaming District, Northern Ontario and Ontario, 1995-2005

	1995			2005		
	Total number of farms	Total farm operating expenses	Average expenses per farm	Total number of farms	Total farm operating expenses	Average expenses per farm
Ontario	67,520	\$6,545,516,325	\$96,942	57,211	\$8,843,882,426	\$154,584
Northern Ontario Region	2,915	\$133,749,010	\$45,883	2,479	\$151,879,475	\$61,266
Temiskaming District	589	\$31,488,609	\$53,461	471	\$40,032,383	\$84,994
Harris	26	\$801,577	\$30,830	24	\$849,654	\$35,402
Temiskaming Shores	67	\$4,257,764	\$63,549	55	\$5,095,202	\$92,640
Hudson	37	\$1,324,507	\$35,797	22	\$1,329,033	\$60,411
Kerns	59	\$3,450,856	\$58,489	43	\$4,076,070	\$94,792
Harley	39	\$985,002	\$25,256	30	\$1,243,103	\$41,437
Casey	33	\$2,987,663	\$90,535	28	\$4,005,310	\$143,047
Brethour	21	\$872,515	\$41,548	20	\$2,635,841	\$131,792
Hilliard	32	\$1,982,207	\$61,944	24	\$2,126,167	\$88,590
Armstrong	46	\$5,841,410	\$126,987	36	\$7,665,819	\$212,939
Charlton and Dack	32	\$872,523	\$27,266	29	\$1,091,424	\$37,635
Evanturel	32	\$2,126,658	\$66,458	28	\$2,114,661	\$75,524
Chamberlain	24	\$1,238,831	\$51,618	29	\$1,717,675	\$59,230
Temiskaming, Unorganized	141	\$4,747,096	\$33,667	103	\$6,082,424	\$59,053

Source: Statistics Canada, 1996, 2006.

In examining the distribution of farm operating expenses by expense category we find that almost 23% of total operating expenses (\$9 million) in Temiskaming District were tied to livestock expenses in 2005 followed by crop expenses (11%), wages (11%), fuel expenses (9%), equipment repairs and maintenance expenses (7%), electricity and telephone expenses (5%), building/fences repairs and maintenance expenses (3%), and all other expenses (31%) (Table 5.19b). Wage related expenses account for a smaller proportion of total farm operating expenses in Temiskaming District compared to northern Ontario as a whole and the province (11% vs. 16% and 14%).

Table 5.19a: Farm Operating Expenses by Expense Category for Temiskaming District, Northern Ontario and Ontario, 1995

	Total farms	Total farm business operating expenses	Total wages and salaries ^a	Total crop expenses ^b	Total livestock expenses ^c	Electricity, telephone and all other telecommunication services	All fuel expenses (diesel, gasoline, oil, wood, natural gas, etc.)	Repairs and maintenance to farm machinery, equipment and vehicles	Repairs and maintenance to farm buildings and fences	All other expenses (excluding depreciation and capital cost allowance) ^d
1995										
Ontario	67,520	\$6,545,516,325	\$870,427,370	\$838,018,004	\$1,980,903,395	\$225,698,619	\$315,267,700	\$318,236,693	\$162,405,947	\$1,834,558,597
Northern Ontario Region	2,915	\$133,749,010	\$19,298,274	\$10,442,810	\$33,977,279	\$7,343,404	\$8,923,979	\$9,139,471	\$4,508,504	\$40,115,289
Temiskaming District	589	\$31,488,609	\$3,361,812	\$2,586,690	\$8,201,059	\$1,770,575	\$2,168,305	\$4,281,811	\$1,131,995	\$7,986,362
Harris	26	\$801,577	\$13,489	\$31,484	\$209,543	\$53,984	\$60,554	\$120,828	\$55,605	\$256,090
Temiskaming Shores	67	\$4,257,764	NA	\$190,893	\$1,964,375	\$178,963	NA	\$428,890	\$184,589	NA
Hudson	37	\$1,324,507	\$113,078	\$92,804	\$331,898	\$83,436	\$92,399	\$189,944	\$51,353	\$369,595
Kerns	59	\$3,450,856	\$156,916	\$373,249	\$1,036,103	\$195,668	\$251,682	\$485,256	\$119,387	\$832,595
Harley	39	\$985,002	\$51,764	\$61,242	\$226,231	\$73,281	\$94,440	\$182,386	\$34,755	\$260,903
Casey	33	\$2,987,663	\$318,295	\$244,037	\$645,800	\$134,845	\$166,852	\$296,709	\$82,752	\$1,098,373
Brethour	21	\$872,515	NA	\$72,536	\$136,228	\$46,987	NA	\$157,960	\$41,935	NA
Hilliard	32	\$1,982,207	\$140,405	\$275,928	\$383,899	\$112,859	\$143,887	\$300,296	\$37,933	\$587,000
Armstrong	46	\$5,841,410	\$864,703	\$495,005	\$1,404,965	\$326,937	\$289,311	\$738,485	\$159,674	\$1,562,330
Charlton and Dack	32	\$872,523	\$74,434	\$51,796	\$173,993	\$67,002	\$86,447	\$147,237	\$31,548	\$240,066
Evanturel	32	\$2,126,658	\$149,312	\$240,342	\$419,292	\$111,988	\$192,097	\$339,725	\$62,020	\$611,882
Chamberlain	24	\$1,238,831	\$273,345	\$106,393	\$169,466	\$92,071	\$90,277	\$151,580	\$39,520	\$316,179
Temiskaming, Unorganized	141	\$4,747,096	\$740,884	\$350,981	\$1,099,266	\$292,554	\$415,026	\$742,515	\$230,924	\$874,946

^a Wages includes wages and salaries paid to family members

^b Crop expenses includes fertilizer and lime, seed and plant purchases, herbicides, pesticides, etc.

^c Livestock expenses includes feed purchases (including feed purchases from other farmers), livestock and poultry purchases, veterinary services, etc.

^d Other expenses includes rental and leasing of farm machinery, equipment and vehicles; rental and leasing of land and buildings; custom work and contract work; and other expenses. It excludes depreciation and capital cost allowance.

Source: Statistics Canada, 1996.

Table 5.19b: Farm Operating Expenses by Expense Category for Temiskaming District, Northern Ontario and Ontario, 2005

	Total farms	Total farm business operating expenses	Total wages and salaries ^a	Total crop expenses ^b	Total livestock expenses ^c	Electricity, telephone and all other tele-communication services	All fuel expenses (diesel, gasoline, oil, wood, natural gas, etc.)	Repairs and maintenance to farm machinery, equipment and vehicles	Repairs and maintenance to farm buildings and fences	All other expenses (excluding depreciation and capital cost allowance) ^d
2005										
Ontario	57,211	\$8,843,882,426	\$1,269,812,144	\$1,197,628,533	\$2,362,356,671	\$269,542,496	\$582,869,778	\$426,417,721	\$211,320,305	\$2,523,934,778
Northern Ontario Region	2,479	\$151,879,475	\$24,490,985	\$14,877,218	\$29,852,551	\$7,555,681	\$13,928,483	\$10,973,703	\$5,355,841	\$44,845,013
Temiskaming District	471	\$40,032,383	\$4,280,768	\$4,311,819	\$9,066,843	\$1,984,972	\$3,401,741	\$2,841,609	\$1,382,729	\$12,761,902
Harris	24	\$849,654	NA	\$37,401	\$265,745	\$47,951	\$69,726	\$89,103	NA	NA
Temiskaming Shores	55	\$5,095,202	\$458,384	\$791,190	\$1,157,404	\$197,255	\$517,160	\$522,127	\$212,567	\$1,239,115
Hudson	22	\$1,329,033	\$131,369	\$119,394	NA	\$66,764	\$85,598	\$80,456	\$58,420	NA
Kerns	43	\$4,076,070	\$342,767	\$617,408	\$683,288	\$176,428	\$380,656	\$268,353	\$152,871	\$1,454,299
Harley	30	\$1,243,103	\$129,643	NA	\$280,505	\$90,866	\$131,038	\$108,647	\$49,885	NA
Casey	28	\$4,005,310	\$460,007	\$446,725	\$769,937	\$187,081	\$354,931	\$231,155	\$96,257	\$1,459,217
Brethour	20	\$2,635,841	NA	NA	NA	\$94,241	\$196,770	\$109,538	NA	NA
Hilliard	24	\$2,126,167	\$104,602	\$163,136	\$413,821	\$115,075	\$166,435	\$169,882	\$62,648	\$930,568
Armstrong	36	\$7,665,819	\$1,001,055	\$583,016	\$2,398,022	\$360,266	\$420,299	\$448,331	\$317,270	\$2,137,560
Charlton and Dack	29	\$1,091,424	NA	\$118,491	NA	\$78,216	\$141,087	\$140,147	\$38,049	NA
Evanturel	28	\$2,114,661	\$231,335	\$143,617	\$486,829	\$116,866	\$136,401	\$158,293	\$94,933	\$746,387
Chamberlain	29	\$1,717,675	NA	\$140,160	\$276,721	\$91,925	\$163,549	\$91,393	\$54,493	NA
Temiskaming, Unorganized	103	\$6,082,424	\$749,938	\$591,627	\$1,458,518	\$362,038	\$638,091	\$424,184	\$183,190	\$1,674,838

^a Wages includes wages and salaries paid to family members

^b Crop expenses includes fertilizer and lime, seed and plant purchases, herbicides, pesticides, etc.

^c Livestock expenses includes feed purchases (including feed purchases from other farmers), livestock and poultry purchases, veterinary services, etc.

^d Other expenses includes rental and leasing of farm machinery, equipment and vehicles; rental and leasing of land and buildings; custom work and contract work; and other expenses. It excludes depreciation and capital cost allowance.

Source: Statistics Canada, 2006.

In 2005, total net farm revenue in Temiskaming District amounted to \$9.8 million or 36% of the total net farm revenue reported in northern Ontario. The average net revenue per farm in Temiskaming District in 2005 was \$20,812 which almost twice the average for northern Ontario as a whole (\$11,012) (Table 5.20). In 2005, most of the townships/municipalities in Temiskaming District reported positive total net farm revenues. Casey reported the highest net revenue per farm at \$75,539 followed by Armstrong at \$71,657 and Brethour at \$44,330.

Table 5.20: Total Net Farm Revenue and Net Revenue per Farm in Temiskaming District, Northern Ontario and Ontario, 1995 and 2005

	Total number of farms	Total gross farm receipts	Total farm expenses	Total net farm revenue	Net revenue per farm
1995					
Ontario	67,520	\$7,778,476,483	\$6,545,516,325	\$1,232,960,158	\$18,261
Northern Ontario Region	2,915	\$151,786,040	\$133,749,010	\$18,037,030	\$6,188
Temiskaming District	589	\$36,399,900	\$31,488,609	\$4,911,291	\$8,338
Harris	26	\$689,528	\$801,577	-\$112,049	-\$4,310
Temiskaming Shores	67	\$4,263,716	\$4,257,764	\$5,952	\$89
Hudson	37	\$1,574,474	\$1,324,507	\$249,967	\$6,756
Kerns	59	\$3,840,079	\$3,450,856	\$389,223	\$6,597
Harley	39	\$897,254	\$985,002	-\$87,748	-\$2,250
Casey	33	\$3,777,248	\$2,987,663	\$789,585	\$23,927
Brethour	21	\$859,770	\$872,515	-\$12,745	-\$607
Hilliard	32	\$2,771,779	\$1,982,207	\$789,572	\$24,674
Armstrong	46	\$8,159,017	\$5,841,410	\$2,317,607	\$50,383
Charlton and Dack	32	\$889,343	\$872,523	\$16,820	\$526
Evanturel	32	\$2,824,055	\$2,126,658	\$697,397	\$21,794
Chamberlain	24	\$1,028,622	\$1,238,831	-\$210,209	-\$8,759
Temiskaming, Unorganized	141	\$4,825,015	\$4,747,096	\$77,919	\$553
2005					
Ontario	57,211	\$10,342,031,229	\$8,843,882,426	\$1,498,148,803	\$26,186
Northern Ontario Region	2,479	\$179,177,281	\$151,879,475	\$27,297,806	\$11,012
Temiskaming District	471	\$49,834,957	\$40,032,383	\$9,802,574	\$20,812
Harris	24	\$796,887	\$849,654	-\$52,767	-\$2,199
Temiskaming Shores	55	\$6,077,018	\$5,095,202	\$981,816	\$17,851
Hudson	22	\$1,452,810	\$1,329,033	\$123,777	\$5,626
Kerns	43	\$4,735,916	\$4,076,070	\$659,846	\$15,345
Harley	30	\$1,228,843	\$1,243,103	-\$14,260	-\$475
Casey	28	\$6,120,400	\$4,005,310	\$2,115,090	\$75,539
Brethour	20	\$3,522,440	\$2,635,841	\$886,599	\$44,330
Hilliard	24	\$2,667,377	\$2,126,167	\$541,210	\$22,550
Armstrong	36	\$10,245,471	\$7,665,819	\$2,579,652	\$71,657
Charlton and Dack	29	\$1,074,646	\$1,091,424	-\$16,778	-\$579
Evanturel	28	\$2,518,063	\$2,114,661	\$403,402	\$14,407
Chamberlain	29	\$1,763,357	\$1,717,675	\$45,682	\$1,575
Temiskaming, Unorganized	103	\$7,631,729	\$6,082,424	\$1,549,305	\$15,042

Source: Statistics Canada, 1996, 2006.

5.11 Agriculture Value Added

Value added is the unique business contribution to value for the sector being reviewed. It is the net of value added counted previously for components that are inputs to the sector.

One way to calculate value added in agriculture is to take the gross farm receipts and subtract operating expenses (except wages, interest, rent and property taxes) (Wolfe, Statistics Canada 1999). Total gross margin (the profit) is also included in value added. Total gross margin is the gross farm receipts minus operating expenses. These last items are not subtracted because they represent the value of labour and capital added to the original "inputs" into the commodity.

Each step in the value-added chain uses capital and labour to create employment. Consequently, the more "value" that is added to a product before final sale or export, the better it is for the economy, provided, of course, that demand is there. Adding value to a product is often translated into job creation and is viewed as essential to a flourishing economy. Farms can also have a negative value added when the amount spent on items other than labour and capital exceed the amount they receive in gross farm receipts.

The measure of value added can differ depending on the farm type. With an average of 60 cents of value added per dollar of gross farm receipts, tobacco farms have the highest share (i.e. they use the most labour and capital but fewer inputs) among all farm types, while beef farms rank last (21 cents) (Wolfe, Statistics Canada 1999). When comparing the value added for every dollar in gross farm receipts between beef farms and dairy farms for example, the value-added figures are very different. Producing cattle for slaughter usually requires less capital and labour. In contrast, dairy farms are far more labour and capital (equipment and machinery) intensive. On dairy farms, labour and expensive milking equipment are essential. Another major difference between beef and dairy operations is that beef operations work in an open market, whereas dairy operators work within a supply management system which controls production and price levels.

Farms in Temiskaming District produce a variety of goods such as grains, livestock, and dairy products. Because labour and other agricultural and non-agricultural goods such as seed, forage, fertilizer and technology are required to produce these goods, farming makes a considerable contribution to the District's total value added.

As shown in Table 5.21, the total value added component for agriculture in Temiskaming District amounted to \$18.9 million in 2005. This translates into 38 cents of value added per dollar of gross farm receipts. The average value added component per farm associated with Temiskaming District farms is lower than the provincial average (\$40,302 per farm vs. \$63,631 per farm) but higher than the average for northern Ontario farms (\$26,619 per farm).

Dairy farms account for 13% of all farms in Temiskaming District which is higher than the northern Ontario (7%) and provincial average (9%). The higher concentration of dairy farms in the District is an important factor in contributing to the higher total value added estimates in some of the townships.

Table 5.21: Value Added Agriculture in Temiskaming District, Northern Ontario and Ontario, 1995-2005

	Total farms	Total gross farm receipts	Total farm operating expenses ^a	Total agriculture value added ^b	Value added per farm
1995					
Ontario	67,520	\$7,778,476,483	\$5,042,199,846	\$2,736,276,637	\$40,525
Northern Ontario Region	2,915	\$151,786,040	\$101,698,083	\$50,087,957	\$17,183
Temiskaming District	589	\$36,399,900	\$24,932,922	\$11,466,978	\$19,469
Harris	26	\$689,528	\$642,260	\$47,268	\$1,818
Temiskaming Shores	67	\$4,263,716	NA	NA	NA
Hudson	37	\$1,574,474	\$1,101,156	\$473,318	\$12,792
Kerns	59	\$3,840,079	\$2,960,539	\$879,540	\$14,907
Harley	39	\$897,254	\$828,696	\$68,558	\$1,758
Casey	33	\$3,777,248	\$2,332,120	\$1,445,128	\$43,792
Brethour	21	\$859,770	NA	NA	NA
Hilliard	32	\$2,771,779	\$1,575,026	\$1,196,753	\$37,399
Armstrong	46	\$8,159,017	\$4,243,228	\$3,915,789	\$85,126
Charlton and Dack	32	\$889,343	\$740,387	\$148,956	\$4,655
Evanturel	32	\$2,824,055	\$1,675,798	\$1,148,257	\$35,883
Chamberlain	24	\$1,028,622	NA	NA	NA
Temiskaming, Unorganized	141	\$4,825,015	\$3,677,068	\$1,147,947	\$8,141
2005					
Ontario	57,211	\$10,342,031,229	\$6,701,651,827	\$3,640,379,402	\$63,631
Northern Ontario Region	2,479	\$179,177,281	\$113,188,265	\$65,989,016	\$26,619
Temiskaming District	471	\$49,834,957	\$30,852,546	\$18,982,411	\$40,302
Harris	24	\$796,887	NA	NA	NA
Temiskaming Shores	55	\$6,077,018	\$4,139,368	\$1,937,650	\$35,230
Hudson	22	\$1,452,810	NA	NA	NA
Kerns	43	\$4,735,916	\$3,177,246	\$1,558,670	\$36,248
Harley	30	\$1,228,843	NA	NA	NA
Casey	28	\$6,120,400	\$2,826,742	\$3,293,658	\$117,631
Brethour	20	\$3,522,440	NA	NA	NA
Hilliard	24	\$2,667,377	\$1,728,423	\$938,954	\$39,123
Armstrong	36	\$10,245,471	\$5,859,138	\$4,386,333	\$121,843
Charlton and Dack	29	\$1,074,646	NA	NA	NA
Evanturel	28	\$2,518,063	\$1,596,670	\$921,393	\$32,907
Chamberlain	29	\$1,763,357	\$1,289,586	\$473,771	\$16,337
Temiskaming, Unorganized	103	\$7,631,729	\$4,808,351	\$2,823,378	\$27,411

N/A denotes that too few farms have reported data to ensure confidentiality.

^a Total farm operating expenses excluding wages, interest, rent and property taxes.

^b Total Agriculture value added = (Total farm receipts – Total farm operating expenses excluding wages, interest, rent and property taxes).

Adapted from Statistics Canada, 1996, 2006.

5.12 Farm Capital

In 2005, Temiskaming District reported \$293 million in total farm capital, which represents about 23% of the northern Ontario total (Table 5.22b). Within the District, five municipalities (Temiskaming Shores, Armstrong, Kerns, Casey and Brethour) account for 38% of the total farms and 53% of the total farm capital.

The average farm capital value for farms in Temiskaming District in 2005 was \$622,285 which is about \$112,000 more than the average for northern Ontario (\$509,793) but only about half the value of the provincial average of \$1.1 million. On a per farm basis, Armstrong was the top ranking township in the District with an average farm capital value of \$1.1 million followed closely by Brethour at \$1 million.

The concentration of livestock in certain parts of the District is a major factor influencing the high average farm capital values. The cost of modern livestock facilities can easily exceed half a million dollars. In the dairy sector, milk parlors alone range in cost from \$100,000 to \$300,000 depending on the size of the herd and the type of automated equipment (Hyde et al., 2002. p.4).

Table 5.22a: Total Farm Capital for Temiskaming District, Northern Ontario and Ontario, 1995

	Total farms	Total farm capital - Market value ^a	Farm capital per farm	Number of farms reporting by total farm capital category						
				Under \$100,000	\$100,000 to \$199,999	\$200,000 to \$349,999	\$350,000 to \$499,999	\$500,000 to \$999,999	\$1,000,000 to \$1,499,999	\$1,500,000 and over
1995										
Ontario	67,520	\$40,860,936,035	\$605,168	3,756	11,151	17,962	10,770	14,857	4,530	4,494
Northern Ontario Region	2,915	\$1,022,746,952	\$350,857	370	784	850	379	394	81	57
Temiskaming District	589	\$219,354,509	\$372,419	82	145	157	87	82	21	15
Harris	26	\$7,932,482	\$305,095	3	6	11	3	2	0	1
Temiskaming Shores	67	\$23,805,880	\$355,312	17	11	19	8	7	3	2
Hudson	37	\$9,370,208	\$253,249	1	22	7	3	4	0	0
Kerns	59	\$22,920,472	\$388,483	3	17	18	10	8	0	3
Harley	39	\$9,286,328	\$238,111	3	18	14	2	1	1	0
Casey	33	\$19,177,969	\$581,151	4	4	5	5	9	5	1
Brethour	21	\$5,351,725	\$254,844	2	7	8	3	1	0	0
Hilliard	32	\$14,627,471	\$457,108	3	9	7	4	4	4	1
Armstrong	46	\$27,932,947	\$607,238	2	5	11	8	12	5	3
Charlton and Dack	32	\$11,896,327	\$371,760	2	7	8	7	7	1	0
Evanturel	32	\$16,397,370	\$512,418	3	7	8	6	6	0	2
Chamberlain	24	\$8,195,213	\$341,467	4	3	8	4	4	1	0
Temiskaming, Unorganized	141	\$42,460,118	\$301,136	35	29	33	24	17	1	2

^a Farm capital includes the value of farm machinery, livestock and poultry, and land and buildings.

Source: Statistics Canada, 1996.

Table 5.22b: Total Farm Capital for Temiskaming District, Northern Ontario and Ontario, 2005

	Total farms	Total farm capital - Market value ^a	Farm capital per farm	Number of farms reporting by total farm capital category						
				Under \$100,000	\$100,000 to \$199,999	\$200,000 to \$349,999	\$350,000 to \$499,999	\$500,000 to \$999,999	\$1,000,000 to \$1,499,999	\$1,500,000 and over
2005										
Ontario	57,211	\$65,336,796,501	\$1,142,032	945	3,281	9,736	9,122	16,803	6,767	10,557
Northern Ontario Region	2,479	\$1,263,776,707	\$509,793	114	444	699	439	533	149	101
Temiskaming District	471	\$293,096,465	\$622,285	19	72	120	86	113	27	34
Harris	24	\$10,617,619	\$442,401	1	1	7	6	8	1	0
Temiskaming Shores	55	\$39,015,107	\$709,366	1	10	19	9	10	2	4
Hudson	22	\$10,710,712	\$486,851	1	3	7	4	5	1	1
Kerns	43	\$29,930,513	\$696,058	2	2	10	9	13	4	3
Harley	30	\$10,564,479	\$352,149	0	9	11	5	4	1	0
Casey	28	\$25,034,814	\$894,101	1	1	3	8	7	3	5
Brethour	20	\$21,172,673	\$1,058,634	1	5	4	2	5	2	1
Hilliard	24	\$16,060,697	\$669,196	1	3	6	4	5	2	3
Armstrong	36	\$39,907,082	\$1,108,530	0	0	4	10	10	3	9
Charlton and Dack	29	\$13,679,511	\$471,707	1	7	7	5	5	3	1
Evanturel	28	\$14,272,481	\$509,731	1	4	6	5	10	0	2
Chamberlain	29	\$9,825,469	\$338,809	2	6	8	7	6	0	0
Temiskaming, Unorganized	103	\$52,305,308	\$507,819	7	21	28	12	25	5	5

^a Farm capital includes the value of farm machinery, livestock and poultry, and land and buildings.

Source: Statistics Canada, 2006.

5.13 Farm Operator Characteristics

In 2006, Temiskaming District reported a total of 700 farm operators, down from 865 operators in 1996 (Table 5.23).²¹ In 2006, 67% of all farm operators in the District were male and 33% were female. This compares to 69% males vs. 31% females for northern Ontario as a whole and 71% males vs. 29% females for the province. Over the 10 year period between 1996 and 2006, the proportion of female farm operators in the District increased from 28% to 33%.

Between 1996 and 2006, the average age of farm operators in the District increased from 48 years to 51 years. Farm operators in the northern Ontario region and Ontario as a whole are on average 2 years older than farm operators in Temiskaming District.

²¹ In 1996 and 2006, "farm operators" was defined as those persons responsible for the day-to-day management decisions made in the operation of a census farm or agricultural operation. Up to three farm operators could be reported per farm. Prior to the 1991 Census of Agriculture, the farm operator referred to only one person responsible for the day-to-day decisions made in running an agricultural operation.

Table 5.23: Characteristics of Farm Operators – Gender and Age, 1996-2006

	Total number of operators	Gender		Age Category			Average age of operators (yrs)
		# of male operators	# of female operators	Under 35 years	35 to 54 years	55 years and over	
1996							
Ontario	96,940	71,050	25,895	13,835	49,000	34,105	49
Northern Ontario Region	4,180	3,010	1,170	575	2,190	1,415	49
Temiskaming District	865	615	245	135	465	270	48
Harris	35	30	10	5	20	15	50
Temiskaming Shores	105	70	30	15	45	40	50
Hudson	55	40	20	10	25	20	50
Kerns	90	65	30	15	45	30	49
Harley	60	40	15	10	30	20	48
Casey	45	35	5	10	30	5	42
Brethour	30	20	10	10	15	10	47
Hilliard	50	35	10	5	25	20	48
Armstrong	80	50	25	15	45	20	45
Charlton and Dack	45	35	10	5	25	15	51
Evanturel	45	30	10	5	30	10	49
Chamberlain	35	25	10	0	30	10	48
Temiskaming, Unorganized	195	140	55	30	110	65	48
2006							
Ontario	82,410	58,875	23,530	7,070	40,280	35,065	53
Northern Ontario Region	3,570	2,470	1,095	270	1,755	1,540	53
Temiskaming District	700	475	220	80	355	275	51
Harris	35	25	5	5	5	15	51
Temiskaming Shores	80	55	30	10	40	40	51
Hudson	40	20	10	5	20	10	53
Kerns	60	45	20	5	35	15	48
Harley	45	30	20	10	25	20	49
Casey	40	35	5	10	20	5	45
Brethour	35	20	10	0	25	15	51
Hilliard	35	30	10	5	30	5	51
Armstrong	55	40	20	10	25	15	50
Charlton and Dack	50	35	10	0	20	20	56
Evanturel	40	30	20	5	25	20	49
Chamberlain	35	30	10	0	15	25	55
Temiskaming, Unorganized	150	110	45	15	65	65	53

Source: Statistics Canada, 1996, 2006.

Table 5.24 provides data on the types and number of farm operation arrangements in Temiskaming District, northern Ontario and Ontario between 1996 and 2006. The majority of farms in Temiskaming District, northern Ontario and Ontario continue to be managed under a sole proprietor operating arrangement. In Temiskaming District, sole proprietorship type farms account for 57% of all farms which is comparable to the provincial average (56%) but lower than the northern Ontario average (63%).

There was only a small change in the percentage of farms managed under a sole proprietorship arrangement in Temiskaming District between 1996 and 2006. Additional details on farm operation arrangements at the township level are presented in Table 5.24.

Table 5.24: Farm Operating Arrangements for Temiskaming District, Northern Ontario and Ontario, 1996-2006

	Number of farms	Operating Arrangement					
		Sole proprietorship ^a	Partnership with no written agreement ^b	Partnership with a written agreement	Family corporation ^c	Non-family corporation ^d	Other (institution, community pasture, etc.)
1996							
Ontario	67,520	38,465	15,242	5,834	6,972	937	70
Northern Ontario Region	2,915	1,820	616	223	210	41	5
Temiskaming District	589	341	137	62	41	7	1
Harris	26	17	6	2	1	0	0
Temiskaming Shores	67	43	15	4	4	0	1
Hudson	37	22	8	6	0	1	0
Kerns	59	30	16	9	2	2	0
Harley	39	21	11	5	2	0	0
Casey	33	18	6	3	5	1	0
Brethour	21	13	5	2	1	0	0
Hilliard	32	15	8	5	4	0	0
Armstrong	46	22	7	4	12	1	0
Charlton and Dack	32	20	9	3	0	0	0
Evanturel	32	18	4	7	2	1	0
Chamberlain	24	10	8	4	2	0	0
Temiskaming, Unorganized	141	92	34	8	6	1	0
2006							
Ontario	57,211	31,755	13,953	3,178	7,538	733	54
Northern Ontario Region	2,479	1,566	599	104	166	36	8
Temiskaming District	471	267	133	21	43	5	2
Harris	24	18	4	1	1	0	0
Temiskaming Shores	55	33	16	0	5	0	1
Hudson	22	10	9	1	2	0	0
Kerns	43	24	10	3	6	0	0
Harley	30	17	10	1	2	0	0
Casey	28	19	2	2	5	0	0
Brethour	20	10	7	1	1	1	0
Hilliard	24	13	7	1	3	0	0
Armstrong	36	16	11	1	7	1	0
Charlton and Dack	29	13	14	2	0	0	0
Evanturel	28	14	9	1	4	0	0
Chamberlain	29	21	3	3	2	0	0
Temiskaming, Unorganized	103	59	31	4	5	3	1

^a Sole proprietorship operation: an agricultural operation where one person owns the non-incorporated business. The person who owns the business may or may not own the land, buildings, machinery, etc. There may be multiple operators (persons responsible for the day-to-day management decisions) such as husband and wife, father and son.

^b Partnership with or without a written agreement: an agricultural operation where the business is owned and operated jointly by two or more persons with or without a written agreement and where risks and profits are shared.

^c Family corporation: an agricultural corp. in which an individual or family owns the majority of the shares.

^d Non-family corporation: an agricultural corp. in which a group of unrelated individuals owns the majority shares.

Source: Statistics Canada, 1996, 2006.

Agriculture has experienced significant structural change over recent decades as farm size, intensity, capitalization and specialization have dramatically moved from traditional to industrial configurations. Agricultural restructuring refers to the adjustments that the farm community has made in order to cope with the changing and demanding economic, technological and market environments that have developed in the post-war period. Adjustments are made at the farm level as operators attempt to remain profitable (Parsons, 1999. p. 345).

One of the more notable farm changes occurring with restructuring is the fact that many farm operators have taken off-farm work to supplement the inadequate returns they receive from commodities to cover the costs of their farm expenses (Statistics Canada, The Daily: Farmers Leaving the Field, Feb. 22, 2002).

At the national level, the 2006 Census of Agriculture revealed that younger farm operators and operators with a university degree were more likely to be engaged in off-farm work, as were male operators compared with female operators. The level of gross farm revenue was also a factor in off farm work as operators with lower farm revenues were more engaged in off-farm work categories (Statistics Canada, The Daily: Off Farm Work by Farmers, March 9, 2009).

As shown in Table 5.25, 365 of the 700 farm operators (52%) in Temiskaming District reported working off the farm in 2005. This is fairly comparable to the percentage reported for the northern Ontario region (54%) and Ontario as a whole (50%). Between 1995 and 2005 the proportion of Temiskaming District farm operators working off the farm increased from 38% to 53%. The increased involvement in off-farm jobs is a consistent trend for farm operators across Ontario.

Table 5.25: Number of Farm Operators by Hours of Farm and Non-farm Work, for Temiskaming District, Northern Ontario and Ontario, 1995-2005

	Total operators	Hours per week spent working for the agricultural operation			Hours per week of paid work (not related to the agricultural operation)			
		Less than 20	20 to 40	More than 40	None	Less than 20	20 to 40	More than 40
1995								
Ontario	96,940	27,565	25,490	43,885	66,105	6,575	13,300	10,960
Northern Ontario Region	4,180	1,270	1,215	1,695	2,665	320	660	535
Temiskaming District	865	235	245	390	535	75	145	115
Harris	35	10	15	10	25	5	5	5
Temiskaming Shores	105	45	15	35	60	5	20	5
Hudson	55	20	20	20	35	0	10	10
Kerns	90	20	30	40	45	10	15	15
Harley	60	20	25	10	25	0	20	10
Casey	45	10	10	20	30	0	10	0
Brethour	30	10	15	10	20	5	5	0
Hilliard	50	10	15	30	35	5	10	5
Armstrong	80	10	10	50	65	5	5	0
Charlton and Dack	45	10	15	20	25	10	5	10
Evanturel	45	10	5	25	30	0	5	5
Chamberlain	35	5	15	15	15	5	10	5
Temiskaming, Unorganized	195	60	50	90	120	20	25	30
2005								
Ontario	82,410	24,480	22,400	35,520	41,550	7,325	15,205	18,320
Northern Ontario Region	3,570	1,050	1,075	1,445	1,655	370	760	790
Temiskaming District	700	200	200	305	330	70	150	145
Harris	35	10	5	10	10	5	15	10
Temiskaming Shores	80	25	25	35	45	10	20	15
Hudson	40	15	5	15	15	0	10	10
Kerns	60	15	25	30	35	5	5	20
Harley	45	20	20	10	10	10	10	15
Casey	40	10	10	25	20	5	10	5
Brethour	35	10	15	10	20	0	10	5
Hilliard	35	15	10	20	15	0	15	5
Armstrong	55	15	15	30	35	5	10	10
Charlton and Dack	50	15	15	25	20	5	10	10
Evanturel	40	5	15	20	15	10	10	5
Chamberlain	35	10	20	20	20	5	15	5
Temiskaming, Unorganized	150	55	45	55	65	20	40	35

Source: Statistics Canada, 1996, 2006.

5.14 Temiskaming District Compared to Other Northern Ontario Districts

Table 5.26 provides an overview of farm characteristics for the 11 Districts in northern Ontario.

With 471 farms and 700 farm operators in 2006, Temiskaming District has the most number of farms and farm operators of any District in northern Ontario. Temiskaming also features the largest area of farmland in northern Ontario after Rainy River District (205,800 acres vs. 211,625 acres). However, Temiskaming District has a substantial proportion of its farmland in crop production (55%) compared to most of the other Districts. Indeed, in 2006, 30% of the total land reported in crop production in northern Ontario was in Temiskaming District.

Temiskaming District ranks 1st among the Districts in terms of total gross farm receipts (\$49.8 million) and 2nd in net revenue per farm (\$20,812) and net revenue per acre of farmland (\$48).

Table 5.26: Agricultural Characteristics for Northern Ontario Districts, 2006 – Ranked by Total Gross Farm Receipts

	Total number of farms	Total number of operators	Average age of operators	Total area of workable and non-workable land (acres) ^b	Land in crops (acres)	% of farmland in crops	Average farm size (acres)	Total gross farm receipts (2005)	Total farm operating expenses (2005)	Net revenue per farm (2005)	Net revenue per acre farmland (2005)
Ontario	57,211	82,410	53	13,310,216	9,046,383	68%	233	\$10,342,031,229	\$8,843,882,426	\$26,186	\$113
Northern Ontario Region	2,479	3,570	53	1,022,060	380,186	37%	412	\$179,177,281	\$151,879,475	\$11,012	\$27
Northern Ontario Districts											
<i>Temiskaming</i>	471	700	51	205,800	114,118	55%	437	\$49,834,957	\$40,032,383	\$20,812	\$48
Thunder Bay	252	375	51	61,850	29,420	48%	245	\$32,305,551	\$24,575,742	\$30,674	\$125
Algoma	335	480	54	95,814	38,292	40%	286	\$20,095,138	\$17,581,358	\$7,504	\$26
Rainy River	312	420	52	211,625	59,374	28%	678	\$13,152,226	\$12,701,240	\$1,445	\$2
Nipissing	272	395	52	83,747	35,411	42%	308	\$12,777,360	\$12,349,810	\$1,572	\$5
Sudbury	143	205	53	50,799	18,411	36%	355	\$12,611,432	\$10,363,532	\$15,720	\$44
Manitoulin	258	345	56	178,144	34,279	19%	690	\$12,150,387	\$10,277,410	\$7,260	\$11
Cochrane	184	270	55	75,236	28,437	38%	409	\$11,195,641	\$10,426,510	\$4,180	\$10
Parry Sound ^a	338	485	56	82,617	22,625	27%	244	\$11,144,542	\$11,155,989	-\$34	\$0
Greater Sudbury	160	245	53	22,892	8,667	38%	143	\$9,576,636	\$8,918,528	\$4,113	\$29
Kenora	92	130	54	36,153	13,777	38%	393	\$5,477,953	\$4,652,962	\$8,967	\$23

^a Parry Sound District is not part of the Northern Ontario Agricultural Region as defined by Statistics Canada but is included as part of this study to be consistent with previous agri-economic impact research in northeastern Ontario.

^b Workable land includes all arable or cleared lands including area in hay, crops, summer fallow, and tame or seeded pasture land. Non-workable land includes woodlots (sugar bushes, tree windbreaks, and bush that is not used for grazing), natural pastureland, wetlands, ponds, bogs, sloughs, etc., barnyards, lanes, etc., and land on which farm buildings are located.

Source: Statistics Canada 2006.

5.15 Agri-Sector Stakeholder Review of the Census Data

A group discussion and review of the 2006 Census data was conducted with agri-sector stakeholders from Temiskaming District in October 2009. A total of 12 agri-sector stakeholders participated in the session which included representatives from a variety of sectors including dairy, beef, and field crops. The session also had government and agri-business representatives in attendance.

The following key points were raised by the agri-sector stakeholders:

- Agri-sector stakeholders confirmed that jobs in agriculture in the District remain relatively stable compared to other industry sectors like forestry. Although some farmers may have left the business since 2006 it was stressed that any farmland that becomes available in the District is quickly picked up by other farm operators and kept in production.
- It was suggested that the dairy and beef sectors would account for most of the recent job losses in the local agriculture industry. It was further suggested that a small number of jobs could have recently been lost in the hog sector.
- Agri-sector stakeholders confirmed that the overall number of jobs in the mining sector in northern Ontario continues to fluctuate although there has been recent growth at Kirkland Lake in relation to gold mining.
- Agri-sector stakeholders noted that a number of jobs have been lost in the forestry and forest product processing sector since 2006. A furniture plant recently closed in the area which had recently been upgraded with significant investment. It was also noted that a number of trucking companies have ceased operations in recent years with the downturn in the forestry and milling sector. It was also suggested that rising fuel costs have driven some truck operators out of business.
- The accommodation and food sector is continuing to grow in the region and a new Holiday Inn Express with 80 rooms is currently under construction.
- With respect to housing, it was noted that the growth of the mining sector is creating jobs and an increased demand for housing in the region. Agri-sector stakeholders noted that it is particularly challenging to find housing in and around Kirkland Lake.
- Although the Census data shows that the total area of farmland in the District dropped from 214,000 to 205,000 acres between 2001 and 2006, agri-sector stakeholders suggest that this is likely a reporting error as any farmland that comes up for sale in the District is quickly purchased and maintained in production. Agri-sector stakeholders also noted that some farmland in the District that had been allowed to return to bush has been brought back into production since 2006.

- Agri-sector stakeholders also reported that an area of pasture land in the District has been converted to crop production since 2006 as a result of a beef producer exiting the beef sector and renting out the land base for crop production.
- Agri-sector stakeholders suggested that the average farm size reported in the 2006 Census (437 acres) appears to be right. It was noted that the District features a considerable number of farm operators who are working more than a 1,000 acres land and it was suggested that the large farms are increasing in size with more land being rented for production. It was suggested that the area of farmland being rented could exceed 30% of the total farmland in several more municipalities by the next Census (2011). It was noted that very little farmland has been lost to development since 2004.
- Agri-sector stakeholders suggested that there are about 300 farmers in the District who are making more than \$10,000 in annual farm gate receipts and are affiliated with farm organizations such as the Ontario Federation of Agriculture, the Christian Farmers Federation of Ontario, and the National Farmers Union.
- Agri-sector stakeholders indicated that the number of dairy farms in the District has dropped to about 58 since 2006. It was reported that herd sizes are getting larger and the volume of milk production is up but the total dairy cow inventory is likely down from the 2006 values.
- It was also suggested that the number of beef farms in the District has dropped to about 100 since 2006. Agri-sector stakeholders suggested that the total inventory of beef cattle in the District has dropped off by 25-33% and it is expected to drop further next spring.
- Agri-sector stakeholders confirmed that there continues to be a few hog and poultry operators in the District and that these operations are small scale operations. The stakeholders were surprised to see that the inventory of pigs in the District doubled between 1996 and 2006 and suggested that the current inventory is likely lower than the 1996 value.
- Agri-sector stakeholders reported that there continues to be substantial growth in the sheep and goat sectors in the District since 2006. Production in the sheep sector is meat based while production for the goat sector is meat and dairy based with some of the goat milk going into cheese production.
- Agri-sector stakeholders were surprised to see the inventory of horses and ponies in the District decline from 728 in 1996 to 638 in 2006. It was suggested that the number of horses has actually gone up and continues to climb and stakeholders believe that reporting errors may account for the discrepancy.

- Agri-sector stakeholders suggested that the number of farm operators producing deer/elk may be down to zero now while there continues to be at least 2 operators producing bison in the District.
- Agri-sector stakeholders confirmed that there is a substantial amount of hay produced in the District and that there is a hay surplus in the region. It was suggested that at least 10 farm operators in the District derive their income from hay alone and as many as 3 producers are trucking their hay to markets as far as Florida.
- It was suggested that most of the fruit and vegetable production in the District (e.g. strawberries, raspberries, potatoes) is sold through local farmers' markets.
- With respect to grain production it was reported that there was as much as 20,000 acres of wheat in production in the District in 2008 but there will not be as much wheat next year due to the market and crop rotation. It was suggested that the acreage in soybean and canola production in 2008 could be double the 2006 figures but again the fluctuation is linked to crop rotation practices.
- With respect to total gross farm receipts, agri-sector stakeholders reported that there could be as many as 40 farm operators generating \$500,000 or more in gross farm receipts compared to 21 in 2006. It was also reported that there has been an increase in the number of farms operated as partnerships and corporations.

5.16 Summary of Agriculture Characteristics

Key characteristics of the agriculture sector in Temiskaming District:

- The number of farms in Temiskaming District declined from 532 to 471 between 2001 and 2006 which is consistent with an ongoing trend found in the large majority of Ontario counties/districts.²²
- Since 1996, the average farm size in the District increased from 357 acres to 437 acres. The increase in farm size is consistent with a general trend across the province and is linked to farm consolidation.
 - The average farm size in the District is larger than provincial average (233 acres) as well as the average for northern Ontario (412 acres).
 - Within Temiskaming District there is considerable variation in average farm size. On average, farms in Brethour are the largest at 935 acres while farms in Harley are the smallest at 208 acres.
- The District reported a total of 205,800 acres of farmland in 2006 down from 210,033 acres in 2001.
 - Historically, the District reported a much larger area of farmland. In 1961 for example, the District reported 242,663 acres of farmland.
 - The climate and soil conditions in the District allow for the production of a variety of field crops including barley, wheat, oats, corn, soybeans, potatoes and hay crops.
 - Approximately 55% of the total farmland base in the District was used for crop production in 2006 and the area in crop production is increasing. Temiskaming District is the only District in northern Ontario with more than 50% of its farmland base in crops.
- The major farm production activities in the District include beef production (27% of the farms are primarily engaged in this activity), dairy production (13%), oilseed and grain production (8%), and sheep/goat production (5%). A further 62 farms (13%) are involved in other animal production (e.g. horses, bison, deer, elk, llamas, rabbits, bees, etc.).
- Between 2001 and 2006 the number of dairy and beef farms in the District declined while the number of sheep/goat and other animal type operations increased.

²² In Thunder Bay District the number of farms actually increased between 2001 and 2006 and the reversal is partly attributed to the growing interest in producing agricultural products for the local market.

- Between 2001 and 2006 there was an increase in the number of farm operations primarily engaged in hay/fodder crop production and a decrease in the number of farms primarily engaged in oilseed/grain production.
- The number of farms reporting organic production in the District is on the rise including the production of fruits, vegetables and animal and/or animal products.
- The non timber forest product sector is growing in importance in northern Ontario but is not captured in the Census data.²³
- Temiskaming District has the most productive agricultural sector in northern Ontario in terms of total gross farm receipts. In 2005, the District reported \$49.8 million in total gross farm receipts which represents 28% of the total farm receipts for northern Ontario. Dairy farms continue to account for a substantial portion of the total gross farm receipts in the District despite the decline in dairy farm numbers.
- The total net farm revenue per acre of farmland amounted to \$48/acre which is higher than the average for northern Ontario (\$27/acre) but lower than the provincial average (\$113/acre).
- The total value added component for agriculture in the District amounted to \$18.9 million in 2005. This translates into 38 cents of value added per dollar of gross farm receipts.
- Between 2001 and 2006, the number of jobs directly supported by agriculture in the District declined slightly from 745 to 720 jobs.
- Between 1995 and 2005 the proportion of District farm operators working off the farm increased from 38% to 53%. The increase in off-farm employment activity is a consistent trend for farm operators across Ontario.

²³ Non timber forest products (NTFP) encompass all biological materials, other than timber, which are extracted from forests for human use. Examples include forest product fuels, resins, gums, essential oils, hemp, plant fibres for construction products, forest foods (wild berries, wild mushrooms, herbal tea plants, etc.), and floral, foliage and branch products (e.g. used in the manufacture of craft products). Estimating the contribution of NTFPs to national, regional and even local economies is challenging given the lack of broad-based systems for tracking the combined value of the hundreds of products that make up the various NTFP industries (McLain and Jones, 2005. p.1). In 2006, the total value of the NTFP forest bio-products industry to Canada's economy was estimated at close to \$1 billion (Natural Resources Canada, April 2009).

6.0 Agri-Tourism, Agricultural Fairs, and Farmers' Markets

6.1 Agri-Tourism / Entertainment

Agri-tourism is increasingly recognized as an important alternative farming activity that diversifies the economic base and provides educational opportunities to local residents and tourists.²⁴ In Ontario, agri-tourism activities typically combine travel to a rural setting and feature agricultural products (e.g. pick your own enterprises, road side stands, on-farm retail stores selling fresh produce and/or farm products) and/or activities (e.g. on-farm recreation/entertainment, harvest festivals, agricultural heritage museums, farm tours, and farm based bed and breakfast accommodation).

Studies at the provincial level in Canada provide important information about the economic contribution of agri-tourism/entertainment activities. For example, the agri-tourism sector in British Columbia employed 4,400 people in 2003 (of which 23% were full time year round positions) and the average agri-tourism operator generated revenue of \$98,000 (Organization for Economic Co-operation and Development, 2009). Research completed in the United States has also shown that agri-tourism can be an important component of the local/regional agricultural industry and provide a substantial source of revenue for farmers (Leones, Dunn, Worden and Call, 1994; Allen, Gabe and McConnon, 2006).

Temiskaming District features a variety of agri-tourism/entertainment activities and destinations. Some examples of the attractions include:

- Thornloe Cheese which has been producing cheese products in northern Ontario for over 60 years features a retail store where visitors can purchase a variety of specialty cheese products. The plant processes over 3 million litres of milk annually and remains an important outlet for local dairy producers. Thornloe Cheese also services a wide range of wholesale customers, from retail outlets to foodservice establishments;
- Belle Vallée Wools is presently the only complete farm-based woolen mill in Eastern Canada and is a replica of the woolen mills that operated throughout Ontario in the early 1900s. Belle Vallée Wools products are marketed at its mill and in many yarn stores and tourist shops. They also provide custom processing to wool producers and hand spinners. Visitors are welcome to view the woolen mill in operation;
- The Little Claybelt Homesteaders Museum which was founded in 1974 and offers unique insights into the history of the region including farm practices and activities;
- Boreal Cuisine in Earlton is a boutique and internet based retail outlet featuring foods and handicrafts that have been produced regionally throughout northern Ontario and western Quebec.

²⁴ Agri-tourism has its roots in the Italian term agriturismo - the concept of bringing urban residents to farming areas for recreation and to facilitate an understanding of the origin of their food. As small scale farming in Italy became less profitable starting in the 1950s, farmers began to incorporate tourism related activities in their operations to augment their income.

Temiskaming District also features a number of agricultural fairs/exhibitions and farmers' markets which are examined in greater detail below.

6.2 Agricultural Fairs

A recent study conducted by the Canadian Association of Fairs and Exhibitions (CAFE) revealed that agricultural fairs can provide significant economic and social benefits for communities. The study found that the average small fair in Canada (i.e. less than 50,000 visitors) has a \$750,000 impact on the local economy and supports approximately 8 full-year positions (Enigma Research Corporation, 2009).²⁵

The CAFE study also revealed that the majority of attendees at small fairs place a high value on learning about agriculture and 75% of attendees agree that education programs enhance the experience at the fair. This interest indicates that there are opportunities to partner with private and public sector stakeholders for promoting educational opportunities. The study also determined that the large majority of attendees (90%+) value fairs as an important tradition and major social gathering event (Enigma Research Corporation, 2009).

As shown in Table 6.1, Temiskaming District features several fairs/exhibitions.

Table 6.1: Agricultural Fairs in Temiskaming District (2009)

Name of Fair	Date (2009)	Website	Agricultural Features
Charlton Fall Fair	Sept. 5-6	http://www.charltonfair.com/	Heavy Horse Pull, Horse Show, Vegetables, Livestock, 4H Shows, Fall Fair Breakfast
Englehart Fair	Sept. 10-12	http://www.englehart.ca/siteengine/activepage.asp?PageID=38	Livestock Shows, Pony Rides, Petting Farm
New Liskeard Fall Fair	Sept. 17-19	http://www.newliskeardfallfair.ca/default.htm	Light and Heavy Horse Show, Steer Show, Dairy Show, Sheep Show, Poultry Barn, Agricultural Exhibits

Source: Ontario Association of Agricultural Societies (www.ontariofairs.org/cms/) and the respective fair websites.

²⁵ The study involved a survey of 2,400 attendees at 6 small fairs across Canada: Abbotsford Agrifair (British Columbia), Carp Fair (Ontario), Expo Shawville (Quebec), Expo Brome Fair (Quebec), FREX Fredericton Exhibition (New Brunswick), Cape Breton County Exhibition (Nova Scotia).

6.3 Farmers' Markets

Recent studies on farmers' markets indicate that they are experiencing a resurgence of popularity in Ontario and are playing an important role in the marketing of local agricultural products and generating farm income.

A 2008 study completed by Farmers' Markets Ontario (FMO) demonstrates the significant economic and social benefits that markets provide to communities.²⁶ In 2008, the total estimated economic impact of Ontario farmers markets was at least \$641 million.²⁷ The study also determined that sales at Ontario farmers' markets are growing on an annual basis – between 1998 and 2008 the estimated compound annual growth in direct sales at farmers' markets was 7.3%.²⁸ Average in-market spending by customers at Ontario farmers' markets in 2008 amounted to \$27.67 per visit; ranging from \$21.99 at small markets to \$33.94 at large markets (Experience Renewal Solutions Inc., Jan. 2009).²⁹

Farmers' markets also play an important role in supporting and generating local employment. The 2008 FMO study determined that 55% of vendors reported the creation of up to 5 jobs as a result of their participation at the market (e.g. jobs linked to preparing products for the market, assisting the farmer/vendor at the market) (Experience Renewal Solutions Inc., Jan. 2009)

Part of the recent growth of farmers' markets can be attributed to consumer interest in fresh, in-season, locally produced foods. As found in the 2008 FMO study, close to 60% of Ontario market customers reported that fresh produce was their primary reason for visiting the market (Experience Renewal Solutions Inc., Jan. 2009).

²⁶ The Ontario Farmers' Market impact study was completed as part of the National Farmers' Market Impact Study that was conducted in the same 2008 period (July to October). The study was conducted by Experience Renewal Solutions Inc. on behalf of Farmers' Markets Ontario. A total of 70 farmers' markets participated in the National Study including 36 markets from Ontario. Over 1,800 shoppers were interviewed at the 36 Ontario markets. Only one market in northern Ontario, the Downtown Sudbury Farmers' Market, was represented in the study.

²⁷ Total farmers' market direct sales in Ontario in 2008 were estimated to be in the range of \$421 million to \$641 million. Based on a conservative multiplier of 1.5, markets in Ontario are estimated to contribute at least \$641 million to the provincial economy, while a multiplier of 3.0 estimates that markets could be contributing as much as \$1.9 billion to the provincial economy (Experience Renewal Solutions Inc., January 2009).

²⁸ The 1998 baseline study of farmers' markets involved 19 markets across Ontario including 3 markets in northern Ontario: Sudbury Farmers' Market, Timmins Country Market, and Clover Valley Farmers' Market (Fort Frances). The 1998 study determined that on a provincial average, customers spent just under \$20 per visit to the market. Additionally, multipliers associated with agriculture and other special events like agricultural fairs, suggested that for every dollar spent in the market, another two dollars rippled through the provincial economy. These dollars were spent by the businesses that supply the farmers that sell goods in the market, the purchases of retail goods and services by employees in the market, and by customers who stopped to make other purchases while on a trip to the market (Cummings, Kora and Murray, 1999).

²⁹ Small markets are defined in the study as markets with fewer than 20 vendors while large markets have 40 or more vendors.

The local trend toward a greater preference for fresh food reflects a wider global trend. A recent survey conducted by Ipsos Marketing of approximately 1,000 consumers in 18 different countries found that fresh ingredients along with environmentally friendly packaging are growing priorities influencing food purchasing decisions (Canadian Broadcasting Corporation, June 12, 2009).

Consumers are also showing a greater interest in knowing where their food is produced and who is benefiting from their spending habits. A national survey by Ipsos Reid in 2006 revealed that 70% of Canadians recognize the importance of buying locally grown/produced fruits, vegetables, and meat to help the local economy and support family farmers and the majority of Canadians (56%) always or usually check to see where their fresh fruit and vegetables come from (Ipsos Reid, Dec. 1, 2006).³⁰

The results from the 2008 FMO study support the above findings as almost 70% of Ontario farmers' market customers reported that buying directly from a local farmer was extremely important to them (Experience Renewal Solutions Inc., Jan. 2009).³¹

Beyond the economic benefits that farmers' markets generate, customers and vendors are also attracted by the social aspect and sense of community that the market promotes.

Some of the market challenges identified by Ontario market vendors in the 2008 FMO study include: providing a selection of fresh products while dealing with labour and cost of production issues, responding to consumer interest in year round product selection, and increasing pressures associated with meeting health and safety requirements/regulations (Experience Renewal Solutions Inc., Jan. 2009).

The 2008 FMO study also involved a survey of shoppers not using farmers' markets and determined that the key factors limiting their use of markets is convenience (e.g. location and/or time of operation) and lack of awareness issues. The FMO study concludes that "future growth (of the farmers' market) sector will require engaging non-users through increased awareness of benefits, locations, and product selection. Trial usage among non-users will be dependent on making local market hours and locations more accessible to time challenged, health conscious consumers." (Experience Renewal Solutions Inc., January 2009).

The "Riverside Farmers Market" is located in Temiskaming Shores on the waterfront in the Riverside Place. The Market was established in 1998 and features approximately 15

³⁰ The survey results are based on a random sample of 1,091 adult Canadians, weighted by region, age, and gender according to Census data. The results are considered accurate to within ± 3.0 percentage points, 19 times out of 20, of what they would have been had the entire adult population been polled.

³¹ Consumer interest in locally produced foods is changing the way some food retail stores are operating in Ontario. In southwestern Ontario, a group of nine grocery stores recently ended their franchise arrangements with a large national grocery chain in order to stock fresh pork, chicken and beef products that are sourced no further than 60km away (Canadian Broadcasting Corporation, July 14, 2009). Additionally, six Safeway grocery stores in northwestern Ontario are starting to make locally grown food available on their shelves (Northern Ontario Business. June 22, 2009).

vendors. The Market is held each Saturday morning starting June and running to the end of October. The Market also hosts a Christmas Market at the end of November.

6.4 International Plowing Match and Rural Expo, 2009

In September 2009, the District of Temiskaming hosted the first International Plowing Match and Rural Expo to be held in northern Ontario. The Municipality of Earlton played host to the event which featured plowing competitions, local food sampling, an educational program, and over 100 acres of Tented City showcasing 600 exhibitors. The event also served as a venue for showcasing the culture and heritage of northern Ontario with a variety of demonstrations and displays related to the agriculture, mining and forestry sectors and entertainment featuring local artists. The five day event was supported by over 1,200 volunteers and attracted over 80,000 visitors. Additional details on the International Plowing Match can be found at the following website:
www.ipm2009.net

7.0 Agricultural Related Businesses and Economic Impact

7.1 Introduction

An economic impact study of the agriculture sector in Temiskaming District was conducted in 2003 (Cummings and Associates. 2004). The economic impact was measured through an accounting of the total sales and employment of Agriculture and Agriculture-related (agri-related) businesses located in the District. This work involved an assessment of the direct, indirect and induced impacts of agriculture on the local economy. The methodology used in the 2003 study as outlined below was consistent with other agri-impact assessments completed across Ontario. An overview of the theory and applications associated with economic impact analysis is described in greater detail in Appendix B.

Direct Impacts

Direct impacts refer to the on-farm jobs and farm gate sales generated by the agriculture sector in the District. This information was obtained from the Population Census of Canada and the Agricultural Census.

Indirect Impacts

Indirect impacts refer to jobs and sales generated 'off the farm' by agri-related businesses which interact directly with farm operations through buying and selling products and services. 'Agri-related' includes only those businesses that buy from or sell to the farm business; sales to farm families for personal consumption (e.g. household goods and services) are excluded from the indirect impact assessment, but are examined as part of the induced impact component.

The research method used to measure the indirect impacts in the 2003 study was a survey-based 'input-output-like' approach. This was completed through a telephone survey conducted between July and September 2003. The method and survey format was originally developed by Dr. Harry Cummings for use in a similar survey in Huron County in 1996 (Cummings, Morris and McLennan, 1998), and used again with some modifications (primarily translation into French) in other areas of southern Ontario (1998 to 2003) as well as two agri-economic impact studies (2001 to 2003) in northeastern Ontario.

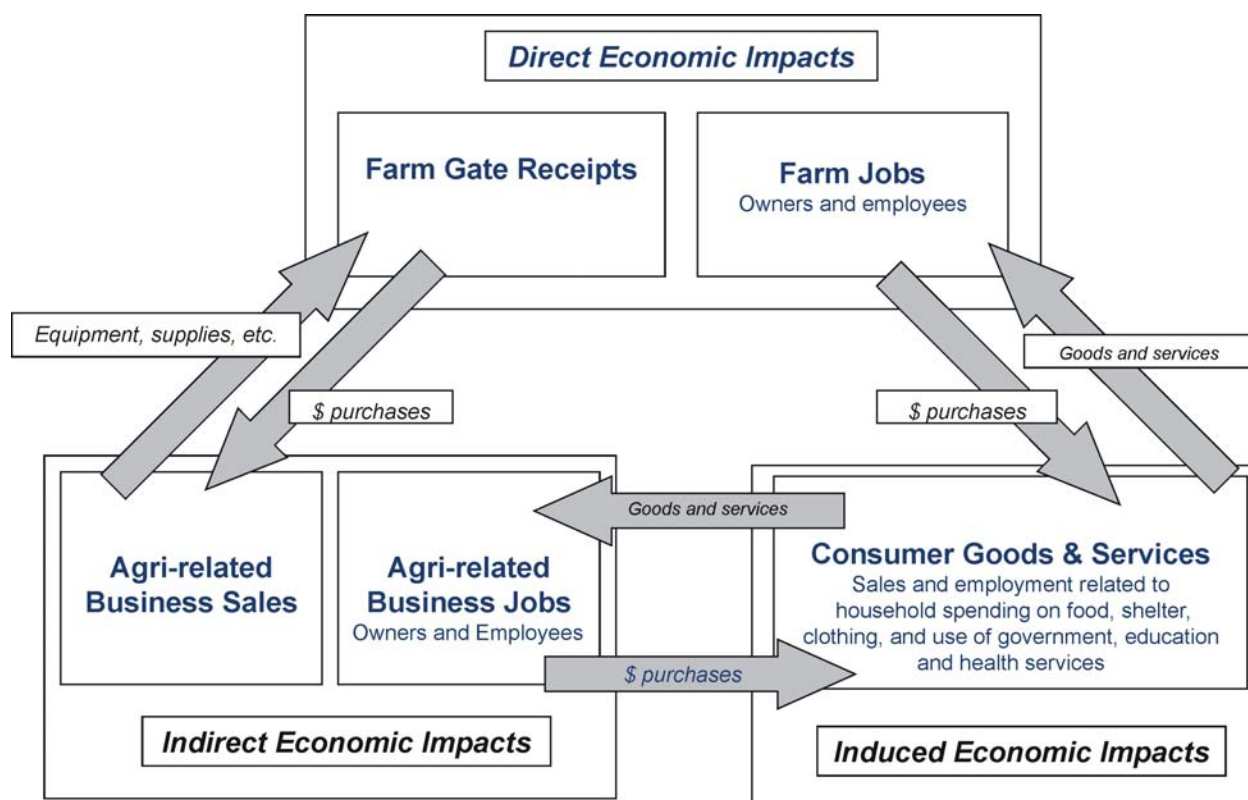
The methodology was designed to identify the value of gross sales and the jobs produced by a sample of agri-related businesses. From this sample, an estimate was produced for the total population of agriculture-related businesses in Temiskaming District. This in turn provided an estimate of the economic impact of agri-related businesses in Temiskaming District through indirect employment and sales.

Induced (Service Sector) Impacts

An examination of the induced effects of agriculture was conducted. Induced employment refers to jobs in the service sector, especially Education, Government, and Health and Social Service sectors that are supported by the people employed in the agricultural sector or in agri-related businesses that use the services provided by these three service industries. Population Census employment data for the agriculture and manufacturing sectors were compared to employment data for the three government service sectors noted above to estimate the number of induced jobs in the District.

Figure 7.1 illustrates the relationship between direct, indirect and induced economic linkages.

Figure 7.1: Tracking the Economic Impacts of the Agriculture Sector



While Figure 7.1 is useful in understanding key linkages in the agriculture sector, it does not reflect the overall complexity of the system. The system is actually a multitude of interconnected loops between various sectors with each sector impacted by a host of inputs and outputs which in turn change the inputs and outputs of the other sectors in the system. The system is not a closed system, in addition to changes experienced within the District the system is also impacted by changes occurring elsewhere in the province, country and the world. Evidence of this can be seen in the effects of the world

wide embargo that was placed on Canadian beef as the result of a single case of bovine spongiform encephalopathy (BSE or mad cow disease) in Alberta in 2003. The closure of markets to Canadian beef resulted in significant financial losses for cattle producers across Canada as well as the businesses that supported and depended on this production activity.

7.2 Overview of Findings from the 2003 Agri-Economic Impact Study

Direct Impacts

Based on the 2001 Census data that was available at the time in 2003, the total number of direct on-farm jobs in Temiskaming District amounted to 745 while the value of total gross farm receipts in the District amounted to \$44.1 million.

Indirect Impacts

In 2003, a total of 175 agri-related businesses were identified in Temiskaming District. In order to obtain a high level of confidence in the results (90%+) a total of 89 businesses were surveyed by random selection. The 89 businesses represented 10 different industrial sectors including retail trade, wholesales trade, construction, manufacturing, finance and insurance, professional services and other services (Cummings and Associates. 2004. p. 69). The 2003 survey determined that the 89 agri-related businesses had \$165,773,500 in total gross sales in 2002 of which \$51,331,125 or 31% of total gross sales were related to agriculture (p.78).

An estimate of the total gross agri-related sales for all 175 agri-related businesses in the District was then derived from the sample of 89 businesses. By dividing the total number of businesses (175) by the total number of businesses that provided sales data (89), a sampling multiplier of 2 (i.e. $175/89 = 1.96$) was used to estimate the total gross agri-related sales in the District. The estimated total gross agri-related sales for the 175 agri-related businesses amounted to approximately \$101 million in 2002 (p. 80).

With respect to jobs, the 89 agri-related businesses surveyed had 956 full time equivalent (FTE) employees. The number of agri-related jobs was estimated by applying the percentage of sales that were identified as agri-related to the total employment number. This translated into 263 FTE jobs related to agriculture for the 89 businesses. An estimate the total agri-related jobs for all 175 agri-related businesses in the District was then derived from the sample of 89 businesses. Using the sampling multiplier of 2 as noted above, the estimated total agri-related jobs for the 175 agri-related businesses amounts to 526 FTE jobs (p.81).

Induced (Service Sector) Impacts

Induced agricultural impacts are impacts on businesses that benefit from the expenditure of wages and salaries of workers in the agriculture and agriculture-related sectors. For the purposes of the 2003 study only the induced jobs were calculated.

Induced employment refers to employment generated by the wages of workers in an area. We refer to wages spent in the services sector on private or public services. The economy can be divided into two general 'production' components: goods producing (primary production including agriculture and manufacturing) and service producing. The service component consists of public sector services (health and social services, education and government) and private sector services³² (wholesale and retail trade, accommodation and restaurant, professional services, and finance and insurance related services). In this case we are trying to estimate what portion of the public sector workers are supported by agriculture and agri-related employment and expenditure. Induced effects are initiated through the spending of wages earned from agriculture and manufacturing, on public services; public service employees and agricultural workers purchase goods from retail stores; retail store workers require health services etc. This pattern of progressive spending reflects the chain of multipliers *induced* by the initial wage in the agriculture or manufacturing sector.

To make estimates of the induced jobs in Temiskaming District two census areas were examined. Armstrong Township and Temiskaming Unorganized West Part were selected to represent the study area as they had the greatest direct agriculture employment numbers in 2001. The total direct employment figure for the two primary production industries in the two census areas, Agriculture and Manufacturing (270 and 215 respectively for a total of 485 jobs), was divided into the total number of jobs in the Health and Social Services, Education and Government sectors (155, 105 and 80 respectively for a total of 340 jobs). This calculation indicates that for every job created in the two primary production industries, 0.7 induced jobs were supported in the three public service sectors.

When this number is applied to the total number of direct and indirect jobs related to agriculture in Temiskaming District (745 direct and 526 indirect jobs for a total of 1,271 jobs X 0.7), it indicates that 890 induced jobs are supported by agriculture and agri-related businesses (p. 82).

Total Economic Impact

As shown in Table 7.1, the 2003 study revealed that there were 745 direct, 526 indirect and 890 induced jobs sustained as a result of the agriculture sector in Temiskaming District. Thus, farm operations, businesses they buy from and sell to, and services that support farmers and farm businesses, were estimated to support a total of 2,161 jobs.

When the total employment figure is divided by the total number of direct agriculture jobs, we get a multiplier of 2.9. This calculation allows us to estimate that for every job in the agriculture sector, an additional 1.9 jobs are supported in the wider economy.

³² Estimates for the 'private sector services' were excluded from induced employment because some of these jobs were already covered in the agriculture-related business survey. This helps in avoiding a double count of some jobs.

In terms of dollars, the total direct sales associated with the agricultural sector amounted to \$44.1 million (2000) while indirect sales associated with agri-related businesses amounted to \$101 million (2002). In total, approximately \$145 million in agri-related sales were generated in Temiskaming District on an annual basis during this period. When the total sales figure is divided by the total agri-related sales figure we get a sales expenditure multiplier of 3.3. This calculation allows us to estimate that for every dollar generated by direct agricultural sales (farm gate sales), an additional \$2.30 in sales related to agriculture is also generated. Please note, these are gross agriculture-related sales and no attempt has been made to identify the “net value-added” component.

Table 7.1 Total Direct, Indirect and Induced Impacts of Agriculture in Temiskaming District, 2003

Impact	Sales	Jobs
Direct ^a	\$44,163,495	745
Indirect	\$100,931,987	526
Induced		890
Total	\$145,095,482	2,161

^a Direct values are taken from Statistics Canada, Population Census and Census of Agriculture 2001. Source: Cummings and Associates, 2004.

7.3 Update to 2003 Agri-Economic Impact Findings

Direct

The direct economic impacts of agriculture in Temiskaming District were updated based on a review of 2006 Census data. In 2006, the agriculture sector in the District directly supported 720 jobs and generated \$49,834,957 in total gross farm receipts.

Indirect

The cost constraints of the current study did not allow for a survey of agri-related businesses to update the indirect economic impacts of agriculture in Temiskaming District. Instead, the researchers used three business activity scenarios to estimate a range of possible indirect agri-economic impacts in the District.

In the first scenario we assumed that the amount of agri-related business activity in the District remained largely unchanged since 2003. In other words, the agriculture sector continues to indirectly sustain a total of 526 full time jobs and indirectly generates at least \$101 million in agri-related sales in the local economy.

In the second scenario we assumed that the amount of agri-related business activity in the District declined by 10% since 2003. In other words, the agriculture sector indirectly sustains a total 474 full time jobs and indirectly generates approximately \$91 million in agri-related sales in the local economy.

In the third scenario we assumed that the amount of agri-related business activity in the District increased by 10% since 2003. In other words, the agriculture sector indirectly sustains a total 578 full time jobs and indirectly generates approximately \$111 million in agri-related sales in the local economy.

Induced (Service Sector) Impacts

Current estimates of the induced jobs in Temiskaming District were derived from the 2006 Population Census data. As in the 2003 study, Armstrong Township and the Temiskaming Unorganized area were selected to represent the study area as they had the greatest direct agriculture employment numbers in 2006. The total direct employment figure for the two primary production industries in the two census areas, Agriculture and Manufacturing (245 and 305 respectively for a total of 550 jobs), was divided into the total number of jobs in the Health and Social Services, Education and Government sectors (220, 115 and 100 respectively for a total of 435 jobs).³³ This calculation indicates that for every job created in the two primary production industries, 0.8 induced jobs are supported in the three public service sectors.

When this number is applied to the total number of direct and indirect jobs related to agriculture in Temiskaming District (assuming no change in indirect jobs since 2003) it indicates that 997 induced jobs are supported by agriculture and agri-related businesses (720 direct and 526 indirect jobs for a total of 1,246 jobs X 0.8).

If we assume that the amount of agri-related business activity in the District declined by 10% since 2003, the induced component would amount to 955 jobs (720 direct and 474 indirect jobs for a total of 1,194 jobs X 0.8). Alternatively, if we assume that the amount of agri-related business activity in the District increased by 10% since 2003, the induced component would amount to 1,038 jobs (720 direct and 578 indirect jobs for a total of 1,298 jobs X 0.8).

Total Economic Impact

As shown in Table 7.2, the agriculture sector in Temiskaming District currently sustains between 2,149 and 2,336 direct, indirect and induced jobs. When we take the total employment figure and divide it by the total number of direct agriculture jobs, we get a multiplier that ranges from 3.0 to 3.2. This calculation allows us to estimate that for every job in the agriculture sector approximately 2 additional jobs are supported in the wider economy.

³³ In 2006, the Township of Armstrong reported 105 jobs in agriculture, 95 jobs in manufacturing, 40 jobs in health services, 35 jobs in educational services, and 15 jobs in public administration. In 2006, the Temiskaming, Unorganized area reported 140 jobs in agriculture, 210 jobs in manufacturing, 180 jobs in health services, 80 jobs in educational services, and 85 jobs in public administration (Statistics Canada, 2006).

In terms of dollars, we estimate that the agricultural sector in Temiskaming District generates between \$141 million and \$161 million in direct and indirect sales. When we take the total sales figure and divide it by the total amount of direct sales, we get a sales expenditure multiplier that ranges from 2.8 to 3.2. This calculation allows us to estimate that for every dollar generated by direct agricultural sales (farm gate sales), an additional \$2.80 to \$3.30 in sales related to agriculture is also generated. Please note, these are gross agriculture-related sales and no attempt has been made to identify the “net value-added” component.

Table 7.2 Total Direct, Indirect and Induced Impacts of Agriculture in Temiskaming District, 2006

Impact	Sales (\$ million)	Jobs
<u>Low Estimate</u>		
Direct ^a	\$49.8	720
Indirect	\$91.0	474
Induced		955
Total	\$140.8	2,149
<u>Medium Estimate</u>		
Direct ^a	\$49.8	720
Indirect	\$101.0	526
Induced		997
Total	\$150.8	2,243
<u>High Estimate</u>		
Direct ^a	\$49.8	720
Indirect	\$111.0	578
Induced		1,038
Total	160.8	2,336

^a Direct values are taken from Statistics Canada, Population Census and Census of Agriculture 2006.

A number of factors suggest that the overall level of agri-related business activity in Temiskaming District has not changed considerably since 2003:

- The number of agricultural jobs in the District declined by only 3% between 2001 (745 jobs) and 2006 (720 jobs) while the total value of gross farm receipts for the District increased from \$44.1 million to \$49.8 million during the same period.

- Between 2001 and 2006 there was a general increase in the number of jobs in each of the three industry sectors that have important linkages with the agriculture sector:
 - Wholesale trade jobs in the District increased by 375 jobs or 2%
 - Retail trade jobs in the District increased by 1,935 jobs or 12%
 - Manufacturing jobs in the District increased by 1,355 or 9%
- Although there has been some consolidation of agri-related businesses since 2003, agri-sector stakeholders reported that there have also been some new agri-related businesses established in the District. Additionally, agri-sector stakeholders generally believe that the amount of trade experienced by local agri-related businesses has increased since 2003 despite the loss of some dairy and beef farms in the District.

Accordingly, we suggest that a reasonable estimate of the current total contribution of agriculture to the economy of Temiskaming District is 2,200 direct, indirect and induced jobs and \$150 million in direct and indirect sales.

8.0 Agriculture Sector Challenges and Opportunities

A focus group was conducted with primary producers and other agriculture sector stakeholders from Temiskaming District on October 22, 2009. One objective of the focus group was to present information from the 2006 Census of Agriculture with the group of stakeholders and to identify any major changes/trends in the local agriculture sector since the 2006 Census (see section 5.15). The balance of the focus group was used to discuss challenges and opportunities related to the development of the agriculture sector.

A total of 12 agri-sector stakeholders from Temiskaming District attended the focus group including representatives from several different sectors including dairy, beef, and field crops. Representatives from the government sector also attended the focus group.

The key findings from the consultation with agri-sector stakeholders are presented below.

Agri-related Business

Approximately 175 agri-related businesses were identified in Temiskaming District in 2003 as part of the original agricultural economic impact study. In general, agri-sector stakeholders believe that the amount of trade experienced by local agri-related businesses has increased over the years. It was acknowledged that there has been some consolidation of businesses since 2003 and although some of the smaller communities in the District have lost businesses that provide goods/services to the agriculture sector (e.g. tire repair and service) these goods/services are still available in the larger communities (e.g. New Liskeard). It was also reported that New Liskeard has gained new businesses such as TSC and a new car/truck dealer and the Mennonite store in the area has expanded.

Agri-sector stakeholders also reported that large farm implements are generally not available from the local equipment dealers although these businesses do stock the implement parts. As noted by one agri-sector stakeholder, equipment like combines typically have to be purchased from dealers outside the area. It was also reported that farmers in the region are increasingly using the Internet to shop for their farm equipment as it is easier to locate and get the equipment that meets their specific needs. As reported by one agri-sector stakeholder, there are many crop farmers in the region who have purchased equipment over the Internet or over the phone at auctions from locations as far as Nova Scotia and Alberta.

With respect to livestock services, agri-sector stakeholders reported that the local livestock auction is doing poorly as the cattle numbers are down over previous years and farmers are increasingly shipping their livestock to Cookstown. Breeding services in the region are provided by Gencor but many farm operators have taken the artificial insemination training course and are doing their own breeding.

Deadstock removal continues to be a major challenge for livestock producers in the region as there are very few accessible facilities that will handle deadstock. As noted by one stakeholder, the nearest facility is in Montreal and the cost of removal from the farm can be as high as \$360. It was suggested that a funding program to help cover costs of deadstock removal needs to be reinstated to ensure that deadstock can be disposed of at a reasonable price.

With respect to financial services, agri-related stakeholders noted that the commercial banks in the region no longer have dedicated farm specialists. Caisse Populaire was acknowledged as an important financial organization for farmers in the area and the stakeholders reported that Farm Credit Corporation (FCC) has become the lender of choice for many farmers because it provides the financial services farmers need and it stays informed of agriculture trends and changes. FCC is also recognized for becoming more accessible to small scale farm operations.

Another supportive organization in the region is the South Temiskaming Community Futures Development Corporation. An agri-sector stakeholder noted that the Corporation has been actively engaged with the agricultural community for the last eight years and was instrumental in providing support for the completion of the initial agricultural economic impact study in 2004.

With respect to utilities, farm operators in the region are generally satisfied with the local electrical services and appreciate that they do not face the same challenges as areas further south (e.g. Parry Sound District) that have to deal with electrical outages resulting from freezing rain. Stakeholders also noted that there is less sensitivity in Temiskaming District relative to areas further south with respect to the need to clear trees to properly maintain the transmission lines.

Agri-sector stakeholders are generally dissatisfied with cell phone and Internet service in the region. The limitation of the local cellular service was brought to light when a temporary cell transmission booster terminal was installed for the Plowing Match which provided excellent coverage. Agri-sector stakeholders also noted that although the local wireless Internet service was recently updated there are still some areas where the connectivity is less than ideal.

With respect to food processing, agri-sector stakeholders reported that the District continues to feature a number of processing businesses including Thornloe Cheese which is looking at expanding into new markets with the development of new cheeses for the Canadian ethnic market. Agri-sector stakeholders reported that there are local abattoirs in the area for red meat but there is no poultry processing facility. Agri-sector stakeholders noted that the agriculture sector and agri-related businesses in Temiskaming District have significant linkages with the agriculture sector and agri-related businesses in Cochrane District and western Quebec. For example, it was

reported that milk and live cattle from Temiskaming District are transported to Quebec for processing.³⁴

Agri-sector stakeholders indicated that Temiskaming District is continuing to develop as a major agri-related business hub in the region. It was noted that many of the larger agri-related businesses in the District are deriving 30% of their sales from farm operators based in Quebec. It was also noted that Cochrane District farm operators rely heavily on agri-related businesses in Temiskaming District.

Research and Industry Support

Agri-sector stakeholders noted that the New Liskeard Agricultural Research Station is conducting more research on a cost recovery basis for private research. They have also expanded into agri-forestry as well as raspberries and strawberries. It was noted that livestock research at the station focuses on beef.

It was suggested that Ontario needs to move back into researching sheep given the growth of this sector. It was acknowledged that some producers are still somewhat uncertain on how long term the market interest in sheep production will be. However, it was suggested that with the increasing ethnic diversity of the provincial population, the market potential should continue to increase. Agri-sector stakeholders feel the time is right for the government to re-engage in promoting the growth of the sheep and lamb sector in Ontario and this includes providing support for research. Producers acknowledge that they also have a role to play in developing and expanding the sheep sector by enhancing the exchange of information between producers and encouraging the use of best practices.

Agri-sector stakeholders in Temiskaming District acknowledge that they have a greater OMAFRA presence in their region relative to other areas of northern Ontario as there are 2 representatives based out of New Liskeard. However, it was suggested that the private sector has not moved into to fill the extension gap that still exists in the area to same extent as it has in southern Ontario. It was suggested that local OFA representatives in northern Ontario and elsewhere are continuing to try and respond to the extension gap that was created when OMAFRA reduced its commitment to this role. Agri-sector stakeholders suggested that the Ontario Federation of Agriculture needs to dedicate more resources in addressing the predator issue for farms. This includes establishing and gaining recognition for an appropriate and consistent response that farmers can use when dealing with predators on farm property.

In 1998, Temiskaming District Farm leaders formed the Temiskaming Agricultural Development Association (TADA) to administer local projects that were eligible for funding under the 1997 and 2001 Northern Ontario Heritage Fund Corporation

³⁴ Temiskaming District lacks a federally inspected meat processing facility which prevents processed meat from being shipped to Quebec.

(NOHFC).³⁵ Under the 1997 and 2001 NOHFC agriculture programs, farm operations were eligible for a forgivable performance loan to a maximum of \$50,000 for their combined land improvement and/or production facility expansion projects. Currently, TADA is idle but can be reactivated when additional government funding becomes available.

NOHFC recently contributed funds to support the 2009 International Plowing Match and Rural Expo which was hosted by Temiskaming District in the Municipality of Earlton. Indeed, the Plowing Match organizing committee was able to attract and obtain support from a wide variety of stakeholders including federal and provincial governments (grant programs), municipal governments (donations and upgrades to infrastructure and services), and local corporate sponsorship. The Plowing Match also attracted a large body of local volunteers to help oversee and coordinate the planning and implementation of the event. The event was deemed very successful in that it attracted over 80,000 visitors and showcased the culture and heritage of northern Ontario. Agri-sector stakeholders reported that the Plowing Match also served to raise awareness about the size and importance of the agriculture sector in the District, particularly with local municipalities that are less agriculturally oriented as well as visitors from southern Ontario and Quebec.

Labour Force Issues and Training

Agri-sector stakeholders noted that there have been several recent school closures in the region and school enrolment in some areas is continuing to decline. At the secondary school level, Temiskaming District Secondary School offers an agri-tech program where students can achieve college credits. Agri-sector stakeholders note that the program is very successful. The program features 48 hours of class time. This year the focus is on livestock agriculture while last year it was cropping.

Northern College has programs geared toward agriculture. This includes a veterinarian technician program and an agricultural technician program. The veterinarian technician program is a 2 year program and includes courses related to large animals. The agricultural technician program is a 1 year program and includes courses on crop production, soil science, animal health, machinery maintenance, business management, value added production, and food safety. The agricultural technician program is not running at the moment because there is insufficient enrolment to offer the program.

Agri-sector stakeholders reported that labour shortage issues typically emerge when other sectors of the economy are doing well (e.g. mining, forestry). It was noted that the agriculture sector is not able to compete with the wages offered by the mining and forestry sectors and there has been interest in establishing an immigrant labour program in the region to deal with seasonal labour issues.

³⁵ Under the 1997 and 2001 NOHFC agriculture programs, farm operations were eligible for a forgivable performance loan to a maximum of \$50,000 for their combined land improvement and/or production facility expansion projects.

Agri-sector stakeholders reported that farmers in the region are increasingly relying on custom operators to conduct their field work (e.g. field tillage, crop seeding, crop harvesting). It was noted that there are at least three large custom operators in the District who also have their own farms. An agri-related stakeholder noted that the use of custom operators has significant savings for small acreage farms where it is hard to justify the purchase of a \$250,000 combine that might only be used for 80 hours a year. Another significant change noted by agri-sector stakeholders is the increase in the number of livestock farms that are transitioning to cash crop farms. Dairy farmers in the region are looking to purchase additional land but the land that becomes available is quickly purchased or rented by cash crop operations.

Agri-production and Farm Viability

Many farmers continue to struggle in obtaining a sufficient return on their products to cover operating expenses. In general, agri-sector stakeholders reported that fluctuating market prices and external factors like the rising dollar continue to make long range planning difficult for agriculture. Agri-sector stakeholders also feel that agriculture continues to be undervalued in the region and its potential is being overlooked by policy makers and the business sector. Producers believe that agriculture in the District and northern Ontario in general has significant growth potential given the substantial farmland base in the region and the lower land prices relative to southern Ontario. It was also suggested that northern Ontario has opportunities to develop, produce and market food items that are contaminate free. Temiskaming District is also seen as having an advantage over other areas of northern Ontario given the concentration of farms in the District and across the border in western Quebec and the presence of a sizable agri-related business base in the District that can support the agriculture sector.

Agri-sector stakeholders noted that there are a number of challenges for food producers who want to focus on supplying the local market including the small population base in the region and trying to compete with prices in local grocery stores. It was suggested that the vision of a farmers' market in the area is different from other areas of the province given the small population base and the challenge for producers to provide a variety of vegetables and other food items at the market. It was noted that some market vendors are bringing in fresh vegetables and fruit from southern Ontario to provide the variety and selection that consumers are looking for. Agri-sector stakeholders acknowledge that local food retail ventures can be successful but the challenge is building and maintaining a loyal customer base.

Government Regulations and Policies

A common concern expressed by agri-sector stakeholders in the region is that many of the government polices and support programs for agriculture are directed at models of agri-food production that are based on larger scale operations and southern Ontario market realities. Agri-sector stakeholders would like to see northern oriented incentive programs that encourage projects that will establish and enhance the capacity of local agri-food and product processing.

The Northern Ontario Heritage Fund Corporation (NOHFC) was recognized by stakeholders for the important role it played in past years in making funds available for land improvement and farm facility expansion projects. However, these cost sharing programs are no longer available through NOHFC even though the need still exists. It was suggested that NOHFC needs to revive its commitment to an agricultural development program.

Agri-sector stakeholders also stressed that policies and processes on obtaining a land severance are very inconsistent across the District. In some municipalities farmland severances are no longer allowed while in others it is still possible to get a land severance but it is very difficult. In cases where a farmer purchases land with excess buildings which may include a house, the farmer takes on additional taxes and there are risks with renting the buildings out to tenants who do not maintain the property or misuse the buildings. It was suggested that the municipalities need to collaborate and decide on a common policy and process for handling land severances.

9.0 Conclusions

The value of agricultural production in Temiskaming District is significant. In 2005, farmers in the District reported a total of \$49.8 million in gross farm receipts which represents 28% of the total receipts for northern Ontario. The average net revenue per farm in Temiskaming District amounts to \$20,812 which is almost double the average for northern Ontario farms.

In terms of employment, the agriculture sector in Temiskaming District directly supports 720 on-farm jobs. Although the agriculture sector experienced a drop in jobs between 2001 and 2006, the loss only amounted to 25 jobs or 3%. A notable trend in the farm operator data is the increased time involved in off farm employment. Between 1995 and 2005, the proportion of Temiskaming District farm operators working off the farm increased from 38% to 52%. The increase in off-farm employment activity in the District is consistent with the wider provincial trend. Producers often link the need for a second income to a combination of factors including stagnant or shrinking commodity prices and rising production costs. The increase in off-farm work is having a negative effect on the amount of time that farm leaders are able to volunteer for organizations and activities that have traditionally helped to promote agriculture in the region.

It is important to emphasize that the decline in agriculture employment does not reflect trends in farm productivity. Agriculture in Temiskaming District continues to have competitive advantages and economic opportunities including a substantial farmland base that supports the growth of a variety of crops; lower land prices relative to land prices in southern Ontario, its isolation from the threat of contaminants from industrial farms; and its access to a regional market (northeastern Ontario).

Temiskaming District reported almost 206,000 acres of farmland from 471 farms in 2006. Historically, the District reported as much as 243,000 acres of farmland in 1961 which indicates the great potential for expanding local agriculture production. With respect to crop production, the climate and soil conditions in the District allow for the production of a variety of field crops including barley, wheat, oats, corn, mixed grains, soybeans, canola and hay crops. Approximately 114,000 acres or 55% of the total farmland base in the District was used for crop production in 2006. Temiskaming District is the only District in northern Ontario with more than 50% of its farmland base in crops.

Temiskaming District features a variety of farm types and sizes. Major farm production activities in the District include beef, dairy, and grain/oilseed and hay production as well as a range of other animal production activities including sheep, goats, horses, and bison. The average farm size in Temiskaming District is 437 acres but there is considerable variation in farm sizes across the District. For example, farms in Harley have an average size of 208 acres while farms in Temiskaming Shores, Casey, Brethour, and Armstrong have an average size of over 500 acres.

Agriculture in Temiskaming District has been greatly advanced and continues to benefit from research and other activities conducted by a number of northern Ontario

institutions and organizations including the New Liskeard Agricultural Research Station, and various farmer led organizations including the Temiskaming Federation of Agriculture, the Temiskaming Soil and Crop Improvement Association, and individual local commodity groups.

Another stakeholder group that plays an important role in supporting agriculture is the agri-related business community. These businesses represent a variety of industry sectors including retail and wholesale trade, manufacturing, construction, transportation and business services. Agri-related businesses provide the support infrastructure for the agriculture sector and through their linkages to farm based activities, generate substantial economic benefits for the region.

A review of the findings from the 2003 agri-economic impact study for Temiskaming District in the context of more recent economic activity reveals that agriculture continues to make a significant contribution to the wider economy beyond the farm gate.

Allowing for a $\pm 10\%$ change in agri-related business activity since the 2003 study, we estimate that agriculture in Temiskaming District currently generates between \$91 million and \$111 million in indirect sales (agri-related business sales) and sustains between 474 and 578 indirect jobs. With respect to induced impacts, we estimate that agriculture in Temiskaming District sustains between 955 and 1,038 jobs in the public service sectors (i.e. health services, education services, public administration).

Overall, the total economic impact of agriculture in Temiskaming District amounts to between \$141 million and \$161 million in sales (direct and indirect) and between 2,149 to 2,336 jobs (direct, indirect and induced). The associated sales expenditure multiplier indicates that for every dollar generated in direct agricultural sales (farm gate sales), an additional \$2.80 to \$3.30 in sales related to agriculture is also generated in the wider economy. The associated employment multiplier indicates that for every job in the agriculture sector an additional 2.0 to 2.2 jobs are supported in the wider economy.

In general, agri-sector stakeholders believe that the amount of trade experienced by local agri-related businesses has increased over the years and Temiskaming District is continuing to develop as a major agri-related business hub in the region providing agri-business services for farmers in surrounding Districts as well as farmers in western Quebec.

However, agri-sector stakeholders recognize that more needs to be done to raise awareness about the agricultural opportunities in Temiskaming District and northern Ontario in general. In September 2009, Temiskaming District successfully showcased its agriculture sector when it hosted the International Plowing Match and Rural Expo. The event attracted support from a wide variety of organizations including federal and provincial governments, local municipal governments as well as local corporate sponsors. The Plowing Match attracted over 1,200 local volunteers to help oversee and coordinate the event and over the course of five days it drew in over 80,000 visitors from across Ontario and Quebec and elsewhere.

A common concern expressed by agri-sector stakeholders in the region is that many of the government policies and support programs for agriculture are directed at models of agri-food production that are based on larger scale operations and southern Ontario market realities. Agri-sector stakeholders see the need for more northern oriented incentive programs that encourage projects that will establish and enhance the capacity of local agri-food production and product processing. For example, there has been substantial growth in sheep and goat production in the region and producers see a role for the provincial government in collaborating with producers in promoting further research and development of this sector.

References

- Allen, T.G., Gabe, T.M., McConnon, J.C. Sept. 2006. The Economic Contribution of Agri-Tourism to the Maine Economy. University of Maine.
<http://www.umaine.edu/soe/publications/REPSTAFFPAPER563.pdf>
- Agriculture and Agri-Food Canada. Crop Heat Units.
http://res2.agr.ca/ecorc/clim3/resu-ana_e.htm
- Baldwin, D.J.B., Desloges, J.R., and Band, L.E. 2000. Physical Geography of Ontario. In: Ecology of a Managed Terrestrial Landscape [Perera, A. Euler, D., and Thompson, I. (eds.)]. UBC Press. Vancouver.
- Barnett, P.J. 1991. "Quaternary Geology of Ontario". In P.C. Thurston, H.R. Williams, R.H. Sutcliffe and G.M. Stott (Eds.). Geology of Ontario - Special Volume Part 2. Ontario Ministry of Northern Development and Mines.
- Bendavid-Val, Avrom. 1991. Regional and Local Analysis for Practitioners, 4th ed. Westport, Connecticut: Praeger.
- Bootsma, Andy. Potential Impacts of Climate Change on Agriculture in Eastern Canada: A Summary of Some Results of Recent Research. Presented at Workshop on "Climate Change and Agriculture in the Great Lakes Region: The Potential Impacts and What We Can Do". Kellogg Center, Michigan State University, East Lansing, MI. March 22, 2002.
- Bootsma, Andy. March 2001. Average Crop Heat Units Available for Corn and Soybean Production in Eastern Canada. Agriculture and Agri-Food Canada.
http://sis.agr.gc.ca/cansis/nsdb/climate/crop_heat/webmap.html
- Bootsma, A., Gameda, S., McKenney, D.W., 2001: Adaptation of agricultural production to climate change in Atlantic Canada. Final Report for Climate Change Action Fund Project A214. Eastern Cereal and Oilseed Research Centre, Agriculture and Agri-Food Canada, Ottawa.
- Brown, D.M and Bootsma, A. 1997. Crop Heat Units for Corn and Other Warm Season Crops in Ontario: Factsheet. Ontario Ministry of Agriculture, Food and Rural Affairs.
<http://www.omafra.gov.on.ca/english/crops/facts/93-119.htm>
- Bradfield, Michael. 1988. Regional Economics: Analysis and Policies in Canada. Toronto: McGraw-Hill Ryerson Ltd.
- Brown, D.M., A. Bootsma and R de Jong. Analysis of Growing Season Water Deficits in Ontario. Land Resource Science, University of Guelph.
- Canadian Broadcasting Corporation. June 12, 2009. Freshness, environmental care main drivers of food purchases: survey.
<http://www.cbc.ca/canada/prince-edward-island/story/2009/06/12/food-environment-freshness-survey-ipsos.html?ref=rss>

- Canadian Broadcasting Corporation. July 14, 2009. Buy local push prompts Ontario grocers to go independent.
<http://www.cbc.ca/consumer/story/2009/07/14/f-grocery-stores-independent-buy-local-meat-produce.html>
- Colombo, S.J., McKenney, D.W., Lawrence, K.M. and Gray, P.A. 2007. Climate Change Projections for Ontario: Practical Information for Policymakers and Planners. Ontario Ministry of Natural Resources.
- Cummings, H. 2005. Ontario's Agricultural and Rural Economy: Today and Tomorrow? A Qualitative and Quantitative Perspective. University School of Rural Planning and Development. Unpublished report. University of Guelph. Guelph, Ontario.
- Cummings and Associates. 2004. Temiskaming Agricultural Economic Impact Study. Harry Cummings and Associates. Unpublished report. Guelph, Ontario.
- Cummings and Associates. 2003. Growing Food and Economy: Economic Impact Study of the Agriculture and Food Related Sectors in Waterloo Region. Harry Cummings and Associates. Unpublished report. Guelph, Ontario.
- Cummings and Associates. 2002. Economic Impact Study of the Agriculture Sector in Algoma – Manitoulin. Harry Cummings and Associates. Unpublished report. Guelph, Ontario.
- Cummings and Associates. 2001. Economic Impact Study of the Agriculture Sector in the Blue Sky Region. Harry Cummings and Associates. Unpublished report. Guelph, Ontario.
- Cummings and Associates. 2000. The Economic Impacts of Agriculture on the Economy of Perth County. Harry Cummings and Associates. Unpublished report. Guelph Ontario.
- Cummings and Associates. 2000. The Economic Impacts of Agriculture on the Economy of Lambton County. Harry Cummings and Associates. Unpublished report. Guelph Ontario.
- Cummings and Associates. 1999. Economic Impact of Agriculture on the Economy of Simcoe County. Harry Cummings and Associates. Unpublished report. Guelph Ontario.
- Cummings, Harry and Vince Deschamps. 1999. Economic Impact of Agriculture on the Economy of Prescott, Russell, Stormont, Dundas, and Glengarry Counties. University School of Rural Planning and Development. Unpublished report. University of Guelph. Guelph, Ontario.
- Cummings, Harry, Karen Morris and Dan McLennan. 1998. Economic Impact of Agriculture on the Economy of Huron County. University School of Rural Planning and Development. Unpublished report. University of Guelph. Guelph, Ontario.
- Cummings, Harry, Galin Kora and Don Murray. 1999. Farmers' Markets in Ontario and Their Economic Impact. University School of Rural Planning and Development. Unpublished report. University of Guelph. Guelph, Ontario.

- Davis, H. Craig. 1990. Regional Economic Impact Analysis and Project Evaluation. Vancouver: University of British Columbia Press.
- Easton, R.M and J.A. Fyon. 1991. "Metallogeny of the Grenville Province." In P.C. Thurston, H.R. Williams, R.H Sutcliffe and G.M. Stott (Eds.). Geology of Ontario - Special Volume Part 2. Ontario Ministry of Northern Development and Mines.
- E.G. Gregorich, D.A. Angers, C.A. Campbell, M.R. Carter, C.F. Drury, B.H. Ellert, P.H. Groenevelt, D.A. Holmstrom, C.M. Monreal, H.W. Rees, R.P. Voroney, and T.J. Vyn. Agriculture and Agri-Food Canada. Changes in Soil Organic Matter. August 2003. http://res2.agr.gc.ca/publications/hs/chap05_e.htm
- Enigma Research Corporation. 2009. The Economic, Social and Educational Benefits of Large, Medium and Small Fairs and Exhibitions in Canada. http://canadian-fairs.ca/CAFE_Economic_Education_and_Social_Benefits_Study.html
- EnviroNics Research Group, September 2000. Survey of Farmers, Ranchers and Rural Landowners: Attitudes and Behaviours Regarding Land Stewardship.
- EnviroNics Research Group, June 2003. National Survey of Rural Landowners: Attitudes and Behaviours Regarding Land Stewardship.
- Experience Renewal Solutions Inc. January 2009. Farmers' Markets Ontario Impact Study 2009 Report. <http://www.farmersmarketsontario.com/Documents/FMO%20Impact%20Study%20-%20Overview%20and%20Highlights.pdf>
- Experience Renewal Solutions Inc. January 2009. National Farmers' Market Impact Study 2009 Report. <http://www.farmcentre.com/File.aspx?id=541aadd6-20ce-4324-8955-46a21ff0e95b>
- Faas, Ronald C. 1980. "Coping with Growth: What Does the Impact Statement Say About Economic Impacts." Corvallis, Oregon: Western Rural Development.
- Feenstra, G.W. 1997. Local food systems and sustainable communities. American Journal of Alternative Agriculture. Volume 12, No. 1, pp.28-36.
- Josling, L.T. 1996. An Empirical Study of the Interdependence Among Agriculture and Other Sectors of the Canadian Economy - An Input-Output Model. Agriculture Economics Research Council of Canada.
- Hegerl, G.C., F. W. Zwiers, P. Braconnot, N.P. Gillett, Y. Luo, J.A. Marengo Orsini, N. Nicholls, J.E. Penner and P.A. Stott, 2007: Understanding and Attributing Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

- Hoffman, D.W. and H.F. Noble. 1975. Acreages of Soil Capability Classes for Agriculture in Ontario. Ontario Ministry of Agriculture and Food, Rural Development Branch and Department of Regional Economic Expansion, Canada.
- Ipsos Reid. Dec. 1, 2006. Canadians See Many Benefits of Locally Grown Food
<http://www.ipsosna.com/news/pressrelease.cfm?id=3298>
- Leones, J., Dunn, D., Worden, M. and Call, R.E. June 1994. Agricultural Tourism in Cochise County, Arizona Characteristics and Economic Impacts. Michigan State University
<http://web1.msue.msu.edu/imp/modtd/33839801.html>
- Moazzami, B. 2006. An Economic Impact Analysis of the Northwestern Ontario Forest Sector. Northwestern Ontario Forest Council.
- Murray, Don. 2000. "Agricultural Exports and their Impact on the Local Economy: A Case Study of Huron County." Unpublished M.Sc. Thesis, University School of Rural Planning and Development, University of Guelph, Guelph Ontario.
- Northern Ontario Business. June 22, 2009. Safeway clears space for local farmers.
- Odyssey Report: An Industry Quest for Solutions. Sept. 2002. Agricultural Adaptation Council.
- Ontario Association of Agricultural Societies. Listing of Agricultural Fairs.
www.ontariofairs.com/oaas/fairs/
- Ontario Cattlemen's Association. Press Release - September 2, 2003. Beef farmers grateful for continued provincial support.
<http://www.cattle.guelph.on.ca/communications/2003/provincialsupport.html>
- Ontario Corn Producers Association. Corn and Climate Change. January 2004.
<http://www.ontariocorn.org/envt/envclim.html>
- Ontario Ministry of Agriculture, Food and Rural Affairs. April 2009. Ontario Market Investment Fund: First Nation Greenhouse Research.
<http://www.omafra.gov.on.ca/english/food/domestic/omif/omif.html#northern>
- Ontario Smart Growth – Shape the Future. 2003. Northeastern Ontario Smart Growth Panel. Queen's Printer for Ontario.
- Organization for Economic Co-operation and Development, 2009. The Role of Agriculture and Farm Household Diversification in the Rural Economy of Canada.
<http://www.oecd.org/dataoecd/35/33/43245349.pdf>
- Parson, H.E. *Regional Trends of Agricultural Restructuring in Canada*. Canadian Journal of Regional Science. XXII:3. Autumn 1999, 343-356.
- Places to Grow: Towards a Growth Plan for Northern Ontario - A Discussion Paper. 2008. Government of Ontario.
- Poole, Eric, Ronald Rioux and Claude Simard. 1994. "The Input-Output Model and Economic Policy". Policy Options. Vol. 15 (10), 28-31.

- Qian, B., Hayhoe, H. and Gameda, S. Developing Daily Climate Scenarios for Agricultural Impact Studies. Presented at the 16th Conference on Climate Variability and Change, January 9, 2005. San Diego, CA.
- Rosehart, R.G. February 2008. Northwestern Ontario: Preparing For Change – Northwestern Ontario Economic Facilitator Report.
- Smit, B., Brklacich, M., Stewart, R., McBride, R., Brown, M., Bond, D. 1989. *Sensitivity of crop yields and land resource potential to climatic change in Ontario, Canada*. Climate Change. Vol. 14 (2), 153-174.
- Statistics Canada. 1996. Census of Agriculture. Ottawa, Ontario.
- Statistics Canada. 1996. Population Profile of Canada. Supply Services. Ottawa, Ontario.
- Statistics Canada. 2001. Census of Agriculture. Ottawa, Ontario.
- Statistics Canada. 2001. Population Profile of Canada. Supply Services. Ottawa, Ontario.
- Statistics Canada. 2006. Census of Agriculture. Ottawa, Ontario.
- Statistics Canada. 2006. Population Profile of Canada. Supply Services. Ottawa, Ontario.
- Statistics Canada. The Daily: Farmers Leaving the Field, Feb. 22, 2002.
- Statistics Canada. The Daily: Off Farm Work by Farmers, March 9, 2009.
- Statistics Canada. Aug. 7, 2009. Labour Force Survey July 2009.
<http://www.statcan.gc.ca/subjects-sujets/labour-travail/lfs-epa/lfs-epa-eng.htm>
- Statistics Canada. July 10, 2009. Labour Force Survey June 2009.
<http://www.statcan.gc.ca/daily-quotidien/090710/dq090710a-eng.htm>
- Statistics Canada. June 2009. Northwest Ontario Labour Market Monitor: Service Canada.
<http://www.servicecanada.gc.ca/eng/on/offices/2009lmb/northwest.shtml>
- Statistics Canada. June 2009. Northeast Ontario Labour Market Monitor: Service Canada.
<http://www.servicecanada.gc.ca/eng/on/offices/2009lmb/northeast.shtml>
- Statistics Canada. January 2009. Northwest Ontario Labour Market Monitor: Service Canada.
<http://www.servicecanada.gc.ca/eng/on/offices/1208lmb/northwest.shtml>
- Suthey Holler Associates. May 2006. Economic Contribution of the Equine Industry to Northeast Ontario.
- Thurston, P.C. 1991. "Geology of Ontario." In P.C. Thurston, H.R. Williams, R.H Sutcliffe and G.M. Stott (Eds.). Geology of Ontario - Special Volume Part 1. Ontario Ministry of Northern Development and Mines.

- United Nations Environment Program. 2009. UNEP Climate Change Strategy.
<http://www.unep.org/climatechange/Publications/Publication/tabid/429/language/en-US/Default.aspx?BookID=4006>
- Walton & Hunter Planning Associates, Betsy J. Donald, J. Ross Raymond & Associates Ltd. November, 1999. *Greater Toronto Area – Agricultural Economic Impact Study*. Commissioned by the GTA Federations of Agriculture Project Management Committee.
- Wolfe, Christian Wolfe, Statistics Canada, with files from Vicky Cano Lamy, Agriculture and Agri-Food Canada. 1999. *What exactly is "value added" anyway?*
http://www.statcan.gc.ca/kits-trousses/agric/edu04_0149a-eng.htm
- Whyte, Donald R. 1978. "Rural Canada in Transition." In Tremblay, M.A., and W.J. Anderson (Eds.). Rural Canada in Transition. Ottawa: Agricultural Economics Research Council.

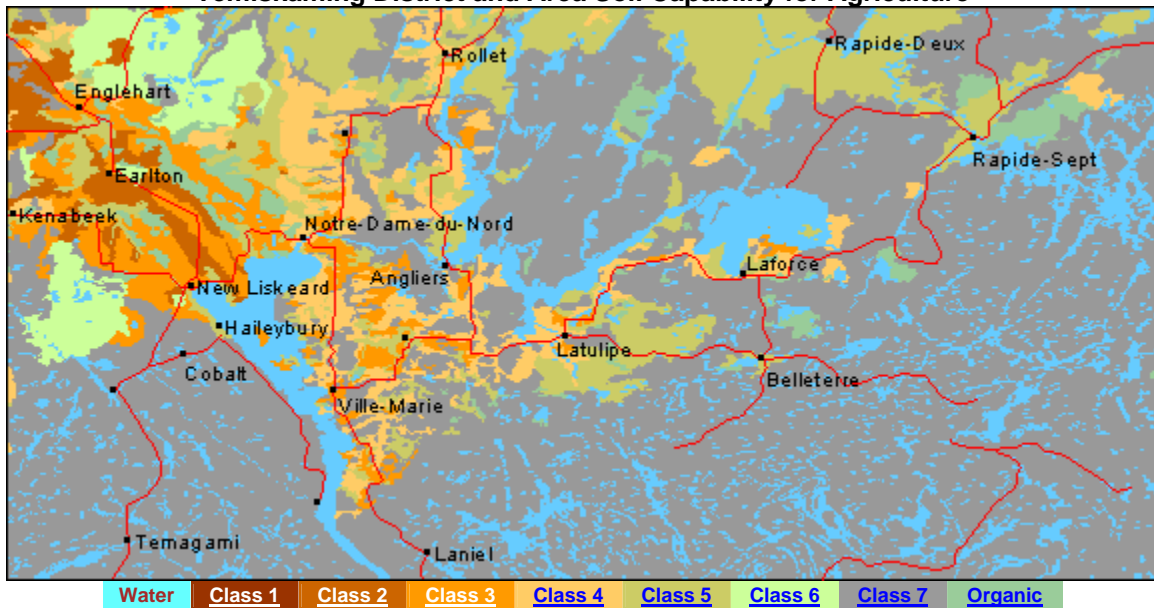
Appendix A: Soil Capability for Agriculture in Temiskaming District

The following land capability classes indicate the degree of limitation imposed by the soil in its use for mechanized agriculture.

Class	Description
1	Soils in this class have no significant limitations in use for crops.
2	Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.
3	Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.
4	Soils in this class have severe limitations that restrict the range of crops or require special conservation practices.
5	Soils in this class have very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.
6	Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.
7	Soils in this class have no capacity for arable culture or permanent pasture.
8	Organic Soils (not placed in capability classes).

Source: Canada Land Inventory. Environment Canada

Temiskaming District and Area Soil Capability for Agriculture



Source: Canada Land Inventory. Environment Canada.
<http://geogratis.cgdi.gc.ca/CLI/frames.html>

Appendix B: Economic Impact Analysis - An Overview

Economic impact is generally a measure of the impact of a sector or a project on all sectors of the economy. Economic impact analysis studies are aimed at identifying "...changes in a local economy resulting from a stimulus (positive or negative) to a particular segment of the economy" (Davis, 1990, p 5). These studies are often based on one of the several standard methodologies of regional analysis: the economic base analysis and input-output analysis (Faas, 1980, p. 4).

Economic Base Approach

Economic Base Theory maintains that economic growth is only possible if the economy's exports grow (Bradfield, 1988, p.38). The theory is based on the belief that as exporting industries expand their sales, there will be an increasing demand for inputs locally which will consequently drive local economic growth (Bradfield, 1988, p.39). In economic base theory, the economy is classified into two sectors of basic and non-basic. The basic sector includes industries that ultimately export their product out of the region. The non-basic sector is the economic activity with final sales remaining inside the region (Davis, 1990, p. 10). These are support industries that provide everything from industrial inputs to houses for basic sector employees (Higgins and Savoie, 1995, p. 66). The exporting industries are identified as basic sectors while all other industries are classified as non-basic.

According to economic base theory, exports are the engine of the local economy. It follows then that the export of goods supports all other needs of the economy (Bendavid-Val, 1991, p. 77). Economic base theory and its supporters carry the separation of basic and non-basic sectors to the point where they attempt to predict the relative impact of the basic sector on the non-basic sector. The prediction of economic impact is assessed through two economic indicators known as the economic base ratio and economic base multiplier. Economic base theory has been refined to the point where it can be questioned: "What is the overall gain in employment or income in the region associated with each gain in export sales?" (Bendavid-Val, 1991, p. 78).

This question is answered through the economic base ratio indicator and the base multiplier indicator (Bendavid-Val, 1991, p. 780). The economic base ratio calculates jobs that are theoretically created from one additional job in the basic sector. The economic base ratio is the ratio between employment in the basic and non-basic sectors and is supported by the idea of basic and non-basic employment combined equaling total employment (Bendavid-Val, 1991, p. 78). The economic base multiplier is the ratio of total employment to basic employment and indicates how many jobs in total are provided for each basic job. Thus, the economic base multiplier is the total sum of the jobs created in both sectors from one job in the basic sector (Bendavid-Val, 1991, p. 78). The economic base method is used in this study to estimate jobs in the service sector related to the basic sector of agriculture.

Input-Output Analysis

Input-Output (IO) analysis is used to measure the inter-relationships between economic activities at the sectoral, national and regional levels. Linkages are expressed by estimating the sales (outputs) from a given sector to all other sectors in the economy, and by estimating inputs from all other sectors to a specific sector. What makes the IO model so useful is its comprehensiveness, which disaggregates the economy into individual sectors (Josling, 1996, p. 5). Disaggregation permits analysis at the sectoral level, providing researchers with a close-up view of the economy. This analysis allows the researcher to assess where each sector

purchases its inputs and where it sells its outputs. Such analysis is invaluable in identifying what investment will provide the greatest impact on an economy (Poole et al., 1994, p. 30).

The IO model estimates the movement of expenditures through the economy. This is traced through four different levels of expenditure: intermediate and primary suppliers, and intermediate and primary purchasers. Suppliers - intermediate and primary - purchase inputs for processing into outputs. Purchasers - intermediate and primary - buy outputs from suppliers and either use them to manufacture a product, or sell them as a final product (Bendavid-Val, 1991, p.88).

Input-output analysis has two main approaches. The Open Model allows the estimation of only the direct and indirect effects of a sector. The Closed Model estimates these, as well as the induced effects of a sector. The open model is used to trace the flow of variables between sectors of the economy (i.e. direct and indirect expenditures). The open model does not measure induced spending in the economy; expenditures on food, services and other household expenses would not be included (Davis, 1990, p. 59). The closed model is used to measure all aspects of the economy, including the direct, indirect and induced effects. Treating the household sector as a producer that sells labour to other purchasing sectors assesses induced effects (Davis, 1990, p. 59). As this study aims to measure all of the effects of agriculture on the Study Area economy, it is based on the Closed Model approach.

There are several problems associated with the IO model. The first is that it is time-specific; it takes a snapshot of the economy at a specific point in time. This model cannot account for changes in product demand or input costs, or for the introduction of new technology into the industrial sector (Davis, 1990, p. 62). Thus, the IO model does not adjust for the changing nature of the economy. A second problem of the IO model is the cost and time needed for the construction of the tables associated with this analysis. For this reason, the analysis for this study has been carried out using a survey-based "input-output-like" approach.

Multipliers

Given the previous discussion of economic base analysis and input-output analysis, the reader may question where the application of the two models leads. One of the best uses is that they allow the analyst to identify the impacts of economic changes or shocks to a system. Essentially, what these models do is measure the multiplier effects that result from a change in the economic system. In basic terms, multiplier effects are the relationship between direct jobs produced by a project or sector and indirect and/or induced jobs caused by the direct jobs, presented in a single number (Lewis et al., 1979, p. 1). Therefore, an economic multiplier can be used to estimate the impact of change in one variable (for example, the value of agricultural production) on another variable (for example, the value of non-agricultural production). Direct employment and production in the agriculture sector will affect the rest of the economy by supporting employment in related industries as well as in the retail sector. In this way, "...a multiplication of transactions occurs in the economy by people re-spending money" (Van Hoeve, 1995, p. 66).