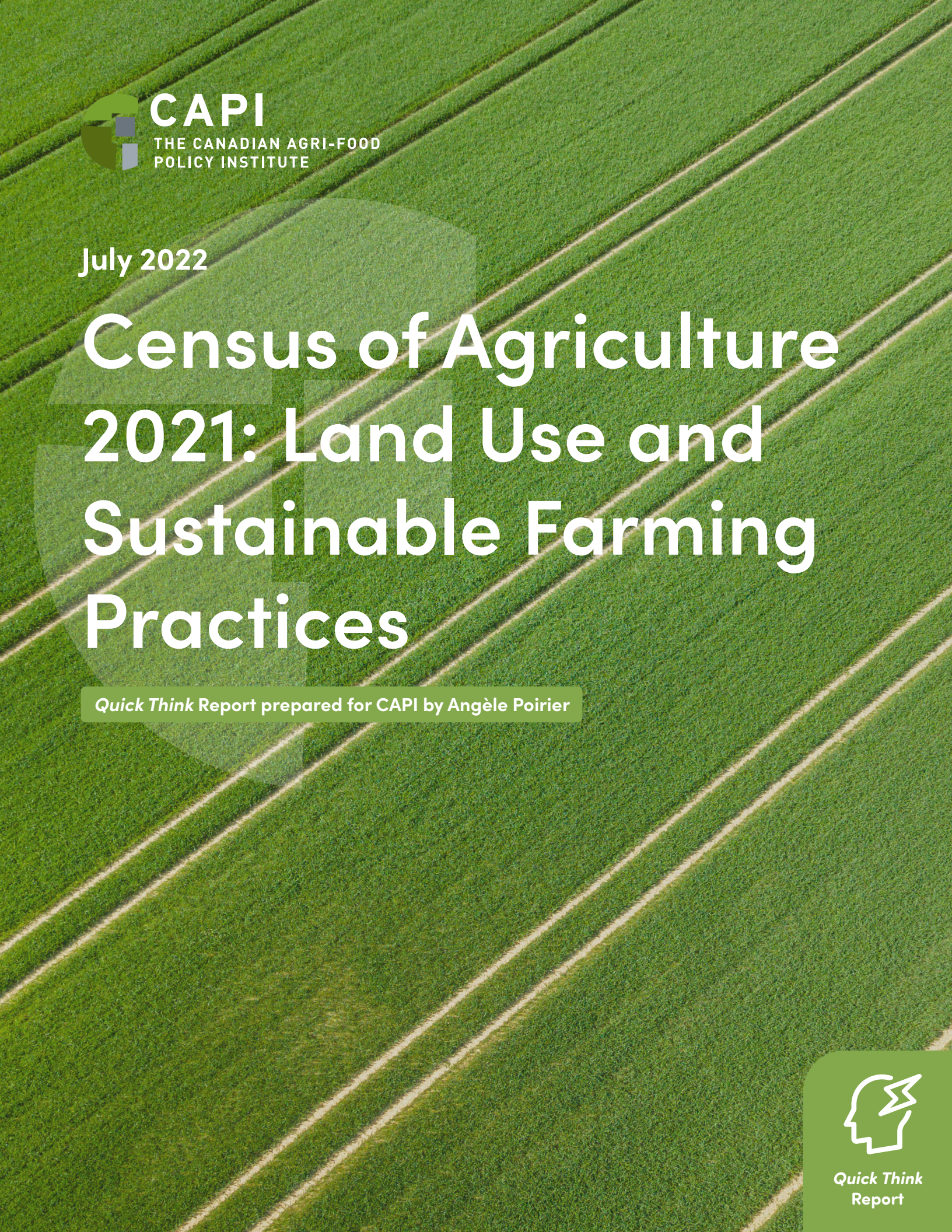

CAPI
THE CANADIAN AGRI-FOOD POLICY INSTITUTE

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Census of Agriculture 2021: Land Use and Sustainable Farming Practices

Quick Think Report prepared for CAPI by Angèle Poirier

Quick Think Report

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A Note from CAPI

On June 15th, 2022, Statistics Canada published its second release of data from the 2021 Census of Agriculture. This *Quick Think* Report compares the 2021 data with 2016 and 2011 data, providing analysis on land use and the adoption of sustainable farming practices. The colourful maps contained in this report allow readers to quickly visualize agricultural trends by census division (small parcels in each province) and to compare provincial and regional land use or sustainable practices.

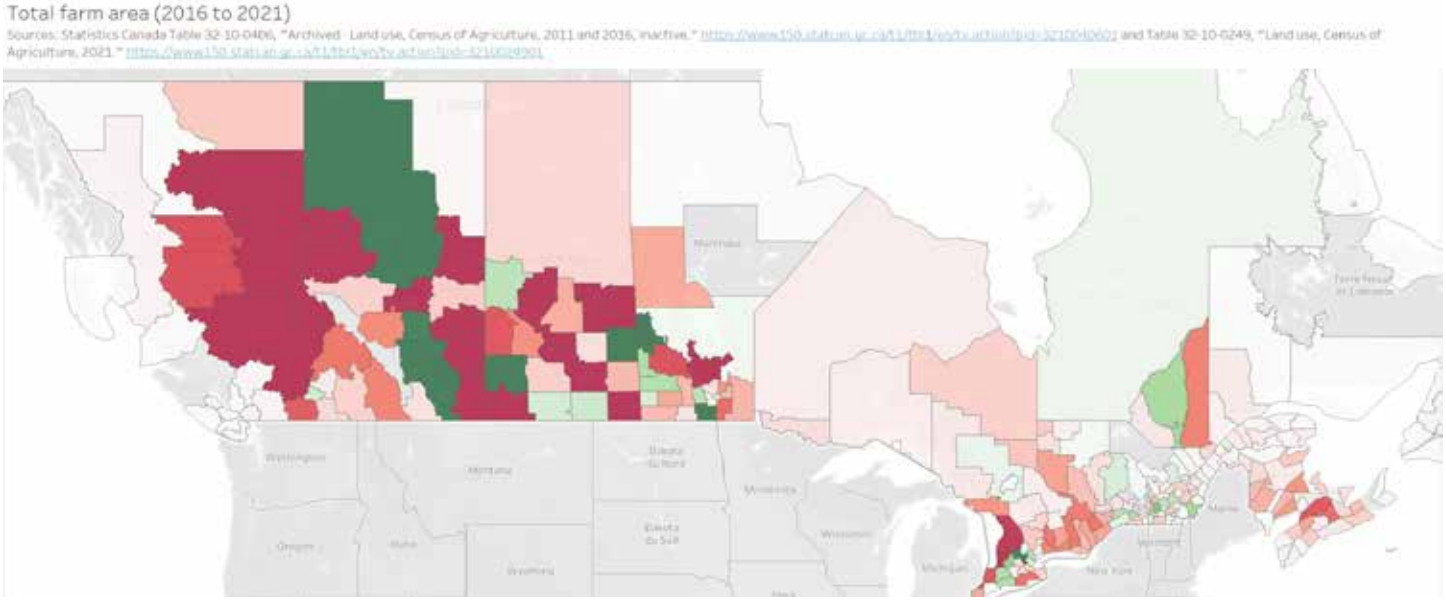
Go to www.statcan.gc.ca/en/census-agriculture to view a comprehensive profile of the physical, economic, social, and environmental characteristics of Canada's agriculture industry.

Key Takeaways

- In general, long-term trends continue: total farm area is on the decline across Canada, farms are fewer and larger, and they are adopting sustainable practices. These long-term trends highlight some of the challenges and opportunities facing policymakers.
- Despite decreasing total farm area, land in crops is on the rise, while pasture and grassland are decreasing.
- Changes in land use have a long-term impact on Canadian agriculture. Pasture and grassland are important to Canada's livestock industry but also sequester and store carbon and protect biodiversity.
- Census data also reinforces agriculture's long-term commitment to using sustainable farming practices.
- While the census does not tell us why farmers are adopting these practices, policymakers should consider the significant progress already achieved when developing policies to encourage sustainable agricultural practices.

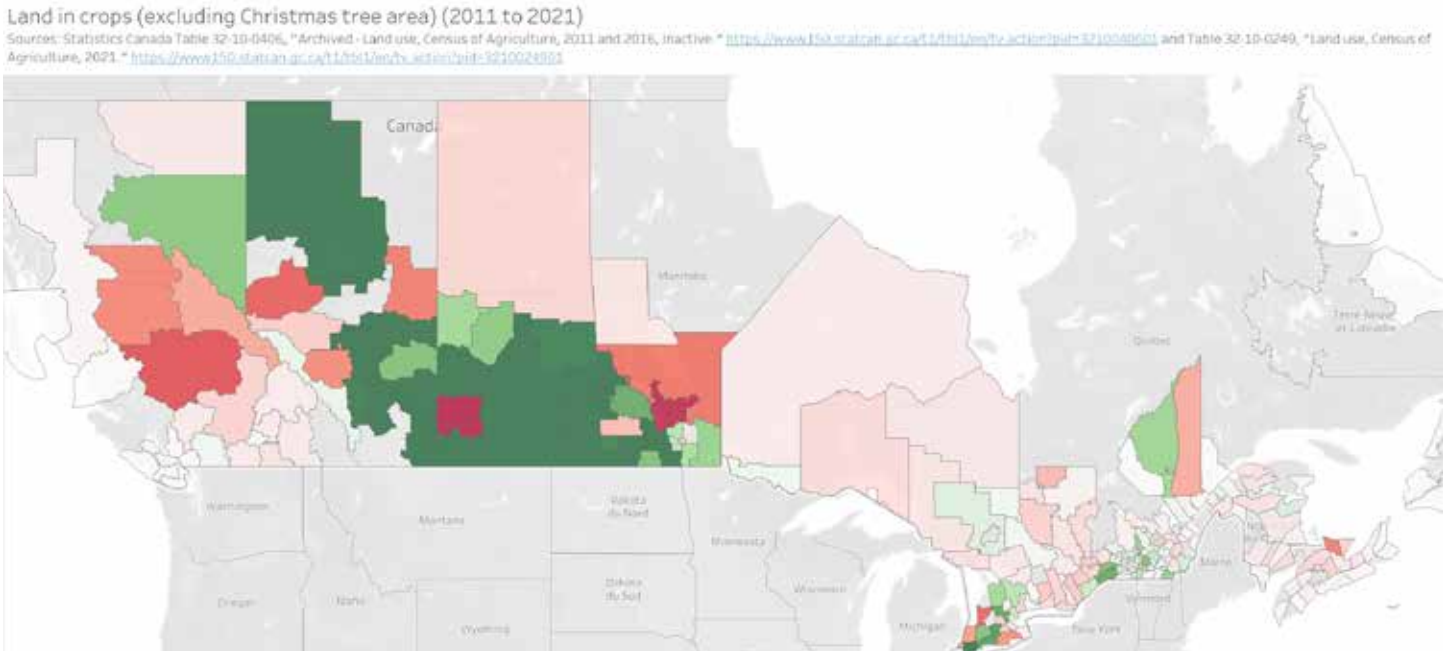
Land use

Figure 1. *Total farm area: Change, 2016-2021 (red=decr., green=incr.).*



- The graphic above shows the change in total farm area over the last five years (2016 to 2021).
- Going further back in time, total farm area has fallen over the last 10 years, from 160M acres to 153M acres (2011 to 2021).
- The rate of loss of total farm area has more than tripled over the last three censuses from 1.1M acres lost in a five-year period (2011 to 2016) to 5M acres in the next five-year period (2016 to 2021).

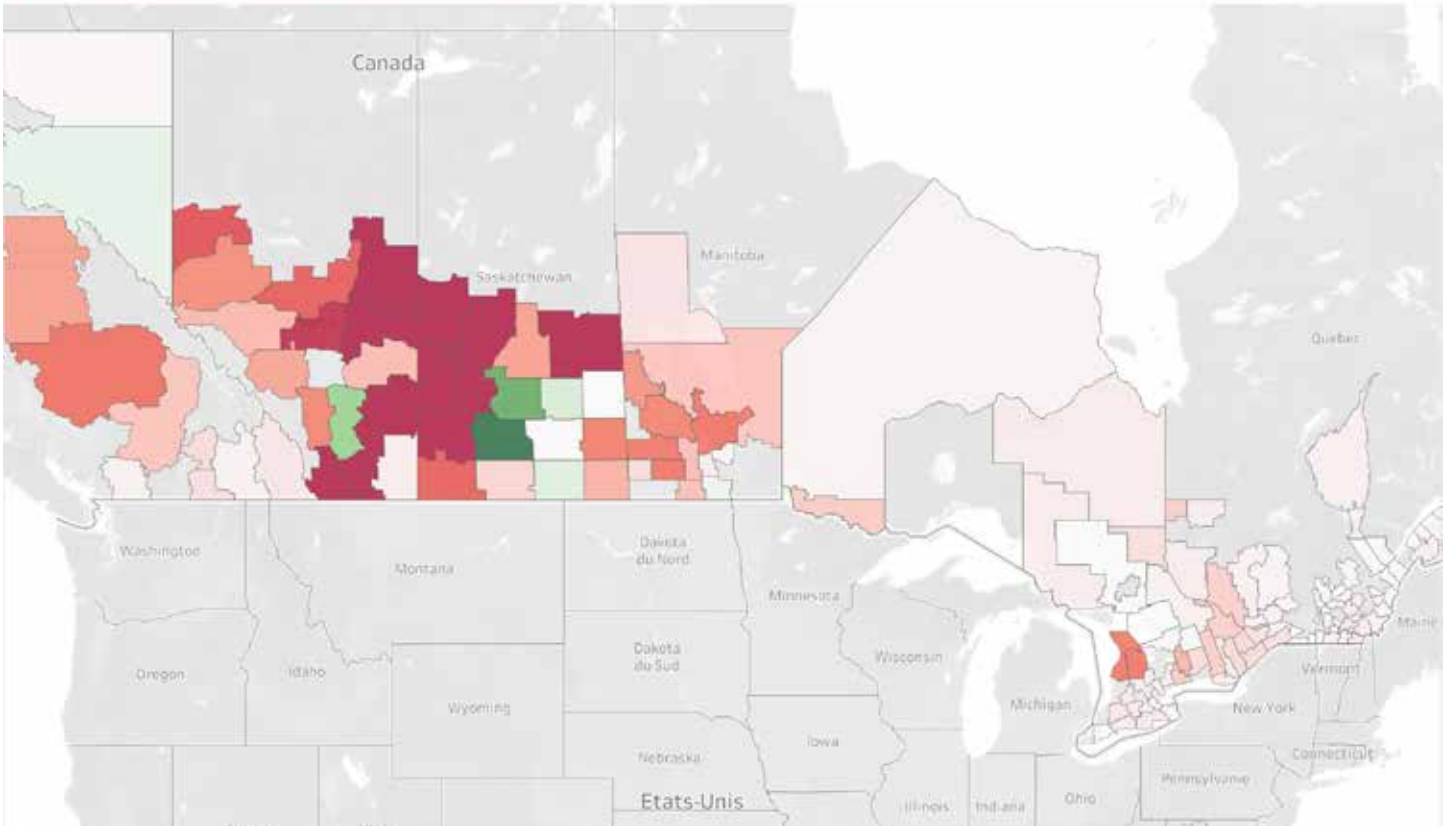
Figure 2. Land in crops: Change, 2011-2021 (red=decr., green=incr.).



- Land in crops has been increasing, especially in Saskatchewan, Alberta, and southern Ontario.
- As total farm area has been decreasing simultaneously, this is consistent with the conversion of other non-urban lands (such as pasture, forest, and wetlands) to croplands.

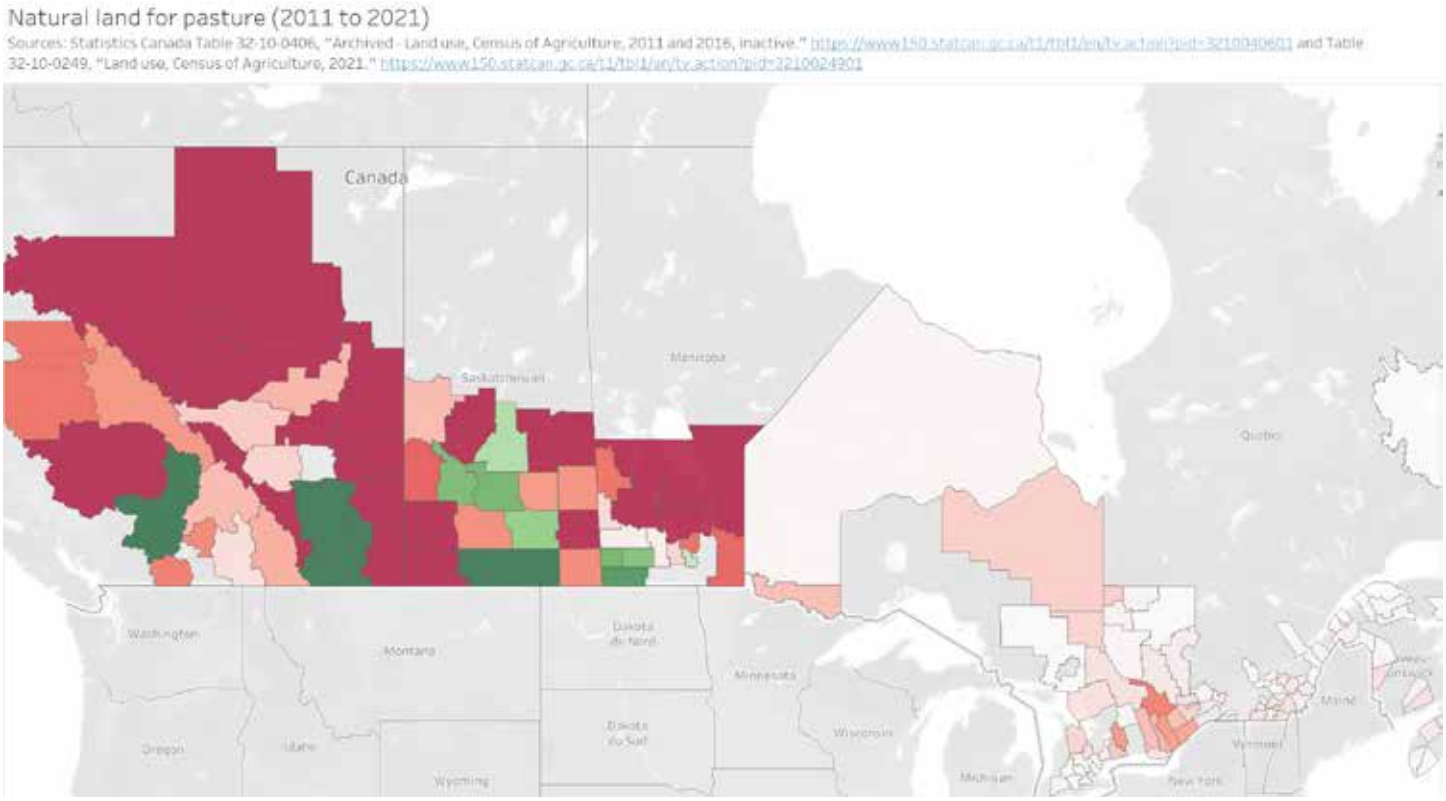
Figure 3. Tame or seeded pasture: Change, 2011-2021 (red=decr., green=incr.).

Sources: Statistics Canada Table 32-10-0406, "Archived - Land use, Census of Agriculture, 2011 and 2016, inactive."
https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210040601 and Table 32-10-0249, "Land use, Census of Agriculture, 2021."
https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210024901



- Of the two types of pasture (tame/seeded and natural), tame or seeded pasture most readily converts back and forth between cropland and pasture.
- Most census divisions have experienced a decrease in tame or seeded pasture over the past ten years, with a few exceptions in Saskatchewan and Alberta.
- These losses of tame or seeded pasture may explain some of the gains in cropland as a mere conversion of the use of these agricultural lands.

Figure 4. Natural land for pasture: Change, 2011-2021 (red=decr., green=incr.).

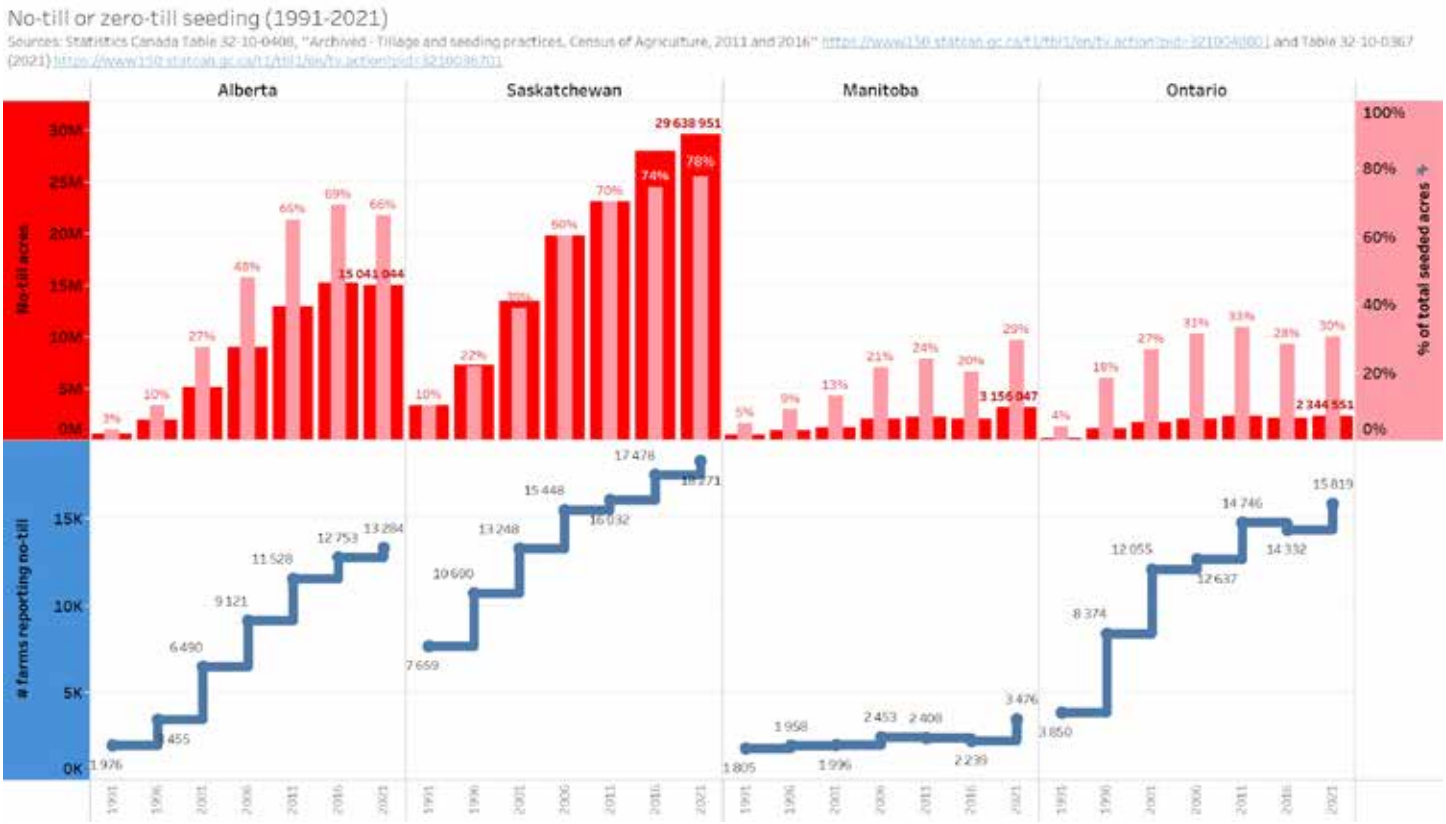


- Natural land for pasture (native grassland) has been disappearing in Canada, down 1.3M acres from 35.2M acres to 33.9M acres (2011 to 2021).
- These losses were greatest in Alberta, Canada's largest beef producer. When livestock disappear from an area, they take a very long time to return, if ever.

Sustainable Farming Practices

Sustainable farming can encompass a range of practices which allow farmers to grow the maximum amount of product with the least amount of land and other inputs. The use of no-till seeding, cover crops, autosteer, and the production of renewable energy are each indicators of adoption of sustainable practices.

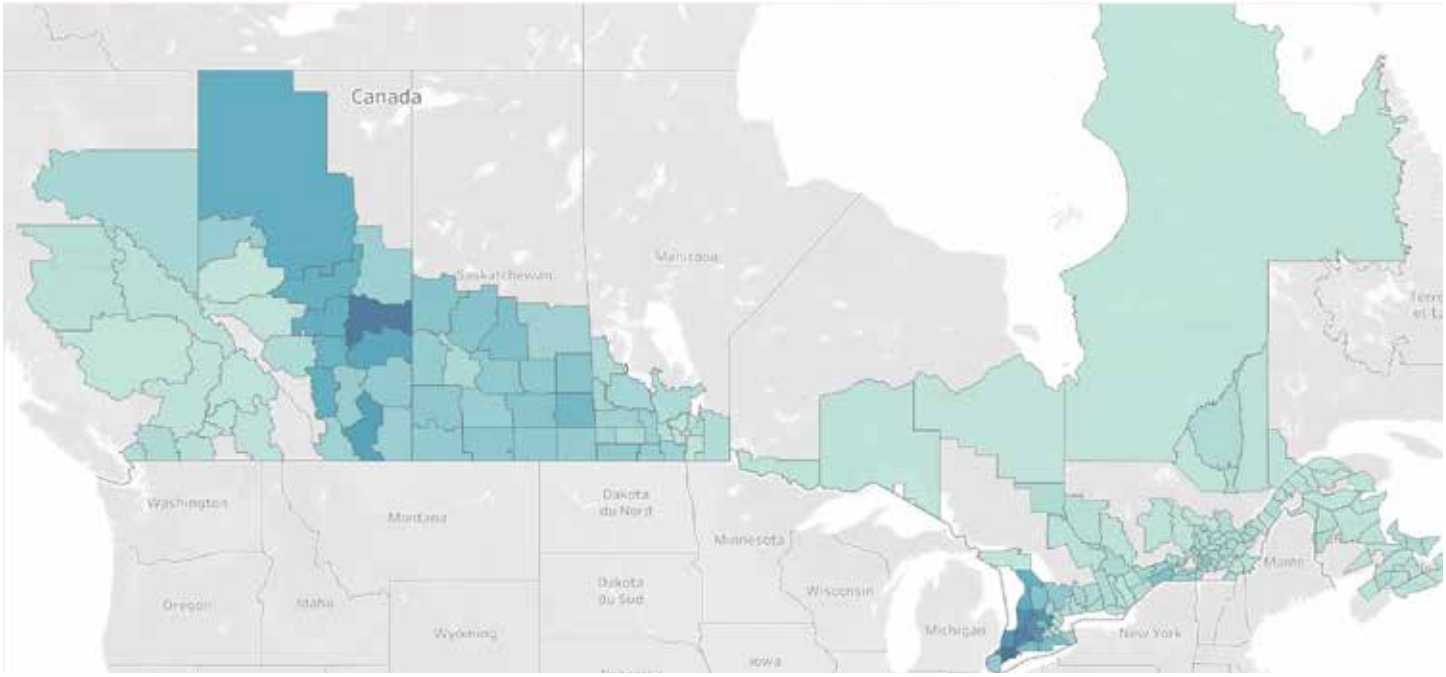
Figure 5. No-till seeding: Time series, 1991-2021.



- No-till seeding (as opposed to tillage prior to seeding) is a sustainable farming practice which reduces emissions (fewer equipment passes in the field) and does not disturb the soil, leading to improved soil health and soil organic carbon retention.
- The number of farms (blue line) practicing no-till seeding has increased from 1991 to 2021 in Canada, especially in Ontario and in the Prairies.
- The number of acres seeded using no-till (large, red bars) has also increased across Canada, with the largest number of acres in Saskatchewan.
- The percentage of seeded acres which use no-till seeding (small, pink bars) has increased over the past 30 years, but has been relatively stable over the past 10 years.
- The Prairies have proven well-suited to no-till seeding, while adoption has struggled in Ontario, reflecting differences in climate, soil types, and crop rotations.

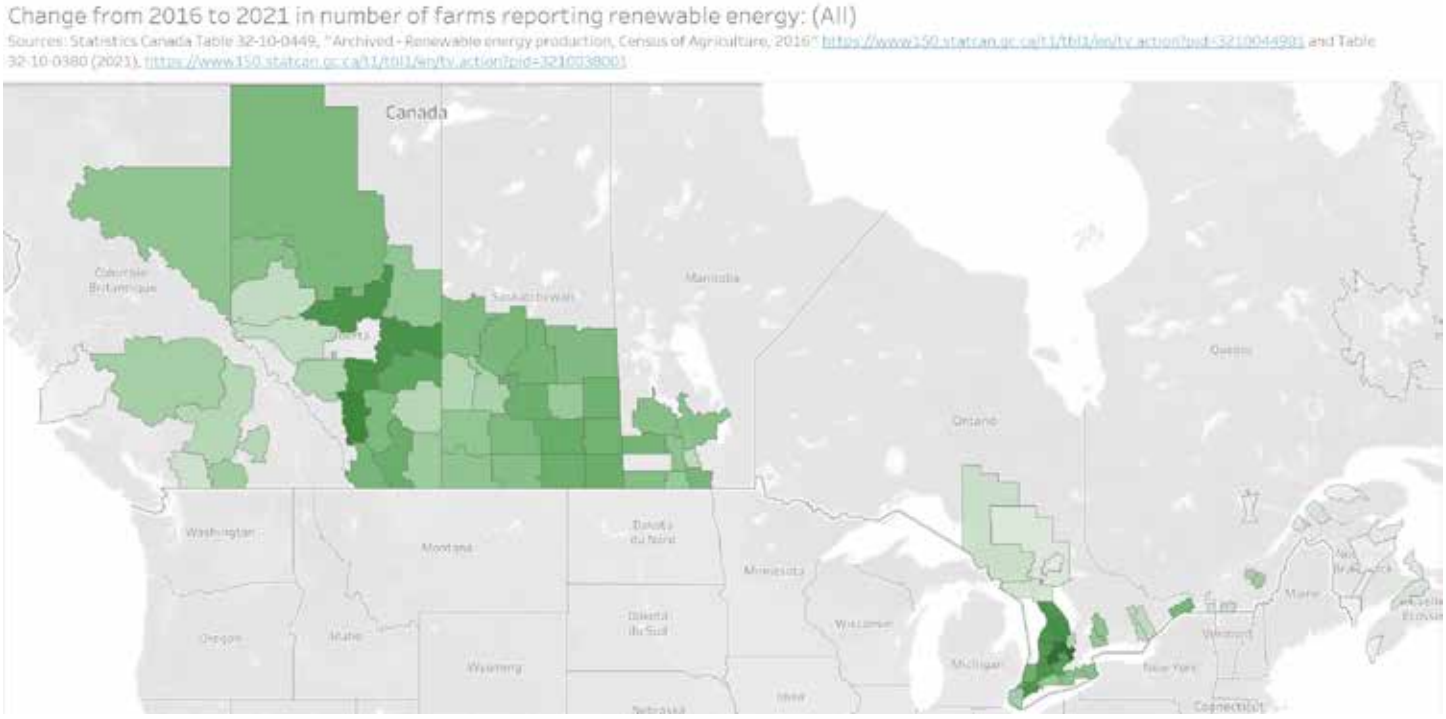
Figure 6. Autosteer: Change, 2016–2021 (darker blue = greater incr.).

Sources: Statistics Canada Table 32-10-0446, "Archived - Technologies used on the operation, Census of Agriculture, 2016" https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210044601 and Table 32-10-0379 (2021), https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210037501



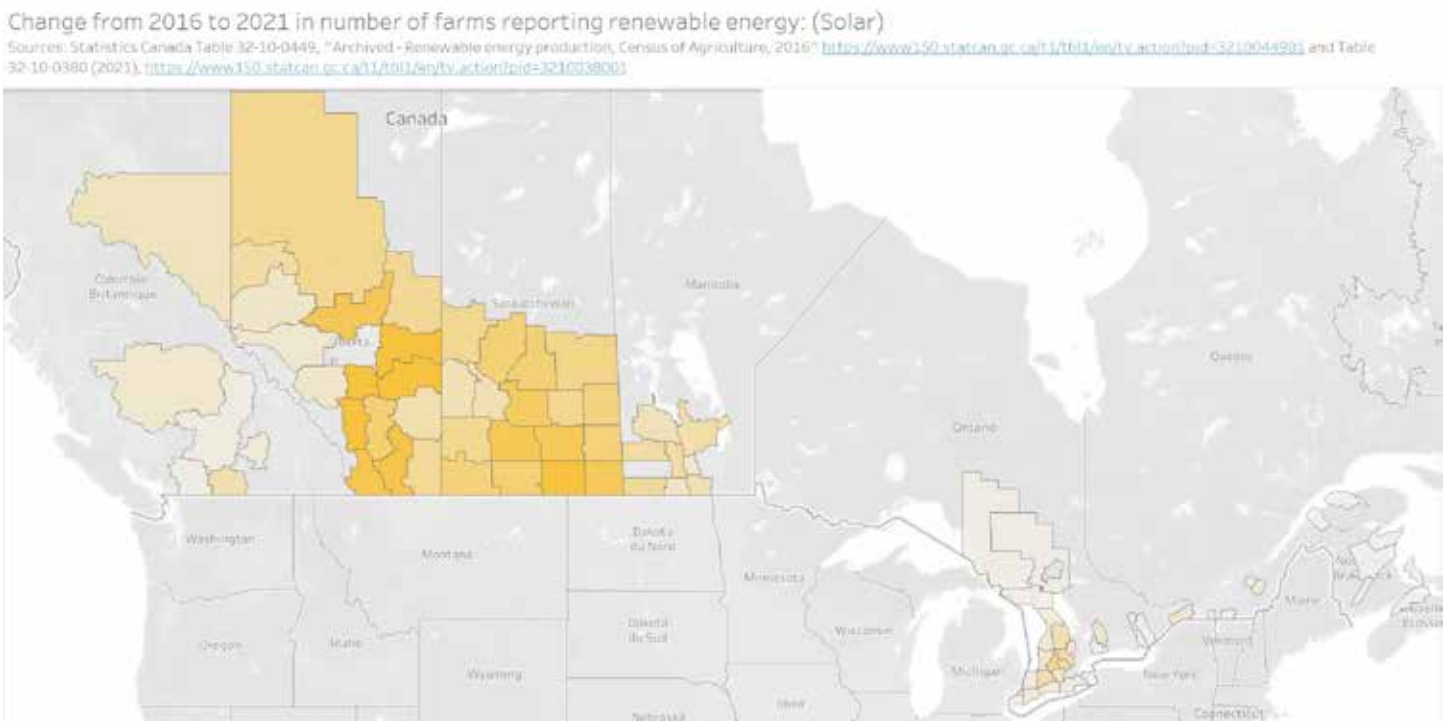
- Autosteer supports sustainable farming practices because it eliminates overlap in the field, thus saving on product application (seed, fertilizer, chemical) and fuel use.
- Autosteer has become very popular in Canada, with use going from 40,000 farms in 2016 to 50,000 in 2021.
- These gains have been most concentrated in Alberta and southern Ontario in terms of number of farms using autosteer.

Figure 7. Renewable energy production (all types): Change, 2016-2021 (darker green = greater incr.).



- From 2016 to 2021, the number of farms who report producing (and often using) some type of renewable energy has increased in every province, for a countrywide increase from 10,000 farms to 20,000 farms.
- Renewable energy sources are increasingly being developed as low-carbon substitutes for fossil fuels. In June 2021, Agriculture and Agri-Food Canada announced the Agricultural Clean Technology Program which provides funding to farmers to adopt "green" technologies such as finding substititues for fossil fuels.
- Examples of renewable energy are solar, wind, geothermal, and biofuels such as biodiesel made from soybeans or canola.

Figure 8. Solar energy use on farms: Change, 2016–2021 (darker yellow = greater incr.).



- The number of farms reporting the production (and sometimes, use) of solar energy increased from 8,000 in 2016 to 14,000 in 2021.
- Solar energy is more common in the Prairies. Some areas have more than doubled in the number of farms reporting solar energy production, from 200 farms to over 400 farms per census division.

Conclusion

The 2021 census highlights a mix of important progress made on climate and sustainability objectives in agriculture, but also notes important gaps and lags. No-till seeding is ubiquitously adopted in much of western Canada – at rates approaching 70 or 80 percent of cropland acreage in Alberta and Saskatchewan – consistent with impressive carbon sequestration in agricultural soils. It is adopted to much less a degree in Ontario, at around 30 percent. In both high-adoption and low-adoption regions, there is evidence that the adoption rate has stagnated.

In other cases, adoption of practices related to sustainability is more uniformly increasing. The production of renewable energies on farms and the use of auto-steer systems in equipment are increasing, certainly in part as new technology and incentives become available.

Long-standing challenges remain. Total farmed area is broadly in decline, consistent with the best land available for agriculture already in agricultural use, and ongoing pressure to convert farmed land into higher-valued uses, notably for development into residential and other urban uses in the periphery of urban centres and towns. Within the long-running decline, land in crops is broadly increasing, implying that a subset of agricultural land is undergoing conversion to cropland. The data suggest that pasture – both tame or seeded pasture and natural pasture – are in decline, consistent with conversion of pasture to crop land. This trend aligns with relatively high crop prices, but at the cost of grassland and grazing livestock benefits such as carbon sequestration and biodiversity.

The array of sustainability successes, gaps, and challenges suggests the need for refined policy that allows for a targeted sustainability approach to engage the diversity of regions, agricultural technologies, agricultural systems, and the contribution that each can make in helping agriculture improve as an ongoing sustainability solutions provider.

References

Statistics Canada. (2017). Table 32-10-0406-01. "Archived - Land use, Census of Agriculture, 2011 and 2016, inactive."

Statistics Canada. (2022). Table 32-10-0249-01. "Land use, Census of Agriculture, 2021."

Statistics Canada. (2017). Table 32-10-0411-01. "Archived - Land practices and land features, Census of Agriculture, 2011 and 2016, inactive."

Statistics Canada. (2022). Table 32-10-0369-01. "Land practices and land features, Census of Agriculture, 2021."

Statistics Canada. (2017). Table 32-10-0446-01. "Archived - Technologies used on the operation, Census of Agriculture, 2016, inactive."

Statistics Canada. (2022). Table 32-10-0379-01. "Technologies used on the operation, Census of Agriculture, 2021."

Statistics Canada. (2017). Table 32-10-0449-01. "Archived - Renewable energy production, Census of Agriculture, 2016, inactive."

Statistics Canada. (2022). Table 32-10-0380-01. "Renewable energy production, Census of Agriculture, 2021."