



**Credit Valley  
Conservation**  
inspired by nature



# **Statistical Profile of Agriculture in the Credit River Watershed**

Prepared by: Credit Valley Conservation

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## Executive Summary

Agriculture represents a significant type of land use in the Credit River Watershed. It's estimated that 30% of the land in the watershed is farmland. Agricultural stewardship and management are essential to the future of Credit Valley's natural environment and resources. The successful delivery of conservation programs targeting agriculture requires a strong understanding of the agricultural community and changes occurring to agriculture in the watershed. Since 1996, Credit Valley Conservation has used the Government of Canada's Census of Agriculture data to track changes in farms and farmland within the Credit River Watershed. The purpose of this report is to identify and understand changes occurring to agriculture in the Credit River Watershed by examining data from the most recent Census of Agriculture conducted in 2016.

Analysis from the 2016 Census of Agriculture shows farmland has decreased by less than one per cent over the past 10 years. The total amount of farmland reported in the watershed in 2016 was 28,669.33 ha. Although the amount of active farmland has remained stable, there are fewer farms managing it. During the same period from 2006 to 2016, the number of farms in the watershed decreased by 11 per cent. This means there are fewer farms in the watershed, but the average size of each farm has grown over time. Farmers operating in the watershed are increasingly renting farmland from others, rather than owning it. It's estimated that over half the farmland in the watershed is now owned by a non-farmer, which could influence how these lands are managed.

The dairy and livestock sector have declined significantly as more farmers turn to crop production. Hay production and land used for pasture has consequently declined, while grain and oilseed crops such as corn and soybean have increased. On cropped lands, the number of farmers implementing best management practices (BMPs) such as no-till planting and cover cropping has steadily increased. These practices not only improve soil and crop health but enhance water quality.

Rented lands and short-term rental agreements can also pose a challenge for the advancement of conservation actions and agricultural BMPs; however, unique opportunities exist to inspire farmland stewardship on rented land. Farmers working on rented land are more focused on annual production profits. Stewardship programs targeting farm profitability present an opportunity to promote conservation actions on rented land.

## Table of Contents

Executive Summary .....	3
List of Figures.....	5
List of Tables .....	5
Introduction .....	6
Farmland .....	7
Farms and farm operators.....	10
Land tenure.....	11
Livestock production.....	12
Crop production .....	13
Farm management practices .....	14
Outlook for agriculture in the Credit River Watershed .....	16
Farmland changes.....	16
On-farm investment .....	16
Implications for agricultural stewardship .....	17
Conclusions.....	18
References .....	19
Appendix A – Methodology .....	21
Appendix B – Credit River Watershed description .....	23

## List of Figures

Figure 1. Total Farmland area (ha) reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016. ....	7
Figure 2. Percent change in total farmland area (ha) from 1996 to 2016 across the subwatersheds of the Credit River Watershed. ....	9
Figure 3. Number of farms reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016. ....	10
Figure 4. Total cropland (ha) reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016 .....	13
Figure 5. Cover crop of oats, peas and sunflowers planted after wheat in August 2018 in Caledon, ON. Image was taken in September, 2018. ....	15
Figure 6. Map of the subwatersheds found in the Credit River Watershed containing their name and corresponding number. ....	23

## List of Tables

Table 1. Total farmland area (ha) reported in the 2016 Agricultural Census across the subwatersheds with reference to their primary lower-tier municipalities. ....	8
Table 2. Total farmland and rented land reported for the Credit River Watershed in the Agricultural Census from 2006 to 2016. Data does not exist for this metric in the 1996 and 2001 census years.....	11
Table 3. Number of farms and farmland (ha) and increase in farmland under no-till management reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016. Increases in no-till farmland (%) are based on the previous census.....	15
Table 4. List of subwatersheds and amalgamated subwatersheds used by Credit Valley Conservation and Statistics Canada to divide the custom Agricultural Census data from 1996 to 2016.....	22

## Introduction

Agricultural producers manage a significant portion of the rural Credit River Watershed and are key stakeholders in the protection of environmental resources, such as water, air, soil and biodiversity. A previous statistical profile of the Credit River Watershed estimated the total land area in agricultural production was 29,409 ha in 2011 (Credit Valley Conservation, 2014). This represents close to 31 per cent of the total watershed. Engaging the agricultural community with efficient and effective conservation programs is essential to the future of Credit Valley's natural environment and resources. It's important to understand the state of agriculture in the Credit River Watershed to ensure the successful delivery of conservation programs.

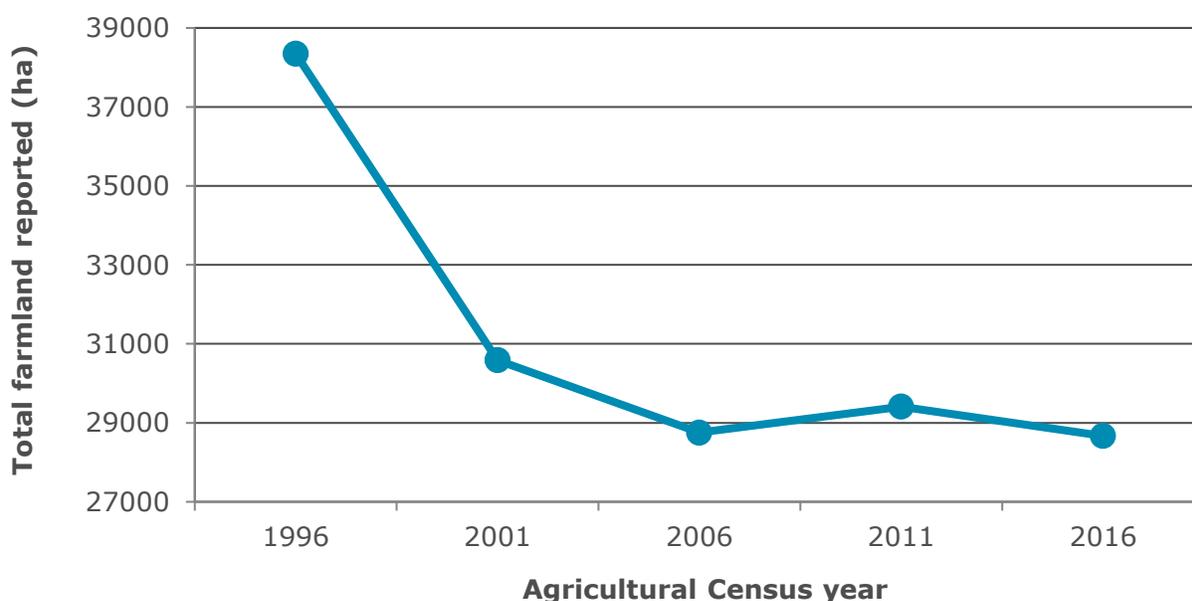
Evidence shows agriculture in the Credit River Watershed is undergoing change (Credit Valley Conservation, 2014). Intense urban pressures, changing age demographics, shifts in land ownership, climate change and increasing public awareness of agricultural practices are a few examples of pressures influencing farm management decisions throughout the watershed. While many of these pressures are shared with other areas in Ontario, the complete set of circumstances governing farm management decisions in the Credit River Watershed is unique. To successfully deliver conservation programs targeted at agriculture, it is imperative to understand how the unique set of pressures is effecting change in the agricultural community.

The purpose of this report is to identify and understand changes occurring to agriculture in the Credit River Watershed by examining data from the most recent Census of Agriculture conducted in 2016. The Census of Agriculture is a federally mandated census administered to agricultural producers every five years. Credit Valley Conservation obtained Census of Agriculture data from Statistics Canada specific to the Credit River Watershed since 1996 to help track agricultural trends. A full description of the data, collection and use in this report is found in Appendix A.

This report provides information on observable changes in agriculture from the census data at both the watershed and subwatershed level. It routinely refers to the four previous census datasets obtained over the past 20 years (1996, 2001, 2006, 2011) to understand longer-term trends. This report also draws on other sources of information describing agricultural trends in Canada and Ontario. Ultimately, this information will be useful to inform future conservation actions and contextualize other data gathered or obtained by Credit Valley Conservation.

## Farmland

In 2016, 28,669.33 ha of the Credit Valley watershed was farmed representing approximately 30 per cent of the total watershed area. From 1996 to 2006, there was a 25 per cent decrease in farmland followed by a stable period (<1 per cent decrease) from 2006 to 2016, as illustrated in Figure 1.



**Figure 1.** Total Farmland area (ha) reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016.

The census data obtained from Statistics Canada for the watershed was custom separated to correspond with the 22 subwatersheds contained within the Credit River Watershed. By doing so, it is possible to see agricultural trends at a granular level and identify likely factors driving changes. A description of the divisions is found in Appendix A and a description of the subwatersheds is found in Appendix B.

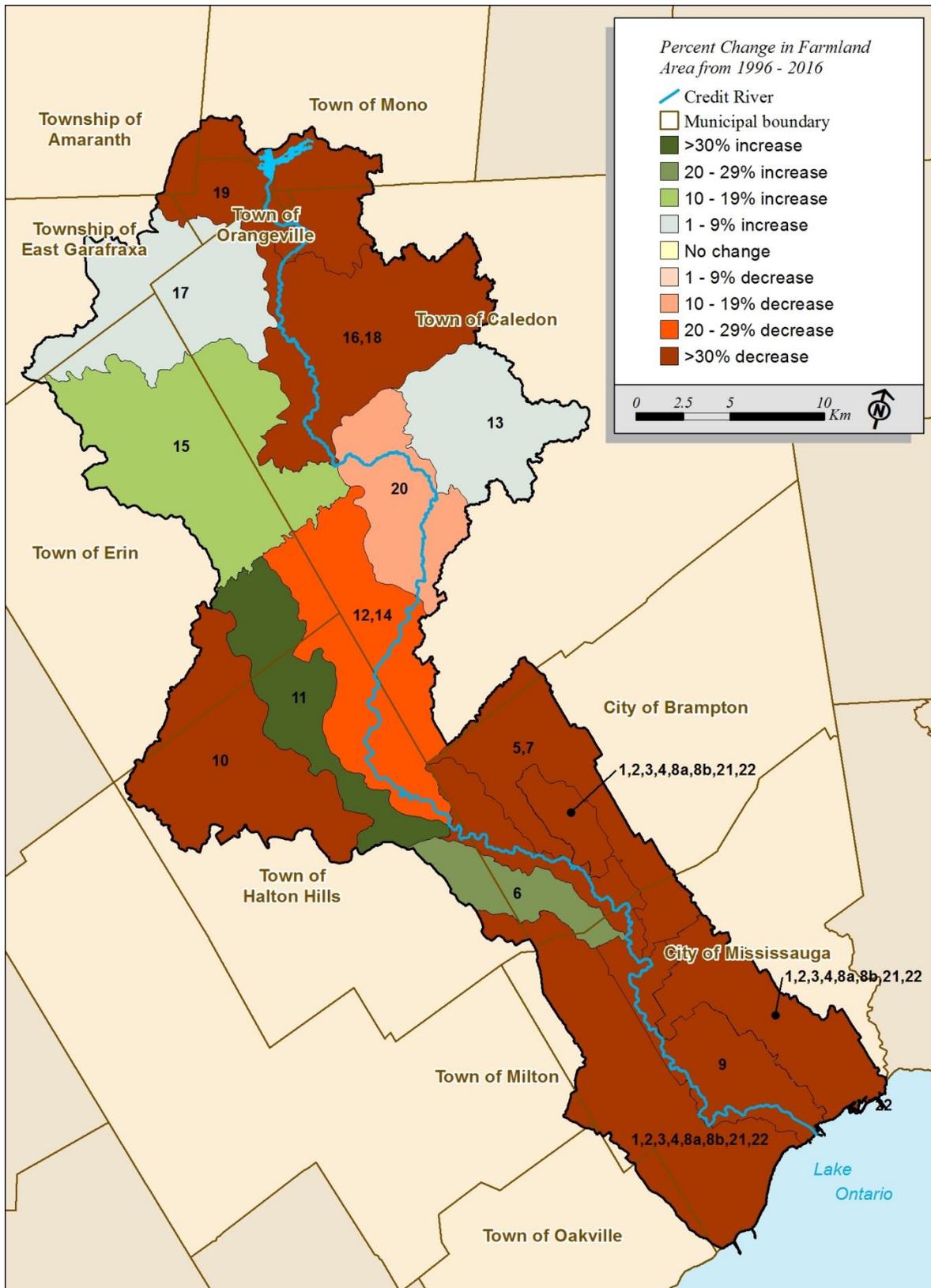
Table 1 on page 8 shows the total farmland reported in the 2016 census divided by subwatershed and the proportion of farmland held in that subwatershed. Subwatershed 15 contained approximately 17 per cent of the total farmland in the watershed. The middle to upper watershed in the municipalities of Caledon, Erin and Halton Hills contained the majority of the total farmland.

**Table 1.** Total farmland area (ha) reported in the 2016 Agricultural Census across the subwatersheds with reference to their primary lower-tier municipalities.

Subwatersheds	Total farmland (ha)	Watershed proportion (%)	Primary Municipalities
<b>Credit River Watershed</b>	28,669.33	100	All
<b>1, 2, 3, 4, 8a, 8b, 21, 22</b>	1,049.00	3.66	Brampton, Mississauga
<b>5, 7</b>	2,139.50	7.46	Brampton
<b>6</b>	1,587.57	5.54	Halton Hills, Brampton
<b>9</b>	734.33	2.56	Brampton, Mississauga
<b>10</b>	1,868.52	6.52	Halton Hills, Erin
<b>11</b>	2,616.52	9.13	Halton Hills, Erin
<b>12, 14</b>	4,233.56	14.77	Caledon, Halton Hills
<b>13</b>	2,512.86	8.77	Caledon
<b>15</b>	4,775.01	16.66	Erin, Caledon
<b>16, 18</b>	1,993.53	6.95	Caledon
<b>17</b>	2,783.26	9.71	East Garafraxa, Caledon
<b>19</b>	1,226.32	4.28	Caledon, Mono
<b>20</b>	1,149.35	4.01	Caledon

Despite a 20 per cent decrease in total farmland across the watershed from 1996 to 2016, the subwatershed analysis reveals the loss is not equal across the watershed. In fact, some subwatersheds have experienced an increase in census recorded farmland since 1996. Percent change in farmland area by subwatershed from 1996 to 2016 is seen in Figure 2 on page 9.

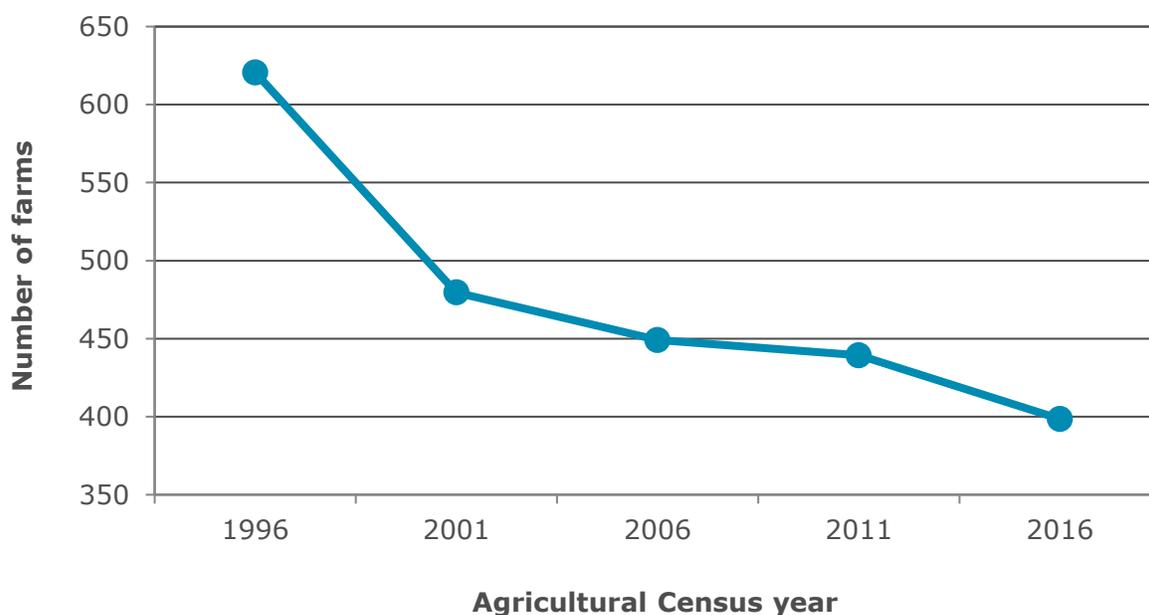
Notable decreases in farmland occurred in the middle to lower watershed and it is likely that development in Mississauga, Brampton and to a lesser extent, Georgetown drove much of the farmland loss. Notable increases in farmland were seen in subwatersheds 6, 11 and 15. It's not clear why some areas experienced an overall increase in farmland compared to others.



**Figure 2.** Percent change in total farmland area (ha) from 1996 to 2016 across the subwatersheds of the Credit River Watershed.

## Farms and farm operators

Although the area of farmland decreased only slightly since 2006 (< 1 per cent), the number of farms in the watershed declined at a faster rate. From 1996 to 2006, the number of farms decreased by 27 per cent. From 2006 to 2016 the number of farms decreased by 11 per cent. In total, from 1996 to 2016 the watershed lost 222 farms and is now home to only 398 farms as shown in Figure 3.



**Figure 3.** Number of farms reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016.

Farms in the watershed are becoming larger as the number of farms is decreasing faster than the amount of farmland. In 2016, the average farm size across the watershed was 71.63 ha. This is a 25 per cent increase in average farm size since 1996; however, this is below the national average. Nationally, the average farm size is 195.46 ha and is projected to increase in the future (Statistics Canada, 2017a).

The average acreage managed by each farm operator also increased alongside increased farm size. In total, there were 565 farm operators in the watershed managing on average 50.58 ha each. The total number of farm operators decreased by 11 per cent to 70 farmers since 2011. The average age of farm operators increased marginally since 2011 from 57.4 to 57.6 years old in 2016. Although this change is minimal, the average age of farm operators in the watershed is higher than the national average of 55.0 years of age (Statistics Canada, 2017a).

Reports on the Census of Agriculture by Statistics Canada (2017a) show similar national trends to those observed in the Credit River Watershed. Similarly, the data

shows an increase in average farm size along with a decrease in total number of farms across Canada. The national data indicates land in agricultural production is increasing. While this is true for Canada and Ontario, this is not the case in the Credit River Watershed.

## Land tenure

Many changes in agriculture have led to the increase in farm size observed across the country. The size of new farm equipment and the technological advancements such as GPS have made it easier for farmers to manage more land and therefore, increase their farm size. Likewise, it is also thought that the increased use of rented land has enabled Canadian farmers to increase the size of their agricultural operations. By renting land, farmers can scale up their farm operations without investing significant amounts of financial resources in land capital (Statistics Canada, 2017a). While the availability of rental lands has not resulted in an increase in farmland within the Credit River Watershed, it is possible the rental market has slowed the decrease in available farmland throughout the watershed.

Since 2011, the total amount of land owned by farmers in the watershed decreased approximately 10 per cent (1,460 ha). At the same time, there was an eight per cent increase in the total amount of land rented from others throughout the watershed. In 2016, 167 of 398 farms reported renting farmland from others representing 42 per cent of all farms. 2016 was the first year where the proportion of farmland rented exceeded 50 per cent of total farmland area. This trend has been observed since 2006 (this question was not asked in the 1996 and 2001 census versions) and by 2016, 15,152.64 ha of farmland was rented from others in the watershed. Total area of rented land and total farmland since 2006 is seen in Table 2. Farmland rental in the Credit River Watershed is high compared to the national average. Statistics Canada (2017a) estimates 35 per cent of farms in Canada rent farmland from others compared to almost 53 per cent of farms in the Credit River Watershed.

**Table 2.** Total farmland and rented land reported for the Credit River Watershed in the Agricultural Census from 2006 to 2016. Data does not exist for this metric in the 1996 and 2001 census years.

Year	Total farmland (ha)	Rented land (ha)	Proportion of land rented (%)
2006	28751.80	13038.85	45.35
2011	29409.36	14041.41	47.74
2016	28669.33	15152.65	52.85

Farmland rental on a subwatershed level shows proportions of rented farmland are generally higher in the lower subwatersheds. These subwatersheds have higher development and urban pressures and are primarily situated in the cities of Brampton and Mississauga. Across the amalgamated subwatersheds (1, 2, 3, 4, 8a, 8b, 21, and 22), 85 per cent of the farmland is rented. In subwatersheds 5 and 7, the land rental percentage is 80 per cent. In contrast, the percentage of rented land in the Greenbelt is lower. For example, subwatershed 15 has the largest acreage of farmland in the watershed and approximately 55 per cent of farmland in subwatershed 15 is rented. It's interesting to note that even subwatersheds located in the Greenbelt such as subwatershed 15, with strong agricultural communities, also have high proportions of rented lands compared to the provincial average. This is likely due to the close proximity of farmland to major urban centers found in the Greater Toronto Area (GTA). In the Credit River Watershed, it's common for rural residents to reside on a farm property and commute to the urban centers for employment and rent the farmland to local farmers. This is not as common in more rural areas of Ontario.

## Livestock production

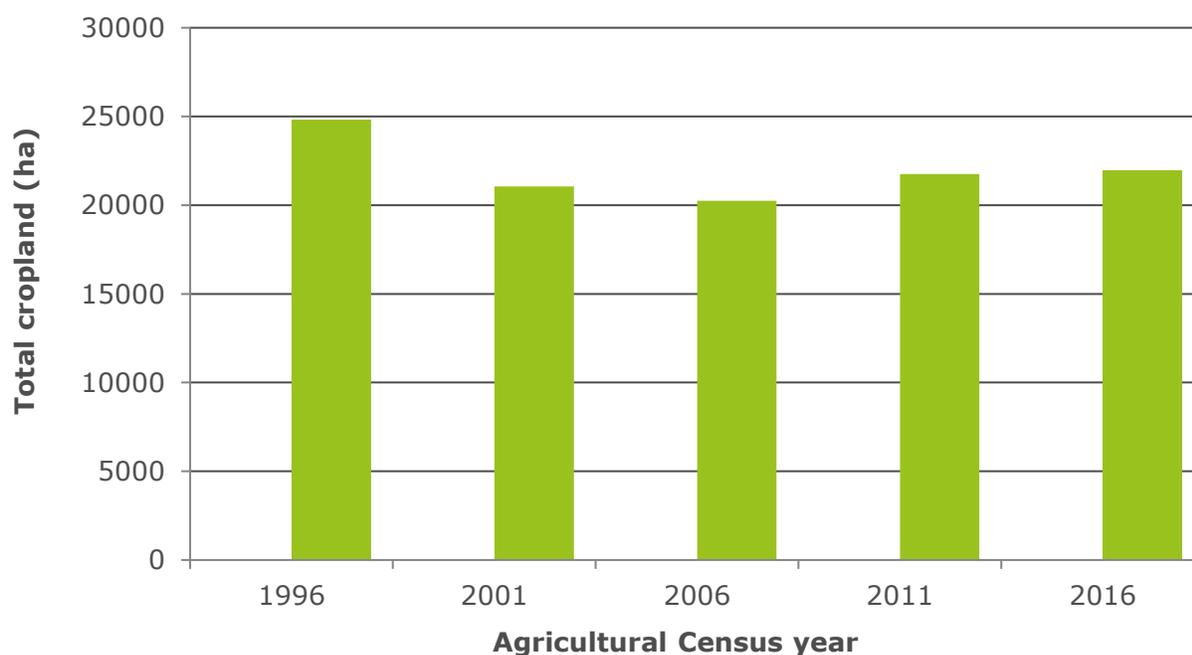
The Credit River Watershed was once dominated by beef and dairy production (Richardson *et al.*, 1956). The watershed was part of the "dairy belt", a term used to describe dairy-producing regions of Ontario that supplied the growing city of Toronto with milk. In 1956, Credit Valley Conservation estimated over 25,000 ha of land was dedicated to pasture alone (Richardson *et al.*, 1956). Since 1996, the watershed lost approximately 75 per cent of dairy and 58 per cent of beef farms. In 2016, only 16 farms reported dairy cows in the watershed; however, there were some gains in livestock production in niche markets within the watershed since 2011. For example, the number of lambs increased by 27 per cent and the number of goats increased by 222 per cent. This is likely due to the emergence and establishment of new markets in the urban areas. Despite some notable increases, the absolute numbers of livestock for both lambs and goats is small relative to other forms of livestock production in the watershed (642 lambs and 784 goats).

With respect to livestock in the Credit River Watershed, the equine sector should be highlighted. In 2016, almost one third of all farms (127 farms) reported owning horses. The total number of horses reported was 1,343 and has remained stable since 2011. Nationally, the number of horses and ponies reported by farms decreased by approximately 25 per cent from 2011 to 2016 (Rostami, 2017). This decline has been attributed to the cost of horse ownership which has steadily increased. Horses are now considered a luxury item rather than a necessary part of a working farm (Rostami, 2017). In the Credit River Watershed many rural residential landowners keep horses on their property for personal reasons. Many of these households are

not captured in the census data and there are likely more horses in the watershed than currently reported in the census data.

## Crop production

Since 1996, farmland the Credit River Watershed has increasingly been dominated by cropland such as grains, oilseeds and hay. In 2016, the proportion of total farmland in crops was 77 per cent compared to 65 per cent in 1996. However, the total amount of cropland in the watershed decreased since 1996 as the total amount of farmland decreased. The total amount of cropland is shown in Figure 4.



**Figure 4.** Total cropland (ha) reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016

Corn, soybeans and wheat accounted for 48 per cent of all agricultural land. Soybeans were the most popular crop at 6,655.06 total ha (48 per cent), followed by corn at 4,183.64 ha (31 per cent) and wheat at 2,941.26 ha (21 per cent). Other grains and oilseeds produced throughout the watershed such as barely and canola were not a large agricultural focus. These numbers are consistent with 2016 Ontario trends noted by Statistics Canada (2017b).

Aside from grains and oilseeds, the other predominate crop was hay. An estimated 5,050.48 ha of hay was produced in the watershed representing just under 18 per cent of the total farmland. The amount of hay production has decreased steadily in the watershed with each census year. Since 1996, hay acreage has decreased by 44

per cent. Factors driving this decline are the overall loss of farmland since 1996 as well as the decline in the beef and dairy sectors. The decline in beef and dairy production is also seen in other cropland statistics. For example, although total land farmed decreased by 739.77 ha since 2011, the total area of land in crop production increased by approximately 200 ha. This indicates farmland lost was likely pasture used for livestock production.

In addition to hay, grains and oilseeds, the Credit River Watershed is home to small pockets of other agricultural crops such as fruits, vegetables and nursery products. Much of these were produced in subwatersheds 10, 11, 12 and 14. For example, in 2016 the entire watershed contained 198.29 ha of land in vegetable production. Over 50 per cent of land in vegetable production was in subwatershed 11. About 80 per cent (393.75 ha) of all nursery products were produced in subwatersheds 10, 12 and 14.

## **Farm management practices**

Beyond farmland and crop trends, the Agricultural Census also collects data on management strategies employed by the farm community. This is valuable information to understand specific environmental impacts from agriculture to the Credit River Watershed. For example, there was a significant increase in the use of fungicides and insecticides over the last two decades. From 1996 to 2016 the use of insecticides and fungicides increased by 222 per cent and 254 per cent, respectively. In addition to insecticides and fungicides, herbicide use remains prevalent throughout the watershed. In 2016, farmers reported using herbicides on 15,191.50 ha of fields. This is likely linked to the high percentage of grains and oilseeds grown in the watershed such as corn and soybean.

Farmers reported applying manure on 2,916.73 ha and this area has been decreasing steadily since 1996. This is consistent with the decline in total livestock previously noted. As the livestock and the manure they generate declines, less is available for field application.

There was a notable positive uptake of best management practices (BMPs) in the watershed such as winter cover cropping and no-till agriculture. The use of winter cover crops increased by 55 per cent since 2011. Cover crops keep vegetative cover on the soil, retain nutrients in the field and prevent erosion. Figure 5 shows an example of vegetative cover provided by cover crops.



**Figure 5.** Cover crop of oats, peas and sunflowers planted after wheat in August 2018 in Caledon, ON. Image was taken in September, 2018.

The practice of no-till agriculture continued to increase over the last two decades and is reported in Table 3. In 2016, over 97 farms reported using no-till systems on 7,106.84 ha of land. In 2016, approximately 40 per cent of the total seeded land ( 17,810.33 ha) was planted using no-till methods. This is equivalent to 25 per cent of the total farmland area and represents a 249 per cent increase in no-till farmland since 1996. No-till agriculture can improve soil health, prevent erosion and reduce nutrient loss into nearby waterways. Credit Valley Conservation and our municipal partners such as the County of Wellington and the Region of Peel promote the use of BMPs to improve soil and water quality.

**Table 3.** Number of farms and farmland (ha) and increase in farmland under no-till management reported by the Agricultural Census in the Credit River Watershed from 1996 to 2016. Increases in no-till farmland (%) are based on the previous census.

Year	Farms reporting no-till	No-till farmland (ha)	Increase in no-till farmland (%)
2016	97.98	7,106.84	25.88
2011	83.54	5,645.72	29.30
2006	52.68	4,366.69	47.10
2001	48.79	2,968.49	45.71
1996	24.82	2,037.19	-

## Outlook for agriculture in the Credit River Watershed

### ***Farmland changes***

Approximately 30 per cent of the Credit River Watershed area is managed directly by fewer than 400 farmers. In the rural upper and middle watershed, data from Credit Valley Conservation's Integrated Watershed Monitoring Program indicates approximately 40 per cent of the landscape is agricultural due to the significant amount of urban land in the lower watershed. This highlights the fundamental link between engaging the agricultural community and advancing conservation objectives throughout the rural watershed. At the core of this engagement effort is the need to develop an understanding of the agricultural community and the key issues affecting it. The 2016 Agricultural Census data shows changes to farmland are occurring and this will impact the future of farming in the watershed.

While the total acreage of farmland in the watershed has decrease by less than one per cent over the last 10 years, the number of registered farms has decreased by 11 per cent. As a result, the average farm size has become larger. This also led to an increase in the amount of farmland managed per farm operator in the watershed. While this is not inherently an issue, when we note the average age of watershed farmers is high, these factors indicate farms and/or farmland are at risk of decline.

Further evidence of farmland at risk of decline is seen in the amount of owned and rented land. The amount of land owned by each operation has decreased by 10 per cent since 2011 and the amount of rented land increased by eight per cent. 2016 was the first year in the last 20 years that the proportion of total farm area under rental agreements exceeded 50 per cent. In other words, rented land makes up the majority of the farmland in the watershed. A likely cause is development pressure and rising land prices that make it attractive for farmers to sell some, if not all, of their land in the watershed. As farmers work more land, own less land and become older, the decision to sell their remaining farmland and assets becomes more common.

### ***On-farm investment***

Research on the effect of the Greenbelt policy on farm investment by Li *et al.* (2016) found farms within the Greenbelt between 2003 and 2011 were less likely to exit the farm market compared to farms found outside the Greenbelt. Accounting for distance to major urban centers, another key finding of this study found farms contained within the Greenbelt were also less likely to invest in their farm, compared to farms located outside the Greenbelt. Li *et al.* (2016) postulated that farmers within the Greenbelt were likely delaying their farm exit in hope that future policy would allow farmland prices to increase. Farmers in near-urban areas of southern Ontario (both in and outside the Greenbelt) also cited lack of technical services, lack of succession

planning and competition with non-farm residents for farmland as significant barriers to investing in their farm business (Akimowicz *et al.*, 2016).

Only part of the Credit River Watershed falls within the Greenbelt. These results support results observed in the 2016 Agricultural Census data. The number of watershed farms within the Greenbelt continued to decline while the rate of decline for farms outside the Greenbelt was higher. Farmers within the Greenbelt may be biding their time by farming rental land until they decide to sell their farm assets instead of investing in current operations.

Greenbelt farmland has lower farmland values relative to comparable, nearby, non-Greenbelt farmland (Deaton and Vyn, 2010; Deaton and Vyn, 2015). This likely influenced farm sell-off decisions. Nevertheless, this does not mean land value within the watershed has been decreasing. On the contrary, survey data on farmland price and rental rates across Ontario show Peel and Halton regions possess some of the highest land values and the lowest rental prices throughout the province (Deaton, 2018). This ratio of high land value relative to the low rental price is likely influencing the decision to sell and subsequently rent land, rather than continue to own. In addition, the overall increase in land prices and competition for land may also render farming inaccessible for new farm businesses (Rotz *et al.*, 2019).

### ***Implications for agricultural stewardship***

Farmers are primarily using rented farmland to produce field crops. In areas with high acreages of rented lands, grains and oilseeds crops such as corn and soybean are generally grown. For example, in subwatersheds 5 and 7, nearly 80 per cent of farmland was rented and just less than 92 per cent of farmland was in corn, soybean or wheat production. Annual field crops are likely preferred because perennials, such as hay, are often longer-term investments and can be habitat for species at risk, which may complicate future development plans for the landowner.

Rented lands and short-term rental agreements can also pose a challenge for the advancement of conservation actions and agricultural BMPs (Rotz *et al.*, 2019). Expensive BMPs with have long-term payback periods are less likely to be adopted on lands that farmers do not own. This is largely due to uncertainty in how long rental land is available (Deaton *et al.*, 2018). In the Credit River Watershed this could be a barrier to BMP adoption, especially on land rented from developers. There is little incentive from the farmer's perspective to make long-term investments on land that will be developed in the near future.

Certain BMPs captured in the 2016 census data showed growth. For example, cover crops and no-till agriculture were becoming more popular throughout the watershed. Soil health has been a strong focus in agriculture over the past decade and reduced

tillage or no-till capable equipment is accessible to farmers across the province. As farmers invest in new farm equipment, it is likely they are considering reduced tillage and no-till capable options. In addition, BMPs such as no-till agriculture and cover crops can yield faster results than other BMPs such as windbreaks or erosion control structures.

Despite difficulties, there are opportunities associated with advancing conservation actions on rented lands. Since farmers cannot benefit from the sale of their rented lands, they tend to be more concerned with annual production profits on these lands. Therefore, targeted conservation actions that enable farmers to increase profits on rental lands are more likely to be adopted (Capmourteres *et al.*, 2019). The census data shows most land rented by farmers was rented from the private sector. In the watershed this comes mostly from two sources: (1) developer-owned land that is rented back to the farmer, and (2) rural residents who rent out part of their property to farmers. It may be possible to drive conservation action on agricultural land without directly engaging the farmer.

Engaging and educating farm-landlords about agricultural issues and BMPs in addition to farm operators may also help to drive conservation action. Analysis by Statistics Canada (2017a) shows younger farmers rent significant amounts of land to both enter the market and expand their operation. If this trend is also occurring in the Credit River Watershed, then targeting programs on rented lands may also help forge relationships with younger farmers who will be able to work with Credit Valley Conservation on a long-term basis. In addition, as the average farm size increases, each individual relationship made with farmers today has the potential to impact more land in the watershed than in previous years.

## Conclusions

Since 2006, the amount of farmland in the Credit River Watershed has remained steady and covers approximately 30 per cent of the watershed. Over the past 20 years, agriculture in the watershed has changed in response to technology, markets and urban pressures. The acreage of field crops such as corn, soybeans and wheat increased while hay, beef and dairy production declined. The number of farms continued to decline in 2016, but the amount of land each farm is operating increased to 71.63 ha. Farmers in the Credit River Watershed have relied on rental lands to increase the size of their operations. Over half of the farmed land in the watershed is now rented instead of owned. While this can pose certain advantages especially to the farmer, there are difficulties associated with encouraging BMP adoption on these lands. Shifts in farm management signify that a shift in conservation program approach is necessary to achieve effective engagement with the farm community.

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## Appendix A – Methodology

The data for the Statistical Profile of Agriculture in the Credit River Watershed was obtained through a custom request from Statistics Canada using the data collected in the Census of Agriculture. The Census of Agriculture is conducted every five years. The most recent data available are from the 2016 Census of Agriculture and will constitute the main focus for this report. Credit Valley Conservation has been tracking and comparing agricultural trends for this custom set of census data since 1996. For analysis purposes, this report also includes data from the 1996, 2001 and 2006 censuses where applicable.

As part of the Census of Agriculture, Statistics Canada collects statistics at national, provincial and sub-provincial levels. The smallest standard geographic area for which Census data are provided is a dissemination area. The dissemination areas cover all the territory of Canada. To present data for the Credit River Watershed and its subwatersheds, custom geographies were provided to Statistics Canada by Credit Valley Conservation. For the purposes of this research, Statistics Canada based the watershed and subwatershed geographies on a percentage of the dissemination areas (2001, 2006, 2011 and 2016) or enumeration areas (1996). As such, the raw Census data contains decimal places. For this profile, the numbers have been rounded accordingly to avoid the presentation of excessive decimal places. Percentages are provided within the text of the report without decimal places.

Given the limited number of farms in some of the subwatersheds within the Credit River Watershed, Statistics Canada could not present the data for some of the subwatersheds at the individual level under the confidentiality requirements of the Statistics Act. As such, some of the subwatersheds were amalgamated. The selection of the subwatersheds to be amalgamated was made by Credit Valley Conservation and is based upon the extent of urban activities. Table 4 outlines the subwatersheds and the amalgamated subwatersheds used throughout this statistical profile.

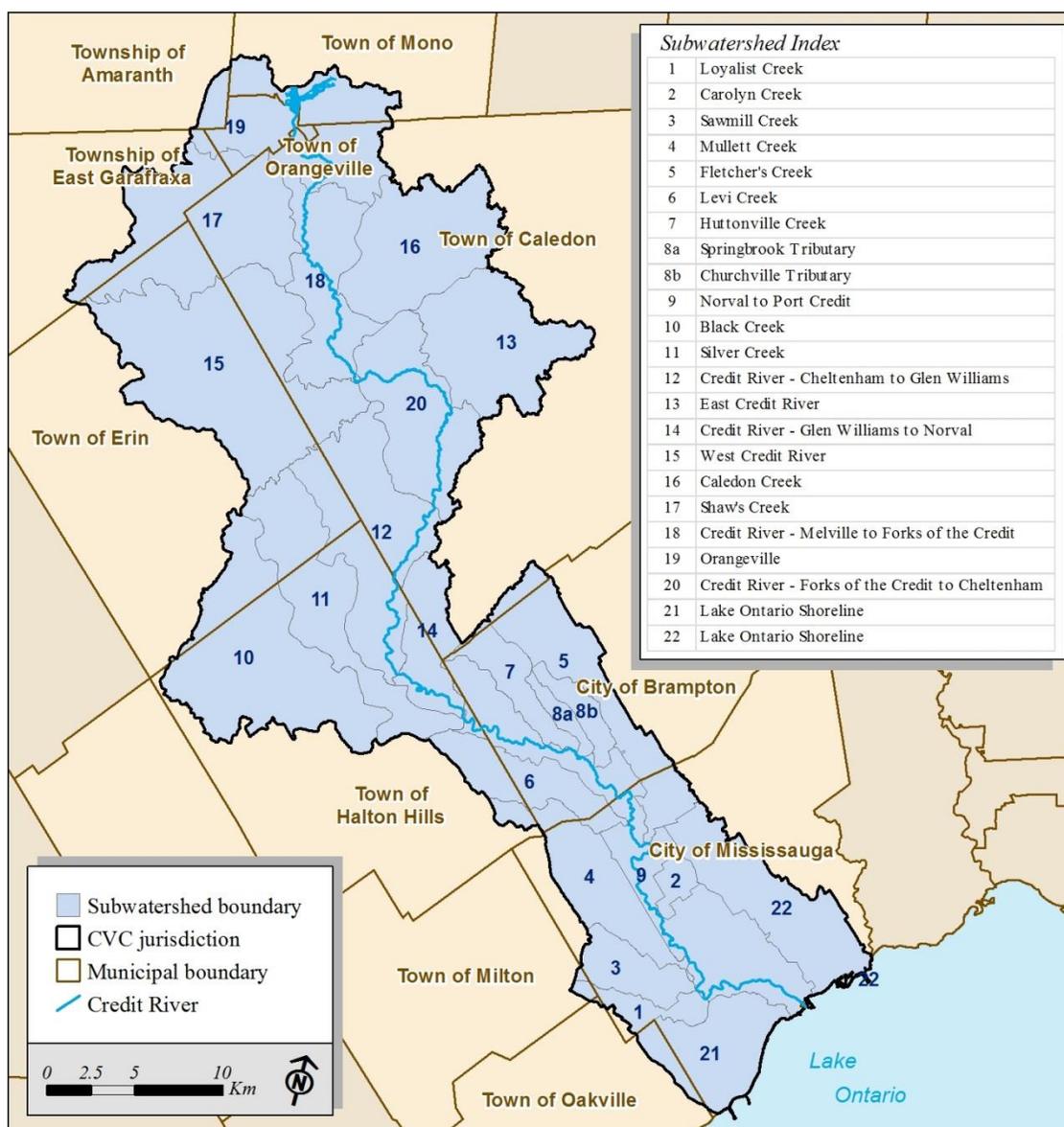
A complete record of the dataset can be requested from Credit Valley Conservation.

**Table 4.** List of subwatersheds and amalgamated subwatersheds used by Credit Valley Conservation and Statistics Canada to divide the custom Agricultural Census data from 1996 to 2016.

Subwatersheds and Amalgamated Subwatersheds	Name of Subwatersheds
1,2,3,4,8a,8b,21,22	Loyalist Creek, Carolyn Creek, Sawmill Creek, Mullett Creek, Springbrook Tributary, Churchville Tributary, Lake Ontario Shoreline West Tributaries, Lake Ontario Shoreline East Tributaries
6	Levi Creek
5,7	Fletcher's Creek, Huttonville Creek
9	Credit River - Norval to Port Credit
10	Black Creek
11	Silver Creek
12, 14	Credit River – Cheltenham to Glen Williams, Credit River – Glen Williams to Norval
13	East Credit River
15	West Credit River
16, 18	Caledon Creek, Credit River – Melville to Forks of the Credit
17	Shaw's Creek
19	Credit River headwaters – Orangeville
20	Credit River – Forks of the Credit to Cheltenham

## Appendix B – Credit River Watershed description

The Credit River Watershed is made up of 1,000 square kilometers of land that is drained by the Credit River and its 1,500 kilometres of tributaries. It is in one of the most rapidly urbanizing parts of Canada, adjacent to the Greater Toronto Area and includes portions of the following upper-tier municipalities: Peel and Halton Regions and Wellington and Dufferin Counties. Lower-tier municipalities within the watershed include: City of Mississauga, City of Brampton, Town of Caledon, Town of Oakville, Town of Halton Hills, Town of Erin, Township of East-Garafraxa, Township of Amaranth, Town of Mono and Town of Orangeville. This entire watershed is divided into 22 separate subwatersheds is seen in Figure 6.



**Figure 6.** Map of the subwatersheds found in the Credit River Watershed containing their name and corresponding number.