Northern Beef Study

Northern Ontario and Northern Québec Cow-Calf Production

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Ontario

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1. Introduction

1.1 The historical development of cattle production in Canada

During the early 16th century, livestock was imported from France and Britain as a source of food for the trading posts. While there were many attempts during a couple of centuries to establish farms in these trading posts, these efforts were not successful because most of the livestock that was to be used for breeding ended up being slaughtered for consumption or perishing due to the harsh Canadian weather conditions. The first settlers did not necessarily have the expertise of breeding and consequently care, food and shelter for animals were limited; moreover, the grazing environments were inhospitable and often led to failures for the establishment of agricultural colonies [1].

Often abandoned to itself, and unlike horses and dairy cows, beef cattle received neither water nor fodder during the winter. The little hay that could be gathered was reserved for the other animals while root vegetable crops were not provided, as they were too urgently needed for human consumption. Farms and fields in eastern Canada were carved out of primeval forest, since the land was subject to a significant investment in labor; it was intensively cultivated rather than being used for pasture or forage. Beef cattle required winter-feed in order to eat and grow and this did not occur until settler farmers had the time and resources to establish pastures with productive cultivated species [1].

In fact, raising beef cattle was not as profitable as growing wheat in the early years of agriculture in Ontario and Québec so they played a limited role until the wheat boom and bust lead to diversification of livestock. As well, beef prices in Ontario have been vulnerable due to the occasional "dumping" of US beef in Canada [1].

In the mid-1800s, there was a gradual shift to increase beef production mainly in Ontario and Québec given the accumulation of capital and agricultural mechanization. High quality winter-feeding rations made the diversification of livestock possible while the development of an export market for live cattle in the United Kingdom (UK) was the most important factor as incentive for farmers to diversify. Ontario benefited more from the benefits of wheat sales, which allowed it to have more capital to invest in the beef industry. As a result, southern Ontario became Canada's leading specialty beef producing region in 1870 [1].

Shortly after, the western cattle industry gained momentum with the global cattle boom. Beef production became western Canada's first staple industry alongside mining and railway construction. Local markets were needed by cattle ranchers and provisions were needed by miners and construction gangs. American cattle drivers drove the majority of the first cattle herds north to Western Canada. The Hispanic-California System was used for BC's interior and suited it well with the use of transhumance while the Anglo-Texas System was employed in the Great Plains of Alberta and Saskatchewan for a brief period.

Eventually, large ranch leases gave way to small homestead farming due to two extreme winters coupled with a depression leading to many of the American immigrants returning to the US. This situation eventually led to an increase in the cattle population as a cattle export market opened in the US, while livestock management on smaller farms was more intensively leading to healthier, heavier animals ready for sale [1].

The involvement of the state in the west also aided in the distinctively Canadian System of cattle production with livestock densities being prescribed according to the aridity of the region, training, education and extension services becoming available for new homesteaders (part of their agenda to help settle in the "wild west"), while homesteaders were guaranteed access to land at a nominal rate whereas ranchers were forced to compete publicly for grazing land. The government played an active role in inspections and regulations, and finally with the creation of community pastures [1].

Several fundamental themes of regional economic development illustrate the history of cattle production in Canada. The governments have long ignored the livestock industry in eastern and western Canada as there was no incentive to move forward with the technologies or to intensify production with low cattle prices and no way to compete internationally. Once the international markets developed, the incentive for breed improvement began resulting in more care for the cattle as well the need to raise them in a more land and labour-intensive manner. Further, a distinct Canadian style of stock raising emerged that met the demands of the harsh Canadian climate while being encouraged and thoroughly shaped by a pervasive level of state intervention [1].

1.2 Traditional practices and northern regions

The majority of Canada's beef cattle farms fall into one, or a combination, of the three stages of beef cattle production: cow-calf operations that produce weaned calves while maintaining a breeding herd, stocker/backgrounding operations that feed weaned calves to maturity, or forage and finishing operations that feed cattle intensively (in feedlots) to reach slaughter weight [1].

While the majority of Canada's beef cattle farms are located in the prairies due to the importance of pasture and rangeland for cow-calf operations, many parts of northern Ontario and northern Québec are suitable for cow-calf operations due to the uneven terrain that would be unable to support cropping but can support sustained ruminant grazing [2]. The northern regions/districts in Ontario with approximately 100,000 head of cattle include Algoma, Cochrane, Kenora, Manitoulin, Nipissing, Parry Sound, Rainy River, Sudbury, Temiskaming, and Thunder Bay [3]. The northern regions/districts in Québec with approximately half of all the beef farms in the province include Abitibi-Témiscamingue, Côte-Nord, Mauricie, Nord-du-Québec, Outaouais and Saguenay-Lac-Saint-Jean [4].

1.3 Forage-based cow-calf farming

The majority of cattle in the beef production industry are fed on standing grass and other forages during the growing season while cured hay and silage are used in the colder months when the grasses and other forages are dormant. It is necessary to feed with preserved forages over the winter due to the cold climate of Canada, and especially in the north. While forage-based cow-calf farming is an economical way to produce beef as it allows farmers to use land otherwise deemed unfit (due to environmental and/or economic reasons) as a food-producing land resource (i.e. to support cropping), it is also a marketing tool as the cattle are raised outside and live in relatively natural surroundings as they grow most of the way to slaughter weight. The grass-fed niche market, which continues to expand as more and more people want to buy their beef from farmers, farmers' markets, or from specialized meat stores [1].

1.4 Farming in the north

Traditionally farming in the north has been a tough go. From harsh weather and shorter growing seasons without enough crop heat units (CHUs) to support many crops, to waterlogging from too much clay or not enough available nutrients due to shallow soil and rough, uneven land on

the boreal shield, to large tracts of crown land and predators, to long distances to markets and lack of access to service providers, the north hasn't been viewed as the most desirable region to practice agriculture.

At the same time, there are parts of the north that are well-known for their fertile soils such as the Great Clay Belt region in northeastern Ontario and northwestern Québec, and the Rainy River and Manitoulin districts. Additionally, these regions are home to hundreds of thousands of lakes that can provide drinking water for livestock and irrigation water for crops. With affordable acreage, the development of weather-tolerant crops, and access to tile drainage funding programs, the north can become a viable option to support agriculture, and specifically beef cattle farming, for the two provinces. The cattle are able to graze otherwise agriculturally useless land as the animals convert grasses and otherwise indigestible plant matter into nutrient and protein-rich food, while returning organic matter (manure) to the soil [5]. In fact, approximately 30% of Canada's agricultural land is too hilly, rocky, cold or wet to grow and support crops, but it can support grazing livestock [5].

1.5 Changing environment and economy

With the lack of land and extreme prices for acreage in the south ($10,000—$25,000+/acre), combined with the warming in the north (i.e. longer growing seasons and more available crop heat units), northern farming is becoming more of a viable, and affordable option ($500—$5,000/acre). With fertile lands available, tile-drainage funding assistance, and the development of weather-tolerant species, cropping and livestock farming in the north is also becoming more realistic. While the climate in the north limits which cash crops can be grown, the fertile soil is perfect for growing hay, oats, and grazing cattle [6]. Moreover, expanding the cattle production in the north is crucial to "retaining and expanding markets, increasing profitability and ensuring sustainability in the beef value chain" [5]. The demand for beef globally is increasing with the emergence of more affluence in China and the Pacific Rim and the shift to a more protein-heavy diet in these regions. With research, innovation, and economic and management models, expansion in the north will be an important achievement for Ontario and Québec agriculture.

1.6 Evolution, growth and moving forward

It is estimated there are 26 million acres of fertile land in the Great Clay Belt region that could be tapped into for agricultural development in the north. There has been a decrease in number of head, both provincially and nationally, in the last decade or so due to bovine spongiform encephalopathy (BSE or Mad Cow disease), in addition to the high cost of land in the south, and loss of land to residential and commercial developments. If the government is willing to release some Crown land for cattle grazing, beef farming in the north could meet the demands of the south. There is a need of a steady supply of local Ontario cattle for southern processing plants, in addition to the demand from consumers in the south for local products. This local food movement is also gaining strength in the north. Additionally, northern beef cattle farming could become a more stable industry (compared to the boom and bust of mining and forestry) as it would be able to contribute to the supply of the global demand for beef, especially since Canadian beef is known for its consistent quality, tenderness, and flavour.

2. Objectives of the benchmarking analysis in the North

There has not been a study completed looking specifically at beef production in the north but more specifically on cow-calf production. Northern Ontario and Northern Québec share the same physical resources but the development of production is different. As everywhere else, there is a decrease in the number of businesses but it is difficult to explain why. The factor of profitability is the one that comes up most often. What could the lack of profitability be related to: poor use of resources, to the business model, to the lack of technological innovation?

The objective of this survey was therefore to get to know businesses better from the different factors in which the operators of these businesses have to deal with. There may be differences in environmental practices, financial assistance, marketing strategies, technologies and innovations. In Québec, cow-calf businesses in Abitibi-Témiscamingue, Saguenay-Lac-St-Jean and Outaouais were surveyed. In Ontario, businesses from the following districts were surveyed: Algoma, Cochrane, Kenora, Manitoulin, Nipissing, Parry Sound, Rainy River, Sudbury, Timiskaming, and Thunder Bay.

3. Results

A questionnaire of nearly 100 questions was sent to the cattle companies in the targeted areas. Nearly 200 questionnaires were answered. A total of 179 responses were received with 80 from Ontario and 99 from Québec. A couple of data sets have been excluded as the overall response rate was very low or the answers to the questions were incomplete and/or ambiguous. Although for each question, the number of businesses that responded was different, so this was considered by giving a percentage of respondents for each individual question.

3.1 Section 1: General information about the owner-operator(s) and the operation

Survey respondents were asked to provide details on their age, sex, number of years in agriculture and beef production, whether they work full-time or part-time on and off the farm, education level (including an agricultural degree or diploma), how they got started in beef farming, their livestock inventories, total land base (owned vs. rented), and what that land is used for.

To evaluate the average size of a farm, the cow and heifer breeding data from 2015 was compiled (question 22). A total of 156 businesses replied to this question, totaling 18 093 females (cows and heifers) with an average herd size of 116 females.

Table 1. Response Details

	ONTARIO	QUÉBEC	TOTAL
% who responded	80%	93%	87.2% (156/179)
Average herd size	86	137	116
Total females represented (exposed in 2015)	5,486	12,607	18,093
% who responded	95%	100%	
1 Owner-Operator	46%	52%	
2 Owner-Operators	43%	40%	
3 Owner-Operators	9%	7%	
4 Owner-Operators	2%	1%	

Table 2. Respondent Demographics

	ONTARIO	QUÉBEC
Age of Respondent		
% who responded	95%	99%
Average age	56	54
% 35 years of age or younger	9%	12%
% 55 years of age or older	62%	55%
Gender		
% who responded	99%	100%
% of respondents male	70%	78%
% of respondents female	30%	22%
Years in Agriculture		
% who responded	73%	89%
Average No. of Years	35	29
% 10 years or less	2%	11%
% 25 years or more	83%	62%
Years in Beef Production		
% who responded	84%	97%
Average No. of Years	29	24
% 10 years or less	11%	15%
% 25 years or more	66%	46%

Works ON the Farm		
% who responded	96%	98%
Full-time	54%	46%
Part-time	77%	23%
Not applicable (N/A)	0%	1%
Works OFF the Farm		
% who responded	59%	38%
Full-time	40%	43%
Part-time	36%	52%
Not applicable (N/A)	25%	5%
Education Level		
% who responded	94%	99%
Primary	3%	4%
Secondary	61%	71%
College	25%	17%
University	12%	8%
Agricultural Degree or Diploma		
% who responded	94%	98%
Yes	22%	29%
No	78%	71%

Table 3. Beef Farming

	ONTARIO	QUÉBEC
Started in Beef Farming		
% who responded	99%	100%
Family farm transferred to you	42%	48%
Purchased an existing farm	20%	17%
Built a new farm	19%	32%
Other*	19%	3%

***Other responses include:** purchasing the family farm and converting dairy farms to beef.*

Table 4. Livestock Inventory on December 31st, 2016

	ONTARIO	QUÉBEC	TOTAL
% who responded	94%	93%	
Purebred: Type of Production*			
Total number of cows	430	670	1100
Average number of cows	72	96	85
Total number of bred heifers	68	146	214
Average number of bred heifers	11	21	17
Total number of mature breeding bulls	16	42	58
Average number of mature breeding bulls	3	6	5
Total number of unsold 2016-born calves	172	303	475
Average number of unsold 2016-born calves	29	43	37
Total number of backgrounders	67	176	243
Average number of backgrounders	11	25	19
Total number of feedlot animals	38	80	118
Average number of feedlot animals/business	6	11	9
Total number of open replacement heifers	106	146	252
Average number of open replacement heifers	18	21	19
Commercial: Type of Production			
Total number of cows	4686	11071	15757
Average number of cows	68	130	102
Total number of bred heifers	874	1267	2141
Average number of bred heifers	13	15	14
Total number of mature breeding bulls	227	547	774
Average number of mature breeding bulls	3	6	5
Total number of unsold 2016-born calves	3035	5587	8622
Average number of unsold 2016-born calves	44	66	56
Total number of backgrounders	1730	3675	5405
Average number of backgrounders	25	43	35

Total number of feedlot animals	190	948	1138
Average number of feedlot animals/business	3	11	7
Total number of open replacement heifers	567	1163	1730
Average number of open replacement heifers	8	14	11

***Purebred producer numbers:** 7 purebred producers in Québec and 6 purebred producers in Ontario.*

Table 5. Livestock Shelters Used for Calving

	ONTARIO	QUÉBEC
% who responded	100%	99%
Type of Shelter*		
Insulated – warm	71%	79%
Non-insulated – cold	56%	49%
Outdoor/Lean-to	46%	13%

***Number of shelters:** 21 insulated, 109 non-insulated, and 56 outdoor in Ontario and 38 insulated, 138 non-insulated, and 168 outdoor in Québec.*

Table 6. Storage Buildings

	ONTARIO	QUÉBEC
% who responded	93%	98%
Type of Building*		
Insulated – warm used for feed storage	12%	6%
Insulated – warm used for machinery	48%	56%
Non-insulated – cold used for feed storage	58%	43%
Non-insulated – cold used for machinery	52%	60%

***Number of buildings:** 25 insulated and 181 non-insulated in Ontario and 34 insulated and 223 non-insulated in Québec.*

Table 7. Expansion Potential

	ONTARIO	QUÉBEC
Potential for Expansion		
% who responded	95%	98%
% whose infrastructure permits them to expand	78%	63%

Table 8. Total Land Base and Use

	ONTARIO	QUÉBEC	TOTAL
Total land base			
% who responded	99%	97%	98% (175/179)
Average size owned (acres)	519	517	90 594
Average size rented (acres)	496	553	83 452
Owned land on operation			
% who responded	95%	98%	
Average size of fields for forages (hay, silage)	170	252	
Total size of fields for forages (hay, silage)	11 751	22 211	33 963
Average size of fields for crops (grains, corn)	55	98	
Total size of fields for crops (grains, corn)	2 141	3 935	6 076
Average size of natural pasture	186	146	
Total size of natural pasture	8 760	6 710	15 470
Average size of enhanced pasture	154	184	
Total size of enhanced pasture	6 294	12 875	19169
Average size of non-cultivated land	264	429	
Total size of non-cultivated land	14 517	30 878	45 395
Rented land on operation			
% who responded	95%	98%	
Average size of fields for forages (hay, silage)	202	279	
Total size of fields for forages (hay, silage)	10 685	23 139	33 821
Average size of fields for crops (grains, corn)	44	109	
Total size of fields for crops (grains, corn)	1 012	2 612	3 624
Average size of natural pasture	333	347	
Total size of natural pasture	11 003	8,330	19 333
Average size of enhanced pasture	100	149	
Total size of enhanced pasture	2 104	6 269	8 373
Average size of non-cultivated land	303	198	

Total size of non-cultivated land	6 068	5 554	11 622
Use of tile-draining			
% who responded	91%	96%	
Fields for forages (hay, silage)	51%	51%	
Fields for crops (grains, corn)	32%	23%	
Natural pasture	2%	3%	
Enhanced pasture	15%	24%	
Non-cultivated land	n/a	n/a	

3.2 Section 2: Herd Management

Survey respondents were asked to provide details on their 2016 production cycle. Information was collected on handling facilities, record keeping, treatments and procedures, dehorning and castration, breeding groups, and bull selection criteria.

Table 9. Record Keeping Systems

	ONTARIO	QUÉBEC
Record Keeping Systems		
% who responded	100%	100%
% who use hand-written/paper documentation	88%	80%
% who use electronic (e.g. smartphone, tablet)	18%	18%
% who use ATQ log only	0%	32%
% who use an Excel file	23%	24%
% who use breed associations	9%	4%
% who use PATBQ	0%	32%
% who use BIO	9%	1%
% who have NO herd data	13%	2%
% who use other record keeping systems	1%	5%

Other record keeping systems include: *Gallagher TSI, Archer, DSA Bovin, Club Conseil, Feedlot Tracer.*

Table 10. Handling Facilities, Equipment/Tools

	ONTARIO	QUÉBEC
Handling Facilities		
% who responded	100%	100%
% who use a head gate and chute	95%	99%
% who use a scale	41%	75%
% who use a mobile/portable corral	28%	25%
% who use a fixed/stationary corral	79%	85%
% who use a self-locking head gate rail	44%	76%
% who use no handling facilities/equipment	0%	0%
% who use other handling facilities	14%	10%
RFID reader and tags		
% who responded	98%	100%
% who use an RFID reader and tags	27%	40%
Ultrasound		
% who responded	96%	100%
% who use ultrasound on their animals	9%	12%
% who use for pregnancy check	71%	75%
% who use for back fat	14%	42%
% who use for ribeye	14%	42%
% who use for marbling	14%	33%

Other responses include: *crowding tubs, Gallagher systems, and calving pens for handling facilities.*

The most common handling facilities include head gates and chutes (95% ON, 99% QC), and fixed/stationary corrals (79% ON, 85% QC) in both provinces. Ultrasound use is not very common with only 7 respondents in Ontario and 12 respondents in Québec indicating they use it. Additionally, 71% of Ontario users are purebred producers and 50% of Québec users are purebred producers.

Table 11. Measuring Performance of Animals

	ONTARIO	QUÉBEC
% who responded	71%	91%
Cows		
% who weigh at sale	42%	46%
Bulls		
% who weigh at sale	42%	41%
Heifers		
% who weigh at birth	---	18%
% who weigh at weaning	---	39%
% who weigh post-weaning	---	29%
% who weigh at sale	42%	42%
Calves		
% who weigh at birth	28%	77%
% who weigh at weaning	42%	64%
% who weigh post-weaning	23%	47%
% who weigh at sale	75%	84%

Table 12. Treatments and Procedures

	ONTARIO	QUÉBEC
% who responded	93%	97%
% who vaccinate their cows	70%	72%
% who vaccinate their bulls	59%	68%
% who vaccinate their heifers	72%	78%
% who vaccinate their calves	88%	94%
% who deworm their cows	86%	93%
% who deworm their bulls	80%	90%
% who deworm their heifers	80%	90%
% who deworm their calves	80%	92%
Treatments and Procedures: Body Condition Scoring		

% who use BCS on their cows	23%	50%
% who use BCS on their bulls	20%	46%
% who use BCS on their heifers	19%	43%
% who use BCS on their calves	12%	39%

Table 13. Polled Cattle and Dehorning Practices

	ONTARIO	QUÉBEC
Polled Cattle		
% who responded	94%	88%
Average % of polled cattle*	94%	85%
Dehorning		
% who responded**	44%	71%
Dehorning: When		
Shortly after birth	29%	33%
At weaning	54%	50%
At sale	3%	1%
Other***	14%	16%
Dehorning: Method used		
Disbudder/scalpel	0%	13%
Electric disbudder/wire	20%	17%
Dehorning paste	14%	20%
Spoons, cut, gouge	0%	0%
Saw	3%	9%
Other***	9%	9%
Dehorning: Pain control used		
Always	31%	15%
Sometimes	17%	15%
Never	52%	70%

****** The range of polled cattle for Québec producers is 1-100%, and the range of polled cattle for Ontario producers is 10-100%. ****** The majority of those who did NOT respond have 100% polled cattle. ******* Other methods and timeframes were usually a mix of methods and timeframes that ranged from a couple of months after birth up to weaning.*

Table 14. Castration Procedures

	ONTARIO	QUÉBEC
Castration		
% who responded	93%	99%
Castration: When		
Shortly after birth	67%	64%
At weaning	25%	29%
Other	8%	7%
Castration: Method used		
Scalpel	11%	3%
Burdizzo clamp	10%	3%
Rubber band	79%	94%
Other	0%	0%
Castration: Pain control used		
Always	9%	6%
Sometimes	7%	3%
Never	84%	91%

Table 15. Breeding Management Practices

	ONTARIO	QUÉBEC
Breeding groups		
% who responded	93%	100%
One (1) group	47%	38%
Two (2) groups	30%	31%
Three (3) groups	16%	15%
Four (4) groups and more	7%	15%
Source of breeding bulls**		
% who responded	99%	100%
Commercial producer/source	10%	6%
Purebred producer/source	49%	49%
Auction	5%	8%

Bull-testing station	5%	15%
Internet	2%	2%
From my own stock/breeding	16%	11%
Artificial insemination (AI)	11%	8%
Other*	2%	1%
Selection criteria of breeding bulls* **		
% who responded	88%	98%
Registered purebred	7	6
Purebred with EPD	1	1
Performance	4	3
Physical appearance	5	2
Temperament	2	4
Polled	3	5
Carcass Traits (e.g. ribeye)	6	7

Other responses include: *embryo transfers, AI for heifers only.* ***Percentages are proportional to the number of responses received where producers selected more than one source for their breeding bulls (e.g. some bulls come from a purebred producer/source, some from auction, and some from a bull-testing station).* ****Selection criteria were ranked with 1 being the most important and 7 being the least important where: 1 = The highest number of people who ranked "purebred with EPD" as the most important selection criteria.*

Table 16. Bedding Use

This question was asked to determine whether the producer uses bedding in the buildings or pens where their animals are housed when they are not on pasture.

	ONTARIO	QUÉBEC
Bedding Type		
% who responded	99%	100%
% who use bedding	96%	100%
% who use straw	71%	68%
% who use old hay	50%	60%
% who use sawdust	25%	29%

% who use other wood products	32%	50%
% who use manure	33%	20%
% who use sand/gravel	20%	0%
% who use other bedding*	10%	46%

***Other bedding includes:** corn stalks, feed waste, and peat moss.*

3.3 Section 3: Information on calves born in 2016

Survey respondents were asked to provide details on their 2015 breeding season and their 2016 calving season. Information was collected on breeding cycles and technologies used, number of calvings, birth and wean weights, weaning methods, sale of calves, death or cull of breeding animals and the cause, calf deaths (when and the cause), and predation.

Table 17. 2015 Breeding Cycle and Technologies Used

	ONTARIO	QUÉBEC
% who responded	91%	96%
Cows		
Average number of *bull(s)* used for natural service	3	6
Total number of *bull(s)* used for natural service	192	521
Average number of *females* exposed to natural service	64	117
Total number of *females* exposed to natural service	4 229	10 605
Average number of *females* bred by artificial insemination (AI)	24	21
Total number of *females* bred by artificial insemination (AI)	287	506
Average number of *females* implanted with embryos*	0	6
Total number of *females* implanted with embryos*	0	6
Average number of *females* exposed to ANY breeding	62	117
Total number of *females* exposed to ANY breeding	4 516	11 117
Heifers 1st Breeding		
Average number of *bull(s)* used for natural service	1	2
Total number of *bull(s)* used for natural service	67	123

Average number of *females* exposed to natural service	16	18
Total number of *females* exposed to natural service	813	1113
Average number of *females* bred by artificial insemination (AI)	12	15
Total number of *females* bred by artificial insemination (AI)	157	377
Average number of *females* implanted with embryos	0	0
Total number of *females* implanted with embryos	0	0
Average number of *females* exposed to ANY breeding	13	16
Total number of *females* exposed to ANY breeding	970	1,490
Breeding Technologies		
% who responded	96%	99%
Oestrus synchronization	12%	14%
Kaymar indicators	1%	2%
Video surveillance cameras	5%	2%
Other	0%	0%
NO technology used	82%	82%

***Embryos were used in six cows by one producer only in Québec.*

Table 18. 2016 Calving Numbers by Season

	ONTARIO	QUÉBEC	TOTAL
% who responded	68%	81%	75%
% who have NO herd data	21%	11%	16%
Winter (J/F/M)			
Total number of calvings	895	2 054	2 949
No. of calves born alive	852	1 967	2 819
% of calves born alive	95%	96%	---
No. of calves born dead	50	102	152
% of calves born dead	6%	5%	---
Spring (A/M/J)			
Total number of calvings	1 954	5 196	7 150
No. of calves born alive	1 900	5 046	6 946

% of calves born alive	97%	97%	---
No. of calves born dead	71	212	283
% of calves born dead	4%	4%	---
Summer (J/A/S)			
Total number of calvings	264	1 357	1 621
No. of calves born alive	238	1 305	1 543
% of calves born alive	90%	96%	---
No. of calves born dead	29	67	96
% of calves born dead	11%	5%	---
Autumn (O/N/D)			
Total number of calvings	85	460	545
No. of calves born alive	81	443	524
% of calves born alive	95%	96%	---
No. of calves born dead	4	21	25
% of calves born dead	5%	5%	---

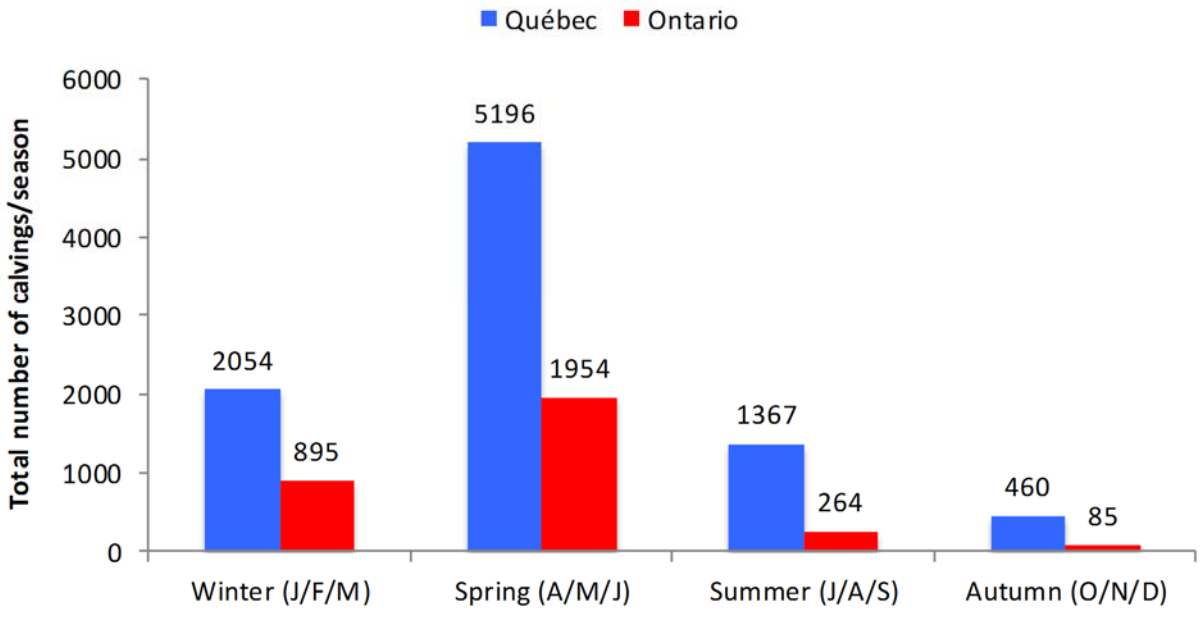


Figure 1. Total Number of Calvings by Season

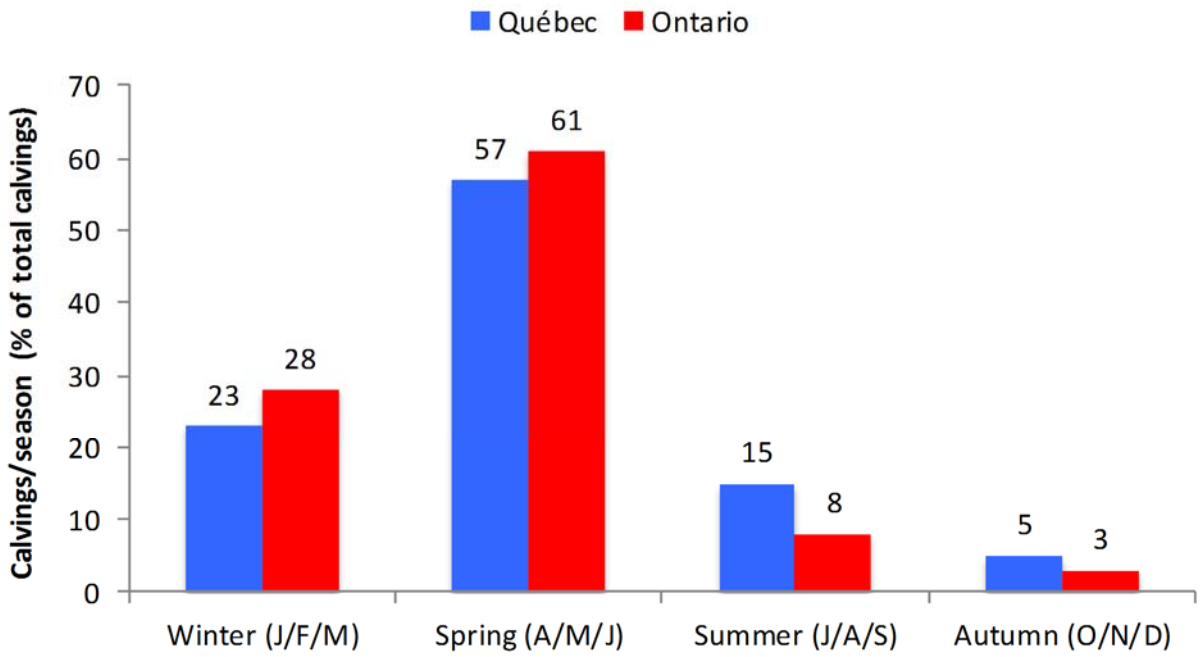
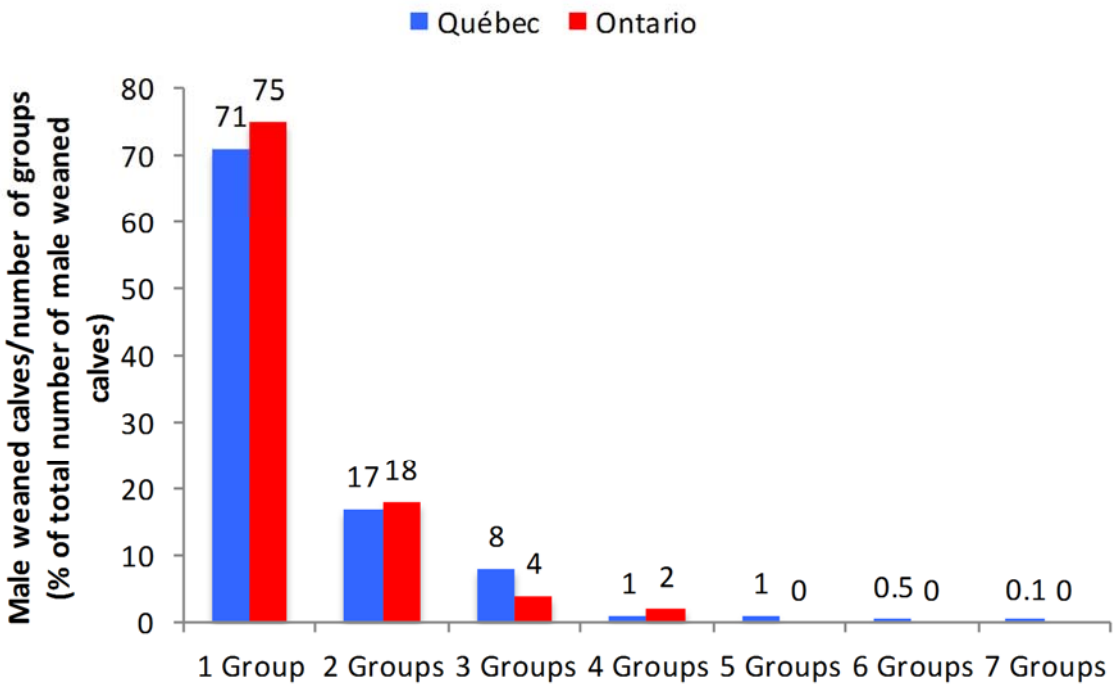


Figure 2. Percentage (%) of Calvings for the 2016 Season

While Québec had a lot higher calving numbers in 2016 (9,067 in QC vs. 3,198 in ON), both provinces produced similar proportions of calves for each season. The majority (>50%) of producers calved in spring with winter being the next most common season (~25%). See figures 1 and 2.

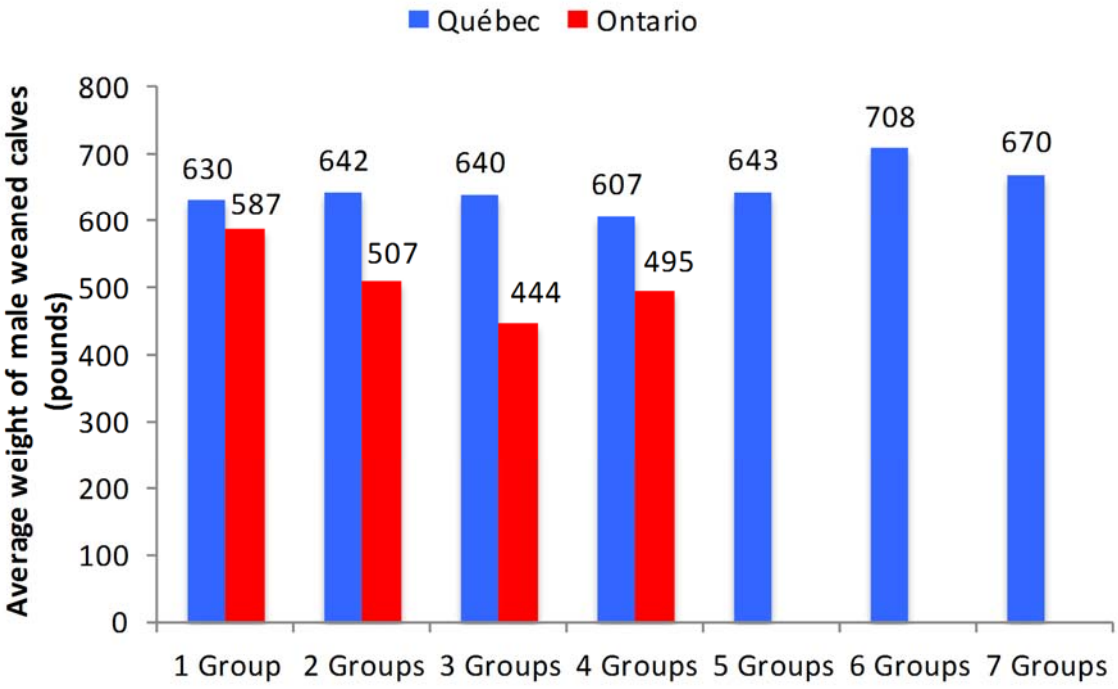
Table 19. 2016 Calving Weights

	ONTARIO	QUÉBEC
Calving weights		
% who responded	98%	100%
% who weigh their calves at birth	13%	29%
Average weight of male calves (lbs)	93	94
Average weight of female calves (lbs)	85	87



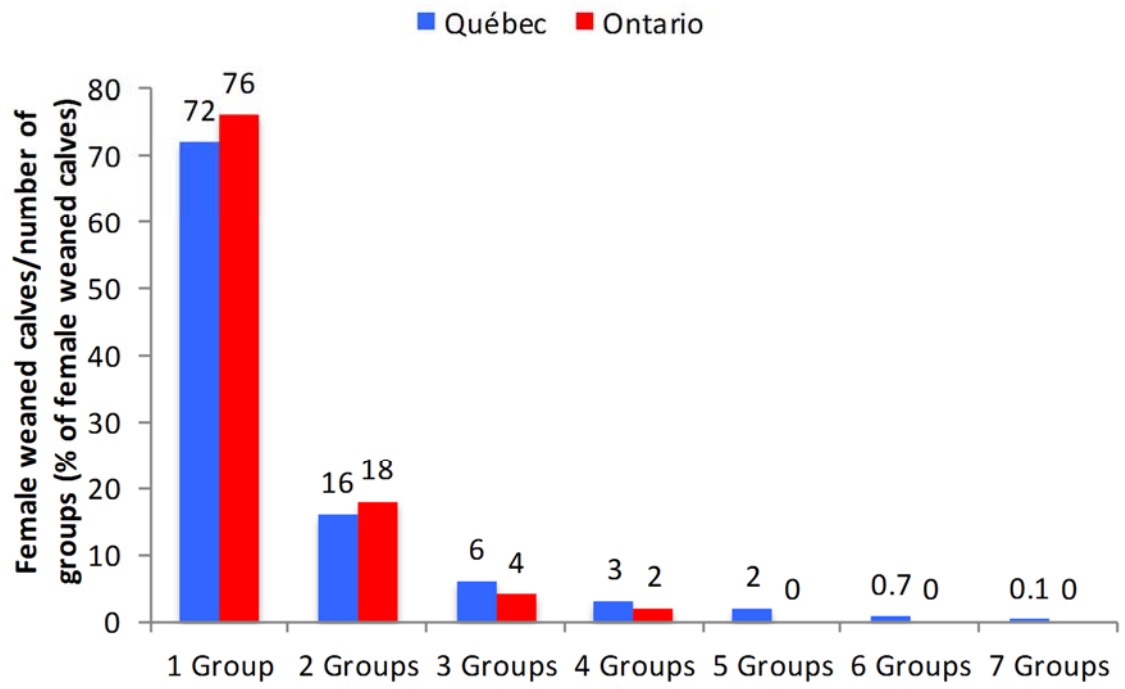
* Percentage (%) who responded: 51% in Ontario and 53% in Québec.

Figure 3. Percentage (%) of Male Calves Weaned by Group (Weaning Date) in 2016



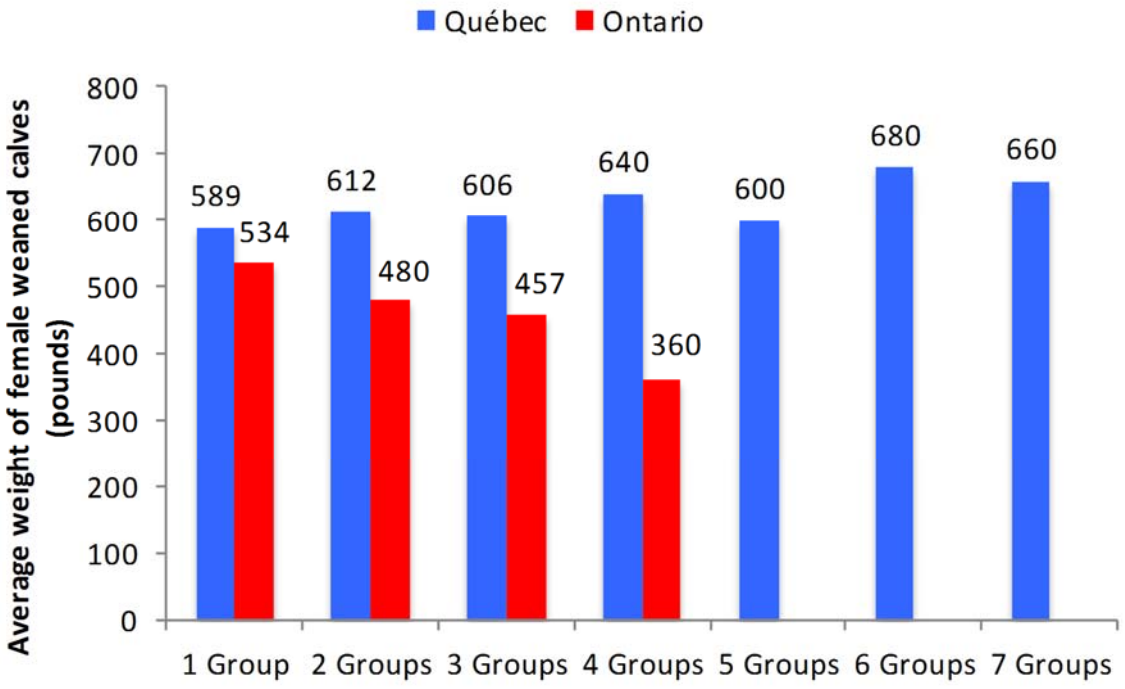
* Percentage (%) who responded: 51% in Ontario and 53% in Québec.

Figure 4. Average Weight of Male Calves Weaned by Group (Weaning Date) in 2016



* Percentage (%) who responded: 51% in Ontario and 53% in Québec.

Figure 5. Percentage (%) of Female Calves Weaned by Group (Weaning Date) in 2016



* Percentage (%) who responded: 51% in Ontario and 53% in Québec.

Figure 6. Average Weight of Female Calves Weaned by Group (Weaning Date) in 2016

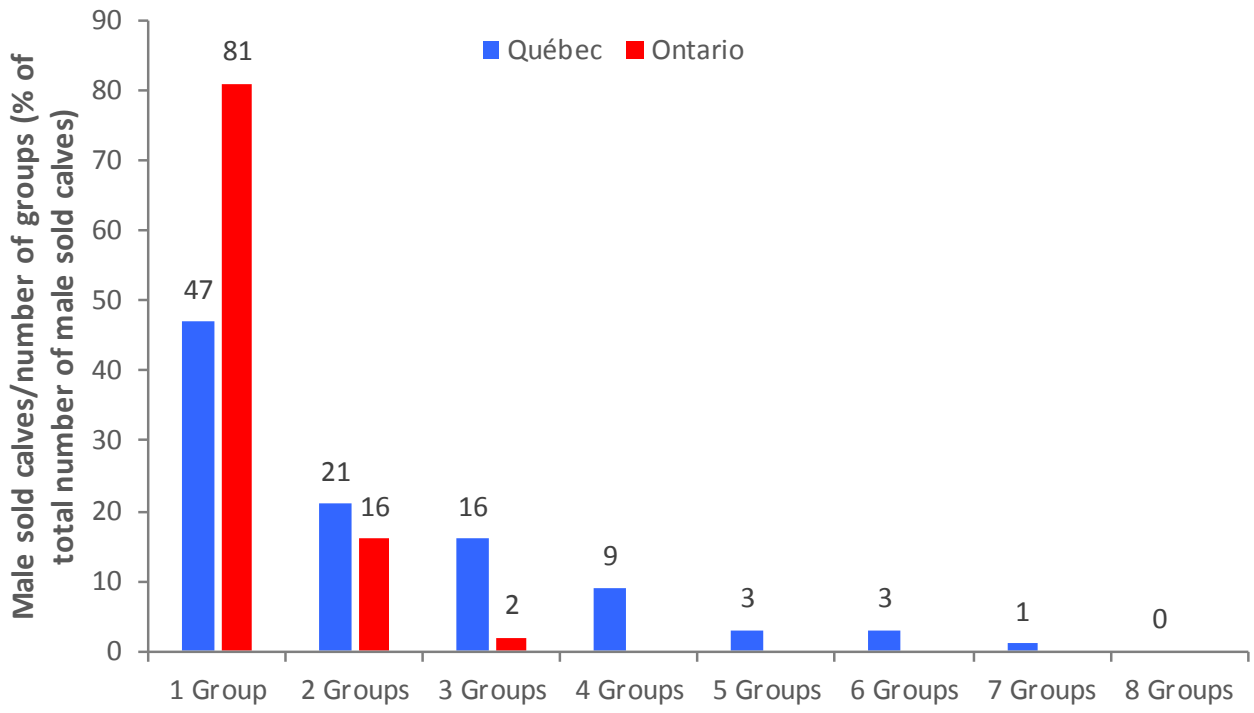
The majority of producers (~52% who responded to this question) had one to three weaning groups in 2016 in both provinces (see figures 3 and 5), and Québec's average weaning weights were higher (see figures 4 and 6). The average weaning weights in Québec were the actual average weaning weights from individual weighing on a scale on the farms (56%) while Ontario gave estimated average weaning weights (45%) (see table 20).

Table 20. Average Wean Weights of 2016 Calves

	ONTARIO	QUÉBEC
Average Wean Weights Provided		
% who responded	64%	69%
% who gave actual average weights from individual weighing on a scale on the farm	18%	56%
% who gave actual average weights from a group weighing	2%	6%
% who gave estimated average weights	45%	12%
% who gave average weights at sale	33%	27%

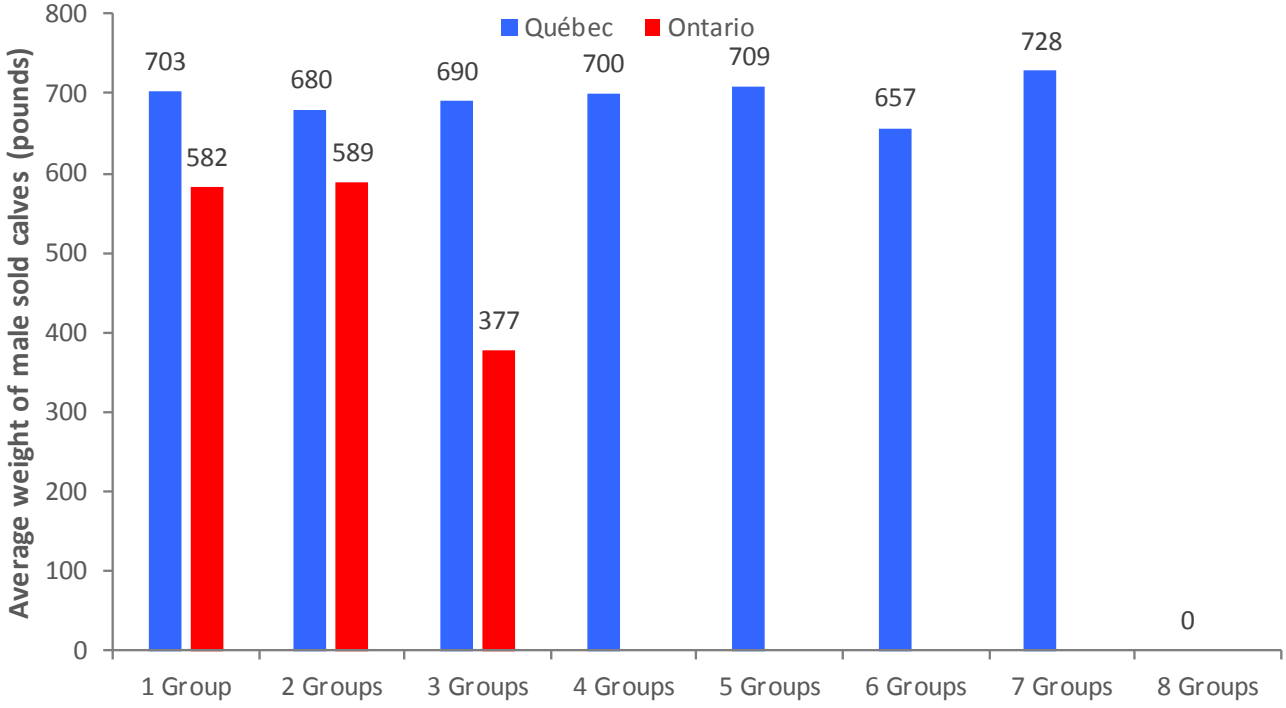
Table 21. 2016 Calves Sold at Weaning

	ONTARIO	QUÉBEC
2016 Sale at Weaning		
% who responded	97%	96%
% who sold their calves at weaning	30%	17%
% who didn't sell any 2016-born calves in 2016	38%	33%



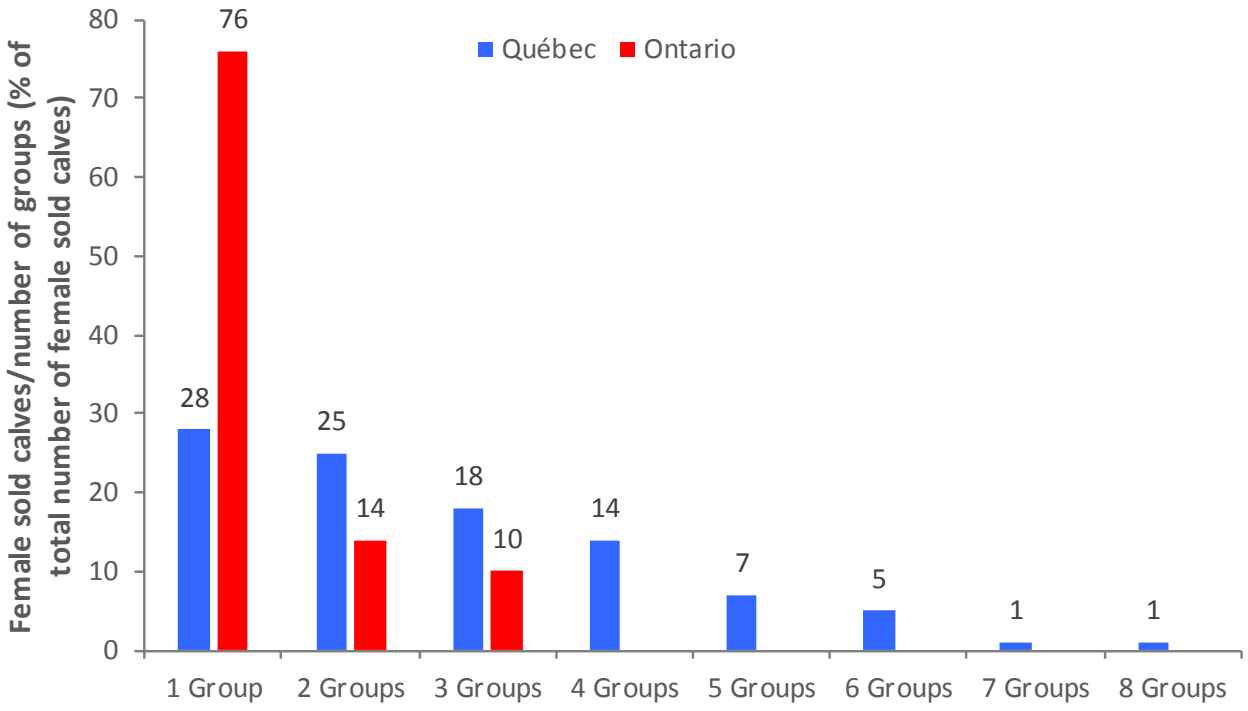
* Percentage (%) who responded: 25% in Ontario and 66% in Québec.

Figure 7. Percentage (%) of Male Calves Sold and Born in 2016 by Weaning Group (Weaning Date)



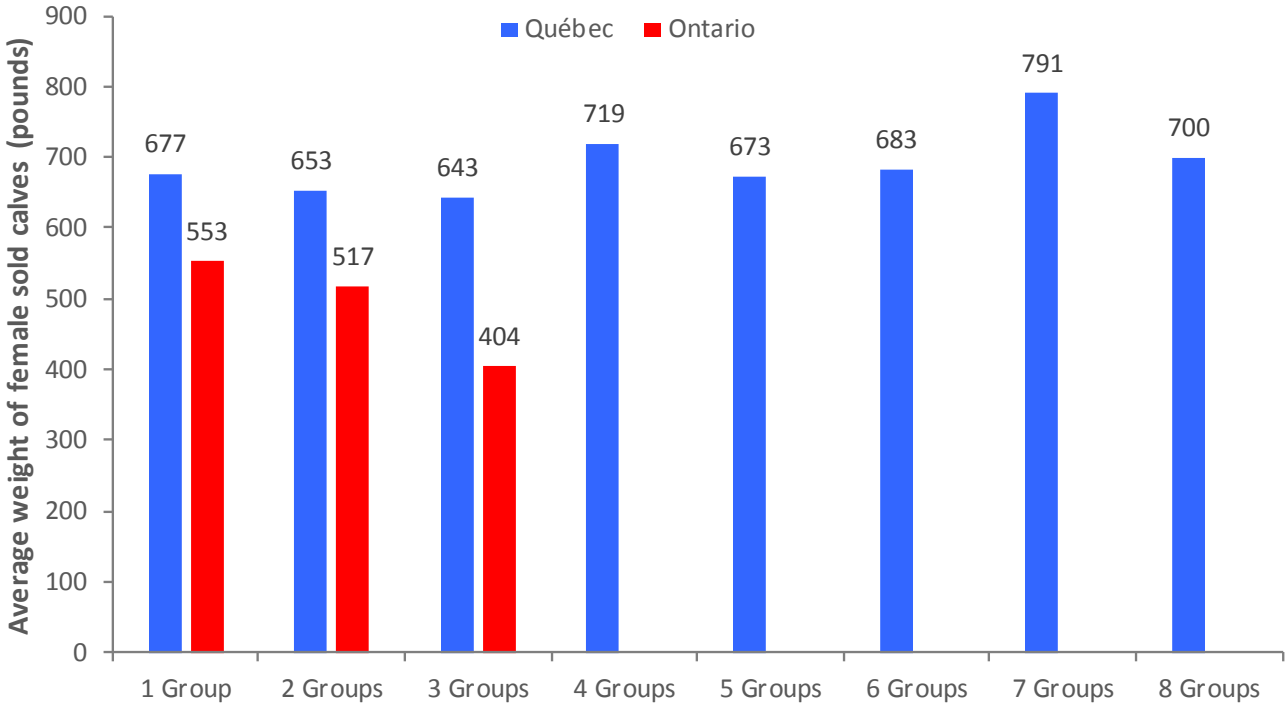
* Percentage (%) who responded: 25% in Ontario and 66% in Québec.

Figure 8. Average Weights of Males Calves Sold and Born in 2016



* Percentage (%) who responded: 25% in Ontario and 66% in Québec.

Figure 9. Percentage (%) of Female Calves Sold and Born in 2016 by Weaning Group (Weaning Date)



* Percentage (%) who responded: 25% in Ontario and 66% in Québec.

Figure 10. Average Weight of Female Calves Sold and Born in 2016

Table 22. Average Sale Weights of Weaned 2016 Calves

	ONTARIO	QUÉBEC
Average Wean Weights Provided		
% who responded	44%	73%
% who gave actual average weights from individual weighing on a scale on the farm	9%	11%
% who gave actual average weights from a group weighing	40%	42%
% who gave estimated average weights	11%	1%
% who gave average weights at sale	40%	46%

Of the 2016-born calves sold in 2016, Québec's average sale weights were higher (see figures 8 and 10). The majority of the average sale weights in both provinces were actual average weights from a group weighing (40% in Ontario and 42% in Québec) and average weights at sale (40% in Ontario and 46% in Québec).

Table 23. Weaning methods

	ONTARIO	QUÉBEC
Weaning methods		
% who responded	99%	99%
% who use traditional/complete separation	60%	67%
% who use natural weaning (e.g. leave on cow)	5%	1%
% who use nose-flap/two-stage	5%	2%
% who use fence-line separation	23%	23%
% who use other methods	8%	7%

Other weaning methods include: *most often a combination of the above methods with the majority being traditional/complete separation AND fence-line separation in Ontario and nose-flap/two-stage separation AND fence-line separation in Québec.*

The most common weaning methods are traditional/complete separation (60% ON and 67% QC) followed by fence-separation (23% in both provinces).

Table 24. Animal Loss: Reproductive Animals

	ONTARIO	QUÉBEC	TOTAL
Reasons for death or culling of reproductive animals			
% who responded	85%	97%	
Breeding females			
Infertility: breeding females	140	451	591
Poor body condition scoring: breeding females	26	27	53
Abortion: breeding females	11	18	29
Bad udder: breeding females	61	81	142
Lameness: breeding females	22	66	88
Poor calf performance: breeding females	42	48	90
Genetics: breeding females	8	5	13
Temperament: breeding females	17	31	48
Age: breeding females	193	313	506
Disease: breeding females	14	61	75
Accidental death: breeding females	39	86	125
Predation: breeding females	4	0	4
Economics (e.g. drought, prices): breeding females	20	11	31
Other: breeding females*	22	31	53
Breeding males			
Infertility: breeding males	5	9	14
Poor body condition scoring: breeding males	0	2	2
Abortion: breeding males	n/a	n/a	n/a
Bad udder: breeding males	n/a	n/a	n/a
Lameness: breeding males	3	22	25
Poor calf performance: breeding males	0	0	0
Genetics: breeding males	3	0	3
Temperament: breeding males	7	1	8
Age: breeding males	19	27	46
Disease: breeding males	2	7	9

Accidental death: breeding males	3	10	13
Predation: breeding males	0	0	0
Economics (e.g. drought, prices): breeding males	2	1	3
Other: breeding males*	5	8	13

***Other reasons for death or culling:** In Québec, the primary reason for culling breeding females was due to calving difficulties/problems, while the primary reason for culling breeding males was to prevent inbreeding. In Ontario, reasons vary from unknown cause of death, to culling due to calving difficulties/problems and to prolapse.*

Table 25. Animal Loss: Calves

	ONTARIO	QUÉBEC	TOTAL
Reasons for calf death			
% who responded	91%	92%	
Birthing complications (abortion, dystocia, etc.)	137	276	413
Scours in the first month after birth	31	126	157
Scours after the first month of life	4	9	13
Respiratory disease (BRD, pneumonia, etc.)	20	84	104
Starvation/insufficient colostrum	10	18	28
Metabolic disorders (white muscle, weak calf syndrome)	15	26	41
Predation	26	39	65
Weather/exposure	17	28	45
Accident/trauma (injury, lameness)	15	27	42
Personal consumption	4	17	21
Unknown reason	28	71	99
Other	22	33	55
Timeframe of calf deaths			
% who responded	83%	90%	
Within 24 hours of birth	129	323	452
Within two weeks of calving	70	134	204
Within first month after birth	28	136	164
Prior to weaning	37	83	120
After weaning	11	18	29
Other	8	13	21

Table 26. Animal Loss: Predators

	ONTARIO	QUÉBEC	TOTAL
Predators			
% who responded	43%	67%	
Wolf: 1-2 occurrences	13	8	21
Wolf: 3 or more occurrences	3	4	7
Coyote: 1-2 occurrences	2	12	14
Coyote: 3 or more occurrences	1	3	4
Bear: 1-2 occurrences	2	1	3
Bear: 3 or more occurrences	0	1	1
Raven: 1-2 occurrences	5	7	12
Raven: 3 or more occurrences	1	4	5
Other: 1-2 occurrences*	1	4	5
Other: 3 or more occurrences*	0	4	4

***Other predators include:** vultures, dogs, humans (bb guns) in Québec, and eagles and ravens in Ontario.*

Table 27. Animal Loss: Practice of Adoption with Calves

	ONTARIO	QUÉBEC	TOTAL
Adoption/cross-fostering			
% who responded	96%	99%	
% who cross-foster	71%	72%	
% with cow from own herd	71%	72%	
% with a cow from another herd	0%	0%	

3.4 Section 4: Health Management Practices

In this section, survey respondents were asked to provide information on their health management practices. Information was collected on vaccination practices, supplements, whether they have preventative health programs and DNA tests, and their education on animal care.

Table 28. Health Management Practices: Preventative Health

	ONTARIO	QUÉBEC
Preventative health program		
% who responded	99%	100%
% who have a preventative health program	68%	67%
Beef Code of Practice		
% who responded	98%	99%
% who have read the Beef Code of Practice	74%	63%

Table 29. Health Management Practices: Vitamins and Minerals

	ONTARIO	QUÉBEC
Vitamins and minerals for calves		
% who responded	80%	87%
Selenium/Vitamin E: by injection	92%	92%
Selenium/Vitamin E: in feed	8%	21%
Vitamin A/D: by injection	61%	58%
Vitamin A/D: in feed	7%	17%
Other: by injection*	13%	2%
Other: in feed	0%	4%

Table 30. Health Management Practices: Navel Dip & DNA Testing

	ONTARIO	QUÉBEC
Navel dip		
% who responded	100%	98%
% who dip the calf navel at birth	22%	34%
DNA testing		
% who responded	99%	100%
% who use DNA testing*	8%	7%
Genetic selection	3%	4%
Parentage verification	83%	6%
Prevent inbreeding and birth defects	0%	3%
Other reasons	17%	0%

***Numbers who DNA test** are 6 producers in Ontario and 7 producers in Québec.*

Table 31. Health Management Practices: Vaccinations

	ONTARIO	QUÉBEC
Anti-scour vaccination		
% who responded	99%	99%
Yes, cows and heifers	25%	31%
Yes, cows only	3%	0%
Yes, heifers only	4%	2%
No	68%	67%
Vaccination of calves		
% who responded	96%	98%
I don't vaccinate my calves	13%	6%
% who vaccinate at birth: respiratory	7%	12%
% who vaccinate at birth: clostridial	10%	6%
% who vaccinate within 24 hours of birth: respiratory	3%	3%
% who vaccinate within 24 hours of birth: clostridial	4%	3%
% who vaccinate within two weeks of calving: respiratory	0%	6%
% who vaccinate within two weeks of calving: clostridial	3%	7%
% who vaccinate prior to weaning: respiratory	36%	22%
% who vaccinate prior to weaning: clostridial	31%	20%
% who vaccinate after weaning: respiratory	26%	43%
% who vaccinate after weaning: clostridial	17%	25%
% who vaccinate out *to* pasture: respiratory	23%	10%
% who vaccinate out *to* pasture: clostridial	27%	23%
% who vaccinate off of pasture: respiratory	10%	4%
% who vaccinate off of pasture: clostridial	8%	5%
% who vaccinate at other times: respiratory**	---	14%
% who vaccinate at other times: clostridial**	---	16%
Administration of booster (if required)		
% who responded	93%	97%
Yes	66%	63%

Sometimes	3%	4%
No	19%	26%
I don't vaccinate my cattle	12%	7%

Other administrations to calves include: *primarily penicillin in Ontario.* *****Other administration of respiratory and clostridial vaccinations:*** *occurred primarily AT weaning in Québec.*

3.5 Section 5: Grazing, Feeding, and Water Management

In this section respondents were asked to provide information about types of pastures used for the 2016 season, if they practiced rotational and/or intensive grazing, winter feeding methods, purchase of additional/other feed and supplements and their use, lab testing of forages and whether they used the results to balance their rations and how if they provided salt and/or minerals and when, and access to pumped drinking water for the herds (including lab testing of the primary source).

Table 32. Types of Pastures Used for the 2016 Season

	ONTARIO	QUÉBEC
% who responded	96%	99%
Native pasture		
% who continuous graze	56%	30%
% who rotational graze	30%	34%
% who intensive graze	1%	2%
Enhanced pasture		
% who continuous graze	20%	21%
% who rotational graze	40%	58%
% who intensive graze	8%	8%
Stockpiled forages		
% who continuous graze	4%	12%
% who rotational graze	5%	10%
% who intensive graze	3%	3%
Cereals for grazing		
% who continuous graze	0%	1%

% who rotational graze	0%	0%
% who intensive graze	5%	0%

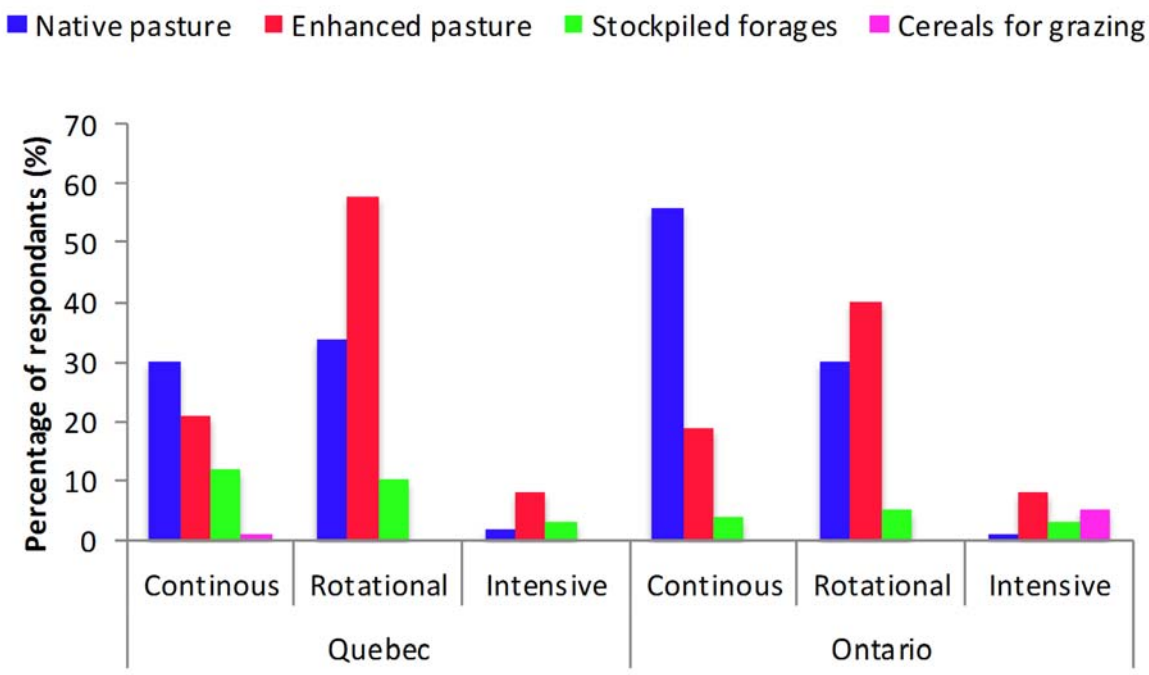


Figure 11. Types of Pastures Used for the 2016 Season

When looking at pasturing practices, native pastures are most often continuously grazed in Ontario (56%) while it is most often rotational grazed in Québec (34%), while enhanced pasture is most often rotational grazed in both provinces (40% in one and 58% in QC).

Table 33. Rotational and Intensive Grazing

	ONTARIO	QUÉBEC
Rotational grazing*		
% who responded	44%	74%
May	46%	52%
June	74%	60%
July	74%	52%
August	66%	51%

September	60%	52%
October	49%	40%
November	11%	14%
December	6%	4%
Intensive grazing**		
% who responded	6%	7%
May	60%	43%
June	100%	71%
July	80%	71%
August	80%	71%
September	80%	57%
October	80%	14%
November	40%	14%
December	0%	0%

Rotational grazing *is practiced by 35 farms in Ontario and 73 farms in Québec. It is considered to be rotational when the animal numbers are larger and are in the paddock for 7 days or less and are generally free to roam and graze on larger-sized paddocks.* ****Intensive grazing*** *is practiced by 5 farms in Ontario and 7 farms in Québec. It is considered intensive when a specified number of animals are in the paddocks or strips for 3 days or less and are generally moved through the areas with the help of a mobile electric fence, and/or feed supplementation.*

Table 34. Pasturing and Winter Feeding Methods

	ONTARIO	QUÉBEC
Days on pasture		
% who responded	93%	99%
< 100 days	1%	0%
101-150 days	51%	71%
151-200 days	43%	21%
>200 days	4%	7%
Winter feeding methods*		
% who responded	84%	93%

Stockpiled forage	36%	25%
Stockpiled forage for swath grazing	0%	0%
Crops specific for fall grazing	9%	1%

***Reasons for using other winter feeding methods include:** In Ontario, the reasons ranked in order of importance are: reduces labour (#1), lowers stored feed (#2), improves cattle condition (#3), and environmental benefits (#4). In Québec, the reasons ranked in order of importance are: lowers stored feed (#1), reduces labour (#2), improves cattle condition (#3), environmental benefits (#4), limited tillable acreage (#5), and agronomic benefits (#6).*

Table 35. Forages Testing and Ration Balancing

	ONTARIO	QUÉBEC
% who responded	95%	98%
2016 Lab testing of forages		
% who test feed	16%	43%
% who test feed regularly throughout the year	7%	12%
% who test during harvest	9%	31%
Balancing of rations using lab test results		
% who use the results to balance rations	15%	26%
% who balance rations through a nutritionist	7%	0%
% who balance rations through an agronomist	0%	20%
% who balance rations through a veterinarian	0%	1%
% who balance their own rations	8%	5%
% who test but do NOT balance their rations	3%	6%

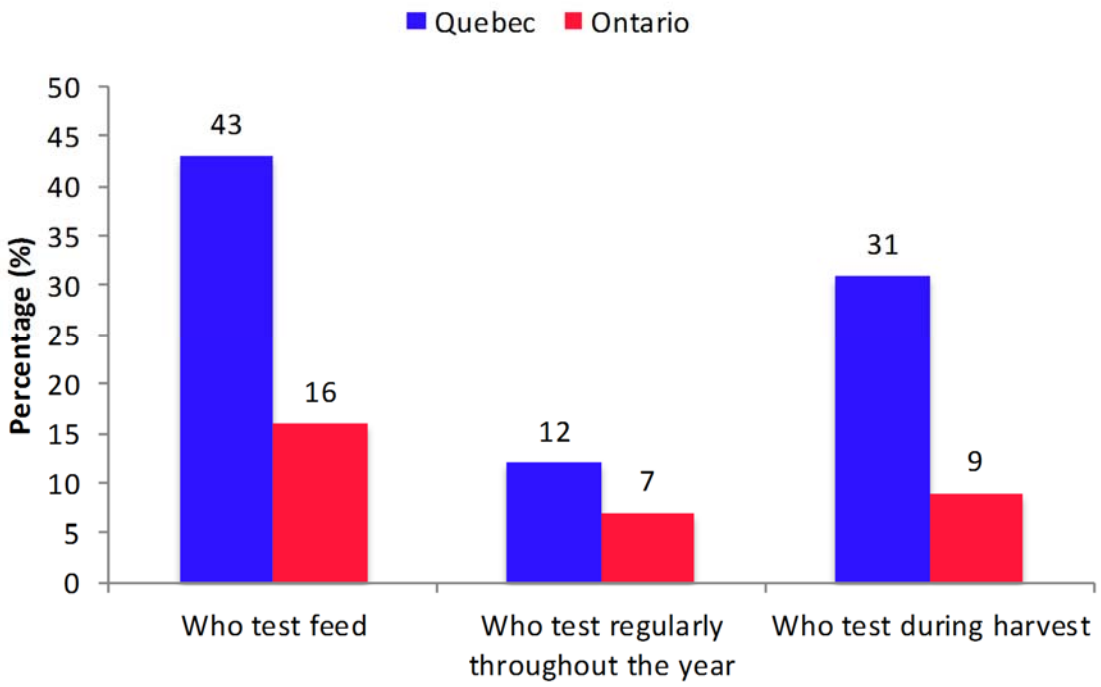


Figure 12. Percentage (%) that Have their Feed Analyzed in the Laboratory

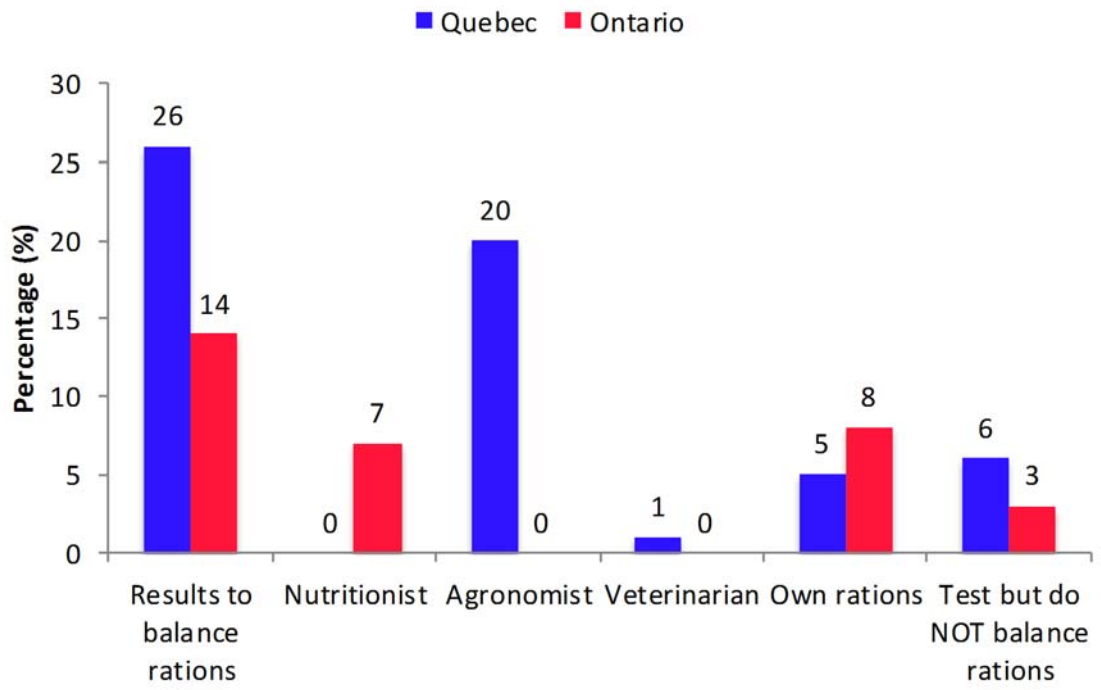


Figure 13. Percentage (%) that Use the Assistance of a Professional for their Feeding Program

Table 36. Other Feed and Supplements Use

	ONTARIO	QUÉBEC
Other feed for calves on pasture		
% who responded	100%	99%
% who provided other feed to calves (e.g. creep feed)*	23%	27%
Purchase and use of grains or supplements		
% who responded	98%	99%
% who purchased grains/supplements in 2016	65%	74%
Fed to ALL of the animals	6%	3%
Fed to COWS only to better BCS	5%	1%
Fed only during the breeding season	5%	0%
Fed to CALVES only	30%	53%
Other**	13%	17%
Salt and minerals		
% who responded	100%	100%
Salt		
Cows/Bulls: All the time	94%	75%
Cows/Bulls: Winter only	0%	3%
Cows/Bulls: Summer only	3%	2%
Heifers: All the time	86%	75%
Heifers: Winter only	0%	3%
Heifers: Summer only	3%	1%
Calves: All the time	91%	75%
Calves: Winter only	0%	3%
Calves: Summer only	3%	1%
Minerals		
Cows/Bulls: All the time	79%	87%
Cows/Bulls: Winter only	15%	8%
Cows/Bulls: Summer only	3%	0%
Heifers: All the time	75%	88%

Heifers: Winter only	10%	6%
Heifers: Summer only	3%	0%
Calves: All the time	76%	85%
Calves: Winter only	9%	6%
Calves: Summer only	4%	1%

Other feed includes: *barley, corn, beef protein pellets, soya meal, distillers' grains, and oats; with oats being the most common.* *****Other primary uses of grains/supplements include:*** *most often a combination of the above uses, or a combination of the above uses with bred or retained replacement heifers too.*

Table 37. Water Management

	ONTARIO	QUÉBEC
Lab test of primary water source		
% who responded	100%	100%
% who tested their primary water source in the last 5 years	41%	17%
Pumped water access		
% who responded	95%	100%
Pumped water is available all the time in WINTER feeding	79%	98%
Pumped water is available all the time in SUMMER grazing	63%	95%
Some fields/paddocks do NOT have access	40%	5%
Some buildings, pens, or animal housing do NOT have acess	8%	1%

3.6 Section 6: Land and Environmental Management

In this section, respondents were asked to provide details about their land and environmental management practices including: if they have recent soil sample results, if they have an environmental farm plan (EFP), use of commercial fertilizers (including an average per acre) and manure, the frequency of their crop rotations, which crops were grown for harvested forages in 2016, if they bought or sold and forages in 2016, how they harvest and store their forages and what is their primary choice when deciding to harvest a field or not, if they grew grain(s) in 2016 and which type(s), if they frost seed, and for their machinery and/or forage system equipment inventories.

Table 38. Soil Sampling and Environmental Farm Plans

	ONTARIO	QUÉBEC
Soil sample results		
% who responded	100%	100%
% who have recent (<5 years) soil sample results	41%	86%
Environmental Farm Plan (EFP)		
% who responded	100%	100%
% who have an EFP	68%	83%

Table 39. Fertilizer and Manure Use

	ONTARIO	QUÉBEC
% who responded	93%	96%
Commercial Fertilizer		
Pasture	34%	22%
Grass/hay land 1 to 5 years old	61%	44%
Grass/hay land 5+ years old	50%	24%
Grains, oilseed, pulses	41%	30%
Other	0%	6%
Manure		
Pasture	41%	50%
Grass/hay land 1 to 5 years old	42%	60%
Grass/hay land 5+ years old	38%	58%
Grains, oilseed, pulses	19%	22%
Other	4%	4%

The majority of producers in both provinces apply commercial fertilizers to their younger grass/hay lands and manure is spread over the pastures and younger and older grass/hay lands in both provinces. Québec has more than double the number of producers (86% in QC vs. 41% in Ontario of the 100% response rate of the 179 respondents in both provinces) who have recent soil samples of their croplands and this is most likely because the MAPAQ requires it as part of their EFPs.

Table 40. Decisions made When Harvesting a Field

	ONTARIO	QUÉBEC
Choice for Harvest		
% who responded	89%	90%
% who choose volume	49%	47%
% who choose quality	51%	53%

Table 41. Frequency of Crop Rotations

	ONTARIO	QUÉBEC
Pasture		
% who responded	88%	94%
3 years or less	0%	1%
3 to 5 years	7%	5%
5 to 7 years	11%	20%
7 years or more	23%	42%
No ploughing	59%	31%
Hay Land		
% who responded	93%	95%
3 years or less	0%	2%
3 to 5 years	27%	17%
5 to 7 years	30%	39%
7 years or more	37%	29%
No ploughing	7%	13%

Table 42. Average Size of Land Cultivated per Year

	ONTARIO	QUÉBEC
Average Size of Land Cultivated per Year		
% who responded	88%	84%
Average size cultivated (acres/year)	53	76

Table 43. 2016 Annual Crops Grown for Forages

	ONTARIO	QUÉBEC
% who responded	94%	98%
Annual Crops Grown for Forages		
% who grew barley	15%	3%
Barley: % average of crops grown	31%	10%
% who grew oats	45%	29%
Oats: % average of crops grown	34%	17%
% who grew corn	7%	10%
Corn: % average of crops grown	55%	24%
% who grew grasses	75%	92%
Grasses: % average of crops grown	60%	61%
% who grew legumes	73%	89%
Legumes: % average of crops grown	43%	35%
% who grew other crops*	12%	8%
Other: % average of crops grown	37%	62%

***Other crops include:** most often a mixed crop like mixed hay or oats & peas in Ontario and Québec.*

Table 44. 2016 Sale and Purchase of Forages

	ONTARIO	QUÉBEC
Sale of Forages		
% who responded	100%	96%
% who sold forages	23%	18%
% who sold small square bales	4%	1%
No. of small square bales	10 700	3 000
% who sold large round/square bales*	19%	17%
No. of large round/square bales	3 289	5 325
% who sold forages in tonnes	---	1%
No. of tonnes	---	380
Purchase of Forages		
% who responded	100%	100%
% who bought forages	26%	34%
% who bought small square bales	---	---
No. of small square bales	---	---
% who bought large round/square bales*	25%	30%
No. of large round/square bales	3 746	17 107
% who sold forages in tonnes	1%	3%
No. of tonnes	3	17 392

***Size variation includes:** large round/square bales in Ontario include: 4'x4', 4'x5', 5'x5', and 5'x6' rounds ranging from 750 to 1,300 lbs, and large square bales were indicated at 7'. Large round bales in Québec were predominantly 4'x5'.*

Table 45. Harvest and Storage of Forages

	ONTARIO	QUÉBEC
% who responded	93%	99%
Dry Hay		
% small bale, protected/covered	26%	14%
% small bale, unprotected	1%	1%
% large bale, protected/covered	68%	50%

% large bale, unprotected	45%	27%
Haylage		
% stored in silo tower	1%	0%
% stored in bunker or pile	3%	10%
% wrapped	60%	70%
% tube bags	1%	14%
% other	7%	2%

***Other forages include:** barley and corn silage in Ontario and Québec.*

Table 46. Machinery and/or Forage System Inventory

	ONTARIO	QUÉBEC
% who responded	91%	100%
Tractors		
Tractor *without* bucket	101	177
Tractor *with* bucket	165	246
Harvesting		
Disc mower, haybine, cutter	90	145
Harvester for haylage	9	11
Self-propelled harvester	2	9
Self-propelled swather	23	6
Rake	81	126
Hay/Silage Baling		
Small square baler	36	31
Large square baler	8	2
Large round baler	98	135
Round bale wrapper	41	82
Round bale wagon	120	88
Manure		
Manure spreader	89	134
Soil and Seeding		
Moulboard plow	81	130
Cultivator or dis	111	147

Seed drill	71	111
Grain Harvesting		
Combine	38	54
Feeding		
Bale chopper/TMR	16	54
Other	21	67

Table 47. Frost Seeding

	ONTARIO	QUÉBEC
Frost Seeding		
% who responded	95%	97%
% who frost seed	30%	26%

3.7 Section 7: Innovation and Technology

In this section respondents were asked to provide information on their access and/or use of innovation and technology in regards to their applications to their production/business including: whether they own a computer, have high-speed internet, use social media for their businesses, if they own a smartphone and download agricultural-related applications (apps), where they routinely get their information on innovations, technologies, and/or new equipment and if they attend agricultural-related workshops, training, and/or conferences and how many days per year on average.

Table 48. Innovation and Technology: Access and Use

	ONTARIO	QUÉBEC
Computer use		
% who responded	100%	100%
% who own a computer	93%	91%
High speed internet		
% who responded	100%	98%
% who have high speed internet	76%	77%
Social media		
% who responded	100%	100%
% who use social media for their business	38%	23%
Smartphone use		

% who responded	100%	100%
% who own a smartphone	56%	61%
Agriculture-related apps		
% who responded	98%	99%
% who download and use ag-related apps	18%	20%

Table 49. Innovation and Technology: Learning and Information Sources

	ONTARIO	QUÉBEC
Ag-related workshops, training, and/or conferences		
% who responded	98%	100%
% who attend ag-related workshops, training, and/or conferences	71%	71%
Average number of days at ag-related events in one year	4	5
Info source for innovations, technologies, &/or new equipment*		
% who responded	75%	91%
Internet	1 and 2	1
Veterinarian	---	5
Agronomist	5	3 and 4
Industry magazines	---	2
Extension services (gov., university)	3	6
Specialized company/industry representative	4 and 6	---

Question asked for respondents to indicate their sources in rank order where 1 is the most important and 6 is the least important (i.e. 1 = the highest number of people who indicated that either the internet or industry magazines are the primary sources of their information on innovations, technologies, and/or new equipment).

3.8 Section 8: Finances

In this section respondents were asked to provide general details about their finances including: their gross agricultural incomes for 2016 and the distribution of this income, whether they have any debt and how much in terms of short-term vs. long-term, if their operation generated a profit in 2016, whether they access any financial programs, if and how they keep financial records for their business, the method of accounting used, if they use their financial records to make business/management decisions and if they know their cost of production per calf.

Table 50. Finances: Agricultural Income

	ONTARIO	QUÉBEC
Gross Agricultural Income 2016		
% who responded	100%	100%
< $10,000	6%	0%
$10,001 - $50,000	31%	3%
$50,001 - $100,000	24%	30%
$100,001 - $200,000	24%	21%
$200,001 - $500,000	15%	31%
> $500,001	0%	15%
Distribution of Gross Agricultural Income		
% who responded	99%	100%
% who have income from cattle	100%	100%
Cattle income: % average	86%	87%
% who have income from grains, oilseeds, legumes	11%	18%
Grains, oilseeds, legumes income: % average	20%	14%
% who have income from forages	19%	12%
Forages income: % average	9%	13%
% who have income from wood	1%	19%
Wood income: % average	15%	6%
% who have income from contract work	10%	17%
Contract work income: % average	17%	18%
% who have income from other*	27%	20%
Other income: % average	21%	20%

***Other income revenues:** the most common is pigs/pork, chickens/poultry, and goats in Ontario; and snow removal, blueberries, and maple syrup in Québec.*

Table 51. Finances: Farm Debt

	ONTARIO	QUÉBEC
Total Amount of Farm Debt		
% who responded	88%	100%
% who have NO farm debt	14%	4%
Short-Term (operational) Debt		
< $10,000	26%	16%
$10,001 - $50,000	20%	21%
$50,001 - $100,000	11%	14%
$100,001 - $200,000	4%	15%
$200,001 - $500,000	3%	9%
> $500,001	0%	0%
Long-Term Debt		
< $10,000	1%	8%
$10,001 - $50,000	11%	10%
$50,001 - $100,000	9%	11%
$100,001 - $200,000	6%	15%
$200,001 - $500,000	19%	25%
> $500,001	3%	14%

Table 52. Finances: Profit and Program Use

	ONTARIO	QUÉBEC
2016 Profit		
% who responded	96%	97%
% who generated a profit	49%	67%
% who do not know if they generated a profit	4%	3%
Program use		
% who responded	69%	99%
ASRA (Québec)	n/a	99%
Production insurance	47%	70%

AgriStability	73%	100%
AgrInvest	63%	99%
Risk Management Practices (RMP)	51%	1%
Other (AgriQuébec)	0%	7%

Table 53. Finances: Accounting Records and Methods

	ONTARIO	QUÉBEC
Financial Records		
% who responded	95%	100%
% who keep hand-written records (e.g. notebook)	53%	27%
% who keep electronic records (e.g. computer, smartphone)	45%	71%
% who do NOT keep financial records	3%	2%
Methods of Accounting		
% who responded	96%	100%
% who use accrual accounting	14%	58%
% who use cash accounting	66%	35%
% who use income-tax returns only	20%	7%
% who do NOT keep specific accounting records	0%	0%
Financial Records to Make Business Decisions		
% who responded	96%	100%
Yes, always	26%	51%
Yes, sometimes	60%	23%
No	14%	26%

Cost of production per calf: Only 15% of producers in both provinces *combined* knew their costs of production per calf. When asked how they calculate their costs of productions, the variety of ways to calculate and/or represent them is too varied (in addition to the very few answers) to quantify the responses into anything representable.

3.9 Section 9: Marketing/commercialization

In this section respondents were asked to provide information on the type of cattle they sell, where they typically market their cattle and calves, how they market replacements if they sell breeding stock, where they get their market information from, whether they've changed their production practices to meet market/buyers' demands, and if they participate in the Verified Beef Program.

Table 54. Type of Marketed Cattle

	ONTARIO	QUÉBEC
Cattle sold		
% who responded	99%	100%
% who sold weaned cattle	52%	35%
Weaned cattle: average % of sales	78%	76%
% who sold backgrounded cattle	53%	72%
Backgrounded cattle: average % of sales	74%	84%
% who sold finished cattle	34%	12%
Finished cattle: average % of sales	37%	58%
% who sold breeding stock	22%	25%
Breeding stock: average % of sales	23%	21%
% who sold other types	10%	2%
Other: average % of sales	14%	10%

Table 55. Marketing of Animals

	ONTARIO	QUÉBEC
Cattle/calves marketing		
% who responded	98%	99%
% who market at auctions (live, online) for finishing	76%	37%
% who market at specialized sales for finishing	12%	47%
% who market direct to feedlots	9%	12%

% who market direct to consumers for consumption	31%	12%
% who market direct to butchers, restaurants, etc.	8%	2%
% who market direct to abattoir	5%	7%
% who market at/to other options*	14%	17%
Marketing of breeding stock		
% who responded	33%	24%
% who sell with private treaty	77%	88%
% who market at auction	23%	8%
% who market at a specialized sale	8%	4%
% who market on the internet/online	4%	0%
% who market at/to other options**	12%	13%

***Other options include:** brokers in Québec and to other cattle/backgrounder buyers or as breeding stock in Ontario.*

****Other options include:** on farm auctions and bull testing station (representing 3 producers/respondents) in Québec and "as heifers" (representing 3 producers/respondents) in Ontario.*

Table 56. Market/Production Practices

	ONTARIO	QUÉBEC
Market Information Sources		
% who responded	100%	99%
% who get their info from UPA/BFO	19%	29%
% who get their info from the internet/online	76%	67%
% who get their info from extension services (gov., university)	14%	2%
% who get their info from the radio	5%	6%
% who get their info from printed materials and reviews	53%	64%
% who get their info from auction reports	58%	61%
% who get their info from a local trucker/driver	13%	17%
% who get their info from an animal dealer/trader	9%	21%
% who get their info from other sources*	0%	9%
Production Practices		
% who responded	98%	100%

% who changed their production practices to meet buyers' demands	26%	29%
Verified Beef Program		
% who responded	99%	99%
% who participate to the program	15%	2%

Other sources of market information include: *other producers and brokers as the top "other sources" for Québec.*

3.10 Section 10: Human Resources

In this section, respondents were asked to provide general details about total wages paid in 2016, if there were other people who worked on their farms in addition to the owner-operators (expressed in average number of weeks per year), if they have a succession plan, and if they have relief workers in case of emergencies or for vacations.

Table 57. Total Wages Paid in 2016

	ONTARIO	QUÉBEC
Owner-Operator Wages		
% who responded	93%	93%
$10,000 and less	16%	28%
$10,000 to $30,000	11%	22%
$30,000 and more	4%	24%
Not applicable	61%	24%
Employee wages		
% who responded	88%	76%
$10,000 and less	16%	25%
$10,000 to $30,000	11%	17%
$30,000 and more	6%	24%
Not applicable	59%	31%

Table 58. 2016 Number of Average Weeks Worked per Year

	ONTARIO	QUÉBEC
No. of average weeks/year		
% who responded	55%	68%
Family member, unpaid	39	39
Family member, paid	21	34
Part-time employee	30	20
Full-time employee	37	46
Other*	4	29

***Other includes:** summer students, co-op students, and vacation coverage in Ontario, and volunteers and casual labour in Québec.*

Table 59. Succession and Relief Plans

	ONTARIO	QUÉBEC
Succession Planning		
% who responded	99%	100%
% who have succession plan	32%	38%
Relief		
% who responded	100%	100%
% who have relief workers	69%	66%

3.11 Section 11: Opinions

In this section respondents were asked to provide their feedback/opinions on what they felt were limiting factors to the growth of their businesses, as well what they felt were contributing factors to the growth of their businesses. Using a ranking system were '1' was considered the most important factor, some similarities and some differences appeared.

Table 60. Limiting factors to the growth of your business

	ONTARIO	QUÉBEC
Limiting factors		
% who answered	86%	95%
Lack of relief/successor	---	---
Lack of land	5	---
Lack of quality animals	6 - 7	6 - 7
Lack of cash-flow/assets	---	4
Low profitability	1 - 2	1 - 2
High cost of land	3	5
Lack of labour/hired help	4	3 - 4

1 = *The most amount of people who indicated the low profitability to be the most important limiting factor.*

Table 61. Contributing factors to the growth/success of your business*

	ONTARIO	QUÉBEC
Factors for success/growth		
% who answered	98%	100%
Help from family or mentor	1	2 et 3
Good land at a great price	2	2 et 3
Access to qualified experts for advice	4	4
Sharing of equipment	6	8
Access to custom work	10	7
Financial aid from the government	5	1
Diversified agricultural production	7	10
Agricultural background	3	5
Proximity of auctions/markets	9	9
Other**	8	6

It is not a matter of ranking for importance but rather the greatest number of times an answer was selected for the same factor. i.e. in Ontario the factor "help from family or a mentor" was selected the most, whereas in Québec the factor "financial aid" was selected the most.* ****Other: *External work/work off the farm, access to community pastures, and hard work on the farm in Ontario. External work/work off the farm, work hard on the farm, and forestry in Québec.*

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Ontario-Québec Analysis

Cow-Calf Production in Northern Ontario and Northern Québec

Yves Gauthier, North Haven Solutions
with collaboration of
the members of the project committee

Ontario-Québec Analysis

Introduction

The benchmarking analysis in its broader sense allows businesses to compare themselves to themselves or to compare themselves to similar operations at a certain point in time or for a certain period of time. The questionnaire to which the owner-operators responded to, found that 39% of respondents in Ontario generated a gross agricultural income of $100,000 or more while in Québec, 67% of respondents said they had reached or exceeded this gross agricultural income 2016. This could possibly be explained by herds on average larger in Québec (137 cows) than in Ontario (86 cows). On the other hand, the results of this survey show that short-term and long-term debt is higher in Québec than in Ontario. Despite this finding, 49% of businesses in Ontario reported making a profit in 2016 compared to 67% in Québec. Moreover, in both Québec and Ontario, the most important factor limiting the development of businesses is the low profitability of businesses. In addition, the high cost of land in Ontario and the lack of labor in Ontario and Québec are also factors that limit business development. From this information, two questions arise: 1) If we want to work to improve the profitability of businesses, do we know the cost of production? Only 15% of respondents in Ontario and Québec combined mentioned knowing their production costs. 2) Does the profitability of cow-calf production require a large herd?

Methodology

The first step was to develop a tool in order to study the cost of production. This tool analysis was developed by Franck Djea agro-economist at the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ). It is an Excel spreadsheet, which takes into account the financial data of accrual accounting and the balance sheet of businesses. For the study, the years 2014 and 2015 were used because they were the last two financial years for which the necessary information was available.

Of the cow-calf operations that responded to the questionnaire, 30 were selected. Of these, one withdrew during the meeting process. As a result, the study was conducted with data from 15 businesses in Québec and 14 in Ontario.

The tool generates several financial ratios (Table 1) from the data entered in the spreadsheet, which allows us to calculate the cost of production and understand the structure of the cost of production and work in the right places to lower the cost of production. Thereafter, it is possible to study businesses by the herd size, which is an important factor for the expansion of cattle production in the North.

Table 1. Financial ratios generated by the cost of production analysis.

	Average Qc-2014	Average Qc-2015
Cows	184	154
Charge rate (Expenses - Cost of living - Amort.) / income	68%	76%
Monetary surplus (Net income + Amort - return of capital) / income	26%	17%
Return on assets Net income / Assets	7%	2%
Working capital ratio Current assets/Current liabilities	6.47	6.93
Real liquidity (Current assets - inventory) / Current assets	1.72	1.14
Financial autonomy ratio Equity / Total assets	62%	57%
Total liabilities / cow	$2 298.40	$2 997.90
Production cost without program		
Target price	$2.59	$2.61
Minimum price	$1.78	$1.90
Production cost with program		
Target price	$2.11	$2.52
Minimum price	$1.31	$1.80

Results

In Québec, cattle producers wishing to take advantage of the Farm Stabilization Revenue Insurance (ASRA) program must provide annually to the Financière Agricole du Québec (FADQ), their annual financial data on an accrual basis and their balance sheet. A majority of producers are using it. In Ontario, AgriStability requires operators in this province to provide similar data. However, not all farms necessarily participate in the AgriStability program. Thus, in this study, it was not possible to have all the same data for all farms in Québec and Ontario. On the other hand, for all businesses, the number of cows and calves sold were known as well as operating expenses. It was therefore necessary to work with other financial ratios to compare cow calf operations with each other (Table 2). These ratios come from the sale of animals only and exclude government revenues.

Table 2. Ratios used to compare businesses between each other.

	Average 2014		
	≤ 100	100 < x ≤ 153	> 153
Cows	78	123	243
Sale of animals (livestock)	117 836	234 854	383 995
Total income	157 898	257 688	496 800
Total expenses	137 307	207 821	336 853
Net profit (earnings)	20 591	49 866	159 948
Total weight of calves sold (lb)	52935	77152	138817
Ratios			
Sale of animals (livestock) / cow	1 518	1 916	1 582
Total income / cow	2 034	2 102	2 046
Sale of animals / Total income	75%	91%	77%
Total expenses / Total income	87%	81%	68%
Net profit (earnings) / cow	265	407	659
Net profit (earnings)/lb of calves sold	0.39	0.65	1.15

The performance of Québec-Ontario businesses

The first step was to verify the source of income by calculating the ratio of livestock sales to total income. This ratio must be greater than 50% in order to represent a business with beef production as the main income. As a result, four companies (two in Ontario and two in Québec) were eliminated from the in-depth analysis.

Thereafter, the ratio of net profit per cow was used to summarily assess the business performance in herd size and between provinces. The results show an increase in net profit per cow with increasing herd size (Figure 1). This was obvious in 2014 but not in 2015. Besides, the gap, when the two years were combined, was very low between herds of 100 to 153 cows and herds of more than 153 cows. It therefore seems that increasing the herd may allow some economies of scale but not always since in 2015, the net profit per cow of large herds (> 153 cows) was lower than that of herds between 100 and 153 cows (Figure 1). When all operations were gathered together to see the differences between years (Figure 2), 2014 was the best performer. However, it should be noted that 2014 was the year in which the highest prices for the sale of calves were historically recorded, which could explain the observed results. In addition, the high selling prices in 2014 resulted in businesses selling calves that would normally be sold in 2015. This could explain the drop in income in 2015.

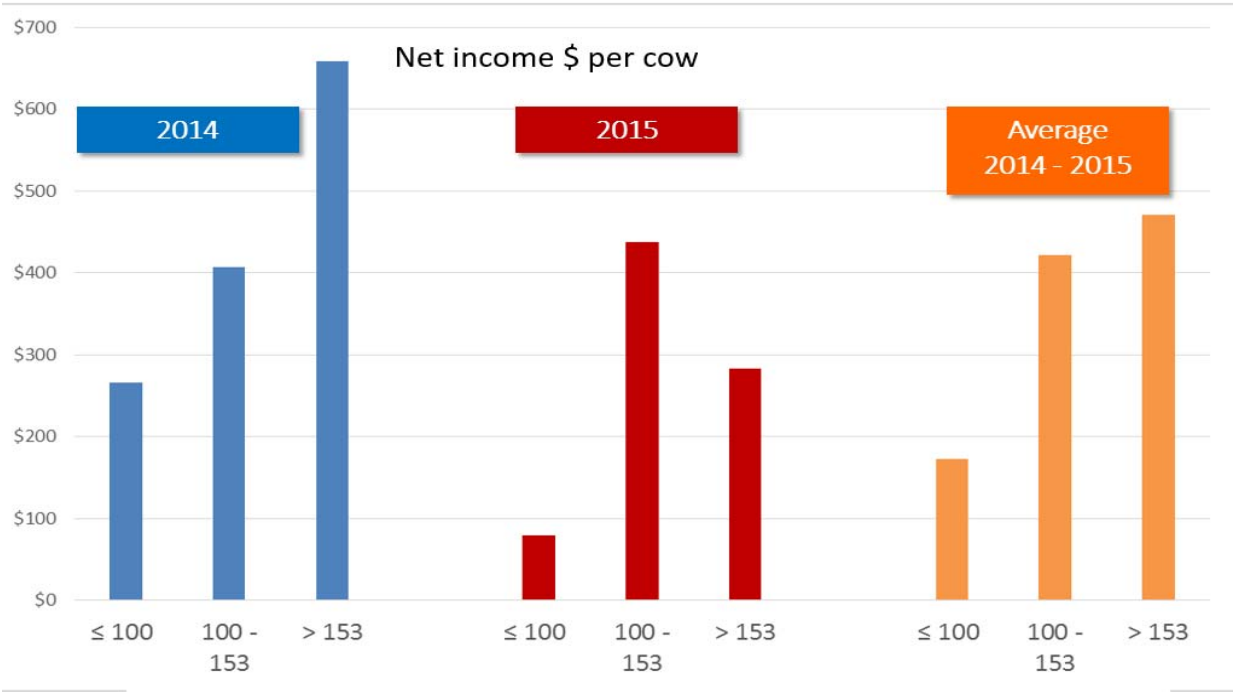

Figure 1. Net income per cow by herd size.

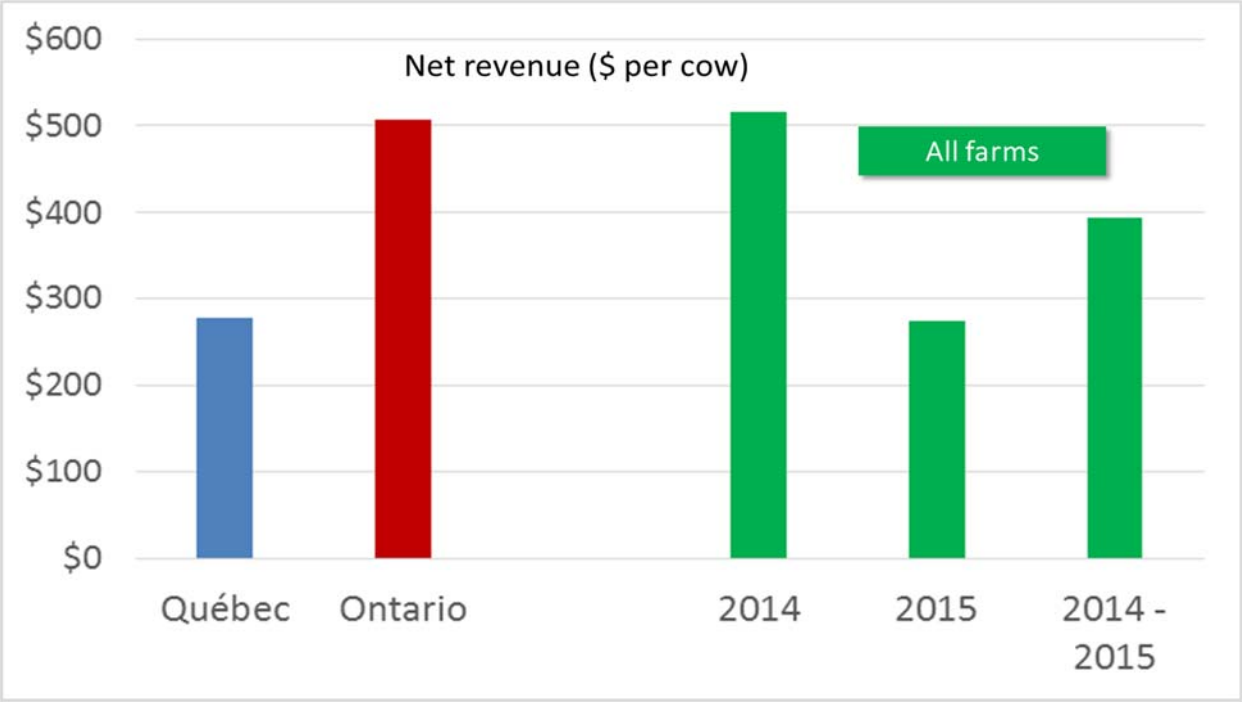

Figure 2. Net income per cow for each province and year of study

A comparison between Ontario and Québec operations shows that Ontario had better net profit per cow (Figure 2). The operating expenses are different. Operating expenses per cow were higher in Quebec with an average of $1 647 compared to $1 315 in Ontario. Agricultural programs and environmental standards may be able to explain these results, but for the moment; these details are not known. However, in the cow-calf production, it is feeding expenses that are important. They can easily represent 60% of operating expenses. Thus, working on reducing feed costs remains the best option for cow-calf operations.

Conclusion

This comparative study was ambitious in its objectives and in the time allotted to do the work. The tool developed made it possible to calculate the cost of production and to know the cost structure of cow-calf operations in the North. Unfortunately, data collected by cow-calf operations were not the same and this was not possible. However, the net benefit/cow ratio has shown that increasing the herd brings economies of scale, but they are not linear and varied from year to year. It should also be noted that it seems necessary to own a herd of 100 or more cows to generate a higher net benefit per cow. This comparison should be made over a longer period of time to be able to determine the herd size that would on average, give best net benefit/cow. This is important for developing sustainable business models that can lead to the expansion of cow-calf production in the North.

MANAGEMENT PRACTICES FOR BEEF COW-CALF HERDS IN THE NORTHERN REGIONS OF QUÉBEC AND ONTARIO

Yves Gauthier
North Haven Solutions
March 28, 2018

Growing Forward 2 | Cultivons l'avenir 2
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BEST MANAGEMENT PRACTICES FOR BEEF COW-CALF HERDS IN THE NORTHERN REGIONS OF QUÉBEC AND ONTARIO

INTRODUCTION:

The northern regions of Québec and Ontario have recently been identified as new frontiers for beef farming expansion in Canada. Producers with cow-calf herds in other regions have been concerned with rising production costs including land prices, and the ability to buy and expand. Land prices are not the only costs that are rising, which is why it is important that cow-calf producers are able to spread farming costs over a larger herd of cows. Although we have seen land prices rising steadily in some parts of the northern regions, they are still considered affordable in comparison, and the availability of it is much greater than in the south.

Government agencies are also working on the development of the northern regions. They see the area as an economic development opportunity in the agricultural sector. OMAFRA Statistics show that in 2016 there were a total of 26 698 cows on 480 farms, which means the average beef cow-calf operation has 56 cows per farm. On the Québec side, 2016 MAPAQ Statistics show that their northern regions (Saguenay-Lac-St-Jean, Abitibi-Témiscamingue/Nord-du-Québec, Outaouais) held a total of 52 064 cows on 941 farms, giving them an average of 55 cows per farm. In order to study and learn from these existing operations, North Haven Solutions sent out surveys to 200 farms of which 179 (80 in Ontario and 99 in Québec) were returned with usable information whereas those that were omitted were either ambiguous or had a lot of unanswered sections. The survey asked beef farmers detailed questions about their management practices. These farms were divided equally between northern Ontario and northern Québec. Results from this study will help various government agencies determine how best to serve and help grow the beef sector for both northern regions of Ontario and Québec.

North Haven Solutions was also contracted to visit and question 30 well established, larger scale, cow-calf operations. Again, these were 50:50 from the north of both provinces.

From the information gathered, here are a number of best management practices (BMPs) that are applicable to the northern regions. It is with hope that producers can implement some or all of these BMPs in order to reduce costs, improve efficiencies, and be more profitable.

We want to thank all the producers who took part in this study. This project is based on the initiative of farmers helping farmers. We believe it is fitting to learn from individuals who are currently farming, as it is a very effective way to learn about, and encourage, sustainable farming practices.

CALVING SEASON:

One of the most important time frames of a cow-calf-production year.

- Keep it short: A short calving season concentrates activities that save time and labour. It also gives a more uniform calf crop. This is very important for the northern region as trucking calves to a sales barn or a feedlot is usually more expensive due to distance to market. The bigger the load, the lower the cost per head. A more condensed calving season can allow for many other time management efficiencies throughout the seasons (pregnancy testing, weaning, parasite control, vaccinations). You may not always look at it this way, but your time is worth money.

- Pick the right time: The northern climate can be very harsh during certain times of the year. Calving from January to March, and even into April in some years, can prove to be a challenge. An earlier calving season may allow bigger calves to sell earlier in the fall. However, provision of buildings, and sometimes a heat source, will be required. Buildings cost money to build and maintain. They are also usually harder to clean, bed, and properly ventilate therefore making them the perfect incubator for various illnesses. For these reasons, we have seen a shift to a later calving season where producers are now calving cows on pasture starting in late May. They usually start calving heifers a few weeks earlier than cows. This gives the farmer the opportunity to provide more attention to that group, as well as giving those first time mothers a chance to better their body condition before they get exposed to a bull. Our findings show that generally, when calving later in the spring, the producer experienced fewer calf losses and less overall health issues. Producers that switched to a later calving period (late spring) told us their calves were still very similar in weight at weaning in the fall as to when they previously calved in the cold (winter to early spring).

- Pick the right location: According to the numbers from the study, the more confined the animals are during calving season, the greater the instances of diseases and calf loss. There has been a shift in calving seasons for the larger producers as they have opted out of using buildings that became too small to support the herd growth. Calving stress is the perfect opportunity for bacteria or viruses to attack a cow's immune system. Pick or create a clean, dry environment for the cows and calves to lay on. In the study, producers that were calving out on pasture would pick a nice dry area with a decent slope on sandier ground (if they had any). Sandy ground warms up faster in the spring and grass starts growing a little earlier. It also retains less water after big rainfalls. It was quite common for those farms to use the calving area once throughout the entire year specifically for the calving period. They felt that this practice helped greatly decrease any potential diseases that may affect the health of newborns. Wherever you are calving your cows, you will need a system to contain cows and calves if any issues arise where you need to intervene.

- Check calving cows and heifers frequently: This can increase the number of live calves as well as save the odd cow from straining and pushing too long when there is an issue. You will not be getting much sleep for as long as calving season lasts; this is yet another important reason to aim for a shorter calving timeframe. Checking and calving cows later in the spring has made that critical period a lot less stressful to work through according to the producers who have experienced both.

- Intervene as little as possible: Unless there is an issue, let the cows do their thing and avoid assisting the calves. When you do intervene, avoid cross contamination. If you have just handled a calf with sores, or any other sick animal, is it a good idea for you to go near a newborn? The same principle applies to any handling mechanism you may be using. Keep everything as clean as possible. Most of the producers we interviewed would perform a series of management and health protocols to the calf shortly after birth. If this is the case on your operation, it is important that you perform these tasks as quickly and as stress-free as possible. Use a clean and efficient

handling system and have your kit ready with all the tools and vaccines. Make sure that whoever is doing this is a calm individual with knowledge of how to avoid injury to themselves and to the cattle. Provide training for all involved.

PASTURING AND LAND MANAGEMENT:

- Prepare a best-use plan of your land base: If planned out right, a cow-calf operation can utilize different types of landscape better than any other type of farm. Here are a few of the questions you need to ask in your analysis:
    1. What is the topography of the land (flat, hilly, etc.)?
    2. What type of soil is it and is some of it tiled?
    3. Does it have trees, rocks, or sandy areas?
    4. Does it have access to a water source?
    5. How much land do you own and how close is it located to other land you own/rent (if any)?
    6. Can you rent or purchase some land close by and at what price?

  The answers to these questions are important for you to plan hay/crop strategies, including fertilizer and manure spreading plans. Pasture strategies include wintering and calving areas, a watering system plan for all seasons, fertilizer and manure spreading plans, fence types, and ways to isolate and work with animals that need special attention.

- Pasturing: There are some innovative ways to increase forage availability of your pastures. Rotational or controlled grazing has shown that it can increase forage availability over continuous grazing anywhere from 10 to 35%. This has the potential to increase your profitability if a shortage of hay ground is an issue or if you wanted to increase your herd size to spread overhead costs for your farm. There exists a large amount of good data on the subject of rotational grazing. Farms that were practicing rotational grazing in our study group stuck to it. According to these farmers, once the initial set up of fencing and watering is complete, producers found that it was relatively low labour to move cows and calves from parcel to parcel. Cows did not have to be pushed as they get to know that a new meadow is usually offered when the farmer shows up. One easy practice to consider in order to avoid cows separating from their calves during the transfer of pastures is to leave the gate open between the last pasture and the new one for the day. This will allow cows to go back later if the calf did not follow. Another point of observation on this practice through discussions with producers was fly reduction. This was more apparent with cows moving to a new pasture every few days. Flies follow the manure of the cows therefore; it was less of an issue on a fresh pasture. Rotational grazing might not be the best option for farms where parcels of pasture are too far from one another. Proper stocking rate, a good eye, and the ability to adjust quickly when the weather does not cooperate is very important for a successful grazing season.

- Access to water: Every farm we visited had different methods or a combination of methods to supply fresh water to the cattle throughout the seasons. Some were more labour intensive than

others, but all were based on the operation's lay of the land and water sources. Many farms had set up new systems in the past few years to comply with environmental laws. What was interesting about this was producers found that calves gained weight better once both cows and calves had access to bigger volumes of water at the waterers. A cow will often want to get back to the pasture shortly after she drinks and that might not give sufficient time for the calf to drink if there is competition at the trough. More often than not, calves will end up following the mother back to the pasture without getting the chance to drink. This may lead them to heat stress that will translate to a lesser average daily gain.

- Proper Fencing: Probably one of the most boring jobs on a cow-calf/beef operation is building and maintaining good fences. However, if planned and installed adequately, proper fences can save you a lot of time throughout the year as well as increase profitability. Solid perimeter fencing will help eliminate cattle getting out, creating damage, or being injured. A good internal fence system can facilitate ease of cattle movement from one paddock to another. When cattle are easy to move, then it is fair to assume that they should be moved when it is necessary and not when the operation can find enough time and personnel to get it done.
  There is really no right style of fencing that can be applied to every type of beef operation. However, 96% of the farms visited picked electric fence as their favourite type to work with. Here are the top five reasons why they picked this type over the others:
  1. Easier to install and remove on any type of soil or rocky ground;
  2. Less harmful to cattle if they pass through the fence;
  3. More flexible and easier to adjust to paddock sizes;
  4. Relatively low maintenance;
  5. Less expensive.

HEALTH AND GENERAL PRACTICES:

- Protect your investment: Vaccines are very important to protect your herd from infectious diseases. Every farm visited followed a strict vaccine program. It is recommended that farms contact their local veterinarian's office to discuss, establish and implement the best, and most current, vaccine program specific to your herd. Programs will vary depending on the type of herd you manage and how severe the risk of disease is in your specific area.

- Parasites are hungry: Internal and external parasites can cause significant economic losses if the herd is infested. Deworming your cattle and providing lice control will ensure that your investment in feed will benefit the animal instead of these hungry little thieves. Work with your local veterinarian to set up a proper program. Parasite levels vary on different types of pastures as well as pasture stocking rates. Lice can be a huge problem in cattle trying to maintain body condition throughout the harsh winters in the north.

- Observe and react: Cattle might not be able to speak but they can communicate by their actions and composure. It is an important practice to spend time with your herd and watch what they are trying to telling you. It is also as important that you react promptly when you do see an issue. Treat injuries and disease right away and watch for any reoccurrence or outbreak. Do not wait

too long before involving your veterinarian. When you do get them involved, be truthful about what you are dealing with. Provide as many details as possible. He is working for you and with you to solve the situation in a timely manner. Do not be cheap on using the proper medication and proper dosage. Treat and handle your animals in a calm and caring way. This will help speed up the treatment process and you never know who is watching you.

- Weigh your cattle: With so many important management decisions based on birth weights and weaning weights of your calves, it is crucial that you have the most accurate data available to you in order to adjust and calculate for betterment opportunities. It is also important for you to know the weight of your calves for marketing purposes.

- Castrate your bull calves: Bull calves can be discounted by up to 10 percent over steers. Steers are easier to manage in feedlots, so they command a premium. Why shouldn't that money go in your pocket? Bulls should be castrated if they are not intended for replacement breeding bulls. Castration is easier to perform when the calf is young. It is also less stressful on the animal at that time. Castration was performed on 96 percent of the herds visited. Out of that group, 93 percent were castrating with an elastic band at birth, at the same time as they performed other management tasks to the calf. This was not time consuming nor difficult at that age.

- Pregnancy test your cows: Consider all costs of carrying a cow for one year. Why would you keep and feed a cow if she is not going to bring you a return on your investment? The cost of a pregnancy test is minimal and every area visited has access to a qualified veterinarian.

- Wean properly: Weaning calves is a stressful time for your herd. It is also a time when you will have to process your cattle. You will need to be patient and organized in order to deal with a noisy environment. You should start to prepare for this period long ahead. Here are a few tips shared by our producers:
    1. Line up extra helpers or a veterinarian well in advance (if needed).
    2. If you will be trucking cattle, make sure your trailer is in good working condition or make sure to book your trucker ahead of time.
    3. Make sure your holding pens are solid and clean.
    4. Check your handling system and make sure it is in working order.
    5. Check your scale.
    6. Make sure that you have extra tags ready.
    7. Make sure vaccines are not expired and that you have enough.
    8. Have extra needles and syringes on hand.
    9. Make sure you have enough products to treat for parasites.
    10. Move your cattle closer to your handling system in advance if possible.
    11. Have a good recording system in place for you to be able to document data clearly and efficiently for future reference.

- Proper Handling Systems: Whether you are vaccinating, treating, or performing any physical examination on an animal, you will need a system to confine and restrain the animal in a safe and

easy manner. Having a proper system is so critical in helping you deal with these tasks quickly and efficiently. In many cases, this means the difference between the animal getting the care they need in a timely manner and not getting any care at all. All farms that we visited understood this concept and were well organized in this area.

- Proper nutrition: It is no surprise that proper nutrition can have a great influence on the health of your herd. Test your feed and involve a reputable nutritionist to discuss any shortfalls. Selenium deficiency is quite common for the northern regions so make sure that your specialist is aware of this before recommending any minerals.

- Proper culling: Reoccurring health issues can be avoided or minimized if the producer is aware of the animals creating the issues and culls them out. Retain problem-free animals. High-strung cows will cause you grief. Get rid of them!
    1. They can prevent you from going and observing your herd daily.
    2. They can prevent you from being able to segregate an animal for special attention.
    3. They could injure you.
    4. They will make all other animals nervous during manipulation.

WINTERING:

- Score your cows: Typically, in order for your cows to go through the harsh winters of the northern regions, they must enter the season in relatively good condition. Extremely thin cows or extremely fat cows will usually generate issues at breeding and at calving. It is good practice to learn how to body condition score your cows throughout the seasons and most importantly in the fall. This will help you to determine a feed program to start out the winter. You may want to separate some cows and feed them separately or simply cull them. Body condition scoring is an easy practice to learn but works best when performed by the same person throughout the seasons. Keep an eye on your herd and react quickly when you see an issue.

- Picking the right location: If your farm is in Québec, picking a location or many locations will depend on the rules put in place by the Ministry of Agriculture, Fisheries and Food (MAPAQ). In Québec, these sites have to be investigated and approved by the ministry before they can be put into use. In Ontario, these rules have not been adopted but, when we visited most of the sites, we found that they were very similar to those on the Québec side. Sites are picked or designed with a proper amount of windbreak, proper slope for water runoff, access to a water source that will not freeze up, proper fencing, and solid ground.

- Plan ahead: Producers who knew where their cows were going during the winter would position good quality hay or silage close by for easy access during the winter months. Calculate how much hay you have and its quality. If you will be short on hay or energy, make sure to find some well in advance.

- Feed properly: Your cows will need a certain amount of energy to maintain body condition and carry a calf through the winter. Make sure that you have enough quality hay available for them to eat through the cold months. Some winters can be much colder than others. Prepare to add some energy to the diets if necessary during the coldest days. If cattle are not fed enough energy, they will use up body fat and lose weight. Consult a good nutritional adviser to help when necessary. If you have varying kinds of quality hay, you may want to use a bale shredder to blend in the hay and prevent competition at the better bales. Usually the more timid cows will get pushed away and end up having to go to the lower quality bales. Test your feed and balance with a quality free choice mineral. Minerals are known to help with digestion of forages.

FORAGE PRACTICES:

- Buying or making your own hay: Farms that we studied have been in existence for many years. Land prices were cheaper and availability of land was not an issue in the past. Therefore, it is not a surprise that all of them were growing their own hay. Northern Québec and northern Ontario are both huge regions. We were in areas where land prices were as low as $150 per acre to purchase, and other areas that were as high as $3800 an acre to purchase. Some areas could rent all the land they wanted for $5 per acre or less while other areas were paying as much as $75 per acre and having trouble accessing any.

  It is recommended that any new or expanding operation analyze whether or not it is more feasible to purchase hay rather than to make it. Should you own or rent equipment? Is there an opportunity to get it custom done? Things to consider would include all costs related to owning, operating and maintaining your own haying equipment. This would include buildings needed to store the equipment, interest paid on equipment, and housing loans, as well as depreciation. It would also include interest paid on land purchased for hay, land lease payments, and payments on buildings or plastic to store hay, as well as costs like fertilizer and grass seed.

  Each operation is different. That is why it is important to determine if you can get the quality and the volume of hay that you require at a price you are willing to pay. Are there any local custom operators and are they reliable and competitive in price? Will they be able to fill your needs on years when the weather is not cooperating? It is important to note that in many of the regions of the study, access to reliable custom operators was not an option.

- Haying season: Mid-June seems to be the consensus on starting first cut in every region of the north, with second cut being ready for the second week of August. Not many farms did a third cut, but for those who did, was late September (they also were well tile-drained and applied large amounts of fertilizer).

- Manure application: Spreading manure on hay ground is an excellent way to increase productivity of the field. However, it can also cause you many issues if not done right. Liquid manure can be spread just about any time when hay is at its shortest period. However, solid manure with lots of straw and hay residue should be spread after you have cut your last hay for the year. This practice is even more important if you use a rake for your hay when it is cut.

Manure residue in hay bales decreases feed intake and could increase spread of diseases. Manure spreaders are not all created equal. Some spreaders do a much better job than others do at shredding and spreading. Consider risks versus reward when applying manure. If you are sinking all over and rutting up the field, what consequences will you pay for this later?

- Fertilizer application: Fertilizers are not cheap but they can help increase your volumes of hay per acre. Test your soil and target only the areas where it is needed.

- Haymaking methods: Of the farms studied, 100 percent were making some round bales for hay, while 86 percent only made round bales. Some of the reasons why making round bales is the method of choice in the northern regions include:
    1. Requires fewer people to bale.
    2. Bales can be left outside with little spoilage
    3. Baler can bale both dry and wet forages
    4. Easier and less expensive per ton to wrap compared to large squares
    5. Easy to feed and requires less equipment
    6. Easy to transport

- Quality over quantity: Making and feeding good hay are the cheapest ways for you to gain a profitable return on your cows. Cows need to achieve and maintain a certain body weight and condition in order to be able to handle the cold winter while remaining pregnant and growing a healthy calf. Aside from a quality-balanced mineral, she could be able to get everything she needs nutritionally if she has access to good quality hay.

- Tiling your land: One of the most beneficial ways to increase productivity of the land is to install tiles. Field tiles remove the excess water to a level where it will not interfere with plant root growth and development. Here are some of the benefits:
    1. Increased yields through less plant stress and diseases
    2. Earlier cropping start
    3. Reduced winter kill on hay stands
    4. Opportunity to use higher yielding legumes
    5. Improved conditions for harvesting
    6. Less soil compaction
    7. Less stress on equipment
    8. Opportunity for third cut or stockpiling

  Farms studied that were faced with higher land prices and competition to rent, quickly adapted with this practice in order to maximize the land they owned.

GENETICS:

- Pick the right bulls: Using good genetics with the right traits is very important. Strive to improve the herd by learning how to use EPDs (Expected Progeny Differences) and purchase bulls with

information on them. An average cow can still produce a good calf when using the best bulls available.

- Study the markets: What was interesting throughout this study was how different each area was as far as what breeds they were using. Breeds used had a direct influence on premiums at their local feedlots, and how much the local sales barn buyers paid.

- Crossbreeding: Take advantage of hybrid vigour to help produce cattle that are lower maintenance and that possess the desired traits for the marketplace. Keep in mind the birth weight and weaning weight of each breed when selecting.

- Bull per cow ratio: The textbook recommendation for a bull-cow ratio is typically one bull for 20 to 30 females. Mature bulls can handle up to 30 females and yearling bulls 20 females. Keep an eye on the health and overall condition of your bulls. If you are using your own replacement heifers, you will need to avoid inbreeding issues. Only one producer was testing semen quality on a regular basis. This was after a semen issue had cost the operation a small fortune in open cows. With a cost of just under $100 per bull, it is recommended that this practice be done annually to avoid costly surprises.

- Replacement heifers: Buying replacement heifers verses breeding and raising your own can be another way to improve your herd faster and cheaper. It can also help you adjust to market demands faster. In order to determine this, you will have to examine your genetic base as well as all related costs to raising and keeping heifers up to calving. You will also have to research if you can consistently have access to quality of heifers you require to fit your program and at what cost per unit. Producers that were purchasing replacements were paying anywhere from $1700 to $2400 per bred heifer. One producer had a five-year written agreement for a specific number of replacements with specific traits, at a predetermined price. This innovative idea can provide advantages to both parties. The seller has a better idea of what kind of heifers to prepare, as well as how many and at a price, he has accepted. The purchaser does not have to spend hours every year trying to locate the quality and quantity of replacements he requires. He also knows how much money to budget for.

- Biosecurity and disease control: This is an important practice to follow when introducing new cattle to the existing heard. You must follow strict measures by quarantining incoming cattle for a few weeks and watch for any disease outbreak. Your complete heard should also be up to date on vaccines. We recommend each farm contact their local veterinarian's office and set up a proper quarantine and vaccine program.

FARM BUILDINGS:

- Be creative: Usually when you purchase or own a farm for a while, there are a number of existing buildings in place. If you have moved or are considering moving to a later calving period and

might get away from calving in buildings, you will find yourself with some spare indoor real estate. Empty building space available is not a bad thing to have at your convenience.

Whether you are dealing with an existing building or you are designing a new one, do not be scared to think outside the box. Look at your existing operation and analyze what could help your operation run smoother and possibly save you money. As previously stated in this report, this region is exposed to extreme weather. This environment can take its toll on equipment when stored outside. Equipment that is stored outside will cost you more in repairs and down time. Extreme weather can also affect how well the producer can perform important tasks during certain times of the year.

One of the aspects that stood out the most from touring the farms in this study was the innovative ability that most producers had in order to create a best usage approach on existing buildings and in some cases on buildings recently built. Many of the buildings had more than one purpose. Older calving barns had been turned into well-organized handling and processing centres. Being able to adjust when the weather is not cooperating is crucial to being successful in the northern regions. Your buildings could help you.

- Heated workshop: One could argue that you do not need to have a heated shop in order to be successful at beef farming in the north and they may be right. Owning and heating a shop will cost you a certain amount of money depending on size and heat source. However, a good shop can also help your operation. Here are a few things to consider:
    1. Does your operation demand that you start a tractor often during the winter months? Starting a piece of equipment in very cold conditions is harder on it and can cause mechanical issues in the end. Northern climates can be extremely cold for long periods of time. This can create fuel gelling issues and urea freezing for the newer models.
    2. Are you or anyone on your operation mechanically inclined? Shop rates are usually high for some repairs. Some of them could be done at the farm. Winter months can also present an opportunity for your operation to go over some equipment and perform preventive maintenance.
    3. Are you innovative and creative? Farmers that we visited spent time in their shop creating or improving on gating systems, waterers, and many other aspects of their operation. This exercise usually leads to many work-related efficiencies that save the farm time and labour.

- Maintain and keep organized: Buildings are expensive to replace or repair once they have been neglected for too long. Keep them in good shape and they can last forever. Keep them clean and organized. This will help you keep track of what you have and where it is stored. This will also help you maximize the precious indoor space that is available to you.

MARKETING:

- Start today: Farmers might think that determining what they might get for their calves is something to start pondering in late summer. In reality, it is happening with every management decision you make regarding your herd. Here is list of the most prominent ones:
    1. What is the breeding base of the herd?
    2. How good are the bulls you use at creating the desired calves with the desired muscle structure?
    3. Do you make use of crossbreeding?
    4. Are your calves polled or dehorned?
    5. Are the bull calves castrated and when?
    6. Are calves fed with starter feed?
    7. Are the calves vaccinated properly?
    8. Do you use antibiotics on your calves?
    9. When do you wean before shipping?
    10. How uniform is your group of calves?
    11. Do you background your calves?
    12. How often do you contact potential buyers?
    13. Do you work with neighbouring farmers to fill more uniform loads?
    14. Does your farm have a good reputation for supplying quality calves?

- Markets change: Through the years, we have seen trends come and go. Some of them have stuck long enough for farms to benefit from financially. Keep current with what is happening in the marketplace. There is no benefit for you to supply a product no longer in demand.

- Distance to market: For most of the regions that we visited, farmers were selling their calves to a marketplace very far away. Distant markets mean a long truck ride for your calves and that can be expensive if not planned out. It was quite common for local farms to work together with a reputable trucker in order to fill bigger loads, with a more uniform group of calves, in order to save on trucking charges and attract a higher premium.

BUDGETING AND PLANNING:

- Know your numbers: Results from the surveys collected showed that many farms indicated that they would like to lower their production costs. Meanwhile, when asked if they knew what their productions costs were, only 15 percent total (Ontario and Québec combined) said they did.

- Put it in print form: You might think that you know your numbers by heart pertaining to your production costs and maybe you do. However, once you have them broken down in a visual format, you can really start to analyze your financial portrait. A practical way to do it is to have previous years' data side by side on each of the income and expense item lines. This way, you

can see if there is a variance from one year to the others. If there is a variance, then you already know the reason why. What change could have affected this outcome?

- Plan ahead: It is only once you have an accurate understanding of your current financial position that you can really begin to plan on how to proceed for future years. Budget ahead and follow your projected budget throughout the year to see how close you are to your plan. This will allow you to adjust quicker if you are heading off track. Remember, numbers do not lie.

PLEASE DO NOT FORGET TO ANSWER THE SURVEY!

THANK YOU!