

Canadian Agriculture at a Glance

The educational advancement of Canadian farm operators

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The educational advancement of Canadian farm operators

by **Kevin Tran** and **Matthew Shumsky**

Today's Canadian farm operator is technologically savvy and more formally educated than ever before.

As the modern farm becomes increasingly automated and technologically driven, results from the 2016 Census of Agriculture along with data from the 2016 Census of Population show that farm operators are placing a greater emphasis on educational attainment, specifically at the trades and college level. This emphasis on formal education is equipping farm operators with the knowledge and ability required to use new technology when farming.

The educational attainment of farm operators has increased over the past 20 years

From 1996 to 2016, the educational attainment of farm operators increased at the high school, trades and college, and university levels.

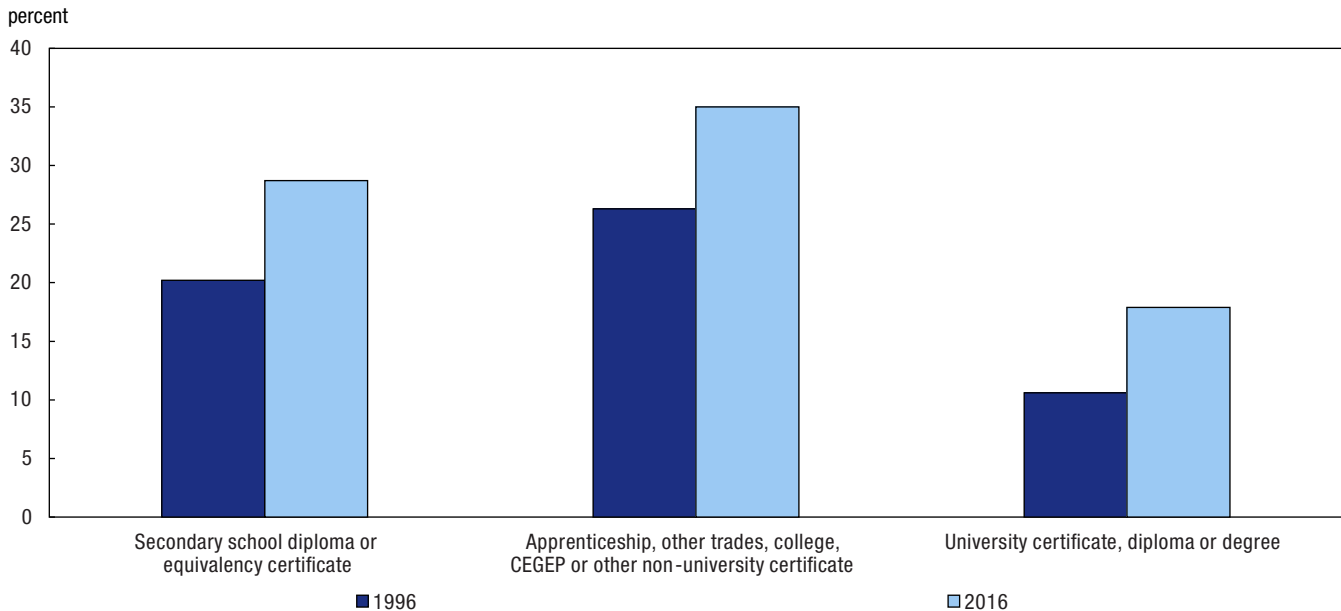
The largest increase in educational attainment was at the trades and college level. In 1996, 26.3% of farm operators reported an apprenticeship, other trades, college, CEGEP or other non-university certificate as their highest level of educational attainment. By 2016, this figure had increased to 35.0% (Chart 1).

One possible reason for the increase in farm operators with a trades- or college-level education is the two-pronged educational approach these programs provide to farm operators: they can acquire the technical skills required to repair and operate sophisticated machinery, such as advanced machinery controls and automated feeding systems, while also acquiring the business management principles necessary for running a farm. They can learn about staff and labour relations management, hedging contracts, crop insurance, and marketing strategies.

The second largest increase in educational attainment was at the high school level. In 1996, 20.2% of farm operators reported a secondary school diploma or equivalency certificate as their highest level of educational attainment. By 2016, this figure had increased to 28.7% (Chart 1).

Farm operators also placed an increased emphasis on university education. In 1996, 10.6% of farm operators reported a university certificate, diploma or degree as their highest level of educational attainment. By 2016, this figure had increased to 17.9% (Chart 1).

Chart 1
Highest level of educational attainment of farm operators, Canada, 1996 and 2016



Source: Statistics Canada, Agriculture–Population Linkage Data, 2016.

Farm operators with a formal education more likely to use technology when farming

In 2016, farm operators with a university (75.7%), trades or college (70.7%), or high school (69.8%) education were more likely to report using technology for farm work, compared with farm operators with no formal education (53.2%) (Chart 2).

Integrating technology into farming practices may help farm operators adapt to increasingly modernized and consolidated agricultural operations. The use of technology in farming may also increase the efficiency and production outputs of agricultural operations.

Key facts

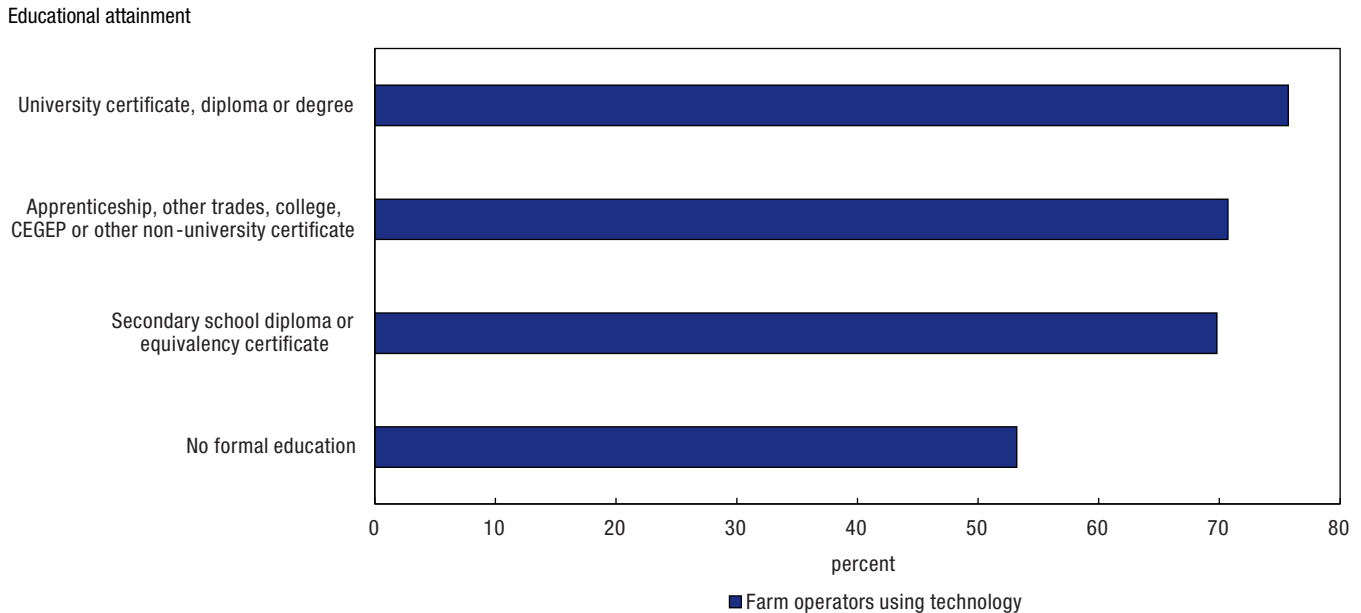
College-educated farm operators in 2016:

- Average age of 52.1 years
- Median age of 53.0 years
- 39.1% were female
- 60.9% were male
- 10.1% were immigrants
- Average total income of \$55,154
- Median total income of \$41,151
- 93.1% studied in Canada
- Top three major fields of study:
 - ▶ Agriculture, agriculture operations and related sciences (27.9%)
 - ▶ Business, management, marketing and related support services (17.5%)
 - ▶ Health professions and related programs (13.2%)

More details on farm operators can be found in the [2016 Agriculture–Population Linkage Data](#).

Chart 2

The percentage of farm operators using technology by highest level of educational attainment, Canada, 2016



Source: Statistics Canada, Agriculture–Population Linkage Data, 2016.

Dairy farm operators most likely to use technology on the farm

In 2016, 87.6% of farm operators on farms classified as dairy cattle and milk production (NAICS) reported using technology. Automated feeding systems are important for their day-to-day operations.

The second most likely group to report using technology (86.8%) was farm operators on farms classified as hog and pig farming (NAICS). This type of farming requires a carefully controlled environment where animals can be closely observed in specialized buildings designed to prevent disease transmission, feeding regime changes and breeding program results.

Dairy farm operators place larger emphasis on trades- and college-level education

In 2016, farm operators on farms classified as dairy cattle and milk production (NAICS) were most likely to report an apprenticeship, other trades, college, CEGEP or other non-university certificate (45.0%) as their highest level of educational attainment.

This may be because of the specific knowledge and training farm operators acquire from trades and college. For example, dairy farm operators require heavy equipment training because they frequently use heavy equipment to process, feed and transfer forage for the cattle.

Key facts

University-educated farm operators in 2016:

- Average age of 54.0 years
- Median age of 55.0 years
- 38.3% were female
- 61.7% were male
- 11.0% were immigrants
- Average total income of \$83,963
- Median total income of \$54,799
- 89.8% studied in Canada
- Top three major fields of study:
 - ▶ Agriculture, agriculture operations and related sciences (22.3%)
 - ▶ Education (15.1%)
 - ▶ Business, management, marketing and related support services (13.0%)

More details on farm operators can be found in the [2016 Agriculture–Population Linkage Data](#).

Farm operators focus their education on agriculture-related disciplines

As farming practices modernize, farm operators are investing in their education, with a specific focus on agriculture. In 2016, agriculture, agriculture operations and related sciences (22.2%) was the top reported major field of study for farm operators. The second most reported major field of study among farm operators was business, management, marketing and related support services (12.7%). Farm operators may benefit from business training because it can help them manage the complex finances of their operations.

Across Canada, agriculture, agriculture operations and related sciences was the top major field of study for farm operators in every province except British Columbia, Nova Scotia, and Newfoundland and Labrador. In these three provinces, business, management, marketing and related support services was the highest reported major field of study for farm operators.

Farm operators with a formal education had diverse income streams

Farm operators with a university certificate, diploma or degree were nearly twice as likely to report working off the farm, compared with farm operators with no formal education. In 2016, 54.5% of farm operators with a university education reported off-farm work, while 30.4% of farm operators with no formal education reported off-farm work (Chart 3).

Increasing education levels may improve farm operators' off-farm work opportunities. Moreover, off-farm work can provide farm operators with additional income that can reduce the financial volatility involved with running a farm.

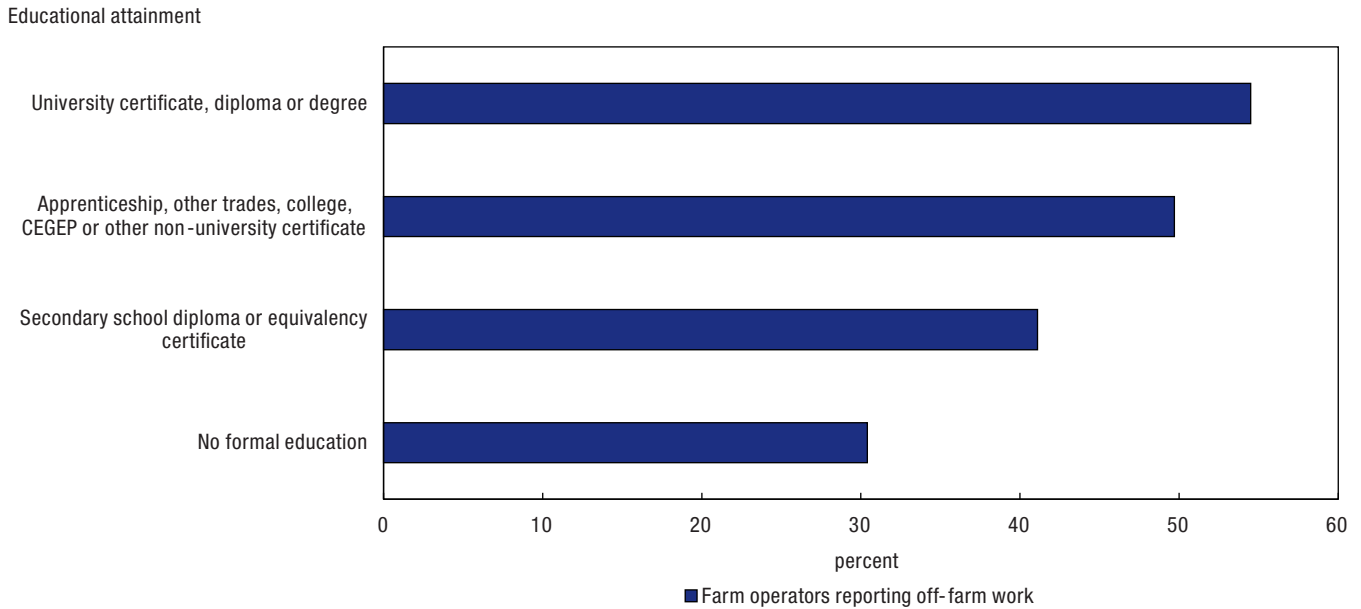
Key facts

Trades-educated farm operators in 2016:

- Average age of 53.9 years
- Median age of 55.0 years
- 15.3% were female
- 84.7% were male
- 8.1% were immigrants
- Average total income of \$54,847
- Median total income of \$40,740
- 94.9% studied in Canada
- Top three major fields of study:
 - ▶ Mechanic and repair technologies/technicians (26.3%)
 - ▶ Construction trades (18.8%)
 - ▶ Precision production (13.9%)

More details on farm operators can be found in the [2016 Agriculture–Population Linkage Data](#).

Chart 3
The percentage of farm operators reporting off-farm work by highest level of educational attainment, Canada, 2016



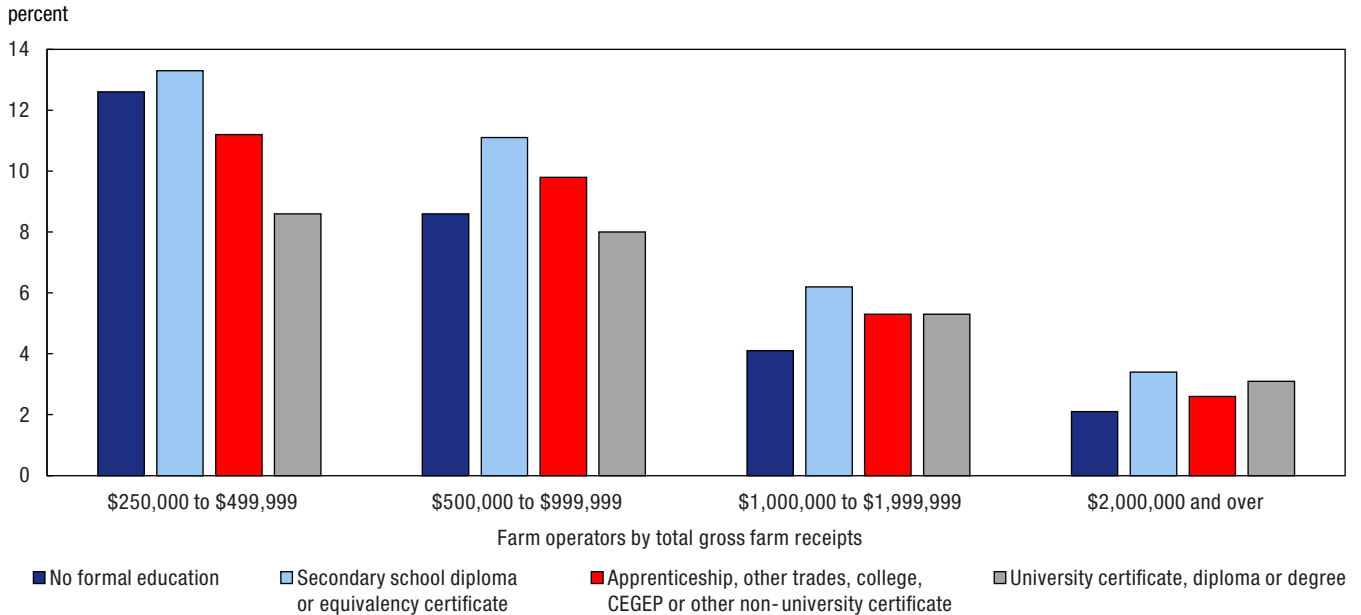
Source: Statistics Canada, Agriculture–Population Linkage Data, 2016.

Farm operators’ investments in education pay off

Farm operators reporting a secondary school diploma or equivalency certificate were more likely than those reporting no formal education to have higher farm revenues. In 2016, farm operators with a high school education were more likely than those with no formal education to report gross farm receipts ranging from \$250,000 to \$2 million and over (Chart 4).

In terms of higher income classes, farm operators with any level of formal education were more likely than those with no formal education to report total gross farm receipts of \$1 million and over in 2016 (Chart 4).

Chart 4
The percentage of farm operators by highest level of educational attainment for total gross farm receipts, Canada, 2016



Source: Statistics Canada, Agriculture–Population Linkage Data, 2016

Conclusion

As agricultural operations evolve into increasingly sophisticated and consolidated businesses, today’s farm operator is placing a greater emphasis on formal education, specifically at the trades and college level.

Trades and college give farm operators the expertise necessary to work with technologically advanced equipment, while also providing them with business and accounting skills to manage their farm and the financial aspects of a farm.

As farming practices modernize, farm operators are focusing their education on agriculture-related disciplines. In 2016, nearly a quarter of farm operators reported agriculture, agriculture operations and related sciences as their major field of study.

With agricultural operations becoming more capital intensive, farm operators are using the skills they acquired through formal education to explore off-farm work for additional revenue streams. In 2016, farm operators who reported having a postsecondary education were more likely to work off the farm than those with no formal education.

For more information on the educational attainment of Canada’s farm operators, please see the infographic [Canadian farm operators: An educational portrait](#).

Note to readers

Data for Yukon, Nunavut and the Northwest Territories are not included in national totals because of their differing definition of an agricultural operation and because of confidentiality constraints.

[Collective dwellings](#) are not included.

Please refer to the [Dictionary, Census of Population, 2016](#), for additional information on census variables.

No formal education refers to an education level below a secondary school diploma or equivalency certificate.

Farm operators' technology use refers to Step 23 of the 2016 Census of Agriculture. If the farm operator indicated "None of the above" in this section, they were counted in this article as not using any technology. Conversely, if the farm operator reported meeting any of the criteria for technology use, they were counted as using technology.

Terms

Agricultural operation: Any operation that produces agricultural products intended for sale.

Farm operator: Any person responsible for the management decisions in operating an agricultural operation.

NAICS: North American Industry Classification System.

Technology: Refers to computers or laptops and smartphones or tablets used for farm management, automated steering, GPS technology, GIS mapping, greenhouse automation, robotic milking, automated environmental controls for animal housing, automated animal feeding, and other technologies.