

The Economic Impacts of Agriculture on the Economy of Perth County



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Executive Summary

Over the last 50 years, rural areas in Ontario and across Canada have experienced a decline in the number of farms and farmers. This has reached the point where, in most rural areas, the number of jobs in the service sector exceeds the number of jobs in agriculture. Many rural policy makers appear to have taken the position that agriculture is dead and strategies for the future must focus on services and other job producing sectors that do not depend on agriculture. People active in the agriculture sector accepted this initially, but more recently began to believe that the decline of agriculture was perhaps being overstated.

Recognizing this problem, a number of counties in Ontario began to look at the broader role of agriculture in their economy. They approached the University of Guelph to assist them in this work. The first study using this approach looked at the largest agricultural county in the province, Huron County (Cummings, Morris, McLennan, 1998). Several other studies have now been completed, including those in Prescott, Russell, Stormont, Dundas and Glengarry Counties (Cummings and Deschamps, 1999), Simcoe County (Cummings et al., 1999), and Lambton County (Cummings et al. 2000). As in the other studies of this type which are completed or underway, the basic focus is on sales and jobs related to agriculture, directly or indirectly.

The jobs and sales data compiled by this study indicates that there are 11,134 jobs (29% of the county's total) tied to agriculture in Perth County and over \$1.083 billion in sales from farms and businesses that buy from and sell to farms per annum. The employment and sales expenditure multipliers indicate that for every on-farm job in Perth County, there are an additional 1.26 jobs off the farm, and for each dollar in farm gate sales, there are \$1.52 in sales in businesses that deal with farmers. Further details follow in this report.

The study started with a review of secondary data on the economy of Perth County in comparison with Ontario. There were 38,550 employees in Perth County in 1996, an increase of 2.3% from 1991. A review of personal income levels in the county showed that income levels were similar to those of Ontario as a whole, with most falling within the middle income range. The census data show that jobs in manufacturing,

agriculture and retail are large in absolute numbers. Construction and service industries are also very significant in the county. Direct employment on farms actually declined by 4.9% between 1991 and 1996 (from 5,190 employees to 4,935). This is a somewhat poorer performance than overall employment for Perth County, which increased 2.3% over the same time period. However, it does fare better than the 6.3% decline experienced by the agricultural sector in Ontario as a whole.

While farm employment declined, farm gate sales in the county increased by \$64.1 million, or 17.5%, from \$366.2 million to \$430.3 million between 1990 and 1995. The number of farms declined slightly (2.1%, or 62 farms from 1991 to 1996). The county had 3.7% of the cultivated land area in the province and produced 5.5% of the value of Ontario's farm gate sales in 1995. The data on farm size suggests that the farms on average are smaller in Perth than in Ontario as a whole. With respect to the type of farms, the county is very diverse. Field crops and livestock farms play the major roles in Perth County's agriculture.

The second part of the study involved a survey of businesses (hereafter referred to as Ag-related businesses) that buy from and sell to farm operations. The purpose of this survey was to estimate the value of sales related to agriculture and the number of jobs created by Ag-related businesses.

We estimate that there are 686 businesses beyond the farm gate related to agriculture in Perth County. The sample survey of 250 businesses, completed in the winter of 2000, produced an estimate of 3,133 jobs servicing farm operations in Perth's ag-related businesses. This refers to the jobs that are supported by farm operations and is in addition to the 4,935 jobs (1996) on-farm. In addition, from other secondary sources we estimated that 3,066 jobs in the service sector were supported by the direct and indirect agricultural jobs. With respect to sales, we estimate that the \$430.3 million in farm gate sales produced another \$652.9 million in ag-related sales.

Other selected data indicate that there is a high level of exports from the county. An average of 34.6% of ag-related sales for businesses in the county were to markets outside the county. The largest ag-related industrial sector in the county, in terms of the number of businesses present, is Retail Trade, followed by Wholesale Trade and

Construction. Specialty agricultural services such as veterinary sciences and land drainage were also well-represented as linked industries. Other typical businesses included in the study were heating and plumbing, raw milk transport, feed and seed stores, accounting firms, truck sales and service and real estate brokers. The average number of employees in the businesses surveyed was 9.3, and about half of the businesses surveyed had less than five employees. According to employment criteria, the great majority of these businesses are classified as small. Approximately 1,500 additional jobs are present in businesses in Perth County which are related to Agriculture, but do not deal directly with farmers.

The results of the study are comparable to those of previous studies. Since the sector has a strong export base, there are significant opportunities for value-added processing and manufacturing industries related to agriculture in Perth County. The establishment of these value-added industries would lead to further Ag-related jobs. Planners, policy makers and business people in Perth have an important role to play in making this happen.

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Sincerely,
Perth County Federation of Agriculture Impact Study Committee Co-chairs
Mary McIntosh
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1.0 Introduction

This report attempts to identify and measure the economic impacts of agriculture on the Perth County economy. While providing an analysis of primary agriculture in the county, it focuses on agriculture beyond the farm gate—the feed manufacturers, the veterinarians, the trucking companies and others who deal with the agriculture industry. In the past, many studies of this type have restricted themselves to reports on conditions on the farm. By ignoring the size and importance of agriculture beyond the farm gate, the impact of agriculture on the economy was under-emphasized. This study hopes to set the record straight and present a more complete picture of agriculture's contribution to the economy.

The basic focus of the report is on dollars and jobs. The main method used is based on input-output analysis. 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, and the sales to other sectors by a sector are the outputs.

The research presented in the report relies on data from the Population Census, Agricultural Census, surveys of Agriculture-related businesses, case studies of Agriculture-related businesses and information from local citizens knowledgeable of the area. The report includes a discussion of the role of agriculture in the Perth County economy, as well as a discussion of related socio-economic conditions in the county.

1.1 Background to the Research Report

Over the past 50 years the number of people living and working on farms in Canada has declined. In many cases, the role of agriculture in the local economy was seen, by local politicians, to decline at the same rate as farm jobs declined. Other sectors were seen to replace agriculture. There was a growing feeling that jobs in the service sector and special sectors like tourism held the jobs of the future. Many people argued for a strong push to develop these sectors and find jobs associated with them. However, most of the evidence for these changes came from direct employment data which ignored the multiplier impact of agriculture in the total economy.

It is also worthwhile noting that, even though there were declines in the number of direct jobs in agriculture (ie. on the farm jobs), the value of farm gate sales has continued to rise. Between 1986 and 1996, farm gate sales in Ontario rose from \$5,511 million to \$7,778 million (a growth rate of 3.5% per year) while employment on farms declined. Not only did the value of production increase; the volume of production also increased. This implies an increase in the productivity of farm workers and more capital intensive farm operations. With fewer people working on farms, the linkages to industries and sectors supporting agriculture became all the more important.

1.2 Introduction to the Perth County Research

The Perth Federation of Agriculture recognizes the importance of Agriculture in the county economy. However, they have not been able to accurately describe its total role on and off the farm. The Federation became aware of the work done in Huron County and Eastern Ontario describing the role of Agriculture. They approached Harry Cummings to carry out the work using a similar methodology to the Huron, Simcoe and Prescott, Russell, Stormont, Dundas and Glengarry studies. Human Resources Development Canada also expressed an interest in the labour force information the study would provide.

2.0 A Profile of the Perth County Economy

2.1 Population and Employment in Perth County

Table 1 details the overall population and the number of employed in Perth County and townships¹ in 1991 and 1996. A number of interesting observations can be made from the data. In terms of population, Perth County grew from 69,976 people in 1991 to 72,106 people in 1996, a growth rate of 3%. The highest growth rates were recorded in the urban areas with Mitchell being the growth leader with a 9% increase in population. The greatest proportional decrease in population was the Town of Milverton (-3%).

In terms of employment, the number of jobs in Perth County grew by 2% from 1991 to 1996. The largest proportional increase in employment was 11% in Mornington Township which recorded 185 new jobs from 1991 to 1996. The largest proportional decrease (-5%) in jobs was recorded in Elma Township with a loss of 115 jobs.

Table 1. Population and Employment in Perth County by Township 1991 & 1996.

Town/Township	Population			Population Employed			Employed in Agriculture		
	1991	1996	% Change	1991	1996	% Change	1991	1996	% Change
Blanshard	1,960	1,988	1.4%	1,180	1,175	-0.4%	340	410	20.6%
Downie	2,382	2,355	-1.1%	1,425	1,425	0.0%	395	400	1.3%
Ellice	3,100	3,137	1.2%	1,790	1,735	-3.1%	455	410	-9.9%
Elma	4,046	3,991	-1.4%	2,230	2,115	-5.2%	710	610	-14.1%
Fullarton	1,631	1,662	1.9%	920	1,000	8.7%	210	330	57.1%
Hibbert	1,374	1,348	-1.9%	755	780	3.3%	285	205	-28.1%
Listowel	5,404	5,467	1.2%	2,580	2,650	2.7%	85	60	-29.4%
Logan	2,178	2,227	2.3%	1,215	1,185	-2.5%	555	435	-21.6%
Milverton	1,664	1,618	-2.8%	785	855	8.9%	75	45	-40.0%
Mitchell	3,382	3,670	8.5%	1,710	1,785	4.4%	60	75	25.0%
Mornington	3,280	3,332	1.6%	1,625	1,810	11.4%	695	500	-28.1%
North Easthope	2,178	2,169	-0.4%	1,295	1,290	-0.4%	485	400	-17.5%
South Easthope	1,842	1,853	0.6%	1,075	1,170	8.8%	200	190	-5.0%
St. Marys	5,496	5,952	8.3%	2,775	2,925	5.4%	80	150	87.5%
Stratford	27,666	28,987	4.8%	15,000	15,250	1.7%	130	110	-15.4%
Wallace	2,393	2,350	-1.8%	1,315	1,390	5.7%	420	610	45.2%
Perth County	69,976	72,106	3.0%	37,665	38,550	2.4%	5,190	4,935	-4.9%

Source: Statistics Canada 1991 & 1996

¹ Unless otherwise noted, the old township divisions of Perth County are used in this report

2.2 Employment and Employment Changes 1991 to 1996

Table 2. Standard Industrial Classification (SIC 1980) Divisions².

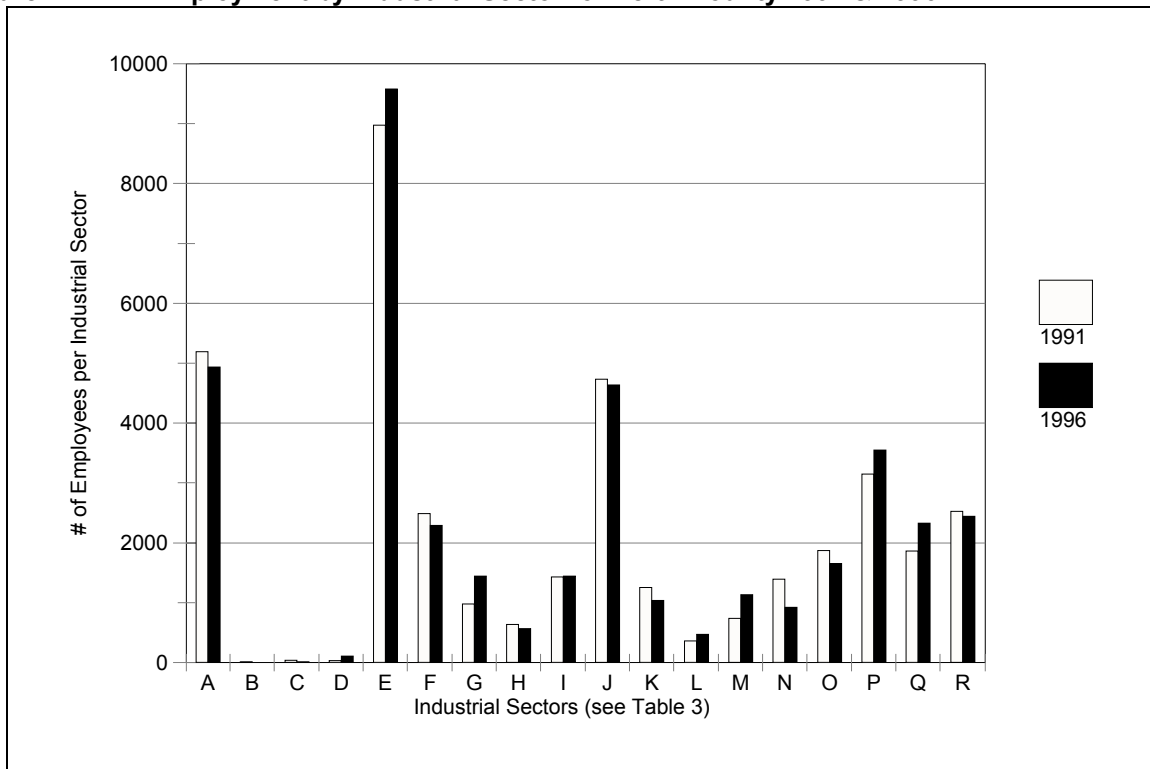
Div	SIC (1980) Description	Div	SIC (1980) Description
A	Agricultural and related service industries	J	Retail trade industries
B	Fishing and trapping industries	K	Finance & insurance industries
C	Logging & forestry industries	L	Real estate operator and insurance agent industries
D	Mining (incl. milling), quarrying and oil well industries	M	Business service industries
E	Manufacturing industries	N	Government service industries
F	Construction industries	O	Educational service industries
G	Transportation & storage industries	P	Health and social service industries
H	Communication & other utility industries	Q	Accommodation, food and beverage service industries
I	Wholesale trade industries	R	Other service industries

The structure of the Perth economy, as measured by employment by industrial sector, was more good-producing intensive, as compared to the Ontario economy as of 1996. While the provincial economy had 28.8% (1,556,275 people) of its workforce employed in the goods-producing sector, the corresponding proportion in Perth County was 45.4% or 17,485 employees. Correspondingly, 54.6% of the Perth County workforce was employed in the service sector while that proportion for the Ontario economy was 71%. In terms of employment in the Agriculture sector, Perth County was much more capital and labour-intensive than Ontario with 12.8% (4,935 workers) of the workforce employed in Agriculture in 1996 as opposed to only 2.4% (131,035 workers) of the workforce at the provincial level.

In the period 1991 to 1996 the Perth County economy outperformed Ontario when measured in terms of employment, in almost every sector. From 1991 to 1996 the number of jobs in Perth grew by 2.3% or 885 jobs while Ontario shrunk by 0.6% or 34,480 jobs. In 1996, the three biggest sectors of the Perth economy were Manufacturing with 9,580 or 24.9% of total employees, followed by Agriculture with 4,935 jobs (12.8%) and Retail Trade industries with 4,640 jobs (12.0%).

² The SIC categories or divisions refer to the Standard Industrial Classification (1980) system which categorizes the Canadian economy into different productive categories or classifications. At the greatest level of aggregation the economy is divided into 18 Divisions.

Figure 1. Employment by Industrial Sector for Perth County 1991 & 1996.



Source: Statistics Canada 1991 & 1996

From 1991 to 1996 Manufacturing in Perth grew by 6.7% or 605 jobs while Retail Trade declined by 1.9% or 90 jobs. In terms of agricultural employment (i.e. Farmers and farm workers), Perth County lost 255 agricultural jobs (-5%) between 1991 and 1996. There were significant variations in growth and decline in agricultural jobs between the towns/townships. The range varied from +88% (St. Mary's) to -40% in Milverton. In 1996, the two top townships in terms of farmers and farm workers employed were Elma and Wallace, each with 610 jobs. However, this type of employment in Elma decreased by 14% from 1991 while Wallace grew rapidly, enjoying a 45% increase in farm jobs from 1991 to 1996.

The sector with the greatest proportional growth was the Mining, Quarrying and Oil Well industry (250%) while the greatest proportional decline was recorded in the Fishing and Trapping Industry (-100%) which had essentially ceased to exist in Perth County by 1996. However, these sectors had very low employees levels in 1991; 30 jobs and 10 jobs respectively.

Perth County seems to have ignored the general trend of decline in goods-producing industries for the period 1991 to 1996. In Agriculture, while jobs were lost, the percentage decline was less than the Ontario average (-4.9% vs. -6.3%). In Manufacturing, which saw a -2.2% drop in employment across Ontario, Perth actually grew by 6.7%. The biggest proportional losses in Perth in the goods producing industries were in two very small sectors, Fishing and Trapping and Logging and Forestry industries, where declines were 100% and 75% respectively. Overall, the goods producing sector in Perth county grew by 120 jobs (0.7%) to 17,485 or 45.4% of total county employment. By contrast, the goods producing sector of the economy in Ontario declined by 124,260 jobs (-7.4%) to 1,556,275 jobs representing just 28.8% of total provincial employment in 1996.

In the service sector the results for Perth County were even more positive. Overall, the Perth service industry sector grew from 20,300 jobs in 1991 to 21,070 jobs in 1996. This represents a growth of 3.8%. Within the service sector the growth leaders (in percentage terms) were the Business Service industries with 54.4% (400 jobs) growth, Transportation and Storage industries with 47.4% (465 jobs) growth, and the Real Estate operator and Insurance agent industries with 28.8% (105 jobs) growth. The biggest proportional declines in the service sector were in Government Service industries with -34.1% (475 jobs), Finance and Insurance industries with -17.1% (215 jobs) and Educational Service industries with -11.5% (215 jobs).

At the provincial level, the service sector grew by 89,685 jobs (2.4%) to 3,754,990 jobs. The growth leaders in the provincial economy were Wholesale Trade industries with 18.9% growth, Other Service³ industries with 16.8% and Health and Social Service industries with 12.4% growth. The biggest declines were in Government Service industries (-26%), Construction industries (-19.1%) and the Finance and Insurance sectors (-9.6%).

³ Other Industries, sector R, can be broken down into four major groups. These are: Amusement and Recreation service industries such as theatres, sporting events, casinos and amusement parks; Personal and Household service industries such as beauty salons, laundry facilities and funeral services; Membership Organization industries such as religious organizations, business organizations and professional membership associations; and Other Service industries, which are the most relevant to agriculture as they include machinery and equipment rental and leasing, welding shops that repair farm machinery and equipment and auctioneers providing services for livestock owners.

Table 3. Employment by Standard Industrial Classification (SIC 1980) Divisions Perth County and Ontario 1991 and 1996.

SIC DIVISION	SIC 1980 Description	Perth County			Ontario		
		1991	1996	Change 1991-96	1991	1996	Change 1991-96
Division A	Agricultural and related service industries	5190	4935	-255	139855	131035	-8820
Division B	Fishing and trapping industries	10	0	-10	1965	1900	-65
Division C	Logging & forestry industries	40	10	-30	13945	11370	-2575
Division D	Mining (incl. milling), quarrying and oil well industries	30	105	75	34340	26020	-8320
Division E	Manufacturing industries	8975	9580	605	942975	922545	-20430
Division F	Construction industries	2485	2290	-195	358860	290390	-68470
Division H	Communication & other utility industries	635	565	-70	188595	173015	-15580
Total Goods Producing		17365	17485	120	1680535	1556275	-124260
Division G	Transportation & storage industries	980	1445	465	187805	198525	10720
Division I	Wholesale trade industries	1430	1445	15	233895	278205	44310
Division J	Retail trade industries	4730	4640	-90	700905	662805	-38100
Division K	Finance & insurance industries	1255	1040	-215	253110	228865	-24245
Division L	Real estate operator and insurance agent industries	365	470	105	100080	111875	11795
Division M	Business service industries	735	1135	400	367190	411050	43860
Division N	Government service industries	1395	920	-475	411435	304595	-106840
Division O	Educational service industries	1870	1655	-215	365220	369280	4060
Division P	Health and social service industries	3150	3550	400	457110	513580	56470
Division Q	Accommodation, food and beverage service industries	1865	2330	465	322930	350925	27995
Division R	Other service industries	2525	2440	-85	355310	414970	59660
Total Services		20300	21070	770	3754990	3844675	89685
All industries Total Labor Force		37665	38550	885	5435850	5401370	-34480

Source: Canada Census, Statistics Canada 1991 & 1996

Note: Some columns may not sum exactly due to rounding.

Division Q, Accommodation, food and beverage service industries includes: *Accommodation Service Industries* (Hotels, motels & tourist courts; Lodging houses & residential clubs; Camping grounds & travel trailer parks; Recreation & vacation camps) and *Food & Beverage Service Industries* (Food services; Taverns, bars & nightclubs).

Division R, Other Service Industries includes: *Amusement & Recreational Service Industries* (Motion picture, audio & video production & distribution; Motion picture exhibition; Theatrical & other staged entertainment services; Commercial spectator sports; Sports & recreation clubs & services; Gambling operations; Other amusement & recreational services); *Personal and Household Service Industries* (Barber & beauty shops; Laundries & cleaners; Funeral services; Other personal & household services); *Membership Organization Industries* (Religious organizations; Business organizations; Professional membership organizations; Labour organizations; political organizations; Civic & fraternal organizations) and *Other Service Industries* (Machinery and equipment rental and leasing services; Automobile & truck rental & leasing services; Photographers; Other repair services; Services to buildings & dwellings; Travel services; Other services; n.e.c.).

2.3 Long-Term Changes in the Perth County Economic Structure

As shown in Table 4, total employment in Perth County grew from 33,750 to 38,555 jobs, or by 14%, from 1981 to 1996. With the data on the economy now aggregated to just eight sectors (see notes to Table 4), it may be noted that there were wide variations in sector employment, particularly in the Government Services, Construction and the Trade sectors during the period 1981-96, with 1991 being the high point in terms of employment for most sectors.

Table 4: Employment by Industrial Sectors, Perth County 1981-96.

Industrial Sector	Number of Employees								Percent Change			
	1981	1981%	1986	1986%	1991	1991%	1996	1996%	1981-85	1986-90	1991-96	1981-96
Government Services	1040	3%	1,000	3%	1,395	4%	920	2%	-4%	40%	-34%	-12%
Finance, Insurance & Real Estate	1230	4%	1,465	4%	1,620	4%	1,510	4%	19%	11%	-7%	23%
Transp., Comm. & Oth. Utility	1590	5%	1,695	5%	1,615	4%	2,010	5%	7%	-5%	25%	26%
Construction	2160	6%	2,050	6%	2,485	7%	2,290	6%	-5%	21%	-8%	6%
Primary Industries	4990	15%	5,110	15%	5,270	14%	5,050	13%	2%	3%	-4%	1%
Trade	4955	15%	5,145	15%	6,160	16%	6,085	16%	4%	20%	-1%	23%
Manufacturing	9460	28%	9,595	28%	8,975	24%	9,580	25%	1%	-7%	7%	1%
Other Service Industries	8280	25%	8,820	25%	10,145	27%	11,110	29%	7%	15%	10%	34%
Total Employment	33750	100%	34875	100%	37665	100%	38555	100%	3.3%	8.0%	2.4%	14%

Source: Statistics Canada, 1981, 1986, 1991 & 1996

Notes to Table 4:

1. Government Services industries include federal provincial and local government services in the courts of law, protective services, correctional services, labor and employment services, regional planning services, human resources' administration services etc.
2. Primary Industries includes agriculture, forestry, fishing, trapping, mines, quarries and oil well industries
3. Trade includes both wholesale and retail trade industries
4. Other Service Industries include business services, educational services, health and social services and the hospitality industries
5. Column totals may vary slightly from arithmetic sum due to statistical rounding

When considering the entire 1981-96 span of time, it may be noted that Government Services (inclusive of federal, provincial and local government services in the courts, the police, firefighting, employment and administrative services etc.) fell by 12%. All the other sectors of the economy experienced positive growth during the same period with Transportation, Communications and the Utility industries being the growth leaders with 26%, followed by the Wholesale and Retail Trade sector and the Finance, Insurance and Real Estate sector both with a growth rate of 23%. The Primary Industries sector, which includes Agriculture, Forestry, Fishing, Trapping, Mines, Quarries and Oil Well industries, grew by 1% (60 jobs) in the same period. Manufacturing also grew by 1% during the period 1981-96 adding 120 jobs.

As important as the long-term trends may be, the apparent fluctuations in sector employment are also significant. While a 15-year term is relatively short for long-term sector analysis, the data points to the fact that Government Services, Construction Wholesale and Retail trade and Other Service sectors seem more variable in nature than Manufacturing and the Primary Industries sectors.

In summary, the Primary Industries and Manufacturing seem to be the “bread and butter” of the Perth economy, together accounting for 38-43% of the employment in the County during the period 1981 - 1996 and demonstrating less variability in terms of employment losses and gains than most of the other sectors

2.4 Family Income Distribution in Perth County

Table 5 illustrates and compares family income distribution in Perth County, Ontario and Canada. Income Category 1 (the lowest) denotes all the families with family income less than \$10,000 per year while the highest ordinal level, 11, denotes families with income at or exceeding \$100,000 per year.

Perth County has relatively fewer number of families in the two lowest income groups as compared to Ontario and Canada. In Perth County, only 9% of families had incomes of less than \$20,000 per year in 1996 while the corresponding numbers for Ontario and Canada were 13.8% and 15.8% respectively. Similarly, Perth County had relatively fewer number of families in the two highest income brackets when compared to Ontario and Canada. In Perth County, 12.2% of the families had incomes equal to or exceeding \$90,000 in 1996. The corresponding proportions for Ontario and Canada were 16.8% and 13.2% respectively.

Perth County had relatively more families in the middle income groups 4-8 denoting family incomes between \$30,000 and \$80,000. For Perth County, 60.9% of all families could be categorized as belonging to this “middle income” range. In Ontario and in Canada as a whole, this “middle income” group was significantly smaller - representing 52.1% of all Ontario families and 53.0% of all Canadian families.

From an economic and social perspective, Perth County seems fortunate in the sense that although family income is on average marginally lower than incomes in Ontario, they are also marginally higher than those across Canada. Furthermore, there is less disparity shown in Perth County; income is relatively more evenly spread

throughout society with proportionately fewer families that are poor and less that are very rich, as compared to the rest of the province and the country.

Table 5: Family Income in 1996 by Income Class in Perth County, Ontario and Canada.

Family Income Categories	Income Class	Number (%) of Families by Income Class 1996					
		Perth County		Ontario		Canada	
		Number	% of Total	Number	% of Total	Number	% of Total
Under \$10,000	1	500	2.6%	148,050	5.0%	435,760	5.6%
\$ 10,000 - \$19,999	2	1,260	6.4%	256,625	8.8%	795,895	10.2%
\$ 20,000 - \$29,999	3	2,410	12.3%	332,130	11.3%	1,007,840	12.9%
\$ 30,000 - \$39,999	4	2,710	13.9%	336,440	11.5%	992,020	12.7%
\$ 40,000 - \$49,999	5	2,745	14.1%	340,330	11.6%	968,900	12.4%
\$ 50,000 - \$59,999	6	2,270	11.6%	324,365	11.1%	883,520	11.3%
\$ 60,000 - \$69,999	7	2,395	12.3%	289,155	9.9%	736,990	9.4%
\$ 70,000 - \$79,999	8	1,765	9.0%	235,015	8.0%	568,055	7.2%
\$ 80,000 - \$89,999	9	1,090	5.6%	179,905	6.1%	416,740	5.3%
\$ 90,000 - \$99,999	10	745	3.8%	127,950	4.4%	286,875	3.7%
\$100,000 and over	11	1,645	8.4%	362,765	12.4%	745,265	9.5%
Total		19,535		2,932,730		7,837,860	
<i>Average family income \$</i>		<i>56,369</i>		<i>59,830</i>		<i>54,583</i>	
<i>Median family income \$</i>		<i>50,540</i>		<i>51,520</i>		<i>46,951</i>	

Source: Statistics Canada, 1996

2.5 Farm Gate Sales and Farm Productivity in Perth County

In this section farm gate sales in Perth County will be examined at the county and township levels for 1985, 1990 and 1995. Additional comparisons will be made to farm gate sales in the Western Ontario Agricultural Region⁴, Ontario, and the other provinces.

⁴

Western Ontario Agricultural Region consists of Peel, Halton and Waterloo municipalities and the counties of Dufferin, Wellington, Perth, Huron, Bruce, Grey and Simcoe.

2.5.1 Farm Gate Sales and Farm Sales per Acre

The total farm gate sales for Perth County in 1995 were \$430,255,814 (Table 6). In 1990 and 1985 total farm gate sales in Perth County were \$366,245,402 and \$306,488,160 respectively⁵. Total farm gate sales therefore increased by 19.5% from 1985 to 1990 and by 17.5% from 1990 to 1995. In total, farm gate sales in Perth County rose by 40.4% in the ten years between 1985 and 1995. Farm gate sales per farm acre also increased significantly in Perth County during that period. From 1985 to 1990, average farm gate sales per acre rose from \$632/acre to \$745/acre - a 17.9% increase. From 1990 to 1995 farm gate sales per acre rose by \$98 - suggesting a further 13.2% increase in sales per acre. Overall, in the ten years from 1985 to 1995, average farm gate sales per acre in Perth County increased by \$211/acre or 33.4%.

2.5.2 Farm Gate Sales and Productivity at the Township Level

Table 6 provides detail on farm gate sales in Perth County Townships for 1985, 1990 and 1995. In 1995, farm gate sales varied from a high of \$71,281,157 in Elma Township to a low of \$19,985,098 in South Easthope Township. In terms of productivity per acre, Elma was also the highest by a significant margin: Elma farm gate sales were \$1061/acre while Ellice, Downie and Mornington were all in the \$900-\$999/acre range (see Map 1). The townships with the lowest output of farm gate sales/acre in 1995 were Hibbert (\$674/acre), Blanshard (\$724/acre) and North Easthope (\$752/acre).

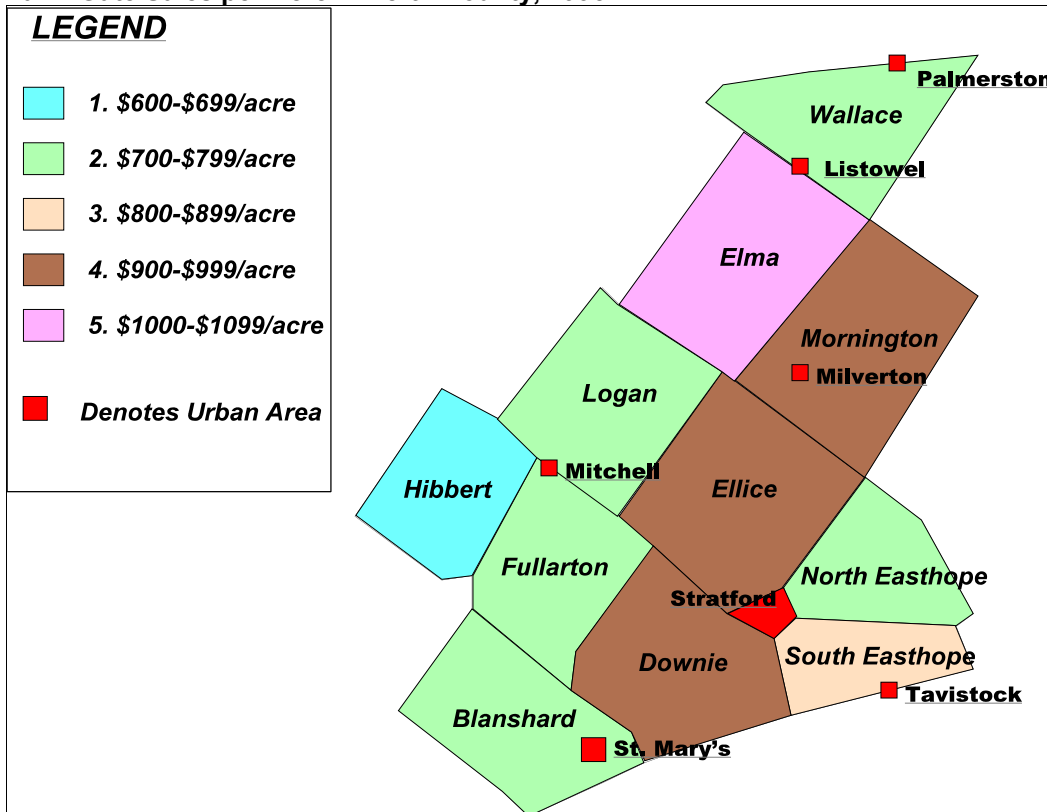
As shown in Table 6, the most productive agricultural townships in 1986 were Elma, Mornington and Hibbert with \$849, \$643 and \$641 in farm gate sales per acre respectively. In 1990 the “top three” were Mornington, Fullarton and Elma - with Mornington and Fullarton with farm gate sales of \$858/acre each and Elma with \$800/acre. Finally, in 1995, Elma had sales of \$1061/acre followed by Ellice with \$928 and Downie with \$917.

The townships of Logan, Ellice, Downie, Mornington, Wallace, North Easthope and South Easthope and South Easthope all increased their farm gate sales/acres in each of the data years from 1985. Elma and Hibbert had lower farm gate sales in 1990 while Fullarton and Blanshard enjoyed higher farm gate sales in 1990.

⁵ The 1985, 1990 and 1995 farm gate sales figures have not been adjusted for inflation.

In summary, we find that farm gate sales and farm gate sales per acre, increased in most of the townships in each of the census years 1985, 1990 and 1995. Both Elma and Hibbert had rebounded from the low sales of 1990. In Blanshard and Fullarton the 1995 sales were down from 1990, but were higher than in 1985. Ellice township recorded the highest increase in sales from 1985 to 1995 (61%).

Map 1. Farm Gate Sales per Acre in Perth County, 1995.



Source: Adapted from Table 6.

Table 6: Farm Gate Sales and Sales/Acre for Perth County & Townships, Western Ontario and Ontario.

Township/Geographic Area	1995			1990			1985		
	Farm Gate Sales	Farm Acres	Sales/Acre	Farm Gate Sales	Farm Acres	Sales/Acre	Farm Gate Sales	Farm Acres	Sales/Acre
Elma	\$71,281,157	67,171	\$1,061	\$52,124,530	65,125	\$800	\$55,253,089	65,098	\$849
Logan	\$48,336,632	62,730	\$771	\$41,742,446	60,327	\$692	\$34,944,013	58,957	\$593
Ellice	\$46,909,028	50,523	\$928	\$36,614,454	45,833	\$799	\$25,641,813	44,326	\$578
Downie	\$46,132,502	50,298	\$917	\$33,458,773	45,640	\$733	\$28,169,731	46,964	\$600
Mornington	\$45,280,677	50,204	\$902	\$39,304,689	45,817	\$858	\$29,886,346	46,513	\$643
Wallace	\$36,175,665	46,922	\$771	\$31,618,049	46,076	\$686	\$25,332,134	47,048	\$538
Fullarton	\$30,699,092	40,180	\$764	\$32,023,402	37,311	\$858	\$24,528,849	38,651	\$635
North Easthope	\$30,230,681	40,177	\$752	\$25,406,189	37,743	\$673	\$20,124,848	36,792	\$547
Hibbert	\$28,145,300	41,753	\$674	\$24,412,582	42,974	\$568	\$26,638,405	41,585	\$641
Blanshard	\$27,079,982	37,402	\$724	\$34,808,168	42,739	\$814	\$23,430,800	38,835	\$603
South Easthope	\$19,985,098	22,967	\$870	\$14,732,120	21,880	\$673	\$12,538,132	20,443	\$613
Perth County	\$430,255,814	510,327	\$843	\$366,245,402	491,465	\$745	\$306,488,160	485,212	\$632
Perth % of Western Ontario	16.2%			15.5%			15.9%		
Perth % of Ontario	5.5%			5.5%			5.6%		
Western Ontario	\$2,661,259,194	4,193,177	\$635	\$2,364,851,918	4,021,332	\$588	\$1,922,457,927	4,163,469	\$462
Ontario	\$7,778,476,483	13,879,565	\$560	\$6,671,452,382	13,470,653	\$495	\$5,511,666,761	13,953,009	\$395

Source: Calculated from Statistics Canada Agricultural Census 1986, 1991 & 1996

2.5.3 Farm Gate Sales in Perth County Contrasted with Other Areas

2.5.3.1 Perth County and the Western Ontario Region

Table 6 shows that 1995 farm gate sales in Perth County comprised 16.2% of farm gate sales for the Western Ontario agricultural region, and 5.5% of farm gate sales for all of Ontario. These proportions have not changed significantly from 1985 and 1990.

Farm gate sales per acre in Perth County were 32.8% higher than in the Western Ontario Region and 50.5% higher than in the Province on average in 1995. When analyzing the sales per acre in 1990 and 1985, we find that Perth County enjoyed results over the Western Ontario Region and Ontario. In 1990, farm gate sales per acre in Perth County were 26.7% higher than those of the Region and 50.5% higher than those of Ontario. For 1985 the corresponding productivity advantages of Perth County over the Region and the Province were 36.9% and 60.0%. The above analysis suggests that Perth County enjoyed significant competitive advantages in agricultural factors of production both regionally as well as provincially.

2.5.3.2 Perth County and the Province of Ontario

The 1996 census indicates that Perth County is among the top ten producers in the province in terms of its annual value of farm gate sales. Perth County generated approximately \$430 million in farm gate sales in 1996, positioning it as the fifth largest county in terms of farm gate sales for that year. Table 7 provides a comparison of farm gate receipts for the leading agriculture-producing counties in Ontario.

Table 7. Counties with the Highest Farm Gate Sales in Ontario, 1991 and 1996.

County/Regional Municipality	1991 Sales (\$ millions)	1996 Sales (\$ millions)	% Change
Huron	436.9	511.9	17.2%
Haldimand-Norfolk R.M.	378.3	453.1	19.8%
Middlesex	417.3	450.2	7.9%
Kent	295.0	444.4	50.6%
Perth	366.2	430.3	17.5%
Oxford	341.5	418.6	22.6%
Niagara R.M.	318.9	408.3	28.0%
Wellington	320.1	373.1	16.6%
Essex	218.5	315.7	44.5%
Lambton	258.0	301.4	16.8%
Waterloo R.M.	257.8	301.4	16.9%
Total	3608.5	4408.4	22.2%

Source: Statistics Canada, Catalogue No. 95-356, Table 28.1, pp. 229-230; Catalogue No. 95-177-XPB, Table 28.1, pp. 184-185.

2.5.3.3 *Perth County and Canada*

Perth County is a very significant contributor to agricultural production in Canada. Perth County's position as the "seventh" among the provinces has been the same in each of the agricultural census years of 1985, 1990 and 1995 (Table 8).

Table 8: Farm Gate Sales for Perth and the Provinces of Canada 1985, 1990 & 1995.

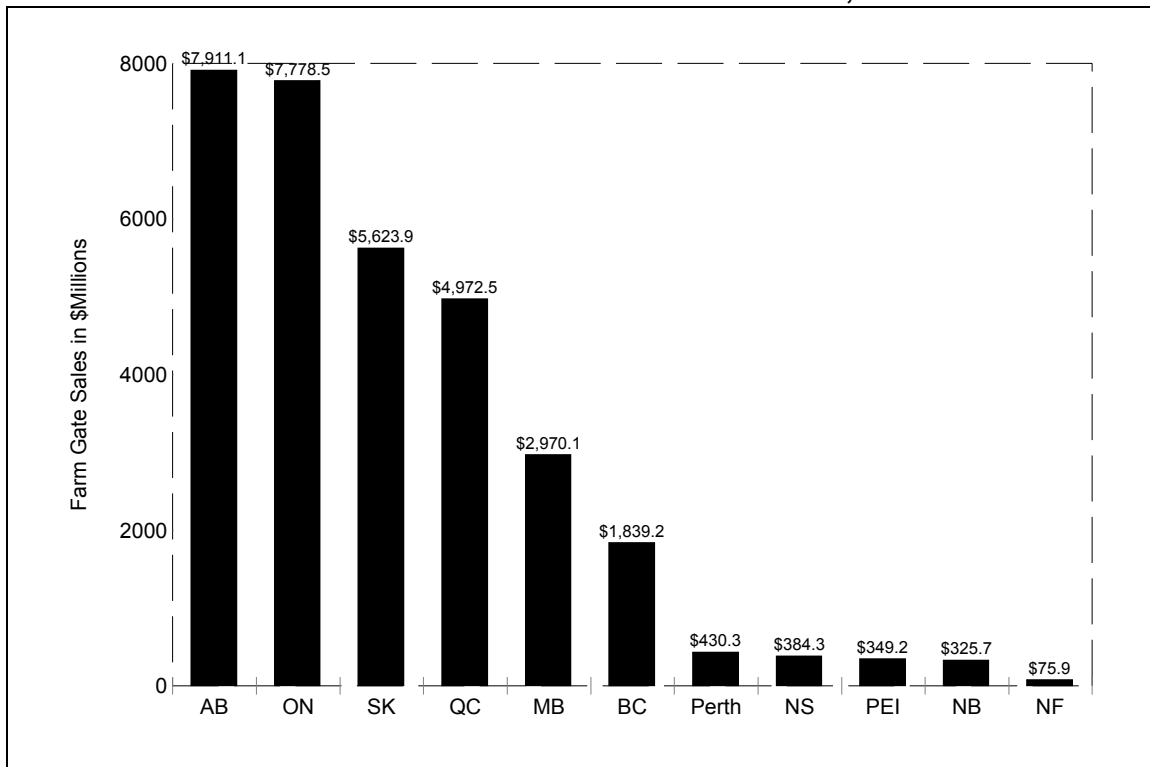
Province	Farm Gate Sales (millions)		
	1985	1990	1995
Ontario	\$5,511.7	\$6,671.5	\$7,778.5
Alberta	\$4,473.9	\$5,541.9	\$7,911.1
Saskatchewan	\$3,938.2	\$4,174.1	\$5,623.9
Quebec	\$3,028.9	\$3,889.6	\$4,972.5
Manitoba	\$2,035.2	\$2,238.5	\$2,970.1
British Columbia	\$1,059.0	\$1,321.2	\$1,839.2
<i>Perth County</i>	<i>\$306.5</i>	<i>\$366.2</i>	<i>\$430.3</i>
Nova Scotia	\$271.4	\$354.1	\$384.3
Prince Edward Island	\$197.9	\$270.0	\$349.2
New Brunswick	\$222.7	\$301.1	\$325.7
Newfoundland	\$46.2	\$68.0	\$75.9

Source: Statistics Canada Agricultural Census 1986, 1991, 1996

When compared with total farm gate sales at the national level for 1995, we find that Perth County sales place it 7th among the provinces, after British Columbia and

before the four Atlantic Provinces (see Figure 2). In fact, Perth County agricultural sales were higher than Newfoundland and Prince Edward Island *combined*.

Figure 2: Farm Gate Sales for Perth and the Provinces of Canada, 1995.



Source: Statistics Canada Agricultural Census 1996

2.6 Farm Land Use by Category in Perth County and Ontario

2.6.1 Changes in Farm Land Use 1986-96

Table 8 details farm land-use in Perth County, Western Ontario Agricultural Region and Ontario Province in 1986, 1991 and 1996. In 1996, the area under crops in Perth County was 427,117 acres, having risen from 400,195 acres in 1986 and 411,371 acres in 1991. Total farmland in Perth County under crops increased by 6.8% from 1986 to 1996. The corresponding proportions at the regional and provincial level were 2.6% and 2.5% respectively.

Total farmland has increased in Perth County from 1986 to 1996. In 1986 the agricultural census recorded 485,212 acres of farmland in Perth County. By 1996 this had risen to 510,327 acres - representing an increase of 5.1%. During the same period, the Western Ontario Region experienced minimal growth in farmland while Ontario

declined marginally. Summer fallow declined dramatically at all levels from 1986 to 1996 to accommodate, in part, the increase in farmland area in crops. In Perth County, summer fallow area was reduced from 2,336 acres in 1986 to just 167 acres in 1996. Similar reductions, were found in the Western Ontario Region as well as the Province.

The last two sections of Table 9 detail trends which are almost universal and well known in agriculture - that of declining number of farms and increasing sizes for the remaining farms. From 1986 to 1996 the number of farms in Perth County declined from 2,927 to 2,832 (-3.2%) while the average farm size increased from 166 acres to 180 acres. During the same 10-year period the number of farms in Western Ontario was reduced by 5.6% and by 7.1% in the province of Ontario.

Table 9: Farm Land Use by Category in Perth County, Western Ontario and the Province.

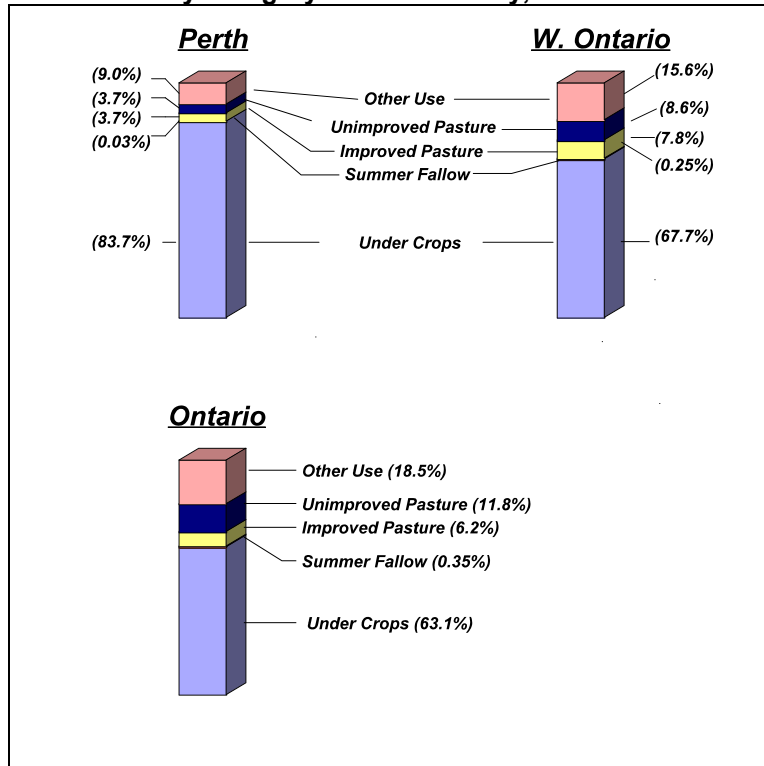
Land Use Category	Year	Area (Acres) by Land use Category				
		Perth	Western Ontario	Ontario	Perth % of W. Ontario	Perth % of Ontario
Under Crops	1996	427,117	2,838,875	8,759,707	15.0%	4.9%
	1991	411,371	2,722,932	8,430,414	15.1%	4.9%
	1986	400,195	2,767,393	8,544,820	14.5%	4.7%
Summer Fallow	1996	167	10,614	48,492	1.6%	0.3%
	1991	1,463	37,735	157,301	3.9%	0.9%
	1986	2,336	49,019	198,517	4.8%	1.2%
Improved Pasture	1996	18,602	328,924	860,786	5.7%	2.2%
	1991	20,905	362,942	964,235	5.8%	2.2%
	1986	25,490	394,607	1,065,731	6.5%	2.4%
Unimproved Pasture	1996	18,671	359,674	1,641,692	5.2%	1.1%
	1991	12,935	319,510	1,574,246	4.0%	0.8%
	1986	12,582	306,916	1,536,372	4.1%	0.8%
Other Use	1996	45,770	655,090	2,568,888	7.0%	1.8%
	1991	44,791	578,213	2,344,457	7.7%	1.9%
	1986	44,609	645,534	2,607,569	6.9%	1.7%
Total Farmland	1996	510,327	4,193,177	13,879,565	12.2%	3.7%
	1991	491,465	4,021,332	13,470,653	12.2%	3.6%
	1986	485,212	4,163,469	13,953,009	11.7%	3.5%
Number of Farms	1996	2,832	21,305	67,520	13.3%	4.2%
	1991	2,894	21,567	68,633	13.4%	4.2%
	1986	2,927	22,561	72,713	13.0%	4.0%
Avg. Farm Size	1996	180	197	206	91.6%	87.7%
	1991	170	186	196	91.1%	86.5%
	1986	166	185	192	89.8%	86.4%

Source: Statistics Canada Agricultural Census 1986, 1991 & 1996

2.6.2 Farm Land Use in Perth, Western Ontario Region and the Province in 1996

Figure 3 details the use of farmland in Perth County, Western Ontario and the Province in 1996. In Perth County, farmland is used much more intensively than in the Western Ontario agricultural region or the Province as a whole. In Perth County, 83.7% of the farmland was under crops in 1996 - as compared to 67.7% in Western Ontario and 63.1% in the Province. As noted earlier, summer fallow acreages in Perth in 1996 were negligible while Western Ontario and the Province had marginally higher rates. Unimproved pasture land comprised 3.7% of total farmland in Perth County in 1996 while the corresponding proportions for Western Ontario and the Province were 8.6% and 11.8% respectively. The corresponding proportions for improved pasture land were 3.7% in Perth, 7.8% in Western Ontario and 6.2% in the Province as a whole.

Figure 3. Farm Land Use by Category in Perth County, Western Ontario and Ontario 1996.



Source: Statistics Canada Agricultural Census, 1996.

In summary, the data indicates that more labour and money per acre is used in Perth County, with a significantly higher proportion of farmland under crops as compared to the Western Ontario agricultural region and the Province of Ontario as a whole. Moreover, the trend line data indicates that farming is using more labour and money per acre in Perth County in the last ten years ending in 1996 with less acreage

for summer fallow, and pasturage, and more for crops. In addition, the data indicates that in the same ten-year period, total farmland in Perth County increased by 5.1%, while the number of farms decreased by 3% and average farm size increased by 8%.

2.7 Farm Sizes by Category in Perth County 1996, 1991, 1986

The previous section noted that average farm size in Perth County increased from 166 acres in 1986 to 180 acres in 1996. In this section a more detailed analysis is attempted whereby farm size distribution by size category is analyzed over time. In the raw data, farm sizes are measured in acres, and then are aggregated into 11 size categories. Table 10 details the frequency distribution of farm sizes in Perth County, Western Ontario and Ontario with the data aggregated into three easier-to-manage categories, for the years 1986, 1991 and 1996.

Small = Categorizes all farms smaller than 180 acres

Medium = Categorizes all farms of size 180 to 759 acres

Large = Categorizes all farms greater than 759 acres in size

Table 10: Farm Sizes in Perth County, Western Ontario and Ontario.

Farm Size in acres	Farm Sizes		
	0-179	180-759	760+
Category	Small	Medium	Large
Perth County			
1986 % of Farms	72.6%	26.6%	0.8%
1991 % of Farms	66.7%	32.1%	1.2%
1996 % of Farms	65.0%	32.8%	2.1%
Western Ontario			
1986 % of Farms	73.3%	25.4%	1.3%
1991 % of Farms	65.0%	32.8%	2.2%
1996 % of Farms	64.2%	32.8%	3.0%
Ontario			
1986 % of Farms	74.6%	24.2%	1.3%
1991 % of Farms	63.2%	33.9%	2.9%
1996 % of Farms	62.8%	33.7%	3.6%

Source: Statistics Canada Agricultural Census, 1986, 1991 and 1996.

In Perth County in 1986, 72.6% of all farms were small, while 26.6% of all farms fell into the medium size bracket while a further 0.8% of all farms were large. By 1996 we find that the proportion of farms in the small size bracket had fallen to 65.0% of all farms while the proportion of farms in the medium size group had risen to 32.1% and

then proportion of large farms had risen to 2.1%. Further examination indicates that the trends in Western Ontario and the province are all very similar to those in Perth.

In summary, the data suggests that in Perth County, as elsewhere in Ontario, the proportion of small farms is falling while the proportion of medium-sized farms and large farms are increasing.

2.8 Farm Types Classified by Major Product

Table 11 details the number and proportion of farms by major product type in Perth County, in the Western Ontario agricultural region and in the province of Ontario for the years 1986, 1991 and 1996. The farm type data are categorized into the 10 classifications used by the Agricultural Census and based on the main productive activity of the farm.

Table 11: Farm Types by Product: Perth County, Western Ontario and Ontario

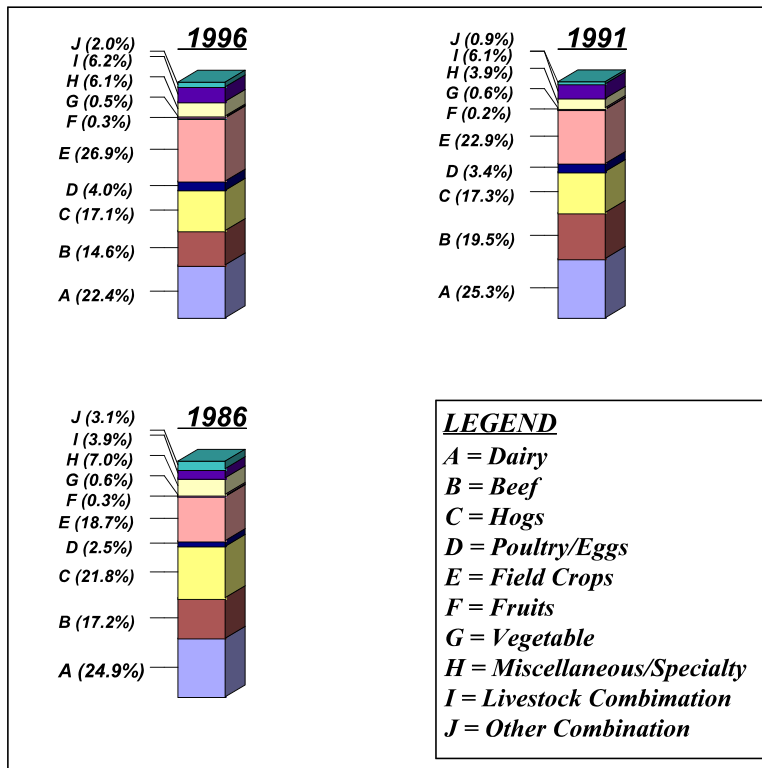
Farm Type	Year	Number of Farms by Category				
		Perth County	Western Ontario	Ontario	Perth % of W. Ontario	Perth % of Ontario
Dairy	1996	608	2,752	8,320	22.1%	7.3%
	1991	676	3,256	9,757	20.8%	6.9%
	1986	742	3,645	11,028	20.4%	6.7%
Beef	1996	397	5,957	14,172	6.7%	2.8%
	1991	523	6,628	16,855	7.9%	3.1%
	1986	513	6,848	17,160	7.5%	3.0%
Hogs	1996	464	1,513	2,677	30.7%	17.3%
	1991	589	2,079	3,827	28.3%	15.4%
	1986	650	2,638	4,840	24.6%	13.4%
Poultry/Eggs	1996	108	643	1,686	16.8%	6.4%
	1991	90	563	1,583	16.0%	5.7%
	1986	75	556	1,643	13.5%	4.6%
Field Crops	1996	730	3,950	17,681	18.5%	4.1%
	1991	612	3,379	15,497	18.1%	3.9%
	1986	557	3,271	16,415	17.0%	3.4%
Fruits	1996	9	296	2,016	3.0%	0.4%
	1991	4	298	2,107	1.3%	0.2%
	1996	9	288	2,298	3.1%	0.4%
Vegetables	1996	14	261	1,428	5.4%	1.0%
	1991	17	257	1,639	6.6%	1.0%
	1986	18	277	1,791	6.5%	1.0%
Miscellaneous/ Specialty	1996	166	2,505	8,547	6.6%	1.9%
	1991	103	2,082	7,312	4.9%	1.4%
	1986	210	1,572	3,876	13.4%	5.4%
Livestock Combination	1996	167	1,045	2,030	16.0%	8.2%
	1991	164	931	1,921	17.6%	8.5%
	1986	117	887	1,653	13.2%	7.1%
Other Combination	1996	54	395	1,330	13.7%	4.1%
	1991	23	259	934	8.9%	2.5%
	1986	93	685	2,223	13.6%	4.2%

Source: Statistics Canada, Agricultural Census 1986, 1991 & 1996.

2.8.1 Perth County Trends from 1986 to 1996

Figure 4 illustrates the proportions of the types of farms for Perth County in 1986, 1991 and 1996. When examining the changes in Perth County from 1986 to 1996, the strongest trend that may be observed is the increased share of farms producing field crops. In 1986, 18.7% of the farms in Perth County were classified as producing field crops as the main farming activity. By 1996 26.9% of all farms were classified as field crop producing farms. Dairy farms were the dominant type of farm in 1986 in Perth County with 24.9% of all farms categorized as dairy farms. While the 1991 statistics show the number of dairy farms was up slightly at 25.3%, by 1996 dairy farms had slipped to second place with 22.4% of farms classified as dairy farms.

Figure 4. Farm Types by Major Product in Perth County 1986, 1991, 1996.



Source: Statistics Canada Agricultural Census, 1986, 1991 & 1996.

Hog farming has been another major farming activity in Perth County, although the number of farms has declined from 1986 to 1996. In 1986, 21.8% of the farms in Perth County were classified as hog farms. By 1996 this share had dropped to 17.1%. The final major area of farming activity in Perth County is beef farming. Again, the number of farms in this sector appears to be in decline in Perth as farm size and productivity increases. In 1986, 17.2% of all farms were classified as beef farms while in 1996, beef farms had dropped to a 14.6% share (albeit with a high 19.5% share in 1991).

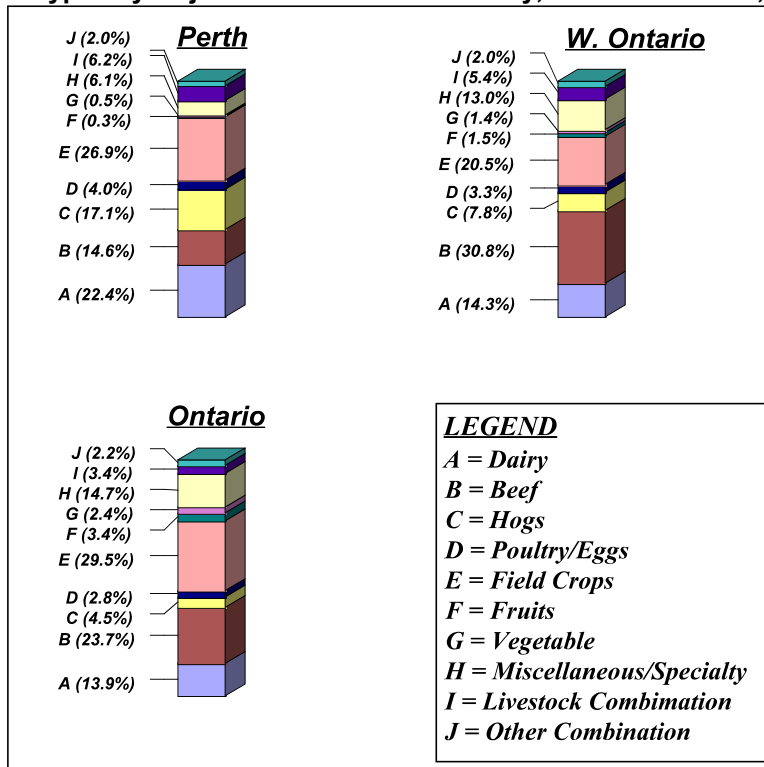
The other sectors of farm types in Perth are quite small and no clear indication of a trend exists, with the exception of the small, but growing poultry and egg-producing farm sectors. In 1986, 2.5% of farms were classified as poultry/egg farms but by 1996 this percentage had climbed to 4.0%. In summary, the data suggests that the relative proportions of farms involved in the production of livestock and dairy are decreasing in Perth County while farms engaged in field crop production are increasing. One has to keep in mind the increase in size and productivity of many farms.

2.8.2 Farm Types: Perth County, Western Ontario and the Province of Ontario

The composition of farm types in Perth County in comparison to Western Ontario and the province shows that Perth County was relatively specialized in dairy, hog and field crop farms. In 1996 22.4% of Perth farms were dairy farms, while the corresponding proportions for Western Ontario and Ontario were 14.3% and 13.9% respectively (Figure 5). In 1996, 17.1% of the farms in Perth County were classified as hog farms while they made up 7.8% and 4.5% in Western Ontario and Ontario respectively. In terms of field crops farms, 26.9% of farms in Perth County fall into this category, while Western Ontario and the Province were 20.5% and 29.5% respectively. Perth appears relatively more specialized in field crop farms with respect to the Western Ontario agricultural region - but less specialized with respect to the Province of Ontario as a whole. Perth County has relatively fewer beef farms and miscellaneous/specialty farms as compared to the Western Ontario region and the Province. Beef farms comprised 14.6%, 30.8% and 23.7% of all farms respectively, in 1996. Miscellaneous and specialty farms were 6.1%, 13.0% and 14.3%, respectively.

In summary, the data suggests that farms in Perth County concentrate on the more "traditional" agricultural production areas of dairy, field crops and to lesser extent on beef. Hog farming is also an important farm activity in Perth County, although the number of hog farms has decreased in the period 1986 to 1996.

Figure 5: Farm Types by Major Product in Perth County, Western Ontario, Ontario 1996.



Source: Statistics Canada, Agricultural Census 1996.

3.0 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).

3.1 Economic Base Approach

Economic Base Theory maintains that economic growth is only possible if the economy's export 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: "[W]hat is the overall gain in employment or income in the region associated with each gain in export sales?" (Bendavid-Val, 1991, p. 78).

The 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.

3.2 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 the comprehensiveness of the model 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 (Bendavid-Val, 1991, p. 88). Suppliers - intermediate and primary - purchase inputs for processing into inputs. 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 (ie. 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 Perth County 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.

3.3 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). The multipliers calculated for this research include a sales expenditure multiplier and an employment multiplier.

4.0 Perth County Study Methodology

Initial research for the Perth County study was carried out from November 1999 to February 2000. The economic impact of agriculture in the county was measured through an accounting of the total sales and employment of Agriculture and Agriculture-related (Ag-related) businesses in the study area. This work involved a review of the primary data from Statistics Canada's 1996 Population Census of Canada and 1996 Agriculture Census to study the direct economic impacts of agriculture on the Perth County economy. A survey-based 'input-output-like' approach was used to measure the indirect impacts. The survey was aimed at businesses that sell products to, or buy products from, the farmer. The induced economic and employment impacts of the Agriculture sector were also studied using primary data derived from the Statistics Canada census data.

4.1 Direct Impact Methodology

Data were taken from the 1996 Population Census of Canada and the 1996 Agricultural Census and yielded information on the economy of Perth County, including general labour trends and population data. Where appropriate, data from earlier censuses were incorporated to examine long-term trends in employment and sales in the county. This information has been presented in Section 2.0 of this report: A Profile of the Perth County Economy. For the purposes of this study, Direct Impacts are the jobs and sales generated 'on the farm': farm gate sales and farm jobs.

4.2 Indirect Impact Methodology

For the purposes of this study, Indirect Impacts are jobs and sales generated 'off the farm' by businesses which interact with farm operations through buying and selling products and services. It should be noted that 'related to agriculture' includes only those businesses that buy from or sell to the farm business; sales to farm families for personal consumption are excluded from the indirect impact assessment, but are included later as induced impacts.

The research method used to measure the indirect impacts was a survey-based 'input-output-like' approach. This was completed through a telephone survey conducted

from November 1999 to February 2000. The method and survey format was originally developed 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 Prescott, Russell, Stormont, Dundas and Glengarry Counties in eastern Ontario in 1998 (Cummings and Deschamps, 1999), Simcoe County and Lambton County in 1999. The method was designed to identify the value of gross sales and the jobs produced by a sample of businesses related to agriculture. From this sample, an estimate was produced for the total population of agriculture-related businesses in the Perth County area. This in turn provided an estimate of the economic impact of these Ag-related businesses in the county through indirect employment and sales.

4.2.1 Development of the Business Inventory and Survey Sample

The survey was based on a random sample of local Ag-related businesses. A list of Ag-related businesses was developed by collecting lists from a number of sources in the area: Perth Federation of Agriculture Representatives, Municipal Offices, Chambers of Commerce, Economic Development Offices and the Yellow Pages. The original list of 993 businesses was pared down to 976 by eliminating businesses that were either out of business, double-listed or had moved out of the county.

In order to attain a 95% confidence level for the 936 businesses in the inventory, an original sample size of 277 businesses was selected at random from the adjusted inventory. As 47 of the first 158 contacts were businesses with no ties to agriculture, it was determined that 29.7% of the businesses in the adjusted inventory had no ties. The inventory was adjusted accordingly, to a final estimate of 686 total Ag-related Businesses in Perth County, with a sample size of 246 required for a 95% confidence level. In total, 250 businesses were surveyed; all of them provided data regarding employment. A total of 246 provided sales data.

During the course of the telephone survey, respondents were asked to provide information regarding the total value of sales and employment figures for their business. They were also asked to estimate the percentage of sales related to the agriculture sector. Data were entered directly onto a spreadsheet; paper copies of the surveys were not kept.

4.2.2 Long Interviews with Ag-related Businesses

In-depth interviews were carried out with ten of the businesses that responded to the survey. The purpose of these interviews were to provide further understanding of the nature of agriculture-related businesses in Perth County and add depth to the data gathered during the telephone survey. Details of the interview findings are presented in Section 5.3.

4.2.3 Total Gross Sales for the Businesses Surveyed

Total gross sales for the businesses surveyed include sales related and unrelated to the Agriculture sector. For example, a plumbing business may have sales to farmers for their farm business, sales to farmers for their house, and sales to non-farmers. Agriculture-related sales include only those sales to farmers for operating the farm. Sales unrelated to agriculture include those of farmers for their personal use, as well as sales to non-farmers.

The sample included Ag-related businesses that buy or sell products or services to agriculture, but may also buy or sell to other sectors of the economy. Total gross sales are divided by the location of these sales; 34.6% of total gross sales for the businesses surveyed were made outside of Perth County. The businesses in the sample generate sales: i) inside Perth County, ii) outside Perth County but in Ontario, iii) outside Ontario but in Canada, and iv) outside Canada. Table 12 illustrates the total gross sales for the businesses surveyed, by the location of these sales.

Table 12. Total Gross Sales of the Businesses Surveyed

# Businesses n = 246	i. Sales in Perth	ii. Sales in Ontario	iii. Sales in Canada	iv. Sales Worldwide	Total Sales
Sales in \$'s	\$302,768,793	\$152,643,014	\$5,842,950	\$1,609,300	\$462,864,057
% total sales	65.4%	33.0%	1.3%	0.3%	100.0%

Source: 1999/2000 Ag-business Survey

The survey determined that total gross sales was \$462,864,057 for the 246 businesses that provided sales data. The initial estimate for total gross sales generated inside Perth County is \$302,768,793, or 65.4% of the total gross sales for these businesses. Total gross sales for these businesses outside of Perth but in Ontario was \$152,643,014, or 33.0% of total gross sales. Total gross sales outside of Ontario but in Canada accounted for \$5,842,950 or 1.3% of total gross sales. Sales made outside of Canada accounted for \$1,609,300 or 0.3% of total gross sales. The apparently high rate of sales outside of Perth County, but within Ontario, is a reflection of the close proximity of some of the larger towns, such as St. Marys, Listowel and Mitchell to adjacent counties, especially Oxford and Huron Counties.

4.2.4 Agriculture-related Sales for the Businesses Surveyed

Part of the telephone survey asked respondents to estimate the percentage of their sales that were related to agriculture, either by providing products and/or services to farm businesses, or by purchasing products of agricultural origin. The survey determined that \$234,245,115, or 50.6% of total gross sales from the businesses surveyed were related to agriculture. Ag-related businesses in Perth County have sales both related and unrelated to agriculture. By separating the Ag-related sales from sales unrelated to agriculture, and using the same percentages for location of sales as in section 4.2.3, we are able to estimate both the type and location of sales for the businesses surveyed. These figures are illustrated in Table 13.

Table 13. Ag-related Sales of the Businesses Surveyed

# Businesses n = 246	i. Sales in Perth	ii. Sales in Ontario	iii. Sales in Canada	iv. Sales Worldwide	Total Sales
Total Sales	\$302,768,793	\$152,643,014	\$5,842,950	\$1,609,300	\$462,864,057
Ag-related (50.6%)	\$153,224,493	\$77,249,205	\$2,956,986	\$814,431	\$234,245,115
Unrelated to Agriculture (49.4%)	\$149,544,300	\$75,393,809	\$2,885,964	\$794,869	\$228,618,942

Source: 1999/2000 Ag-business Survey

4.2.5 Total Gross Sales for Perth County Ag-related Businesses

From the sample, we can estimate the total gross sales of all Ag-related businesses in Perth County. This includes sales both related and unrelated to agriculture. We have already established that there are approximately 686 Ag-related businesses in the county; a total of 246 of these provided sales data. This represents 35.9% of the total number of businesses (e.g. $246/686 * 100 = 35.9\%$). By dividing the total estimated number of businesses (686) by the total number of businesses surveyed (246), a sampling multiplier of 2.79 (e.g. $686/246 = 2.79$) can be used to calculate the total gross sales for Ag-related businesses in the county as a whole. Table 14 illustrates the estimated total gross sales for all Ag-related businesses in Perth County. This estimate was derived by applying the sampling multiplier to the total gross sales of the 246 businesses which provided sales data. Once again, the table presents the sales according to location.

Table 14. Estimated Total Gross Sales for Ag-related businesses Using Sampling Multiplier for Sales

# Businesses n = 686	i. Sales in Perth	ii. Sales in Ontario	iii. Sales in Canada	iv. Sales Worldwide	Total Sales
Total Sales	\$843,901,408	\$425,458,825	\$16,285,938	\$4,485,570	\$1,290,131,741
Ag-related	\$427,079,568	\$215,315,165	\$8,241,948	\$2,270,046	\$652,906,727
Unrelated to Agriculture	\$416,821,840	\$210,143,660	\$8,043,990	\$2,215,524	\$637,225,014

Source: 1999 Ag-business Survey

It should be noted that sales data from financial institutions, such as banks and credit unions, were analyzed somewhat differently. Typically their sales would be based

on profits generated from loans and services provided to farm businesses. However, this information is difficult to obtain. Therefore, for the purposes of this study, 'sales' by financial institutions are based on the number of employees at the institution multiplied by an average salary of \$30,000.

By using the figures from the businesses surveyed and applying the multiplier of 2.79, we can estimate that Perth County's Ag-related businesses generated \$1,290,131,741 in total gross sales. Of this, \$843,901,408 in total gross sales were generated within Perth County. Total gross sales generated outside of Perth county but inside Ontario was \$425,458,825. The total gross sales generated outside of Ontario but still in Canada were \$16,285,938, and the total gross sales outside of Canada were \$4,485,570.

4.2.6 Agriculture-related Sales for Ag-related Businesses in Perth County

Total Ag-related sales for all Perth County Ag-related businesses can also be derived using estimates of the Ag-related sales generated by the businesses surveyed. These sales data are also illustrated in Table 13. Using the same 2.79 multiplier, we can estimate that the total Ag-related sales for businesses in Perth County were \$652,906,727. Of this, \$427,079,568 were Ag-related sales generated in Perth County. Ag-related sales outside of Perth but inside Ontario were \$215,315,165. Ag-related sales generated outside of Ontario but in Canada were \$8,241,948 and sales generated outside of Canada were \$2,270,046.

4.2.7 Number of FTE Employees Working at the Businesses Surveyed

The survey separated employees at the Ag-related businesses into two categories. The first are employees who work on activities related to the agriculture sector. The second includes employees who work at Ag-related businesses, but do not serve the agriculture sector. For example, a veterinary office may have four veterinarians specializing in large mammals (Ag-related employees) and one veterinarian specializing in house pets (unrelated to the agriculture sector). Data on both types of employees were collected in the survey, and organized to reflect the total Full Time Equivalent (FTE) number of jobs at that business based on a 1,875 hours per

year workload (7.5 hours a day X 5 days a week X 50 weeks a year). Using the FTE jobs as a measure of employment allows for greater insight into the total number of jobs, at the Full-time level, that are supported by sales and services to farms.

Altogether, 250 businesses surveyed provided employment data. The total number of employees at these business was 2,392, comprised of 1,708 Full-time employees, 368 Part-time employees and 316 seasonal employees. Based on the hours and weeks worked over the course of a year, and using the FTE calculation as shown above, the initial estimate for the total number of FTE jobs at the businesses surveyed is 2,331. This includes all employees (full-time, part-time and seasonal employees) for the businesses surveyed, regardless of whether or not they perform activities related to the agriculture sector. One would assume that the number of total employees should be substantially larger than the total number of FTE jobs. The reason that the total FTE number is close to the total number of employees, even though 684, or 28.6% of the employees as these businesses were either part-time or seasonal employees, is because the average work-week for Full-time employees is actually 44.4 hours; much higher than the FTE job equivalent of 37.5.

For the businesses surveyed, it is estimated that 49% of the employees spent their time on activities related to buying from and selling to farms. As a result, of the 2,392 employees, 837 Full-time, 180 Part-time, and 155 Seasonal employees worked on activities related to sales and service to farms. When converted to FTE jobs, a total of 1,142 of the total 2,331 FTE jobs were related to agriculture. Table 15 summarizes FTE jobs at the businesses surveyed.

Table 15. FTE jobs for the businesses surveyed

# of Businesses Surveyed n = 250	Total FTE Jobs	% Ag-related Jobs	Ag-related FTE Jobs
Perth County	2331	49.0%	1142

Source: 1999/2000 Ag-business Survey

The survey also determined that there are jobs generated outside of the study area by Perth County Ag-related businesses. This is calculated by multiplying the total FTE jobs by the percentage of sales generated outside of the county (34.6%).

Therefore, the total number of FTE jobs generated by sales outside of Perth County by the businesses surveyed is 806. Of these, 395 service the agriculture sector (806 X 49.0%).

4.2.8 Number of FTE Employees Working in Ag-related Businesses

The total number of FTE jobs for all Ag-related businesses in the county, as well as the total FTE jobs that serve the agriculture sector can be derived from the sample. A sampling multiplier for employment can be calculated by dividing the total number of Ag-related businesses in the inventory (686) by the number of respondents who provided employment data (250). This results in a sampling multiplier of 2.74. From these values, the total number of FTE jobs for all Ag-related businesses in Perth County can be estimated at 6,393 (2,331 X 2.74). Of these, an estimated 3,133 FTE jobs serve the agriculture sector. Table 16 illustrates the estimated total and Ag-related jobs using the sampling multiplier for employment. Note that figures may not add up exactly due to rounding.

Table 16. Estimated Total and Ag-related FTE Jobs Using Sampling Multiplier for Employment

# of Businesses n = 686	Total FTE Jobs	% Ag-related Jobs	Ag-related FTE Jobs
Perth County	6370	49.0%	3133

Source: 1999 Ag-business Survey

Using the sampling multiplier, total FTE jobs created by sales generated outside of Perth County can also be calculated. The total number of FTE jobs generated by the out-of-county sales is 2,211. Of these, 1,084 work on activities related to the agriculture sector.

4.3 Induced Impact Methodology

An examination of the induced effects of agriculture was conducted. Induced employment refers to jobs in the Education, Health and Government Service sectors which are supported by agriculture and agriculture-related employees. Population Census (1996) employment data from the agriculture and manufacturing sectors were compared to service sector jobs in education, health and government services to estimate the number of induced jobs and sales for the Perth County area. More details and results on this are provided in section 5.2.3.

5.0 Results

5.1 Introduction to the Perth County Results

The aim of this chapter is to present the results of the study, including findings concerning the direct, indirect and induced impacts of agriculture and agriculture-related businesses on the economy of Perth County. This chapter includes findings of an in-depth examination of the backward and forward linkages of agriculture-related businesses.

This research focuses on the economic impact of the agriculture sector. More specifically, it focuses on agriculture-related businesses in Perth County. Both primary and secondary data collection were undertaken; the primary research collection was an 'input-output-like' survey approach of Ag-related businesses in the county. This survey has been verified and supported by in-depth case studies with selected businesses who participated in the survey. Further calculations of the induced and direct impacts were completed, based on Population Census of Canada data and, to some extent, on multipliers from previous studies (Cummings et al., 1998). The final analysis of the data illustrates that the agriculture sector continues to be very important to the economy of Perth County.

The study aimed to identify the total economic impact of the agriculture sector in Perth County. While published data present significant farm gate sales for the county, there was no evidence to prove the actual impact of the agriculture sector. Similarly, published data showed that direct employment in agriculture in 1996 continued on a downward trend. From this information, it was predicted that this decline would continue while employment in other sectors would grow. Given this trend and subsequent predictions, estimates of some aspects of the employment patterns in Perth County were made. Through a profile of Perth County, the direct impact of the agriculture sector was illustrated through the employment data for the area's economy, which illustrated growth and decline industries (Section 2 of this report). However, this did not provide the full story of the economic impact of agriculture to Perth County. To provide a clearer picture of the indirect impact of Perth County's agriculture sector, the input-output-like methodology was applied.

5.2 Direct, Indirect and Induced Impact Results

5.2.1 Estimated Direct Sales and Jobs

Direct impacts refer to the value of sales and number of jobs created by the agriculture sector in the county. Direct sales are equivalent to the value of farm gate sales. In 1990, the value of farm gate sales in Perth County was \$366.2 million. This figure increased 17.5% to \$430.3 million in 1996. Farm gate sales from Perth County represent 5.5% of Ontario's total farm gate sales. When the value of Perth County's direct sales is compared to Canada's ten provinces, it ranks seventh behind British Columbia and ahead of Nova Scotia in value of gate sales produced. In 1990 Perth County's agriculture sector contained 5,190 employees. This number includes farm owners, operators and laborers. In 1995, this number fell 4.9% to 4,935 employees.

5.2.2 Estimated Indirect Sales and Jobs

The indirect impacts of agriculture refer to the value of sales and number of jobs created by Agriculture-related businesses in Perth County. An Agriculture-related business is defined here as any business which sells to, or buys from, the agriculture sector. This study found that the value of indirect impacts created by these businesses is substantial.

5.2.2.1 Location of Agriculture-related Businesses in the Survey

Agriculture-related businesses are located in rural areas, villages, towns and cities in every township across the county. Greater numbers of Agriculture-related businesses are found in and around Listowel, Mitchell, St. Marys and Stratford. Other important centres for Agriculture-related businesses were found in smaller communities, such as Atwood, Gadshill, Gowanstown and Milverton. Table 17 illustrates the location of the businesses which were surveyed, by Township or Municipality.

Table 17. Location of Agriculture-related Businesses in the Original Inventory and Surveyed.

Township/Municipality	# of Businesses in Inventory	# of Businesses in Survey
North Perth	226	64
Perth East	222	60
Perth South	79	26
St. Marys	45	13
Stratford	214	43
West Perth	162	44
Tavistock	8	0
Palmerston	16	0
Unspecified	21	0
TOTAL	993	250

Source: 1999/200 Ag-business Survey

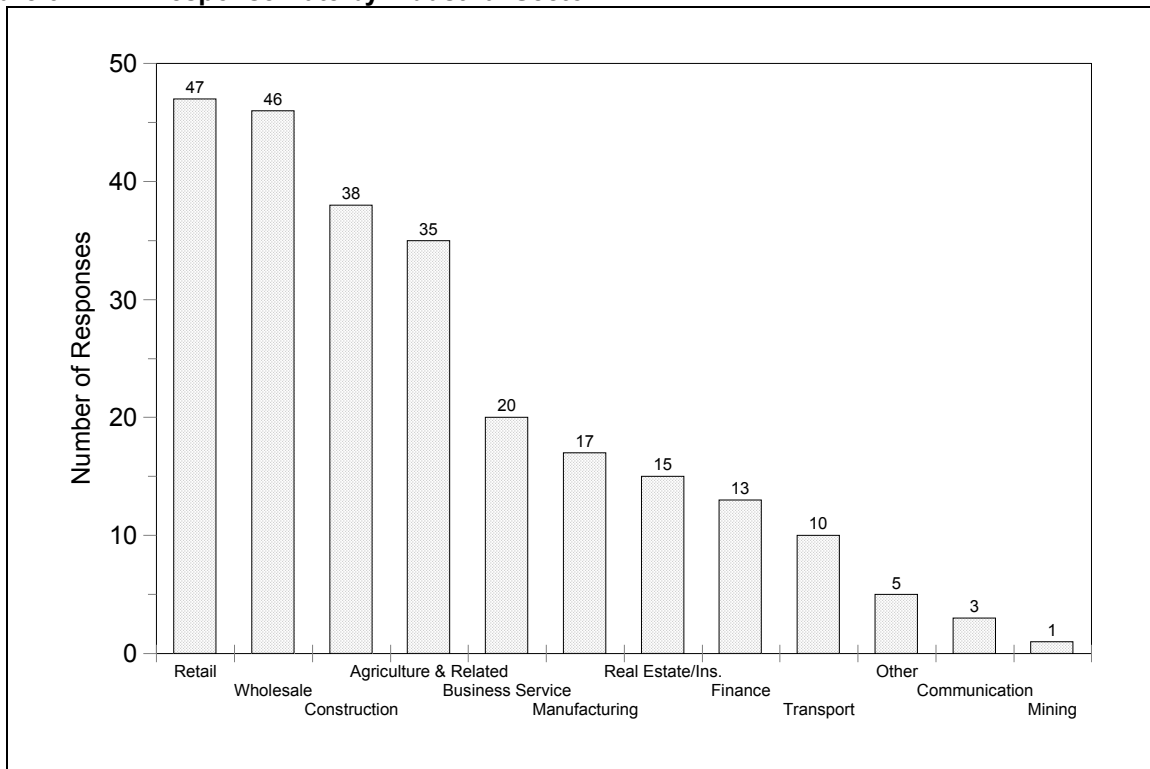
5.2.2.2 *Characteristics of the Businesses Surveyed*

The common characteristic of all the businesses surveyed is that they deal in some way with the agriculture sector. More specifically, all of the businesses surveyed either sell products or services to, and/or buy products or services from agricultural producers. It is important to note that these Ag-related businesses may also conduct trade with other sectors of the economy.

For the purposes of this study, the surveyed businesses were categorized according to their primary activity, using the Standard Industrial Code (SIC) categorization method developed by Statistics Canada. This system separates Canadian businesses into eighteen divisions, or sectors, such as Manufacturing, Retail Trade and Agriculture and Related Service Industries. Employment data for all eighteen sectors in Perth County for 1990 and 1995 were presented earlier in Table 3.

During the agriculture-related business survey, businesses from three industrial sectors (Education, Health and Government Services) were deliberately omitted from the survey as their impacts are being considered under Induced impacts. This leaves fifteen possible sectors with which Perth County Ag-related businesses could form links. As illustrated in Figure 6, the study surveyed businesses in twelve of these fifteen sectors.

Figure 6. Response Rate by Industrial Sector.



Source: 1999/2000 Ag-business survey

This suggests that the agriculture sector has links with almost every sector of the Perth County economy. Connections were found with the following sectors: Retail Trade, Wholesale Trade, Construction, Business Services, Manufacturing, Real Estate and Insurance, Finance, Transportation, Other Services, Communication and Mining, Quarrying and Oil Wells. Linkages were also found among businesses classified as Agriculture and Related Service Industries.

The survey did not include businesses from the following sectors: Fishing and Trapping Industries, Forestry or Accommodation Food and Beverage Industries. This does not mean that these industries do not exist in Perth County; they may not be directly linked to agriculture, or may not have had enough local representation to be picked up by the survey sample.

Some of the industries analyzed in the study have comparatively stronger linkages with the agricultural sector. Of the total 250 businesses surveyed, high representation of Ag-related businesses are found in Retail Trade (47 of the business surveyed), Wholesale Trade (46), Construction (38), Business Services (20) and Real Estate (15). Businesses within the Agriculture and Related Services sector are also

making strong linkages with other businesses within that sector (35 of the businesses surveyed). Characteristics of the businesses surveyed in various sectors of the Perth County economy are discussed below.

i) Agriculture and Related Service Industries

The study found that strong linkages exist between businesses within the agriculture sector in Perth County. Most often, backward linkages are in the form of services provided to farms by these businesses such as veterinary services and land drainage services. More specialized services include breeding services, seed cleaning and custom planting and harvesting. Many of the smaller businesses in this sector are run on a seasonal or part-time basis by farmers. In total, 35 businesses from the agriculture and related services sector were surveyed. A typical example is Williams Drainage Inc., which provides tile drainage systems.

ii) Mining, Quarrying and Oil Well Industries

Only one business from this sector was surveyed, which provided a backward link to agriculture through the supply of gravel for roads and fill.

iii) Manufacturing Industries

A variety of products linked to the agriculture sector are manufactured by businesses in Perth County. In total, 17 businesses from the sector were surveyed. Backward linkages to agriculture exist through the sale of such products as steel tanks, steel products, stabling and concrete. An example of such a manufacturing business is Schmidt Brothers Millwrights, which provides steel replacement parts for machinery. A forward linkage involves the manufacturing of food products from agricultural goods, most notably meat processing. An example of such a business is Walnut Hill Farm, which processes beef and pork.

iv) Construction Industries

Thirty-eight businesses from the construction sector were surveyed. These businesses have strong backward linkages to agriculture through building construction, septic systems, fence installation, electrical contracting, excavating, plumbing and heating. One example of a construction business in Perth County is Brendsen Construction, which constructs Ag-buildings, sheds and chicken barns.

v) Transportation and Storage Industries

A total of ten businesses from the transportation and storage sector were included in the survey. These businesses have backward linkages to agriculture through the transport of livestock, fill and raw milk, as well as grain handling and elevators. Forward linkages are also present through the purchase of grain from farms. An example of a business from this sector is Brubacher Elevator Ltd., which buys and sells corn and soy beans, as well as stores and dries grains.

vi) Communication and Other Utility Services

Three businesses from this sector were included in the survey; they have established backward linkages to agriculture through the provision of telephone and internet services to farm operations.

vii) Wholesale Trade Industries

A number of wholesale dealers have established backward links to the agriculture sector through the sales of building materials, lumber, farm machinery, feed and seeds. Forward linkages are also present, primarily through the purchase of seed, grain, soy beans and alfalfa for resale. A total of 46 businesses from the sector were surveyed, an example of which is Advanced Dairy Systems, which sells and services dairy equipment.

viii) Retail Trade Industries

Businesses in the retail trade sector are primarily selling products to the general public for personal or household consumption, and in providing related services such as installation and repair. However, they also have strong backward linkages to agriculture through the sale of products to farmers for use in the farm business, such as tire, truck and auto sales and service, hardware sales and computer sales and service. Some

forward linkages also exist in the food retail sector, where goods are purchased from farms for resale. In total, 47 businesses from the retail sector were surveyed, an example of which is Double T Garage, which provides tires and tire service, as well as engine maintenance and repairs and rust-proofing.

ix) Finance Industries

A total of 13 financial service and insurance businesses were surveyed. These include banks and credit unions, which have backward linkages to agriculture through the provision of loans and banking services to farm operations. In many cases, local branches have a department responsible for servicing farm operations. An example of a finance industry in Perth County is the Farm Credit Corporation in Listowel.

x) Real Estate and Insurance Industries

Real estate and insurance agencies have strong backward linkages to the agriculture sector. The main service provided to agriculture is the selling of agricultural property. These businesses are also involved in land appraisals and leasing farm properties. The survey included 15 real estate and insurance businesses, an example of which is Shackleton Real Estate, which provides real estate services and sales.

xi) Business Service Industries

Business service industries surveyed include accountants and lawyers that provide, respectively, financial accounting services such as general accounting and taxes, and legal services particularly in relation to real estate transactions. It also included several land surveyors and engineering firms which provide specialized services to farm operations. The survey included 20 businesses from this sector, including Robert Johns Law Office.

xii) Other Service Industries

According to Statistics Canada, other service industries is broken down into four major groups. These are: Amusement and Recreational service industries such as theatres, sporting events, casinos and amusement parks; Personal and Household service industries such as beauty salons, laundry facilities and funeral services; Membership Organization industries such as religious organizations, business organizations and professional membership associations; and Other Service industries, which are the most relevant to agriculture as they include machinery and equipment

rental and leasing, welding shops that repair farm machinery and equipment, and auctioneers providing service for livestock owners. In total, five of these businesses were included in the survey.

5.2.2.3 *Importance of the Agriculture-related Business Survey*

This study measures the importance of a business through its total gross sales per year and through the number of full-time equivalent (FTE) employees at the business. This provides an assessment of all the economic activities of the business, both related and unrelated to agriculture. For example, if a plumbing and heating business serves both residential and agriculture-producing (ie. farm-business) customers, the total gross sales of this business would include both Ag-related and unrelated sales.

a) Sales for the Agriculture-related Businesses Surveyed

All of the businesses surveyed had some sales related to the agriculture sector. During the survey, the owner (or manager) of the business was asked to estimate the total gross sales for their business as well as the percentage of those sales that could be attributed to the agriculture sector. For example, if a plumbing and heating business has \$500,000 in total gross sales per year, and the owner estimates that 50 percent of these sales are agriculture-related, then the total agriculture-related sales for that business would be \$250,000 ($\$500,000 \times 50\%$).

Ninety-eight percent of the businesses surveyed provided sales data (246 of 250). Statistics Canada classifies an industry with less than \$5 million in annual sales as a small business. A medium-size business has sales between \$5 million and \$25 million per year. Businesses with sales above \$25 million are considered large.

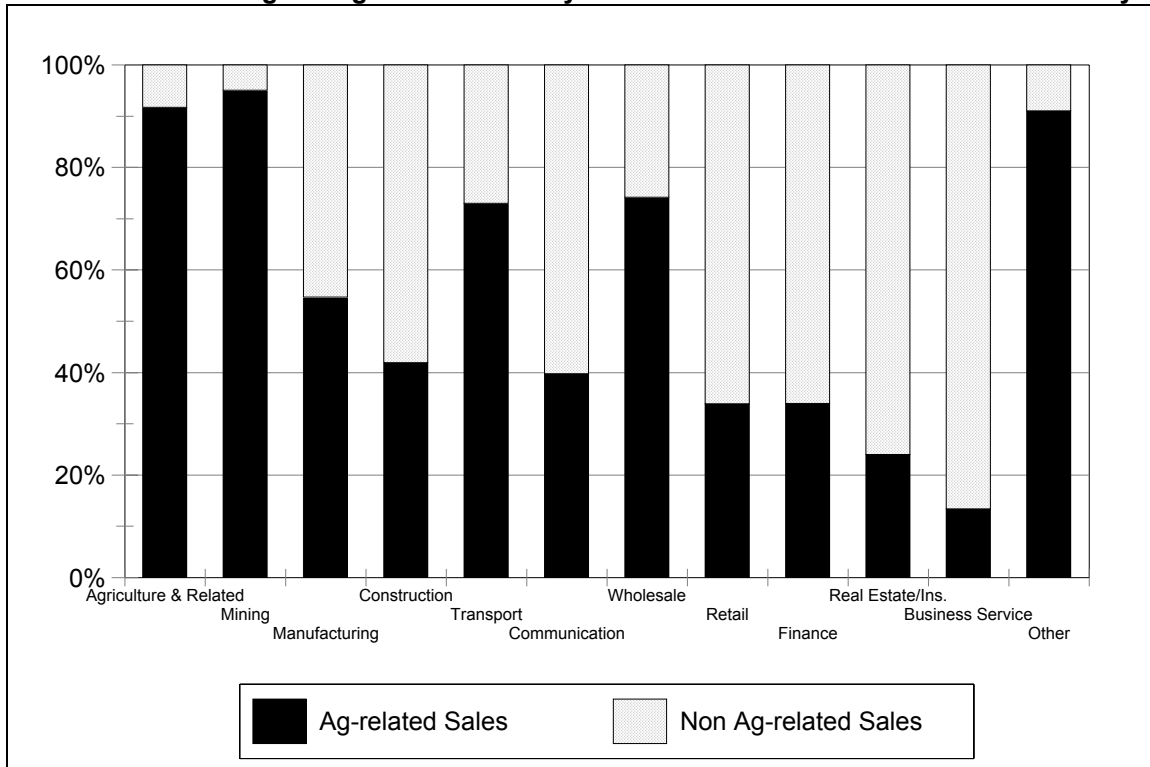
By this classification, businesses related to agriculture in Perth County are generally small. Eighty-eight percent of the business surveyed had sales under 5 million (217 of 246); 53 percent of businesses have sales below \$500,000 (130 of 246). This number is close to the median gross sales of \$400,000 for the businesses surveyed (the mid-point sales for the businesses surveyed; 123 businesses with sales above and 123 businesses with sales below). In this instance the median value

provides additional insight into the types of businesses in the county as it is not influenced by extremely high or extremely low values.

This study found that agriculture-related businesses have a wide range of sales, and some with very high sales. Sales for the businesses surveyed ranged from \$8 thousand to \$100 million. The average total gross sales for the businesses that provided sales data was \$1,881,561. This number is substantially lower than the average gross sales of \$4,240,865 for the 154 businesses surveyed in Huron County in 1996 (Cummings et al., 1998), but is somewhat higher than the \$1,605,329 in average total gross sales for the 295 businesses surveyed in Prescott-Russell, Stormont, Dundas and Glengarry Counties in 1998 (Cummings & Deschamps, 1999). Only one business in Perth County had sales in excess of \$25 million; the top quarter (61 businesses) had sales over \$1.5 million. This number is lower than the top quarter in both Huron County (\$1.7 million) and about the same as PRSD&G Counties (\$1.5 million). Overall the total gross sales for the 246 businesses that provided sales data in Perth County, including sales related and unrelated to agriculture, was \$462,864,057.

On average, the businesses in the study attributed 50.6 percent of their sales to the agriculture sector. As a result, the total agriculture-related sales for these businesses was \$234,245,114. The average agriculture-related sales for the 246 businesses that provided sales data was \$952,216. There were a number of businesses with high agriculture-related sales figures. Seventeen percent of the businesses surveyed (43 of 246) had agriculture-related sales in excess of \$1 million. Forty-one percent of the businesses surveyed had agriculture-related sales below \$100,000 (100 of 246). Figure 7 illustrates the percentage of Ag-related Sales according to Industrial Sector for the businesses that provided sales data.

Figure 7. Percentage of Ag-related Sales by Industrial Sector for the Businesses Surveyed.



Source: 1999/2000 Ag-business Survey

Agriculture-related sales of the businesses surveyed in various sectors of the Perth County economy are discussed below.

i) Agriculture and Related Service Industries

Average gross sales for the 35 agriculture and related businesses that provided sales data were just over \$855,000. Of this, an average of 91.7%, or \$785,000 are attributable to sales related to the agriculture sector.

ii) Mining, Quarrying and Oil Well Industries

As only one business in this sector was surveyed, it is not fair to calculate an average for the industry based on a single entry. However, for this business, gross sales was estimated to be \$230,000. Of this, 95%, or \$218,500 can be attributable to sales related to agriculture.

iii) Manufacturing Industries

The study found that manufacturing businesses surveyed had average gross sales of almost \$1.25 million. Of this, 54.7%, or about 682,000 are sales related to agriculture.

iv) Construction Industries

Average gross sales for businesses surveyed in the construction industry in Perth County is just over \$1.4 million. Of this, 41.9%, or almost \$607,000 can be attributable to sales related to agriculture.

v) *Transportation and Storage Industries*

Transportation and storage businesses surveyed in Perth County had average gross sales approaching \$3.1 million. Businesses stated that 73.0%, or over \$2.2 million of these sales were attributable to agriculture.

vi) *Communication and Other Utility Services*

Communication industries surveyed in Perth County reported average gross sales of just over \$358,000. Of this, \$142,500 or 39.8% came from sales attributable to agriculture, primarily in the form of telephone service and internet access.

vii) *Wholesale Trade Industries*

The study found that wholesale trade businesses providing goods and services to farm operations averaged just over \$2.9 million in gross sales. Of this, 74.2%, or almost \$2.2 million are sales attributable to agriculture.

viii) *Retail Trade Industries*

Retail stores typically sell products for personal or household use. However, many also sell products to the agriculture sector, most notably truck dealers and hardware stores. Average gross sales for the retail businesses surveyed was just over \$1 million, with 33.9% or about \$347,000 being attributable to sales related to agriculture.

ix) *Finance Industries*

As mentioned earlier in the report, sales data for finance institutions were calculated by multiplying the number of employees at the branch by an annual average salary of \$30,000. By using this method, the average gross sales for finance businesses surveyed in Perth County was just over \$556,000, with 34.0%, or almost \$189,000 being attributable to agriculture.

x)Real Estate and Insurance Industries

Average gross sales for the real estate and insurance businesses surveyed in Perth County were \$7.7 million, with 24.0%, or over \$1.8 million of these sales being related to agricultural properties.

xi)Business Service Industries

The business service industry in Perth County is dominated by legal and accounting firms. Average gross sales for the businesses surveyed from this sector were just under \$1.1 million, with 13.3% or about \$145,000 being attributed to sales related to agriculture.

xii)Other Service Industries

Average gross sales for businesses surveyed in the other service industries were almost \$1.3 million, with 91.0% or just under \$1.2 million being attributable to sales related to agriculture.

b) Employment for the Agriculture-related Businesses Surveyed

The importance of a business is also measured by the number of FTE jobs it supports. This information was gathered for the business location surveyed, as well as for any other outlets of that business in other locations. An assumption of this study is that the percentage of sales related to agriculture is equivalent to the percentage of employees serving the agriculture sector for their business. For example, if the plumbing and heating business mentioned in section a) employed 20 people, it would be assumed that 50% of these jobs (10) are supported by sales generated to the agriculture sector. However, in the final analysis the percentage of FTE jobs may not equal the percentage of sales as some sectors/businesses report more working hours per job than others.

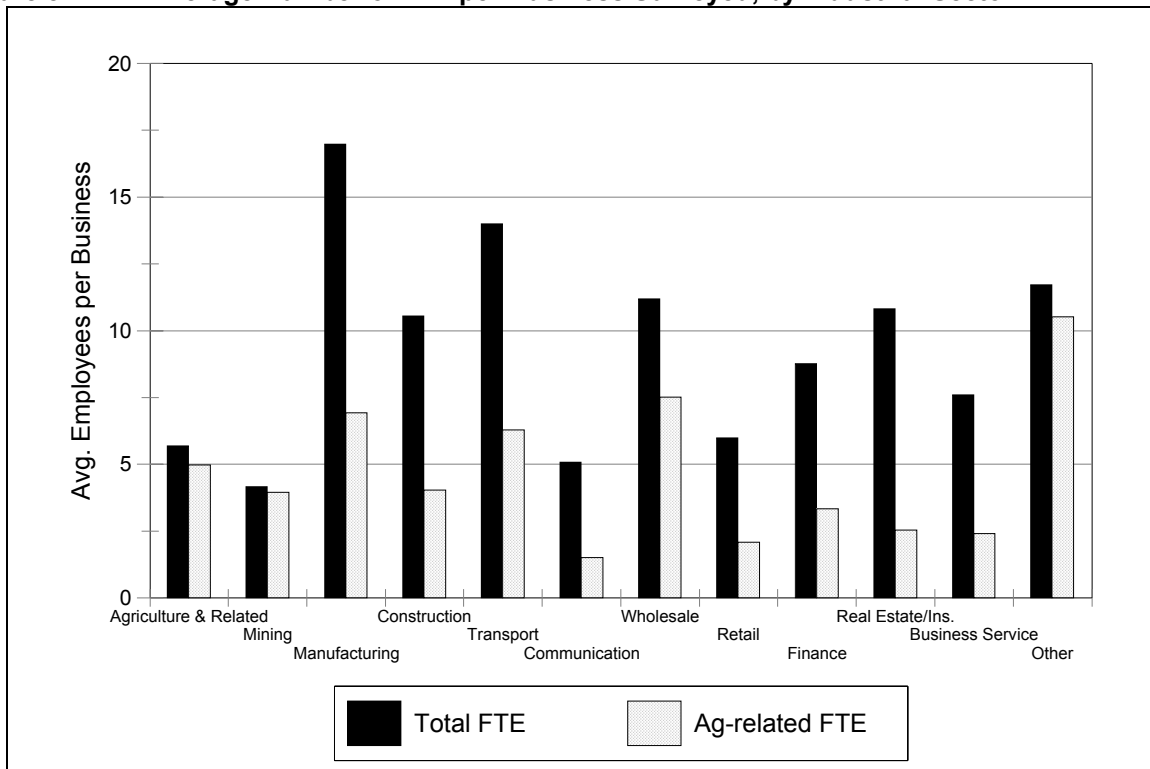
The number of employees in a business is another indicator of the importance of that business in the economy. According to Statistics Canada, a small business employs one to 50 people; a medium business employs 51 to 250 people and a large business employs over 250 people.

In total, 250 businesses provided employment data. By this standard, 98 percent of the agriculture-related businesses in the study are small (246 of 250 that provided

employment data). The remaining 2 percent, 4 businesses, were in the medium-business range. The average number of employees (as calculated by FTE jobs) for the businesses surveyed is 9.3. However, about 47 percent of the businesses surveyed have less than five employees (118 out of 250), and 71 percent of the businesses surveyed have less than 10 employees (178 out of 250). Figure 8 shows the average number of employees by industrial sector for the businesses surveyed.

All of the businesses in the study exchange goods and/or services with the agriculture sector. As such, it can be assumed that each of these businesses must have employees dedicating some or all of their work-time on activities to serve these exchanges. The average number of employees working on activities related to serving the agriculture sector for the businesses surveyed was 4.6. Of the businesses surveyed, 47 percent had at least two employees working strictly on agriculture-related activities (118 out of 250).

Figure 8. Average Number of FTE per Business Surveyed, by Industrial Sector.



Source: 1999/2000 Ag-business Survey

5.2.2.4 Exports of the Agriculture-related Businesses Surveyed

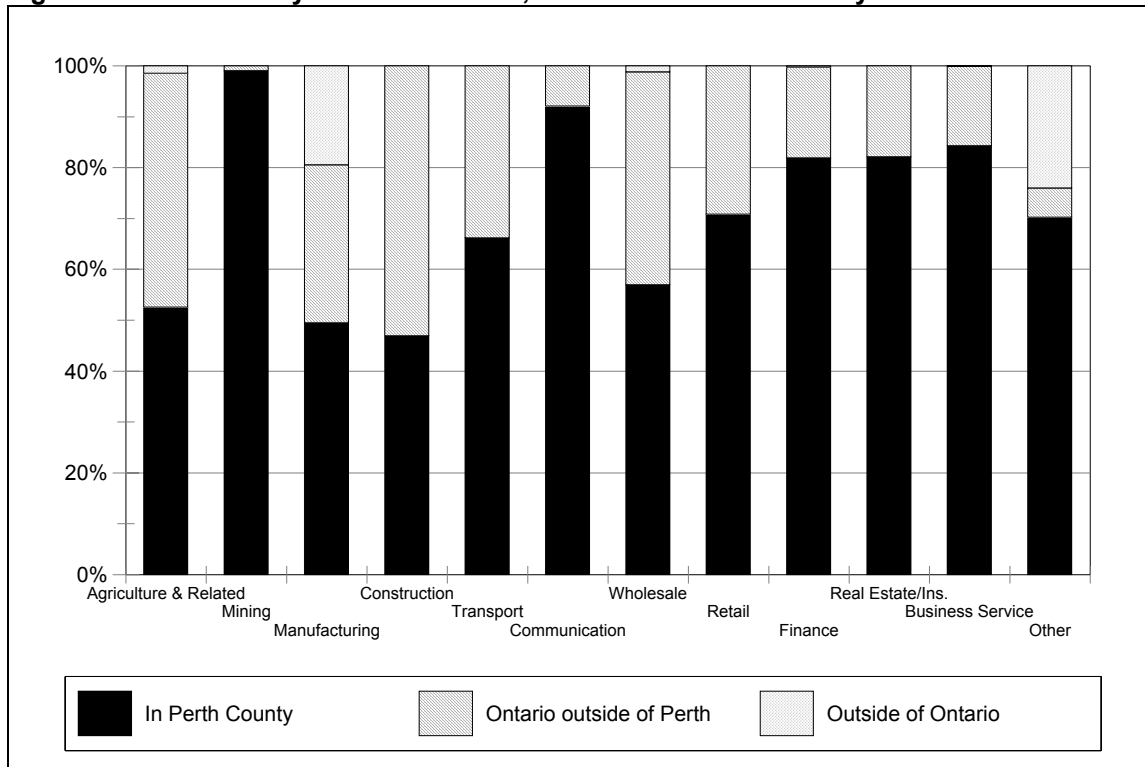
According to the 246 businesses that provided sales data for the study, 65.4% of their sales are made within Perth County. This remaining 34.6% of their sales are exports to other locations in Ontario (33.0%), and outside of Ontario (1.6%). These sales represent the total sales for all the Agriculture-related businesses surveyed, including sales related to and unrelated to agriculture.

As shown in Figure 9, Construction businesses have the greatest percentage of exports with 53.1% of their sales being made outside of Perth but inside of Ontario, and the remaining 46.9% staying in the county. Manufacturing industries export 31.0% of sales outside of Perth, but inside Ontario, with an further 19.5% coming from outside the province. Agriculture and Related Services export 45.9% of their sales outside of Perth, but in Ontario, with a further 1.5% of sales going beyond the province. Wholesale industries export 41.9% of their sales outside of Perth, but inside Ontario, and 1.2% of their sales outside of Ontario. Transportation and Storage industries receive 33.8% of

their sales from locations outside of Perth, but have no sales outside of Ontario. Other Services generate 5.7% of their sales outside of the county, but still in Ontario, and a further 24.0% of their sales from outside of the province. Retail industries generate 29.2% of their sales out of the county, but still in Ontario.

Of the twelve Industrial Sectors which are represented by the agriculture-related businesses surveyed in this study, only five retain 80 percent or more of their sales in Perth County. These include: Mining, Quarrying and Oil Well Industries (99.0%), Communication and Other Utility Industries (92.1%), Business Service Industries (84.2%), Real Estate and Insurance Agent Industries (82.1%), and Finance Industries (81.9%).

Figure 9. Sales by Industrial Sector, for the Businesses Surveyed.



Source: 1999/2000 Ag-business Survey

5.2.2.5 *Summary: Agriculture-related Businesses in Perth County*

The analysis shows that businesses that buy from or sell to the agriculture sector in Perth County generate a sizeable amount of money and jobs inside the county. Furthermore, these companies generate flows of income and expenditure outside the county in terms of both employment and income. It is estimated that \$427.1 million in agriculture-related sales are generated in Perth County by agriculture-related businesses. These businesses generated over \$215.3 million in agriculture-related sales in other parts of Ontario and a further \$10.5 million outside of Ontario. This income is exchanged among the three regions which benefits local businesses. The total amount of agriculture-related sales for all three regions is \$652.9 million.

Businesses supported by agriculture generate additional sales in other sectors of the economy. Total sales of agriculture-related businesses in Perth County reach more than \$1.29 billion, including sales related and unrelated to agriculture. This is shown in Table 18.

Table 18. Gross Sales Generated by all Perth County Agriculture-related Businesses.

Location of Sales	Ag-related Sales (in \$ millions)	Total Sales: Related and Unrelated to Agriculture (in \$ millions)
Sales in Perth County	\$427,079,568	\$843,901,408
Sales in Ontario (other than Perth)	\$215,315,165	\$425,458,825
Sales Outside Ontario	\$10,511,994	\$20,771,508
Total Sales	\$652,906,727	\$1,290,131,741

Source: 1999 Ag-business Survey

Indirect employment is a further impact of the agriculture sector. Table 19 shows that the total Full Time Equivalent Jobs created by agriculture-related businesses is approximately 6,393, including jobs related and unrelated to agriculture. Of this, approximately 3,133 are indirect agriculture jobs created by agriculture-related businesses in Perth County. In addition, there are jobs supported outside Perth County by both Perth County residents purchasing outside the county and by jobs in subsidiary locations of Perth County businesses. There are 2,211 jobs maintained by Perth

agriculture-related businesses which are supported by sales located outside of the county. Of these, 1,084 are positions related to the agriculture sector. These jobs are supported through sales inside and outside of the county, and are important linkages for the Perth County economy.

Table 19. Full Time Equivalent Indirect Jobs in Agriculture

	Agriculture-related Jobs	Total Jobs Related and Unrelated to Agriculture
Jobs in Perth	2,049	4,182
Jobs outside Perth	1,084	2,211
Total FTE Jobs	3,133	6,393

Source: 1999 Ag-business Survey

5.2.3 Estimated Induced Jobs

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 current study, we have not calculated Induced Sales, but this would definitely add a significant figure to the overall Ag-related sales total of agriculture-related businesses in Perth County through the salaries of employees in the Education, Health and Government Service sectors.

Induced jobs in Perth County refer to service sector jobs that are supported by services purchased by agriculture employees. These represent jobs in the education, health and government service sectors. To make estimates of the induced jobs in Perth County, a combination of three administrative areas was utilized; Elma Township was selected to represent the county as it has the greatest total direct agricultural (ie. farm gate) sales, Listowel was selected as the centre which provides the selected services to Elma, and Wallace Township was added as it surrounds most of Listowel and therefore also draws on services from the town. The total direct employment figure for the two primary production industries, Agriculture and Manufacturing, (1,280 and 1,110 respectively for a total of 2,390 jobs) in the area was divided into the total number of jobs in the Education, Health and Government Service Sectors (215, 580 and 105 respectively, for a total of 900 jobs). This calculation indicates that for every job created

in the two primary production industries, 0.38 induced jobs were supported by them in these three service sectors.

When this number is applied to the total number of direct and indirect jobs related to agriculture in Perth County as a whole (4,935 direct jobs and 3,133 indirect jobs for a total of 8,068 jobs), it indicates that 3,066 induced jobs are supported by agriculture in the county.

5.2.4 Total Direct, Indirect and Induced Impacts

As shown in Table 20, there are 4,935 direct, 3,133 indirect and 3,066 induced jobs created as a result of the agriculture sector in Perth County. Thus, farm operations, businesses they buy from and sell to, and services that support farmers and farm businesses are estimated to support an estimated 11,134 jobs. When these three figures are added together to estimate the total number of jobs related to agriculture in Perth County (4,935 direct, 3,133 indirect and 3,066 induced for a total of 11,134) and divided by the total number of direct agriculture jobs, an employment multiplier of 2.26 is the result. This calculation allows us to estimate that for every job in the agriculture sector, an additional 1.26 jobs related to agriculture are supported.

Table 20. Total Sales and Employment Related to Agriculture in Perth County

	Sales	Jobs
Direct	\$430,255,814	4,935
Indirect	\$652,906,727	3,133
Induced		3,066
Total	\$1,083,162,541	11,134

Although they have not been included in this study, there are also industries in Perth County which are related to Agriculture, but do not deal directly with farmers. Approximately 1,500 additional jobs are present in large manufacturing companies, many of which deal with food products using produce purchased through various agents that purchase from farmers, or manufacture products which reach farmers through a

variety of distributors. These companies include: Atwood Cheese, Bio Agri Mix, Campbell Soup, Dickinson, Grantham Dairy, Horizon Poultry, Parmalat, Spinright, St. Marys Vet Purchasing and UNI-Fine Richardson.

In addition, there are \$430,255,814 in direct sales and \$652,906,727 in indirect sales associated with agriculture in Perth County. Therefore, approximately \$1,083,162,541 in agriculture-related sales are generated in the Perth County economy. In order to estimate the sales expenditure multiplier in Perth County, the total amount of agriculture-related sales for the area (\$1,083,162,541) was divided by the total amount of direct sales for the area (\$430,255,814) to calculate a sales expenditure multiplier of 2.52. In short, we can use this calculation to estimate that for every dollar generated by direct agricultural sales (farm gate sales), an additional \$1.52 in sales related to agriculture is also produced.

5.3 In-depth Analysis of Agriculture-related Businesses: Case Studies

Ten Ag-related businesses were randomly selected from the businesses surveyed through the telephone interview. These businesses were contacted and asked to participate in a long interview with a representative from the Ontario Federation of Agriculture. The researcher visited the work site, took a tour of the business when possible, and asked several questions about the linkage between their business and the agricultural sector.

The ten businesses include a feed mill, an electrical company, two woodworkers, two real estate businesses, a farm supply store, a veterinary clinic, a general repair garage and a credit union. The interviews with the businesses lasted from half an hour to an hour in length.

These businesses sold products to the public at large, to farmers and to other ag-related businesses. Some of the products provided to farmers include vitamins and minerals for livestock nutrients, electric work on tractors, wood signage and custom cabinets, auctioneering and property sales, delivery of seeds and fertilizers, soil testing, crop input sales and application, veterinary services including herd health and drug dispensing, farm equipment repair, and the provisions of loans.

Owners were asked to clarify any changes they have seen in their business over the last ten years. They were also asked to address changes in the agricultural industry that have affected their business. The discussion continued on to perceived changes to their business in the future. Owners were asked to discuss the challenges and opportunities they see for their business, with specific reference to those related to the agricultural industry.

Changes in the business over the last ten years

The ag-related businesses that participated in the long interviews have a common characteristic. They are aware of, and interested in, the state of agriculture. Most work in the rural area and see their business as having a vested interest in farming. The majority of business owners are fully aware of the linkage between agriculture and the fate of their business. For example, a Perth County woodworker who creates signs for farm businesses states that “when the price of pigs and crops drops, so does my business.”

Businesses working with farmers have noted the increased size of farms. One realty business owner stated large farms are getting larger. For example, a realtor interviewed noted an influx of farmers originally from Europe that “don’t want to buy anything less than 200 acres in one parcel.”

The ag-related businesses interviewed have noted these changes and have perceived changes to the way they do business as a result. Some suggest that they are now more likely doing business with companies and employees rather than the owner due to the increase in the number of large operations.

The ag-related businesses interviewed believe that the increase in farm sizes is accompanied by a decrease in the number of farmers. Owners suggest that such changes in the agricultural industry have created increased competition among ag-businesses. For example, one ag-related business suggested a positive effect has been that farmers are becoming more business-minded and are better managers.

During some interviews with ag-related business owners, they suggested that their customers, including farmers, are becoming more knowledgeable about the

products they buy and use. As a farm supply store owner stated, “with increased competition, there is a need to know everyone else’s product, in addition to your own.”

An interview with a vet practicing in Perth County revealed that the changing nature of the agricultural industry has necessitated changes in the vet practice in order to meet the changing needs of the farmer. The focus for the veterinarian has changed from emergency-type services to a focus on herd health and preventative medicine. The veterinarian reported that the clinic is spending more time “educating farmers on what they are doing, how and why. More attention is being paid to drug dispensing and prescribing and the way these tie in with consumer awareness.”

The owners of the repair garage and signage business report that farmers are doing more of their own work, resulting in a decrease in their sales. One garage owner stated; “farmers are watching their dollars more. They are trying to do more of the work themselves. When the farmers are too busy to do this work, they come to us.”

Ag-related businesses also state that the advance of technology is among the most important change experienced over the last ten years. For example, a farm supply store owner stated, “everything is going high-tech.” One of the real estate company owners interviewed stated that “technology has had a major impact.”

Ag-businesses also report that the variety of goods now being demanded by the farmer has increased. The farmer is also more aware of the goods and services needed for his farm. Technology, including the internet, has helped to disseminate product information to the public. For example, realty offices noted that the Land Market site on the internet keeps customers well informed of current market prices and other product information.

Other changes were noted in the shipping and transport of goods. A number of those interviewed reported that, while shipping has become faster, there are more industry regulations in terms of the storage and transportation of goods, which has increased costs.

The owner of the farm supply store noted that an important change in the last ten years has been farmers engaging in contracts with packers (i.e. especially in hogs). The business owner worried that farmers may be losing control of their own operations.

A number of the businesses noted increased taxes over the last ten years, making it difficult to maintain profit levels.

Perceived Changes in the Future

Diversification was mentioned by several of the businesses interviewed as a strategy for the future of their business. For example, the feed mill owner sees diversification of their products as likely. They would like to provide diversified feed for emu, ostrich, goats, reindeer as well as hogs, beef and chickens. Their plan is to be able to provide animal supplement for any animal in Ontario.

Future changes also include expanding markets. Two businesses mentioned that they want to search for new markets outside the county. They actually see this as necessary in order to survive.

Some of the ag-related businesses interviewed perceive farming as going in two directions: the high tech farmer and the standard small operator. "The high tech farmer will remain high tech and are in a rush to modernize." One electrical company sees the future of their business as tied to the more advanced farmer.

Staying abreast of technological advances, especially in terms of the computer, is seen as both a present and future concern. For example, one of the carpenters interviewed is aware that there is cabinet software available on the market, but he has yet to purchase and use it. He is currently competing with others in the business who are using it to their advantage. He reports that a likely change for his business is to become "more technologically aware." A real estate business is also looking into providing virtual tours of farm properties for sale.

The farm supply store owner envisions increased partnering with speciality crop producers. The store may also help out with marketing of crops. The manager sees a future trend of increased demand for services such as crop consulting.

The veterinarian interviewed stated that larger farms may increasingly have veterinarians working with them (depending on regulations that may come into place), decreasing their need for general vet services.

Challenges for the business

A recurring theme among all of the ag-related businesses in terms of challenges they face is the emphasis on improved service to the customer. This is seen to be accomplished through communication with farmers about their products, providing the appropriate products by keeping up with technological changes, and providing prompt service.

A farm supply store owner states: “our greatest challenge is to get the new information and results out to the farmer and to give them the choice to use the products or not.” The owner of a woodworking company sees his largest challenge as finding different ways to market his business. “Unfortunately, busy operators don’t have much time to do this.”

An electrical company and a credit union suggest their greatest challenge is to keep up with technological changes. This includes technical advances of their products, as well as methods of advertizing and communicating with their customers.

A realtor and a farm supply store share the same challenge of increased competition. As the farm supply store owner states; “Our biggest challenge is competitors that have a large knowledge base. It is hard to specialize with the limited staff.”

Opportunities for the business

At least one business interviewed sees an opportunity arising from the increased size of farms. A woodworker noted that corporate farms are more interested in wood signage as “farmers are putting more into advertising their farms. Large progressive farmers want to show their business and signs are a way to advertize.

One realtor sees new opportunities for his business in the area of auctioneering. “The auction business is one opportunity. If there is a large turn over in farms, there will be great opportunities for our business. ”

The farm supply store owner sees opportunities for more crop consulting. The owner wants to use his staff’s knowledge base to collect the proper information from farmers in order to make accurate decisions. They see an opportunity to provide some of the services previously provided by local OMAFRA staff.

According to the vet interviewed, there is a changing attitude in the veterinary business from one centered on the animal to a business centered on the farmer. They understand that the modern client wants the veterinary practice to assist the farmer to look after their own animals. Further opportunities seen in the veterinary business include the development of nutritional feed programs and preventative methods.

The Credit Union sees the public's disenchantment with the "big banks" as an excellent opportunity to expand their market.

Final Comments

As previously stated, the agriculture-related businesses surveyed understand the linkage between their business and the fate of the agricultural industry. As a feedmill operator states; "If the independent farmer survives, so will my business. This is a small company and it is the independent farmers that keep me in business." A garage owner states: "When farmers do well financially, they spend it on goods. When they don't, they don't spend. So my business is affected." The credit union interviewed completed the interview by stating; "We see ourselves as real players in the ag industry and want to maintain this."

The businesses surveyed all recognized the link between their business and the agricultural industry. They perceive the fate of their livelihood to be connected to farming and the farm community. They also note that farms are getting larger, and there is increased competition for their business. The sense that their customers are becoming more and more informed about the products they use, and this has necessitated several changes to their businesses. The most important is that the ag-related business feels pressure to keep abreast of the specifics of their products in order to stay competitive. Technological changes in the agricultural industry, as well as their specific industry - be it carpentry, electrical work or banking – have forced these businesses to continually adapt and learn.

5.4 Comparison to Previous Studies

As mentioned previously, this type of study (using the same methodology) has been completed in four other locations in Ontario: Huron County (1998); Prescott,

Russell, Stormont, Dundas and Glengarry Counties (1999); Simcoe County (1999) and Lambton County (2000). Table 21 compares sales data from those studies with the current Perth County study.

Table 21. Total Ag-related Sales in Huron, PRSD&G, Simcoe, Lambton and Perth Counties.

	Huron ⁶	PRSD&G	Simcoe	Lambton	Perth
Direct	\$511,918,855	\$363,496,609	\$264,884,681	\$301,426,481	\$430,255,814
Indirect	\$1,489,000,000	\$756,453,565	\$518,691,957	\$472,117,375	\$652,906,727
Total Sales	\$2,000,918,855	\$1,119,950,174	\$783,576,638	\$773,543,856	\$1,083,162,541
Sales Expenditure Multiplier	3.91	3.08	2.96	2.57	2.52

Source: Cummings et al., 1998 & 1999

Table 22 compares the employment data from the four studies.

Table 22. Total Ag-related FTE Jobs in Huron, PRSD&G, Simcoe, Lambton and Perth Counties.

	Huron	PRSD&G	Simcoe	Lambton	Perth
Direct	5,025	5,955	4,770	3,920	4,935
Indirect	14,186	4,516	2,237	1,624	3,133
Induced	3,528	7,007	7,414	3,382	3,066
Total Jobs	22,739	17,478	14,421	8,926	11,134
Employment Multiplier	4.53	2.94	3.02	2.28	2.26

Source: Cummings et al., 1998 & 1999

The results of this study compare well to the previous studies, with Perth County ranking second or third in most of the categories. What makes this significant is that Huron County has traditionally been the largest agricultural county in terms of farm gate sales over the past decade, and PRSD&G is actually an amalgamation of two united counties (Prescott-Russell and Stormont, Dundas and Glengarry) made up of five smaller counties. Perth County is competitive with these two, and is superior to most of the agricultural-producing counties in the province. As such, the study shows that Perth

⁶ Huron County was the first study of this type to be carried out. As such, the methodology has been continuously refined throughout the course of time. The higher numbers in Huron County's Indirect Sales and Jobs figures may reflect these refinements.

is one of the most important agricultural-producing counties in the province, and agriculture in Perth is an essential part of the county economy.

6.0 Results Conclusions

Agriculture is clearly a dominant player in the Perth County economy, providing approximately 29% of employment in the county and generating over \$1.08 billion in annual sales. The sector touches an estimated 686 businesses selling to agriculture as well as the vital public service sector.

Estimated expenditures of \$1.08 billion are generated by agriculture producers and agriculture-related businesses within Perth County. This is the estimated flow of sales and expenditures generated by farm operations as well as sales related to the agriculture sector. While previous estimates indicated that 4,935 jobs existed in the agriculture sector in 1996 (Statistics Canada, 1996 census), the study shows that an further 3,133 jobs were tied indirectly to the agriculture sector in Perth through agriculture-related businesses, and an additional 3,066 jobs were supported by agriculture in education, health and government service. Clearly, this has a significant impact on the economy of Perth County, where the total estimated number of jobs is 38,550. Multipliers associated with the sales and employment data suggest 1.25 jobs off the farm for every 1 on the farm, and \$1.52 off the farm sales for every \$1 generated by farm gate sales.

There are significant opportunities for agriculture and business. Perth County businesses are well situated to serve the rest of the province and beyond. Many businesses now serve the province from a Perth base. This should be encouraged; the location and work environment are supportive.

We would also note the changing structure of agriculture and the rich base agriculture has to build on in Perth County. A well-trained labour force, reasonable living costs, easy access to markets and other benefits make Perth an attractive location to be involved in Agriculture and all its parts.

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