



Research
Services

Canadian Beef Industry
2021 Farm Management Survey
Beef Cattle
August 2024

The 2021 Statistics Canada Farm Management Survey (FMS) provides a comprehensive insight into Canadian agricultural production and how agriculture is changing. Data was collected in the first part of 2022, for the 2021 growing season. The industry continues to work toward increasing productivity, while remaining environmentally and economically sustainable. The detailed data gathered by the 2021 FMS offers insight into how operators are adapting to a changing market environment and to economic pressures around production practices. This report focuses on operations with beef cattle production.

I. MANAGEMENT PRACTICES

Feeding Practices

Data gathered on production practices by the FMS provides some detail into various management practices. While there are variations between provinces, the FMS data does show some similarities - particularly in terms of the types of inputs being utilized by producers.

Forage

Among the operations that reported beef cattle and growing crops in Canada, the vast majority of beef cattle operations across the country reported that they utilized homegrown forage feed with a consistent 96 per cent in both 2017 and 2021 (Table 1). This reflects a strong reliance on homegrown forage feed in the Canadian beef cattle industry.

There are minor fluctuations in some provinces with the numbers down four percentage points in Ontario, two percentage points in Manitoba; while up three percentage points in Saskatchewan and steady in Alberta and British Columbia.

Table 1. Distribution of beef cattle operations that consumed forage feed grown on operation^{1,2,3}

Percent (%)	Yes		No	
	2017	2021	2017	2021
Canada	96%	96%	4%	4%
ON	98%	94%	X	6%
MB	100%	98%	X	X
SK	95%	98%	5%	F
AB	95%	95%	5%	5%
BC	97%	97%	X	F

¹Forage feed includes all hay, silage and green feed from forages and field crops.

²Forage feed excludes pasture, grains, grain-based products and protein supplements.

³Figures expressed as a percentage of total operations reporting beef cattle that also reported growing crops.

.. not available for a specific reference period

X suppressed to meet the confidentiality requirements of the *Statistics Act*

F - Too unreliable to be published

Source: *Statistics Canada, Farm Management Survey, 2017, 2021*

The distribution of operations by percentage homegrown feed used (Table 2), shows lower levels of self-sufficiency in homegrown forage production in 2021 compared to 2017. In 2021, 59 per cent of the farm reported full reliance on homegrown feed, down 16 percentage points from the 75 per cent from 2017.

This trend of reduced self-sufficiency was observed across all provinces, with the most significant decreases noted in the prairie provinces with Manitoba down from 73 per cent to 59 per cent, Saskatchewan down from 78 per cent to 60 per cent and Alberta down from 75 per cent to 55 per cent. A contributing factor to this shift is the adverse impact of drought affected western Canada and northwest Ontario in 2021, leading to lower crop and forage yields. This created potential shortages in homegrown feed, particularly affecting those operations without stockpiled feed inventories from previous years.

Table 2. Distribution of forage feed consumption by beef cattle operations by percentage grown on operation ^{1, 2}

Percent (%) ³	Less than 25%		25% to less than 50%		50% to less than 75%		75% to less than 100%		100%	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	3%	6%	5%	10%	5%	8%	12%	17%	75%	59%
ON	X	5%	X	6%	X	8%	13%	16%	73%	65%
MB	X	5%	X	10%	F	9%	16%	17%	73%	59%
SK	X	6%	6%	8%	X	8%	8%	19%	78%	60%
AB	F	7%	6%	12%	4%	8%	13%	17%	75%	55%
BC	6%	8%	5%	11%	8%	8%	14%	15%	67%	58%

¹ Forage feed includes all hay, silage and green feed from forages and field crops.

² Forage feed excludes pasture, grains, grain-based products and protein supplements.

³ Figures expressed as a percentage of total beef cattle operations that reported forage grown on the operation and consumed by beef cattle.

X – suppressed to meet the confidentiality requirements of the *Statistics Act*

F – Too unreliable to be published

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

What makes up beef cattle rations varies across Canada, reflecting differences in production systems and feed availability. The cost and availability of feed has significant implications for producer profitability as well as for the economic sustainability and competitiveness of the industry. According to FMS 2021, other field crop silage, greenfeed, or hay continued to dominate the composition of forage feed ration for beef cattle in Canada, constituting 43 per cent of the overall feed mix, followed by grasses at 26 per cent, legumes at 18 per cent, and corn silage at 10 per cent (Table 3).

The proportion of corn silage doubled from five per cent in 2017 to 10 per cent in 2021. This surge in corn silage was primarily propelled by shifts in provinces like Manitoba and Ontario. In 2017, both provinces had corn silage constituting less than 10 per cent of the feed mix. However, by 2021, corn silage had soared to almost a quarter of the feed mix in these regions. In Manitoba specifically, the proportion of corn silage surged from eight per cent to 25 per cent in four years. This surge in corn silage was accompanied by the declines in other field crop silage, greenfeed, or hay, decreasing from 45 per cent to 31 per cent. Additionally, grasses experienced a moderate increase from 17 per cent to 22 per cent, while legumes showed a decrease from 19 per cent to 15 per cent. Ontario also witnessed a similar trend in the rise of corn silage with the percentage up from nine per cent to 23 per cent, while grasses declined from 32 per cent to 21 per cent.

Table 3. Average percentage of beef cattle forage feed ration

% of feed ration by weight ¹	Corn silage		Other field crop silage, greenfeed or hay ²		Grasses ³		Legumes ⁴		All other sources of forages	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	5%	10%	41%	43%	28%	26%	19%	18%	7%	3%
ON	9%	23%	37%	37%	32%	21%	16%	18%	F	F
MB	8%	25%	45%	31%	17%	22%	19%	15%	F	7%
SK	X	F	46%	46%	23%	29%	20%	18%	X	F
AB	X	3%	41%	49%	30%	26%	21%	19%	F	3%
BC	X	x	24%	27%	48%	44%	24%	26%	X	F

¹ Respondents reported percentages based on actual weight

² Other field crop silage, greenfeed or hay includes cereals, oilseeds, pulses

³ Grasses include timothy, fescues, wheat grasses, rye grasses, orchard grass

⁴ Legumes include alfalfa, clover, sainfoin, trefoil, vetches

Source: Statistics Canada, Farm Management Survey, 2017,2021.

The transformation in the composition of forage feed ration, notably the surge in corn silage particularly in Manitoba and Ontario, underscores a shifting landscape in cattle feeding practices between 2017 and 2021.

The reasoning for the shift in corn silage can be attributed to many factors. Drought in 2021 could very well be a driving force as producers are unable achieve typical yield under normal climate conditions and had to shift to different alternatives to combat uncooperative weather conditions.

The surge in adoption of corn silage can be attributed to the significant impact of dry weather during crucial corn silking and pollination periods on grain yield expectations. Insufficient moisture levels during these stages often lead to poor ear fill or complete absence of ears and grains in corn plants. In such instances of extended dry weather, producers encounter the pressing challenge of ensuring sufficient forage for their livestock. Consequently, damaged corn crops with diminished grain yield potential become a valuable resource for salvaging as corn silage, serving as a crucial feed source for livestock producers grappling with forage scarcity. The flexibility offered by silage piles and silage bags for storage further enhances the attractiveness of adopting corn silage. Farmers, seeking to mitigate the impact of dry weather damage on corn fields, recognize the potential benefits of harvesting damaged crops as forage, albeit being mindful of the associated harvesting and nutritional implications. This awareness has fueled the increased uptake of corn silage among livestock producers facing challenges posed by dry weather conditions.

Grain-based Feed

During 2021, the FMS reported that 71 per cent of beef cattle operations in Canada supplement with grain-based feed grown on the operation, fairly steady with the 72 per cent in 2017.

Provincially, notable declines were observed in Saskatchewan, Manitoba, and British Columbia. These significant negative changes align with the 2021 dry conditions compared to 2017.

Table 4. Distribution of beef cattle operations that consumed grain-based feed grown on operation^{1,2}

% of beef cattle operations ^{3,4}	Did consume grain-based feed		Did not consume grain-based feed	
	2017	2021	2017	2021
Canada	72%	71%	28%	29%
ON	65%	66%	35%	34%
MB	72%	65%	28%	35%
SK	76%	70%	24%	30%
AB	74%	76%	26%	24%
BC	41%	36%	59%	64%

¹Grain-based feed includes grains, grain-based products and protein supplements.

²Grain-based feed excludes all pasture and forages.

³Figures expressed as a percentage of total operations reporting beef cattle that also reported feeding grain-based feed

⁴Total Operations reporting beef cattle that also reported feeding them grain-based feed.

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

Grazing and Supplemental Feed

In the summer of 2021 (April to October), beef cattle grazed without supplemental feed for an average of 19.34 weeks, down from 21.85 weeks in 2017. The grazing period with supplemental feed averaged at 10.89 weeks in summer 2021, similar to the 10.54 weeks reported in 2017 (Table 5).

Table 5. Time spent grazing during summer for beef farms

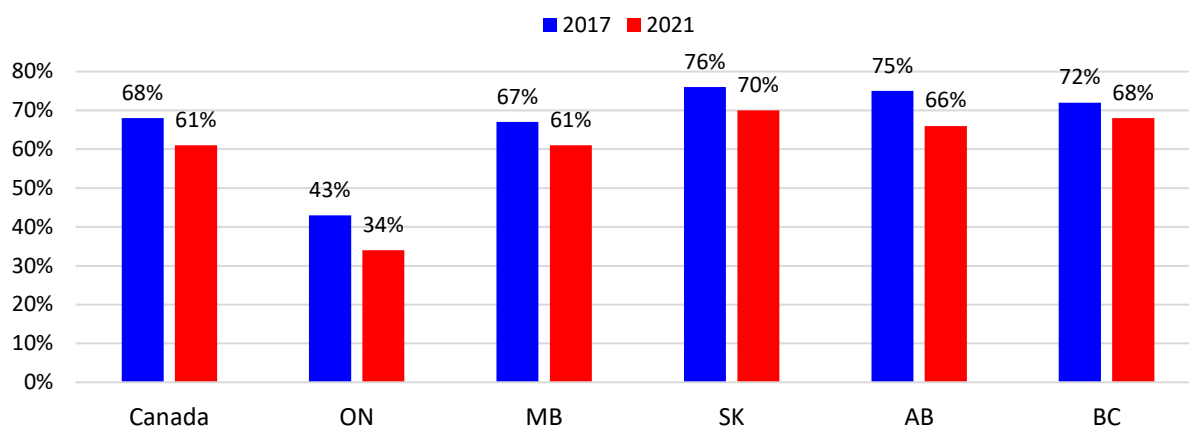
Average number of weeks	Summer grazing <u>without</u> supplemental feed brought on site		Summer grazing <u>with</u> supplemental feed brought on site	
	2017	2021	2017	2021
Canada	21.85	19.34	10.54	10.89
ON	20.56	20.94	13.88	13.95
MB	21.07	18.29	10.06	10.33
SK	22.72	19.55	10.33	12.57
AB	21.92	18.75	9.70	8.93
BC	20.96	21.46	8.30	8.97

Source: Statistics Canada, Table 32-10-0473-01 Time spent grazing during winter and summer for beef farms, by most common type of beef.

Extending the grazing season into the winter months is one approach producers can take to reduce feed costs while also putting nutrients back into the soil. In Canada, the percentage of farms that grazed or fed their cattle in an open field or pasture since November was 61 per cent in 2021, down from 68 per cent in 2017 (Figure 1).

In the 2021 winter months, beef farmers who grazed their cattle reported doing so without supplemental feed for an average of 8.46 weeks. Beef cattle were grazed with supplemental feed for an average of 8.55 weeks. Beef cattle spent an average of 11.05 weeks grazing, relying mostly on feed brought on site, down from 13.58 weeks in 2017 (Table 6).

Figure 1. Beef cattle operations that grazed or fed their cattle in an open field or pasture since November ^{1,2}



1 Respondents were asked to include all land used by this operation, i.e., owned, rented, leased or crop-shared.

2 Respondents were asked to exclude any land rented or crop-shared to others.

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

Table 6. Average time beef cattle operations grazed their cattle during winter with or without supplemental feed brought on site

Average number of weeks	Winter grazing <u>without</u> supplemental feed brought on site		Winter grazing <u>with</u> supplemental feed brought on site		In an open field or pasture in winter, <u>relying mostly</u> on feed brought on site	
	2017	2021	2017	2021	2017	2021
Canada	X	8.46	X	8.55	13.58	11.05
ON	16.03	13.98	12.61	11.08	15.1	13.98
MB	11.8	9.14	12.07	7.77	13.4	10.23
SK	9.58	7.55	10.66	8.54	11.95	11.35
AB	9.17	7.98	10.95	8.28	14.53	10.55
BC	8.18	6.94	10.98	8.21	13.65	10.76

Source: Statistics Canada, Table 32-10-0473-01 Time spent grazing during winter and summer for beef farms, by most common type of beef, 2021.

As shown in Table 7, among the beef cattle operations that grazed their cattle after November 2021 in an open field or pasture without relying mostly on feed brought on site, 55 per cent grazed cattle on residues or aftermath growth from harvested field crops, 28 per cent on other standing dormant vegetation and 29 per cent on other type of vegetation.

In Ontario, the percentage of operations that grazed their cattle on residues and aftermath growth from harvested field crops increased from 18 per cent in 2017 to 32 per cent in 2021, with grazing on other type of vegetation increasing from 34 per cent to 49 per cent. Manitoba experienced a similar trend with grazing on residues or aftermath growth up from 22 per cent to 48 per cent and other standing dormant vegetation up from 20 per cent to 40 per cent. Grazing on other types of forage also grew in Manitoba, from 22 per cent to 30 per cent. In Saskatchewan, grazing on residues or aftermath growth increased from 32 per cent to 58 per cent, while grazing on swathed/cut/windrowed crops increased from 11 per cent to 17 per cent, standing corn from 13

per cent to 17 per cent, other standing dormant vegetation from 19 per cent to 24 per cent, and other types of vegetation from 26 per cent to 27 per cent. Alberta also saw increases across all grazing types, particularly in residues or aftermath growth, which surged from 34 per cent to 59 per cent, while grazing on swathed/cut/windrowed crops rose from 20 per cent to 21 per cent, standing corn from 10 per cent to 14 per cent, other standing dormant vegetation from 20 per cent to 31 per cent, and other type of vegetation from 18 to 26 per cent. In British Columbia, residues and aftermath grazing rose from 33 per cent to 39 per cent, other standing dormant vegetation from 21 per cent to 35 per cent, and other types of vegetation from 23 per cent to 31 per cent.

These changes in forage utilization across provinces suggest a shift towards a greater reliance on residues or aftermath growth from harvested field crops as a primary source of winter forage for cattle operations in Canada, potentially driven by factors such as moisture conditions, cost-effectiveness, resource availability, or changing agricultural practices.

Table 7. Distribution of beef cattle operations by type of vegetation that was grazed by beef cattle operations after November 2017 and 2021^{1,2}

% of operations	Cattle were grazed after November ³		Residues or aftermath growth from harvested field crops ⁴		Swathed, cut or windrowed crops ⁵		Standing corn		Other standing dormant vegetation		Other type of vegetation ⁶	
	2017	2021	2017 ^r	2021	2017 ^r	2021	2017 ^r	2021	2017 ^r	2021	2017 ^r	2021
Canada	68%	61%	X	55%	13%	X	X	X	X	28%	23%	29%
ON	43%	34%	18%	32%	X	F	X	F	F	F	34%	49%
MB	67%	61%	22%	48%	8%	F	X	X	20%	40%	22%	30%
SK	76%	70%	32%	58%	11%	17%	13%	17%	19%	24%	26%	27%
AB	75%	66%	34%	59%	20%	21%	10%	14%	20%	31%	18%	26%
BC	72%	68%	33%	39%	X	11%	X	X	21%	35%	23%	31%

¹ Respondents were asked to select all vegetations that were grazed after November 2017, 2021.

² Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option.

³ Beef cattle operations having grazed their cattle after November 2017, 2021 in an open field or pasture without relying mostly on feed brought on site.

⁴ Residues or aftermath growth from harvested field crops includes stubble, straw, chaff, volunteer crop and weed growth.

⁵ Examples of swathed, cut or windrowed crops includes swath grazing.

⁶ Examples of other standing dormant vegetation include stockpiled forages, cover crops.

^r Revised from *Farm Management Survey 2017 Summary Report*, Canfax Research Services

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

Each operation might differ in their specific approaches to winter grazing. While there was some variation in the methods used to provide supplemental feed, these supplements play a pivotal role in addressing a fundamental trade-off within the beef industry. Cattle serve a crucial role in safeguarding grasslands and their ecological health. Well-managed grazing programs not only aid in carbon sequestration, especially in marginal lands unsuitable for human food crop production, but also contribute to preserving open spaces and wildlife habitats. However, the supplementation of cattle with grain or other supplements involves significant material and energy resources for production. If not managed sustainably, such practices can lead to adverse environmental impacts within beef operations.

Due to data suppression in 2021, the data on the overall Canada producer percentages is unavailable. However, from the data available in the provincial breakdown (Table 8), the FMS 2021 shows that there is a general increase in processed hay, silage or straw fed in a trough in Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. The data suggests that fewer producers are using whole bales of hay or straw (e.g. bale grazing) in Saskatchewan, Alberta and British Columbia when compared to 2017.

Each feeding method has its advantages and disadvantages, others being more effective from other extraneous factors such as weather. Trough feeding is a great example of this as it aims to minimize feed waste by keeping cattle stationary and removing the potential of cattle damage to feed. The increase in trough feeding in 2021 indicates that producers have become risk averse when it comes to cattle wasting feed. This is most likely a consequence of the 2021 drought, where feed yield was low, and producers maximized cattle feed intake by minimizing feed wastage as much as possible. On the contrary, feeding large round bales in pasture settings often leads to significant feeding losses because of cattle trampling and soiling the feed. Nonetheless, by unrolling these bales and feeding on the ground, producers gain the flexibility to relocate feeding areas across the pasture, promoting even distribution of manure and nutrients, thus improving forage production the next year.

Regarding the usage of grain or other supplements, the data reflects changes in supplement utilization among producers. Saskatchewan saw an increase in the adoption of these supplements, rising from 33 per cent in 2017 to 47 per cent in 2021, marking the highest utilization among regions. Alberta also experienced an uptick, with usage climbing from 28 per cent to 36 per cent. Manitoba saw a steady increase from 27 per cent to 31 per cent, while Ontario and British Columbia's data was unavailable.

Table 8. Distribution of number of beef cattle operations (in percentage) by type of feed that were brought on site to feed beef cattle in an open field or pasture during winter ¹

% of Operations ²	Whole bales of hay or straw ³		Unrolled bales of hay or straw		Processed hay, silage or straw fed on the ground in a windrow or pile		Processed hay, silage or straw fed in a trough		Grain or other supplements	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
CAN	49%	X	38%	X	43%	X	13%	X	28%	X
ON	72%	75%	22%	19%	X	F	18%	25%	24%	F
MB	56%	56%	46%	29%	50%	47%	13%	29%	27%	31%
SK	52%	42%	39%	44%	45%	54%	10%	24%	33%	47%
AB	38%	33%	39%	40%	51%	44%	15%	27%	28%	36%
BC	45%	34%	44%	42%	X	X	9%	14%	12%	X

¹ Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option.

² Figures expressed as a percentage of beef cattle operations having grazed their cattle in an open field or pasture with or without supplemental feed brought on site since November 2017 or 2021.

³ Examples of whole bales of hay or straw include bale grazing.

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

Feeding hay in the same spot repeatedly can lead to nutrient buildup and hygiene issues during calving. To avoid this, rotating feeding areas and spreading hay across the pasture helps

distribute nutrients evenly. Preventing nutrient loss is cost-effective considering the hay's nutrient richness. Concentrated feeding sites can impact calf health during calving due to hygiene concerns. Rolling hay daily can substantially reduce wastage. It is beneficial to explore various hay distribution methods while maintaining effective farm management practices.

Among the operations with beef cattle that grazed or fed in an open field or pasture in winter, providing feed several times in the same location and then moved to a different location appeared to be a more common practice, reported by 33 to 45 per cent of operations across provinces. Providing feed only once in the same location, with subsequent feedings always in a new location followed with 15 to 39 per cent. Providing feed in the same location for the entire winter feeding season was reported by eight to 28 per cent of operations. It should be noted that in Ontario, there is more operations providing feed in the same location for the entire winter feeding season (28%) than providing feed only once in the same location, with subsequent feedings always in a new location (15%) (Table 9).

Table 9. Distribution of beef cattle operations (in percentage) by feed placement of beef cattle that grazed or were fed in an open field or pasture since November

% of Operations ¹	Provided in the same location for the entire winter feeding season		Provided several times in the same location and then moved to a different location		Provided only once in the same location, with subsequent feedings always in a new location		Other placement	
	2017	2021	2017	2021	2017	2021	2017	2021
Canada	16%	X	41%	X	39%	X	4%	F
ON	40%	28%	37%	33%	X	15%	X	X
MB	14%	15%	38%	36%	X	35%	X	F
SK	16%	17%	39%	39%	41%	33%	5%	X
AB	11%	9%	43%	45%	42%	36%	3%	F
BC	12%	8%	48%	40%	35%	39%	5%	X

¹Figures expressed as a percentage of beef cattle operations with same feed placement during the winter.

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

In FMS 2021, 32 per cent of the operations with same feed placement during the winter move location every year, down from 76 per cent in FMS 2017 (Table 10). This downtrend was evident across all provinces.

Table 10. Distribution of beef cattle operation (in percentage) by frequency that feed is placed in the same location for beef cattle operations during the winter ¹

% of Operations ²	Every year		Every two years		Every three to five years	
	2017	2021	2017	2021	2017	2021
Canada	76%	32%	14%	7%	10%	3%
ON	87%	48%	X	F	X	F
MB	83%	23%	X	4%	X	F
SK	73%	28%	19%	9%	7%	F
AB	72%	33%	13%	7%	15%	2%
BC	82%	29%	9%	F	8%	X

¹The answer option 'Less frequently than every five years' was not included in the table since the values are negligible.

²Figures expressed as a percentage of beef cattle operations with same feed placement during the winter.

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

II. SUSTAINABILITY

In discussions on climate change, livestock production is often identified as a contributor to greenhouse gas emissions. While beef operations indeed contribute to these emissions, they also hold the potential to actively mitigate them and safeguard the remaining Canadian prairies. Producers are increasingly endeavoring to adopt sustainable and conservation-focused practices while ensuring the profitability and productivity of their enterprises. The aim to achieve both sustainability and profitability is not contradictory. Cattle farmers have a long mutually beneficial relationship with the environment, the improved practices cattle farmers adopt both increase the production of meat and the sustainability of their land operations. Modern production practices seek to increase the efficiency of beef while maximizing limited resources such as water and land to maintain sustainability.

The data provided by the FMS serves as a valuable resource, highlighting potential environmental risks and suggesting strategies for beef production to support environment stewardship.

Grazing Management

Canadian cattle producers function as stewards of grasslands, recognizing their reliance on this resource as a vital feed input. When managed responsibly and sustainably, beef production contributes to the preservation and well-being of native rangelands and the biodiversity they support. Effectively managed grasslands have the capacity to sequester carbon within the grasses and soil of perennial rangelands.

In 2021, 47 per cent of beef cattle operations in Canada reported the species composition of most commonly grazed pastures between April and October comprised mainly native grasses, up from 43 per cent in 2017. The uptrend was particularly evident in Manitoba and Saskatchewan, showing increases from 61 per cent to 67 per cent and from 43 per cent to 53 per cent, respectively.

Mix of tame grass and legume were reported by 28 per cent of operations as the most common species composition, slightly up from 27 per cent in 2017, while mostly tame grasses were down from 21 per cent to 15 per cent.

Table 11. Distribution of beef cattle operations (in percentage) by species composition of most commonly grazed paddock¹

% of Operations ²	Mostly native Grass		Mostly Tame Grasses		Mix of Tame grass and legume		Cereal or Cover Crops ³		Other Compositions	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	43%	47%	21%	15%	27%	28%	F	0%	4%	3%
ON	28%	26%	26%	X	36%	42%	X	X	X	F
MB	61%	67%	8%	F	20%	16%	X	X	6%	F
SK	43%	53%	21%	12%	28%	31%	0%	X	6%	F
AB	44%	45%	23%	18%	26%	24%	X	X	3%	F
BC	45%	42%	17%	23%	29%	29%	X	X	X	F

¹Refers to the paddock used primarily for grazing between April and October 2017 and 2021 by the most common grazing beef cattle on the operation

²Figures expressed as a percentage of beef cattle operations with land for pasture

³Examples of cereal crops include barley, oats and rye.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

Forage resource management is an integral part of cattle farming to ensure that overgrazing and soil degradation can be prevented. Soil that is productive and healthy grows more plants and adds weight to grazing animals who, in turn, add more soil organic matter and improved water-

holding capacity through manure and grazing activity. The optimal grazing time and intensity may vary depending on the type of pasture land cattle are grazing and the grassland management approach that is being utilized.

In 2021, the number of times pastures were used for grazing showed a notable trend, with 37 per cent of operations reporting that their primary grazing pastures were used twice, marking the highest reported frequency. Following this, single-time grazing accounted for 26 per cent of operations, while grazing three times, four times, and five times or more constituted 19 per cent, seven per cent, and 10 per cent, respectively. These findings demonstrated consistency with the 2017 data, indicating a continual practice of approximately a third of operations grazing their paddocks twice.

Table 12. Number of times paddock was used for grazing^{1,2}

% of operations ³	One Time		Two Times		Three Times		Four Times		Five Times or More	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	28%	26%	33%	37%	20%	19%	6%	7%	11%	10%
ON	10%	F	15%	F	30%	F	11%	F	33%	43%
MB	14%	F	40%	51%	24%	22%	12%	F	9%	8%
SK	36%	33%	37%	29%	16%	25%	X	F	8%	F
AB	33%	27%	35%	46%	19%	16%	5%	F	7%	F
BC	34%	28%	34%	X	16%	F	X	F	9%	F

¹Refers to the paddock used primarily for grazing between April and October 2017 and 2021 by the most common grazing beef cattle on the operation

²To be counted as a separate grazing period, there must be a length of time in between where the paddock is not being grazed.

³Figures expressed as a percentage of the total beef cattle operations where most common grazing beef cattle were not kept in the same paddock for the entire grazing season.

Source: Statistics Canada, Farm Management Survey, 2017, 2021.

Concerning the length of grazing time in pastures, a slight shift occurred nationally between 2017 and 2021. Around 26 per cent of beef operations maintained their cattle in the same pasture from April to October in 2021, reflecting a minor decrease from the 28 per cent reported in 2017. Notably, there was an increase in operations where cattle grazed in the same pasture for shorter durations; those grazing for less than three days rose from four per cent to six per cent, while grazing periods of three days to less than a week also increased from five per cent to six per cent over the same period.

Table 13. Provincial breakdown of length of grazing time in a pasture by week and month¹

% of Ops ²	Less than three days		Three days to less than a week		One week to less than two weeks		Two weeks to less than a month		One month to less than two months		Two months or more		Beef cattle kept in the same paddock ³	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
CAN	4%	6%	5%	6%	11%	10%	18%	18%	17%	15%	13%	X	28%	26%
ON	8%	F	10%	F	17%	F	11%	F	10%	F	8%	F	26%	36%
MB	1%	F	X	16%	11%	16%	24%	X	15%	X	12%	F	27%	25%
SK	F	F	5%	F	8%	9%	15%	23%	18%	15%	15%	X	33%	31%
AB	3%	F	4%	6%	10%	10%	20%	17%	18%	17%	15%	12	25%	20%
BC	8%	F	X	F	9%	F	19%	32%	19%	26%	10%	F	30%	18%

¹Refers to the paddock used primarily for grazing between April and October 2017 and 2021 by the most common grazing beef cattle on the operation.

²Figures expressed as a percentage of the total beef cattle operations with land for pasture.

³Beef cattle kept in the same paddock had access to the whole paddock for the entire grazing season.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

The adoption of mobile electric fencing witnessed a notable surge from 35 per cent to 45 per cent in Canada. This uptrend is evident across all provinces, exceeding 60 per cent in Manitoba.

There was an increased percentage of operations observed in the western provinces that reported moving beef cattle to different areas within large fields. However, notably lower percentages were reported for such practices in Ontario compared to other regions.

Table 14. Distribution of beef cattle operations (in percentage) by practices used on pasture land of beef cattle operations to achieve optimal grazing pressure or livestock distribution ¹

% of Operations ^{2,3}	Mobile electric fencing		Strategic placement of salt, minerals, water sources		Shade or shelter		Moved beef cattle to different areas within a large field		Other practice		No practices were used	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	35%	45%	58%	X	36%	X	56%	X	13%	6%	10%	7%
ON	42%	45%	42%	36%	44%	37%	50%	37%	9%	X	14%	17%
MB	35%	61%	52%	44%	44%	38%	64%	60%	15%	F	7%	F
SK	34%	45%	61%	71%	36%	43%	51%	68%	12%	13%	9%	F
AB	35%	40%	62%	63%	32%	32%	59%	64%	13%	F	10%	F
BC	29%	47%	69%	65%	20%	34%	55%	64%	15%	F	6%	F

¹ Respondents were asked to include all land used by this operation, i.e., owned, rented, leased or crop-shared and to exclude any land rented or crop-shared to others.

² Figures expressed as a percentage of the total operations reporting beef cattle operations with land for pasture.

³ Percentages may not sum up to 100 because of non-responses and because respondents could select more than one option.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

Companion Crops

Building on the themes of diversity and flexibility in management practices discussed above, there is increasing interest in companion crops and their potential to improve soil quality. FMS 2021 data shows that the majority of field crop operations did not use companion crops, cover crops or green manure crops. Although there has been a slight uptick in adoption rates for cover crops and green manure crops, their overall usage remains in the minority. Notably, Eastern Canada exhibits higher adoption rates compared to the western provinces.

As shown in the Table 15, national data from 2017 to 2021 remain relatively stable in regard to the usage of companion crops by eight per cent of field crop operations, while there was a slight increase in the usage of winter cover crops from 13 per cent to 16 per cent, and green manure crops up from 10 per cent to 11 per cent. Quebec saw the use of fall or winter cover crops up from 19 per cent to 27 per cent, and green manure crops up from 27 to 37 per cent.

The On-Farm Climate Action Fund (OFCAF) is a funding program that is directed towards supporting farmers in the adoption and implementation of immediate on-farm Beneficial Management Practices (BMPs) designed to store carbon and diminish greenhouse gases. These practices focus on nitrogen management, cover cropping, and rotational grazing. It will be intriguing to observe whether there will be a surge in the adoption rates of these practices in the upcoming FMS.

Table 15. Distribution of field crop operations (in percentage) by use of companion crop, fall or winter cover crops and green manure crops on field crop operations

% of Operations ^{1,2}	Used companion crops ^{3,4}		Used fall or winter cover crops ^{5,6,7}		Used green manure crops ⁸	
	2017	2021	2017	2021	2017	2021
Canada	8%	8%	13%	16%	10%	11%
QC	17%	18%	19%	27%	27%	37%
ON	14%	11%	33%	36%	19%	18%
MB	4%	5%	4%	6%	X	X
SK	3%	3%	F	3%	X	X
AB	4%	7%	2%	4%	3%	3%

¹Figures expressed as a percentage of total field crop operations.

²Percentages may not sum up to 100 because of non-response.

³Includes intercropping where both are seeded at the same time, as well as relay cropping where the second crop is seeded later between the rows of an existing crop.

⁴Companion crops are two different crops grown at the same time on the same land.

⁵Fall and winter cover crops include fall seeded crops that are grazed or harvested for forage in the spring prior to reseeding.

⁶Fall and winter cover crops exclude fall seeded crops that are harvested for grain, e.g., fall rye or winter wheat.

⁷A cover crop is a crop, such as red clover, fall rye, etc., used to protect the soil from water and wind erosion between cash crops. Cover crops may increase soil nutrient levels and soil tilth.

⁸Green manure crops are crops seeded in spring or early summer, whose growth is terminated before maturity, with all crop biomass incorporated into the soil.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

Water Management

Water plays a critical role in the nutrient for cattle, constituting around 50-80 per cent of their live weight. This means that the management of water is equally important as water requirements so that cattle may be fully optimized in feed intake and productivity.

Watersheds are an area where water falls or flows across land and drains into common bodies of water such as rivers or lakes. Watersheds are important to the beef industry because they dictate water quality and health impacts on cattle. In recent years, watersheds preservation and protection have been highlighted in the beef industry as a priority.

It is important to note that keeping livestock near surface water sources may pose environmental challenges and health risks due to increased exposure to waterborne diseases. Therefore, managing the proximity of livestock to surface water requires careful consideration to mitigate environmental issues and maintain animal health standards.

Table 16. Distribution of beef cattle operations by livestock access to surface water

% of beef cattle operations ¹	Unlimited Access		Limited Access		No Access	
	2017	2021	2017	2021	2017	2021
Canada	72%	71%	21%	23%	7%	5%
ON	56%	45%	23%	36%	21%	F
MB	79%	58%	15%	34%	F	8%
SK	80%	81%	16%	15%	F	F
AB	69%	70%	24%	24%	7%	5%
BC	66%	61%	30%	36%	4%	F

¹Figures expressed as a percentage of beef cattle operations with pastures, grazing paddocks, or open field feeding areas adjacent to surface water.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

At the national level, FMS 2021 shows that 71 per cent of beef cattle operations reported unlimited access for their cattle to surface water in 2021, slightly down from 72 per cent in 2017 (Table 16). Conversely, limited access slightly increased from 21 per cent to 23 per cent, indicating a positive trend in water management. When examining specific provinces, Ontario, Manitoba and British Columbia witnessed a decline in unlimited access, while Saskatchewan and Alberta remained relatively stable at 70 per cent to 80 per cent (Table 16).

Regarding the methods used to restrict access to surface water by beef cattle operations, there has been a consistent effort in employing fencing along shorelines, with around 70 per cent of operations where livestock had limited to no access to surface water implementing this practice in 2021 (Table 17). The use of remote or offsite water systems to troughs saw a slight increase from 54 per cent to 57 per cent.

The percentage of operations reporting limited or controlled grazing in riparian areas or adjacent to surface water was up from 36 per cent by 38 per cent, while operations reported in feeding or bedding sites located away from water bodies were up from 39 per cent 49 per, indicating a growing awareness of sustainable grazing practices near water sources.

Table 17. Distribution of beef cattle operations (in percentage) by methods used to restrict access to surface water

% of Ops 1,2	Fencing along shoreline		Remote or offsite water system to a trough		Access ramps for direct watering		Stream crossings		Limited or controlled grazing in riparian areas or adjacent to surface water		Feeding or bedding sites located away from water bodies		Other	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
CAN	71%	70%	54%	57%	14%	10%	18%	16%	36%	38%	39%	49%	7%	F
ON	73%	68%	45%	35%	X	F	34%	F	51%	F	44%	38%	X	F
MB	38%	64%	64%	61%	X	F	15%	F	36%	54%	40%	39%	X	X
SK	71%	67%	44%	61%	X	F	18%	F	30%	X	32%	63%	X	X
AB	76%	73%	61%	60%	12%	F	12%	13%	35%	37%	40%	48%	7%	F
BC	77%	73%	46%	48%	19%	17%	30%	37%	33%	48%	35%	53%	X	F

¹ Figures expressed as a percentage of beef cattle operations where livestock had limited to no access to surface water

² Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option

Source: Statistics Canada, Farm Management Survey, 2017, 2021

Over the past four years, the data pertaining to the distance of riparian buffer zones maintained by beef cattle operations near surface water bodies appears to demonstrate a steady pattern in Canada. Across the nation from 2017 to 2021, there has been a consistent trend in the maintenance of buffer zones, indicating a stable approach to managing these areas.

In 2021, 19 per cent of operations maintained a buffer of less than three meters, slightly up from 17 per cent in 2017. Similarly, percentages for other distance categories remained relatively consistent over the years. There was a noticeable 10 percentage point decrease nationally in maintaining 40 to less than 80 feet as riparian buffer zones among beef cattle operations near surface water bodies in Canada.

Table 18. Distribution of field crop operations (in percentage) by average width of buffer maintained between permanent wetlands or waterways and cropland ¹

% of Operations ² ₃	Less than three meters / less than 10 feet		Three to less than seven meters / 10 to less than 20 feet		Seven to less than twelve meters / 20 to less than 40 feet		Twelve to less than twenty-four meters / 40 to less than 80 feet		More than twenty-four meters / more than 80 feet	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	17%	19%	36%	37%	20%	20%	20%	10%	13%	13%
QC	39%	43%	48%	48%	9%	6%	9%	F	F	F
ON	18%	19%	39%	41%	22%	23%	22%	8%	9%	9%
MB	F	F	22%	25%	21%	28%	21%	X	29%	28%
SK	10%	10%	26%	33%	26%	23%	26%	15%	18%	18%
AB	6%	17%	38%	33%	20%	20%	20%	13%	17%	X

¹ A buffer refers to an area of planted or natural vegetation that is beside a permanent wetland or waterway, extending from the shoreline to the edge of the field

²Figures expressed as a percentage of total field crop operations with buffer maintained between permanent wetlands or waterways and cropland

³Percentages may not sum up to 100 because of non-response.

Source: Statistics Canada, Farm Management Survey, 2017,2021

Fertilizer and Manure

The FMS 2021 data shows a generally stable trend in the practices adopted on pasture land by beef cattle operations when compared to 2017, while there was an increase in pasture conversion for crop production.

Fertilizer application was reported by 21 per cent of operations, an uptick from 20 per cent in 2017. The use of manure experienced a slight decline, moving from 37 per cent to 34 per cent. Thirty-eight per cent of operations reported pasture land also used for hay or silage, up from 32 per cent in 2017.

The conversion of pasture land to crop production was reported by 17 per cent of operation, up from 13 per cent in 2017. In Saskatchewan, particularly, the percentage doubled from 12 per cent to 24 per cent, indicating a shift in land use among beef cattle operations.

Table 19. Distribution of beef cattle operations (in percentage) by practices used on pasture land of beef cattle operations

% of Operations ¹	Applied fertilizer		Applied manure		Removed trees, controlled weeds or brush		Also used land for hay or silage		Reseeded for pasture use		Broke up pasture to convert to crop production	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	20%	21%	37%	34%	23%	25%	32%	38%	16%	17%	13%	17%
ON	34%	38%	54%	56%	33%	33%	30%	32%	26%	16%	15%	F
MB	17%	11%	37%	34%	17%	19%	34%	30%	8%	11%	10%	12%
SK	13%	19%	33%	29%	11%	13%	30%	48%	15%	23%	12%	24%
AB	19%	18%	35%	31%	29%	33%	34%	33%	15%	11%	14%	17%
BC	33%	42%	27%	37%	35%	39%	39%	33%	23%	28%	8%	F

¹Figures expressed as a percentage of the total beef cattle operations with land for pasture.

²The sum of the operations is greater than 100% because an operation may report using more than one practice.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

The FMS found that solid manure being spread on field crops in April to June are steady throughout 2017 to 2021. A trend between both years is that majority of producers spread manure in the fall, 59 per cent and 52 per cent respectively. There is an uptick from 18 per cent to 25 per cent in application in the summer months (Table 20).

Table 20. Percent of total solid manure spread on field crops by time of application ¹

% of solid manure ²	October to December		January to March		April to June		July to September	
	2017	2021	2017	2021	2017	2021	2017	2021
Canada	59%	52%	2%	F	21%	21%	18%	25%
ON	X	X	F	F	38%	36%	19%	34%
MB	53%	41%	X	X	X	F	31%	48%
SK	66%	69%	F	F	17%	11%	X	X
AB	65%	56%	F	F	20%	23%	15%	18%
BC	X	F	X	X	X	X	F	F

¹ Refers to the average percentage of solid manure spread on field crops during each period reported by beef operations with mostly solid manure stored or applied to cropland and where field croplands received more manure than forage croplands.

² Sum of percentages reported in each period may be greater than 100 due to rounding averages.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

The seasonality of solid manure application on forage crops exhibits a more evenly distributed pattern throughout the year compared to field crops. Specifically, 38 per cent of solid manure was applied in October to December, 26 per cent in April to June and 31 per cent in July to September (Table 21).

Provincially, the 2021 FMS shows that there was a significant increase in manure spread on forage crops in British Columbia in April to June, up from 48 per cent in 2017 to 70 per cent in 2021, while applications in October to December dropped from 23 per cent to 10 per cent. The change in application timing may be attributed to the extreme weather conditions experienced in the province, ranging from floods, wildfires, to drought.

Table 21. Percent of total solid manure spread on forage crops by time of application ¹

% of solid manure ²	October to December		January to March		April to June		July to September	
	2017	2021	2017	2021	2017	2021	2017	2021
Canada	37%	38%	X	F	29%	26%	30%	31%
ON	30%	36%	F	F	34%	31%	32%	31%
MB	32%	45%	F	F	18%	X	50%	40%
SK	48%	54%	F	X	21%	F	27%	34%
AB	42%	33%	F	F	29%	29%	26%	30%
BC	23%	10%	13%	X	48%	70%	14%	13%

¹ Refers to the average percentage of solid manure spread on field crops during each period reported by beef operations with mostly solid manure stored or applied to cropland and where field croplands received more manure than forage croplands.

² Sum of percentages reported in each period may be greater than 100 due to rounding averages.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

Regarding application methods, the FMS in both 2017 and 2021 reveals that the majority (76% and 75% respectively) of beef cattle operations utilizing solid manure for field growth tend to

broadcast on surface and worked into the soil, with adoption rates exceeding 80 per cent in Ontario, Manitoba and Alberta (Table 22).

Table 22. Distribution of beef cattle operations (in percentage) by methods used to apply solid manure to land used to grow field crops

% of beef cattle operations ^{1,2}	Broadcast on surface and <u>not</u> worked into the soil		Broadcast on surface and worked into the soil	
	2017 ^r	2021	2017 ^r	2021
Canada	32%	32%	76%	75%
ON	22%	35%	90%	86%
MB	X	17%	88%	86%
SK	42%	47%	X	X
AB	34%	24%	73%	80%
BC	X	X	X	X

¹Figures expressed as a percentage of total beef operations with mostly solid manure stored or applied to cropland and where field croplands received more manure than forage croplands

²Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option. ^rRevised from *Farm Management Survey 2017 Summary Report*, Canfax Research Services

Source: Statistics Canada, Farm Management Survey, 2017, 2021

III. ANIMAL HEALTH

Canada is world renowned for producing healthy beef cattle in a pristine environment and for having a strong commitment to animal health, welfare and antimicrobial stewardship. These attributes are becoming increasingly important among both domestic and export customers and consumers. There are also clear linkages between improvements in animal health and welfare and increased productivity, which is fundamental for the long-term competitiveness and sustainability of all sectors of the Canadian beef industry.

Antibiotic Use

As of December 1, 2018, all livestock producers need a prescription from a licensed veterinarian before they can buy a medically important antibiotic (MIA) for therapeutic use in livestock production. MIAs are categorized as Very High (category I), High (category II), and Medium Importance (category III), while Low Importance Antimicrobials (category IV) are not considered medically important. The majority of antimicrobial doses used in Canadian beef production are of Low importance in human health. The majority of MIA doses used in Canadian beef cattle are of Medium importance.

Antimicrobials of Low importance, such as ionophores, are used in beef cattle to prevent diseases such as coccidiosis and to improve feed efficiency. Generally, category II and III antimicrobials are used for treatment or control of bacterial infections. In Canada, Category I antimicrobials are seldom used in beef cattle production and only for treatment (not control or prevention) of severe bacterial infections in overtly sick animals.

The 2021 FMS shows a steady trend in the usage of antibiotics preventing infection outbreaks and treating infections nationally, while the trend varies across provinces.

At the national level, the percentage of beef cattle operations using antibiotics to prevent infection outbreaks saw a modest increase from 34 per cent in 2017 to 37 per cent, while the utilization of antibiotics for treating infections remained stable at 74 per cent (Table 23).

Provincially, Ontario, Saskatchewan and Alberta witnessed increases in the use of antibiotics to prevent infection outbreaks, rising by one to eight percentage points. Conversely, British

Columbia and Manitoba experienced declines in this aspect, with reductions of four and five percentage points, respectively.

In terms of using antibiotics for treating infections, Ontario saw a four percentage points increase, Saskatchewan and Alberta remained stable, but Manitoba and British Columbia observed declines of two and three percentage points, respectively.

Table 23. Distribution of beef cattle operations (in percentage) reporting having used antibiotics¹

% of beef cattle operations ²	Antibiotics to prevent infection outbreaks		Antibiotics for treating infections	
	2017	2021	2017	2021
Canada	34%	37%	74%	74%
ON	25%	33%	57%	61%
MB	39%	34%	78%	76%
SK	36%	44%	76%	76%
AB	36%	37%	78%	78%
BC	25%	21%	73%	70%

¹Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option.

²Figures expressed as a percentage of total beef cattle operations.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

Ionophores and Implants

Antibiotics are not the only tool available for beef operations. The FMS also provides information on the use of ionophores, ear implants, Ractopamine or Zilpaterol, rumen modifiers, and other products. These different feed additives and products can help increase productivity while also maintaining animal health. Ionophores, for example, are a class of antibiotics that are used in cattle production to shift ruminal fermentation patterns. They also are used to control coccidiosis in cattle.

Table 24. Distribution of beef cattle operations (in percentage) reporting having used products to maintain or improve the health and productivity of beef cattle

% of beef cattle operations ¹	Ionophores		Ear implants		Ractopamine or Zilpaterol		Rumen modifiers ²		Bentonite, Yeast Cell Wall, glucomannan products, or enzymes		Other product	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	7%	8%	14%	14%	1%	1%	7%	9%	1%	1%	17%	10%
ON	8%	4%	17%	16%	X	2%	8%	6%	F	F	10%	9%
MB	6%	8%	8%	8%	X	F	6%	8%	X	F	16%	12%
SK	7%	11%	14%	15%	X	F	7%	12%	X	F	20%	9%
AB	9%	9%	14%	15%	1%	F	6%	9%	F	F	17%	12%
BC	2%	6%	8%	6%	X	F	2%	6%	X	F	19%	9%

¹Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option.

²Rumen modifiers includes yeast or yeast culture, probiotics, prebiotics.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

The FMS 2021 shows a slight increase in the use of ionophores at the national level, from seven per cent in 2017 to eight per cent in 2021. Saskatchewan saw an increase from seven per cent to 11 per cent, while Ontario saw a decrease from eight per cent to four per cent.

There was an increase in the use of rumen modifiers at the national level, from seven per cent in 2017 to nine per cent in 2021. Saskatchewan experienced an increase from seven per cent to 12 per cent, and Alberta was up from six per cent to nine per cent.

The utilization of ear implants (14%), Ractopamine or Zilpaterol (1%) as well as Bentonite, Yeast Cell Wall, glucomannan products, or enzymes (1%) remained relatively stable.

Shelter

Windbreaks or shelterbelts are rows of natural or planted trees or hedges along field edges that stop prevailing winds from eroding the soil. It is used more frequently in Western Canada where farmland is more susceptible to wind action and where trapping snow for moisture is important.

In 2021, while the majority of operations (72%) relied on natural tree bluffs and wooded areas in fields to provide winter shelter for beef cattle, there has been a national decline of 10 percentage point and reductions across all provinces. Ontario experienced the most significant decrease from 86 per cent to 42 per cent, followed by Saskatchewan from 80 per cent to 72 per cent, Manitoba from 93 per cent to 86 per cent, Alberta from 78 per cent to 75 per cent, and British Columbia from 93 per cent to 91 per cent.

This declining trend aligns with the findings of a study conducted in Saskatchewan by Suren Kulshreshtha et al. in 2018, which utilized landowner surveys from both 2013 and 2017. The study revealed that there were relatively few livestock farms with shelterbelts in the province. The authors attributed this scarcity to the opportunity cost associated with the land occupied by shelterbelts, indicating a key factor hindering livestock operators from planting and maintaining them.

Table 25. Distribution of beef cattle operation (in percentage) by methods used to provide winter shelter to beef cattle while in an open field or pasture

% of beef cattle operation ^{s1,2}	Natural tree bluffs and wooded areas in field		Planted shelterbelts in field		Constructed stationary windbreaks or shelters in field		Portable windbreaks or shelters, moved to different locations in field		Cattle walked to farmyard for shelter ³		Other method	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Canada	82%	72%	16%	X	33%	35%	41%	44%	35%	43%	2%	3%
ON	86%	42%	X	F	19%	13%	X	X	43%	80%	0%	F
MB	93%	86%	21%	X	36%	23%	38%	44%	43%	45%	2%	X
SK	80%	72%	17%	23%	32%	42%	44%	43%	38%	46%	F	F
AB	78%	75%	15%	17%	37%	41%	47%	56%	32%	34%	2%	4%
BC	93%	91%	X	F	17%	15%	X	F	14%	21%	3%	F

¹Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option.

²Figures expressed as a percentage of beef cattle operations that grazed or fed in an open field or pasture on this operation.

³Examples of cattle walked to farmyard for shelter includes farmstead shelterbelt, stationary windbreak, barn.

Source: Statistics Canada, Farm Management Survey, 2017, 2021

IV. MANAGEMENT STYLE, INNOVATION AND ENVIRONMENTAL FARM PLAN

Management Style

Farm management style holds significant importance as it serves as the cornerstone of agricultural operations, influencing the overall efficiency, sustainability, and success of a farm. An effective management style encompasses various facets, including planning, resource allocation, risk assessment, and decision-making. It determines the utilization of resources such as land, water, labor, and capital, optimizing their use to maximize productivity while minimizing waste. Moreover, it plays a pivotal role in ensuring the well-being of livestock, implementing sound agricultural practices, and complying with industry regulations and ethical standards. A well-crafted management style integrates strategic foresight, innovation, and adaptability, allowing farmers to navigate challenges, capitalize on opportunities, and steer the farm towards long-term sustainability and profitability. Ultimately, farm management style acts as a guiding force that shapes the direction and success of agricultural enterprises, making it indispensable in the realm of farming and agribusiness.

Table 26. Distribution of beef cattle operations by practices used to manage staff requirements in last 5 years

% of beef cattle operations ^{1,2}	Adopted improved technology with lower staff requirements	Existing staff worked overtime	Temporary Foreign Workers program	Employee training and certification program	Restructured farm operation to reduce or eliminate certain types of farm functions	Not Applicable
Canada	8%	13%	1%	2%	7%	77%
ON	4%	9%	F	F	F	86%
MB	6%	16%	F	F	6%	78%
SK	13%	14%	F	F	9%	73%
AB	7%	15%	1%	4%	8%	75%
BC	8%	12%	F	F	7%	78%

¹ Figures expressed as a percentage of beef cattle operations.

² Percentages may not sum up to 100 because of non-responses and because respondents could select more than one answer option.

Source: Statistics Canada, *Farm Management Survey, 2021*

Table 26 presents an overview of the adoption rates of diverse strategies and practices within beef cattle operations across several regions in Canada. It illustrates the percentages of operations that have implemented specific approaches, showcasing various aspects of their operational strategies. For instance, roughly eight per cent of beef cattle operations nationwide have embraced improved technology aiming to lower staff requirements, while approximately 13 per cent have resorted to overtime for existing staff to meet operational needs. Seven per cent have restructured farm operations to diminish certain functions. The column indicating "Not Applicable" suggests that many operations, spanning from 73 per cent to 86 per cent across different regions, might find some listed practices not relevant to their specific operations.

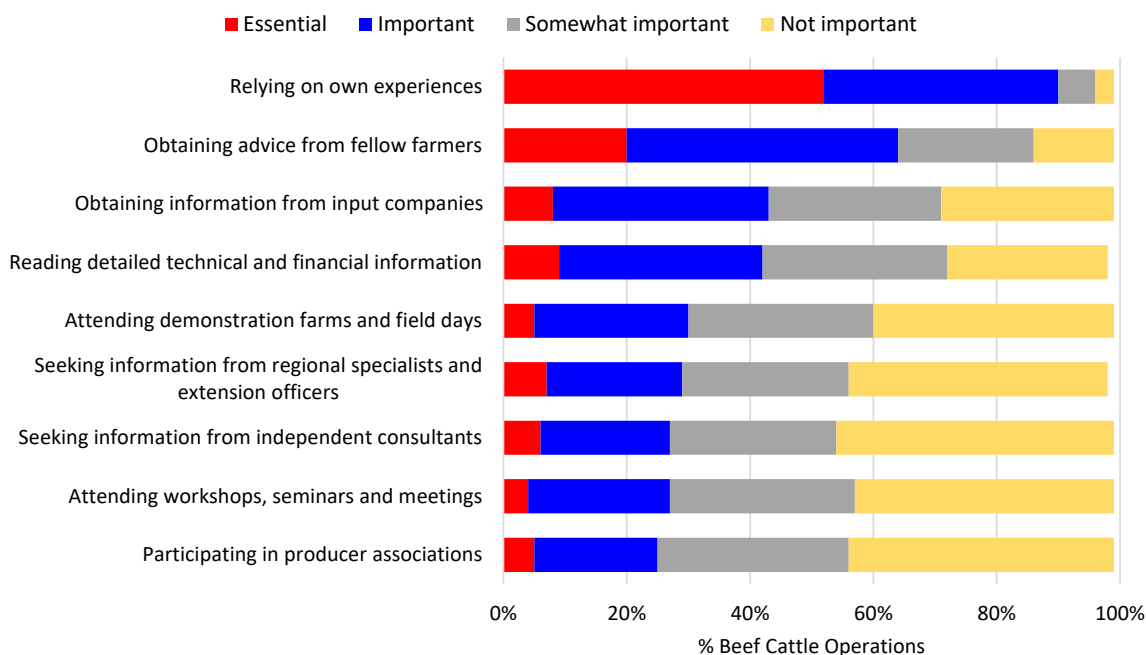
It is important to note that the agricultural industry, including beef cattle operations, encompasses a wide range of operational sizes, management styles, and geographical locations. Consequently, certain strategies or programs listed in the table might not align with the needs, scale, or nature of some operations. This is an interesting observation for future reference for the FMS as we are able to survey more practices that are common between producers and see which practices are more effective than others. Overall, this data showcases the varied adoption rates of different

strategies within the beef cattle industry across Canada, reflecting the diverse approaches and degrees of implementation across regions.

Innovation

The FMS offers an opportunity for producers to voice their opinions and where they place importance regarding innovation. The chart below shows the pivotal role that personal experiences play in the adoption of new practices in beef cattle operations, followed by the influence of peer advice and other information sources or activities.

Figure 2. Important Activities in Implementing New Practices



Source: Statistics Canada, Farm Management Survey, 2021.

Across Canada, approximately 52 per cent consider it essential and 38 per cent deem it important to rely on their own experiences when implementing new practices (Table 27). This sentiment is echoed across provinces like Ontario, Manitoba, Alberta, and British Columbia, emphasizing a consensus among many operations regarding the crucial role of personal experience in adopting innovative practices. Regions like Saskatchewan show a particularly high importance level (59%) placed on personal experience, suggesting a strong inclination towards valuing traditional or locally accumulated knowledge.

Table 27. Distribution of beef cattle operations (in percentage) by reported importance of relying on own experiences to implementing new practices

% of beef cattle operations ¹	Essential	Important	Somewhat Important	Not Important
Canada	52%	38%	6%	3%
ON	49%	39%	7%	F
MB	48%	40%	9%	F
SK	59%	28%	X	5%
AB	50%	43%	5%	F
BC	56%	38%	F	F

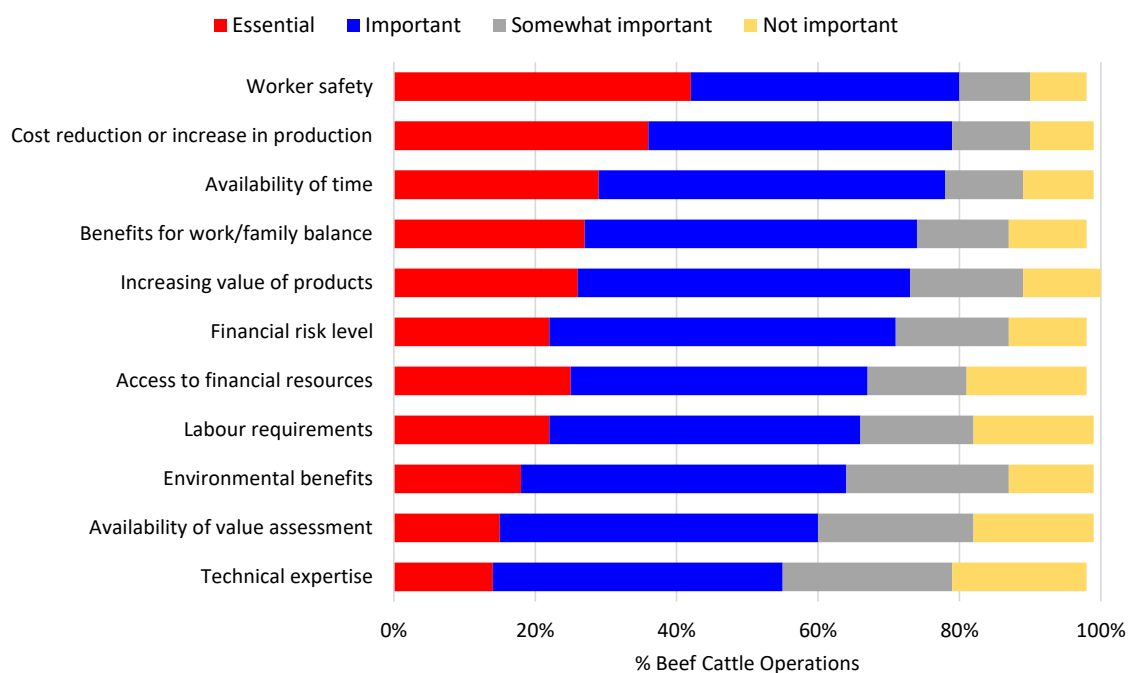
¹ Figures expressed as a percentage of beef cattle operations.

Source: Statistics Canada, Farm Management Survey, 2021

Obtaining advice from fellow farmers also plays an important role with 64 per cent considering it as important to essential. Other information sources or activities such as participating in producer associations, attending workshop, seminars and meetings, seeking information from independent consultants, seeking information from regional specialist and extension officers, attending demonstration farms and field days, reading detailed technical and financial information, and obtaining information from input companies, were rated important to essential by varying proportions of respondents (25-43%) (Figure 2).

In terms of factors influencing decision-making when adopting new practices in beef cattle operations, worker safety stands out as a top priority. Across Canada, 42 per cent of surveyed beef cattle operations considered it essential and an additional 38 per cent deem it important to prioritize worker safety when implementing new practices. Similar sentiments were echoed across provinces, with Saskatchewan showing the highest emphasis (49%) on the essential nature of worker safety (Table 28). These figures emphasize the recognition of the significance of maintaining a safe working environment within beef cattle operations when integrating new methods or practices.

Figure 3. Important Factors in Implementing New Practices



Source: Statistics Canada, Farm Management Survey, 2021.

Table 28. Distribution of beef cattle operations (in percentage) by reported importance of worker safety to implementing new practices

% of beef cattle operations ¹	Essential	Important	Somewhat Important	Not Important
Canada	42%	38%	10%	8%
ON	36%	45%	8%	8%
MB	37%	40%	14%	9%
SK	49%	30%	9%	9%
AB	42%	40%	11%	7%
BC	40%	41%	6%	11%

¹ Figures expressed as a percentage of beef cattle operations.

Source: Statistics Canada, Farm Management Survey, 2021

Followed closely, cost reduction or increasing production is a prominent factor, with 79 per cent considering it important to essential, demonstrating a focus on financial considerations. The availability of time was recognized as important to essential by 78 per cent of respondents, highlighting the importance of efficient time management. Benefits for work/family balance are also identified by 74 per cent beef cattle operations as important to essential. Access to financial resources, financial risk level and increasing the value of products followed closely with the percentages ranging from 67 per cent to 73 per cent. Other factors such as technical expertise, availability of value assessment, environmental benefits, and labour requirements are considered as important to essential by more than half of the respondents with the percentages ranging from 55 per cent to 66 per cent (Figure 3).

In summary, the data from these tables emphasizes two vital aspects for beef cattle producers: the crucial role of personal experiences in implementing new practices and the importance of prioritizing worker safety. These insights suggest that integrating new practices should incorporate a strong reliance on accumulated knowledge while also ensuring a safe working environment for all involved. Producers who value their own experiences and prioritize worker safety are better positioned to adapt and implement innovative practices effectively within the beef cattle industry, leading to enhanced operational efficiency and sustainability.

Environmental Farm Plan (EFP)

Environmental farm planning is a process through which farmers enhance their environmental management. The FEMS results indicated that 29 per cent of beef cattle operations in Canada had a formal EFP developed for their operation, while nine per cent has a plan in development (Table 29).

Table 29. Distribution of beef cattle operations (in percentage) by presence of a formal, written environmental farm plan

% of beef cattle operations ¹	Yes, developed	Yes, in development	No
Canada	29%	9%	62%
ON	42%	5%	54%
MB	26%	11%	63%
SK	24%	10%	65%
AB	28%	9%	63%
BC	26%	11%	62%

¹ Figures expressed as a percentage of beef cattle operations.

Source: Statistics Canada, Farm Management Survey, 2021.

Forty-three per cent of all EFPs in Canada were created or updated within the last five years of FEMS 2021 and 56 per cent were older than five years (Table 30). It is important that EFPs are updated every five years to remain an effective management tool, reflecting the changing needs and requirements of the farm, its management, and any recent changes to regulations, guidelines or advances in new beneficial management practices.

Table 30. Distribution of beef cattle operations (in percentage) by time of development or update of environmental farm plan

% of beef cattle operations with a formal, written EFP ¹	Less than two years ago	Two to less than five years ago	Five to less than ten years ago	Ten or more years ago
Canada	14%	29%	36%	20%
ON	8%	28%	37%	26%
MB	35%	43%	11%	X
SK	F	18%	50%	22%
AB	14%	33%	34%	19%
BC	X	27%	34%	F

¹ Figures expressed as a percentage of beef cattle operations with a formal, written environmental farm plan.

Source: Statistics Canada, Farm Management Survey, 2021.

Forty-five per cent of farms in Canada with an EFP reported the practices identified in the action plan of their EFP fully implemented. Over 50 per cent of farms in Alberta, and over 40 per cent of farms in Ontario, British Columbia and Saskatchewan reported having fully implemented the practices.

Table 31. Distribution of beef cattle operations with an environmental farm plan (in percentage) by implementation status

% of beef cattle operations with a formal, written EFP ¹	Practices fully implemented	Practices partially implemented	Practices not implemented
Canada	45%	54%	F
ON	46%	50%	F
MB	24%	74%	F
SK	42%	58%	F
AB	51%	48%	X
BC	45%	53%	F

¹ Figures expressed as a percentage of beef cattle operations with a formal, written environmental farm plan.

Source: Statistics Canada, Farm Management Survey, 2021.

In Canada, 57 per cent of beef cattle operations without a fully implemented EFP indicated economic pressures was the main reason for not fully implementing an environmental farm action plan, followed by the lack of time (27%) (Table 32).

Table 32. Distribution of beef cattle operations (in percentage) by main reason for not fully implementing environmental farm action plan

% of beef cattle operations without a fully implemented EFP ¹	Economic pressures	Lack of time	Lack of information	Don't accept recommendations	Other
Canada	57%	27%	F	7%	6%
ON	35%	39%	F	19%	F
MB	63%	28%	X	F	F
SK	65%	22%	F	F	F
AB	65%	22%	X	F	F
BC	62%	28%	F	X	F

¹ Figures expressed as a percentage of beef cattle operations without a fully implemented environmental farm action plan.

Source: Statistics Canada, Farm Management Survey, 2021.

Among beef cattle operations without a formal written EFP, 41 per cent identify time constraints as the primary obstacle, followed by challenges related to insufficient information (27%),

perceived complexity (24%), and concerns surrounding data privacy and enforcement issues (21%) (Table 33).

Table 33. Distribution of beef cattle operations with no formal environmental farm plan (in percentage) by reason

% of beef cattle operations with no formal, written EFP ¹	Too complicated	Too time consuming	Lack of information	Already participating in other environmental initiatives	Data privacy concerns and enforcement issues	Other
Canada	24%	41%	27%	10%	21%	24%
ON	19%	44%	23%	10%	23%	25%
MB	29%	40%	28%	12%	24%	17%
SK	27%	44%	30%	10%	20%	20%
AB	22%	38%	27%	9%	21%	29%
BC	35%	38%	18%	17%	21%	28%

¹ Figures expressed as a percentage of beef cattle operations with no formal, written environmental farm plan.

Source: *Statistics Canada, Farm Management Survey, 2021.*

CONCLUSION

The FMS helps to illuminate the changing way resources are being managed and potential areas for improvement. The insights generated by the FMS provide insights that can be used to design effective and well targeted policy and program responses. It helps serve as a robust basis for discussion and the creation of roadmaps that identify realistic targets for the beef industry on a range of topics including best management practices, productivity, sustainability, biodiversity and animal welfare.

REFERENCES

Kulshreshtha, Suren, Redwan Ahmad, Ken Belcher, and Lindsey Rudd. "Economic–Environmental Impacts of Shelterbelts In Saskatchewan, Canada." *Environmental Impact IV*, 2018. <https://doi.org/10.2495/eid180251>.