



#08 October 2023

2022 Results

Executive Summary

The Canadian Cow-calf Cost of Production Network (COP Network), added more benchmark farms in 2022, to be comprised of 59 cow-calf and 3 dairy-beef benchmark farms created with participation from 225 producers across Canada. The benchmarks represent a variety of production systems, including variation in animal performance, economies of scale, labour productivity, feeding, and farm financials.

Since the original set of benchmark farms in the 2020 COP Network, efforts have been made to include production systems previously not represented, including larger herds (particularly in the west) and a broader range of farm sizes within the individual provinces. Some production systems are still unrepresented in the COP Network, including farms that feed primarily by-product feedstuffs, organic/regenerative farms, and grass finishing operations.

The COP Network provides detailed information to producers who have similar production systems as the benchmark farm. As such, data presented in the benchmark farms are different than other avenues of characterizing Canadian cow-calf production systems, such as the Farm Management Survey (FMS) and 2017 Western Canadian Cow-calf Survey (WCCCS).

Given the widespread drought conditions in 2021, data collected for the 2020 to 2022 production years also allow for comparison of production costs between a drought and non-drought years, particularly those related to feeding.

Key takeaways

Total average costs from the COP Network were \$1,638/cow in 2022. Of these, 59 per cent (\$972) were cash costs, 11 per cent (\$187) were depreciation, and the remaining 29 per cent (\$478) were opportunity costs.

Total cost in 2022 was up three per cent compared to 2021. While feed costs in western Canada eased lower with improved moisture conditions and yield compared to the 2021 drought year, the reduction in feed costs were more than offset by the overall elevated input costs.

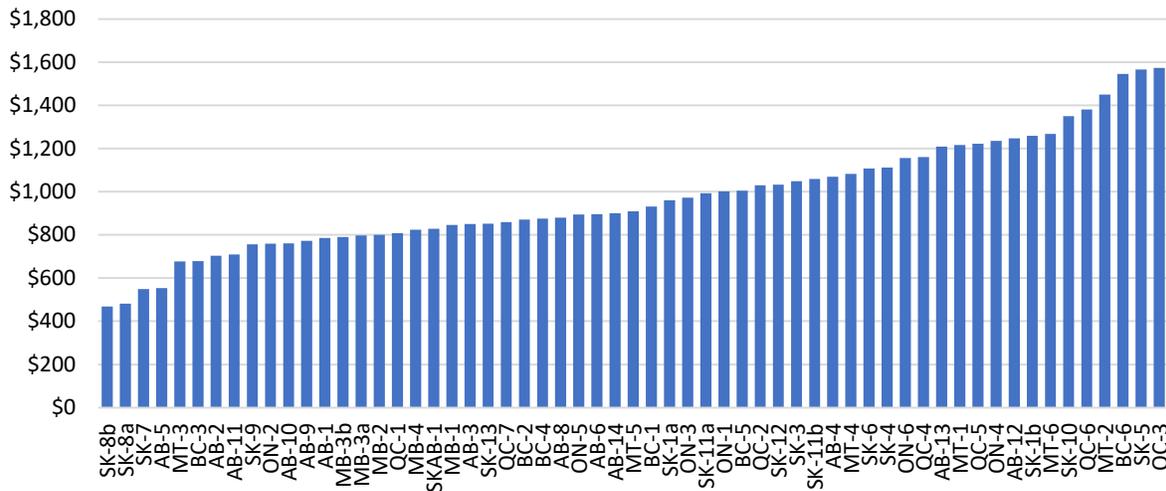
Total average revenue is estimated at \$1,341/cow, up 19 per cent from 2021 as a result of sharply higher cattle prices in the second half of 2022.

Profitability improved in 2022. Most (85%) farms covered short-term (cash) costs, as well as medium-term (cash and depreciation) costs (78%). About a third of farms (32%) were able to cover long-term (cash, depreciation, and opportunity) costs. This compares to 75 per cent covering short-term costs, 53 per cent covering medium-term costs and 10 per cent covering long-term costs in 2021.

Future of the COP Network

The value of the COP Network to producers is the opportunity to compare their current operation to a similar production system benchmark farm. As the first phase of data collection has wrapped up, the COP Network analysis team will transition its focus towards in-depth analysis, centered on Beneficial Management Practices (BMP) as well as farm competitiveness and profitability.

Figure 1b. Cash costs (\$/cow) on benchmark farms in 2022



Source: Canfax Research Services, COP Network

Inflation Year Considerations

In 2022, cow-calf producers were faced with high inflation rates. The effects of inflation should be considered when interpreting this data. There are a couple ways that producers can respond to inflation rates:

1. Lock in interest rates. This allows for a constant interest rate over the term of the loan. Ideally producers would lock in their interest rate early to obtain the lowest rate possible.
2. Prepurchase inputs well in advance before the growing season starts. Purchasing early to avoid increased prices and purchasing when the inputs are in lower demand.
3. Delay major purchases, to reduce the amount of debt and interest that is owned. As inflation subsides the cost of inputs, machinery and interest will reduce resulting in a better time to invest in larger purchases.

Geographic Locations

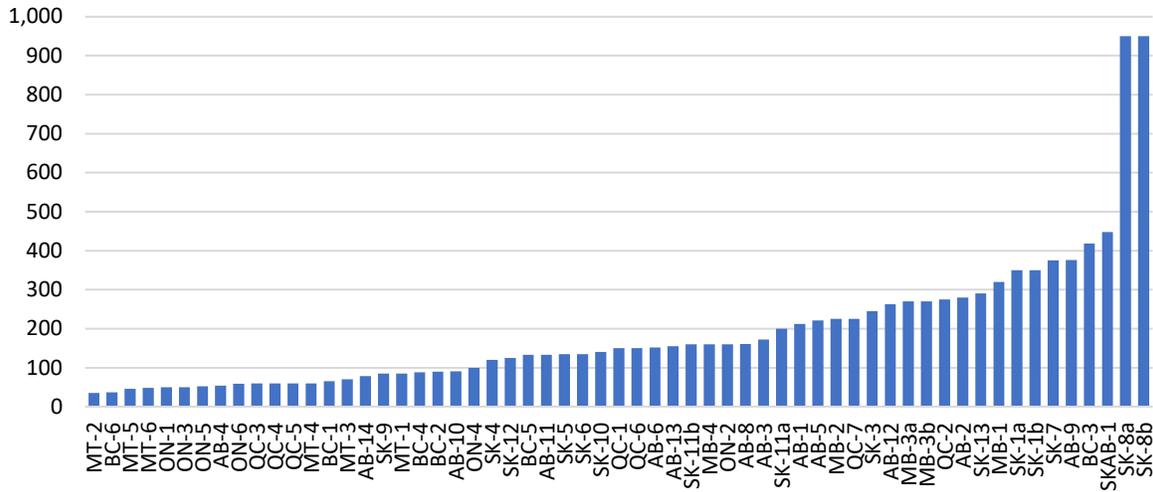
The benchmark cow-calf operations are distributed throughout the provinces in various ecoregions to provide national coverage. Fifty-eight percent of cow-calf benchmark farms (34 of 59) are in the prairies as this is where the majority (84%) of the beef cow herd is located. Oversampling in Eastern Canada is deliberate, to fill existing data gaps.

Herd Size

The 2022, herd sizes within the COP Network range from 35 head of beef cows (MT-2) to 950 head (SK-8a, SK-8b) (Figure 2). It is worth noting that the COP Network dataset is skewed towards small- and medium-sized farms with 36 per cent of the benchmark farms having fewer than 100 cows, 29 per cent between 100 to 200 cows, 20 per cent between 200 and 300 cows and 15 per cent over 300 cows.

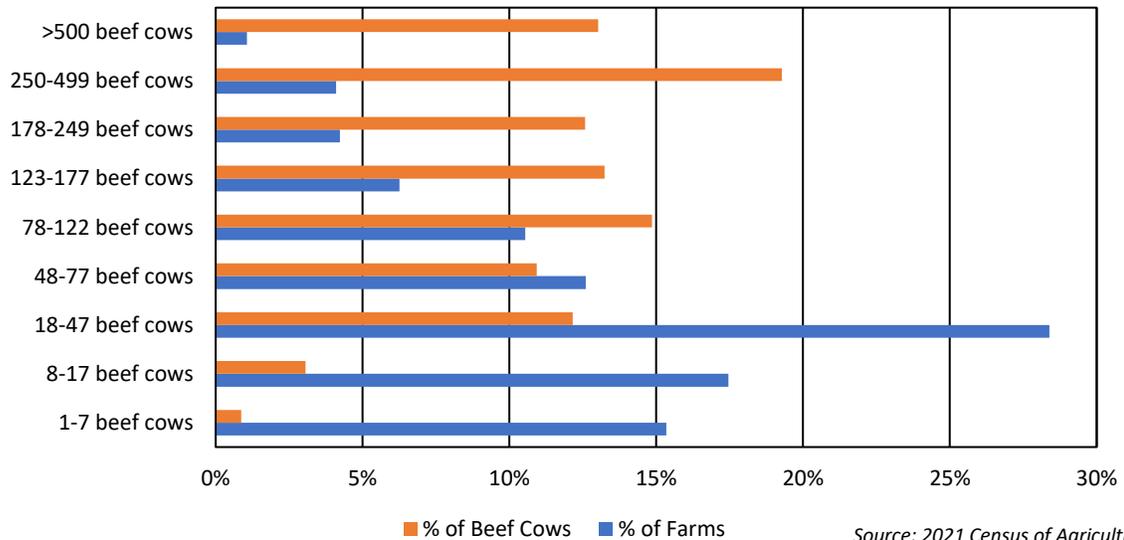
In comparison, according to the 2021 Census of Agriculture, farms with >250 beef cows account for five per cent of beef farms, and 32 per cent of the beef cow herd (Figure 3).

Figure 2. Beef cow herd size on benchmark farms



Source: Canfax Research Services, COP Network

Figure 3. Profile of Canadian beef cattle operations by beef cow herd size

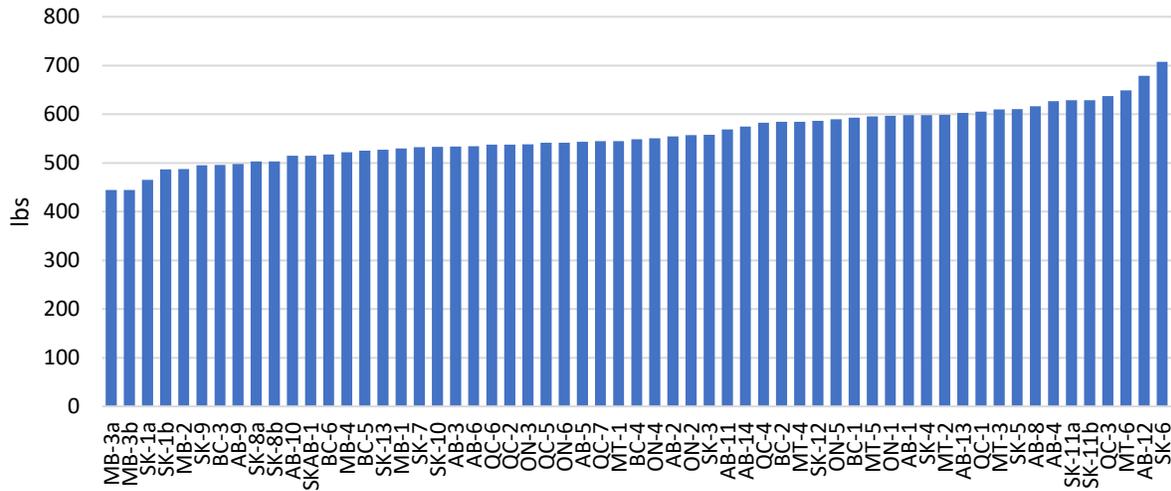


Source: 2021 Census of Agriculture

Animal Performance

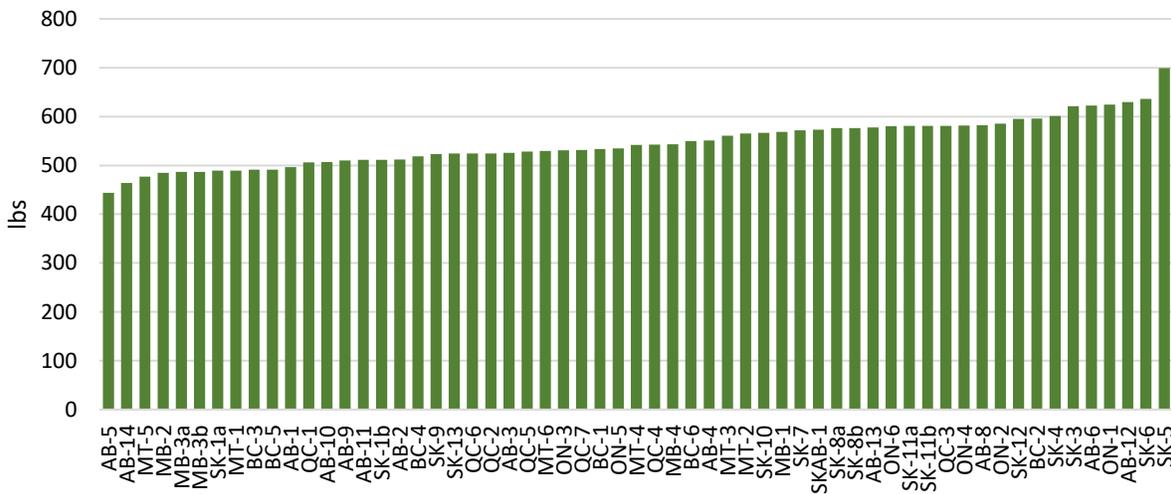
Animal performance metrics from the COP Network will be compared here to those from the 2017 FMS and WCCCS, where applicable. These comparisons provide an indication of the robustness of the COP Network dataset and highlight where differences in the data occur.

Figure 5a. Weaning weight (lb) on benchmark farms



Source: Canfax Research Services, COP Network

Figure 5b. 205-day adjusted weaning weight (lb) on benchmark farms

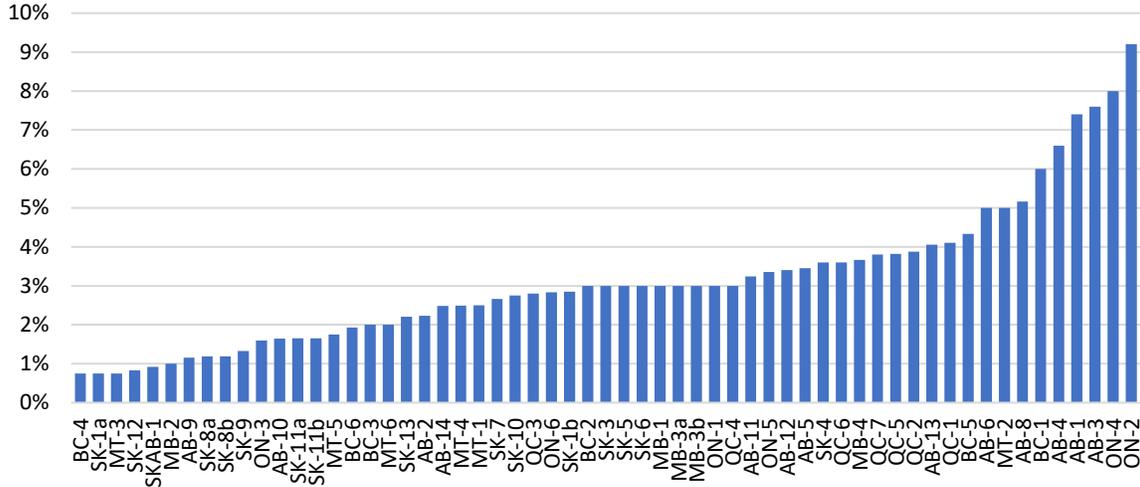


Source: Canfax Research Services, COP Network

Calf mortality and weaning rate

For the COP Network, calf death loss is calculated for calves from 24 hours old to weaning. Calf death loss averaged three per cent and ranged from as low as 0.75 per cent on BC-4, SK-1a and MT-3, to 9.2 per cent on ON-2 (Figure 6). On the latter farm, high death loss is related to large carnivore predation, illustrating the influence geographic region may have on this metric. It should be noted that reported calf mortality does not reflect calf losses within the first 24 hours, which may be positively or inversely related to death loss over 24 hours on an individual farm. This metric may also be skewed by herd size – two calves lost equates to a 10 per cent death loss in a herd with 20 calves, but only two per cent in a herd with 100 calves.

Figure 6. Calf mortality (%) on benchmark farms

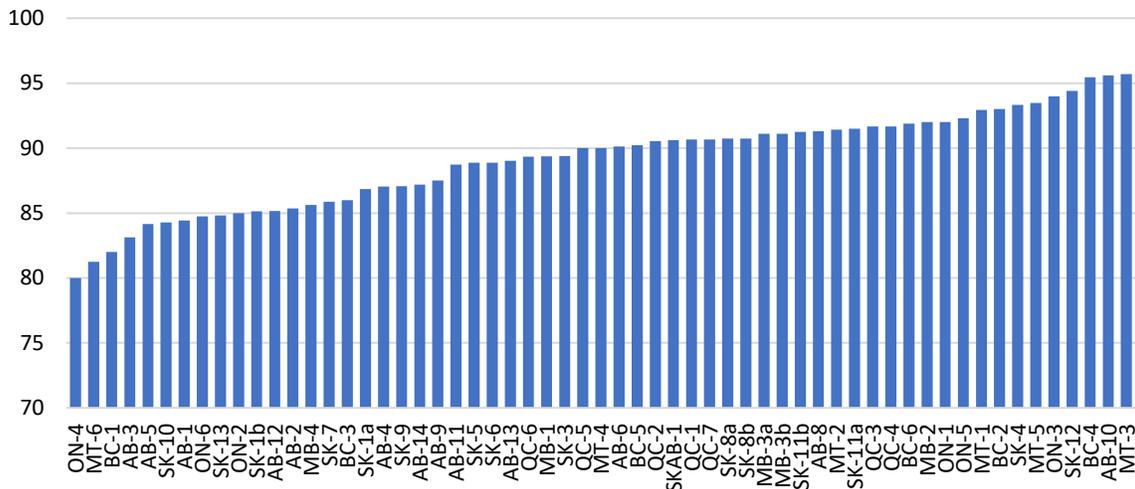


Source: Canfax Research Services, COP Network

The average weaning rate across all benchmark farms in the COP Network was at 89 calves per 100 cows. ON-4 had the lowest weaning rate at 80 calves per 100 cows, while AB-10 and MT-3 boasted the highest weaning rates at 96 calves per 100 cows.

It is worth noting that these figures were higher than the 2017 FMS, which reported average weaning rates of 81 per cent for cows and 72 per cent for heifers. The higher average weaning rates observed in the COP Network have the potential to positively impact farm profitability and may indirectly suggest greater profitability among operations participating in the COP Network compared to those within the 2017 FMS dataset.

Figure 7. Weaning rate (calves weaned per 100 cows) on benchmark farms



Source: Canfax Research Services, COP Network

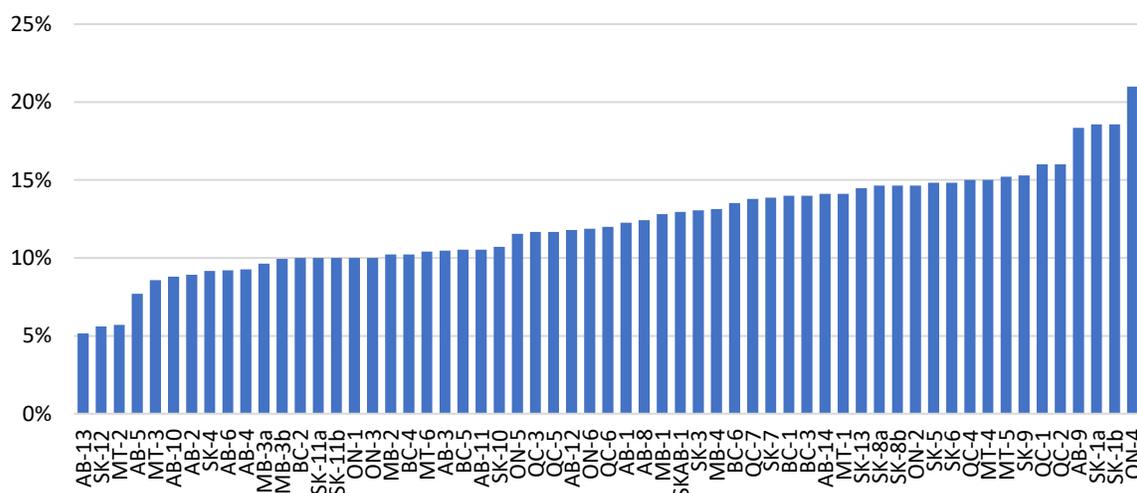
Replacement rate

The COP Network define replacement rate as the number of cull cows plus the number of cows that have died as a percentage of total cows on the operation (Agri Benchmark, 2015). Amongst the benchmark farms, the average replacement rate stood at 12 per cent, with a range from five per cent (AB-13) to 21 per cent (ON-4) (Figure 8). The 2017 WCCCS reported an average cull rate of 11.7 per cent, which closely aligns with the average replacement rate of 12 per cent within COP Network farms across Western Canada (B.C., Alberta, Saskatchewan, and Manitoba).

It is important to note that operations with higher replacement rates inherently maintain younger herds since cows are culled earlier after fewer reproductive years. Cows culled at a younger age tend to have a higher salvage value (Berger, 2014). Consequently, as cows age, their depreciation increases (Equation 1).

$$\text{Equation 1: Cow depreciation} = \frac{\text{Purchase price or Replacement cost} - \text{Salvage Value}}{\text{Productive years in the herd}}$$

Figure 8. Replacement rate (%) on benchmark farms



Source: Canfax Research Services, COP Network

Cow-calf profitability

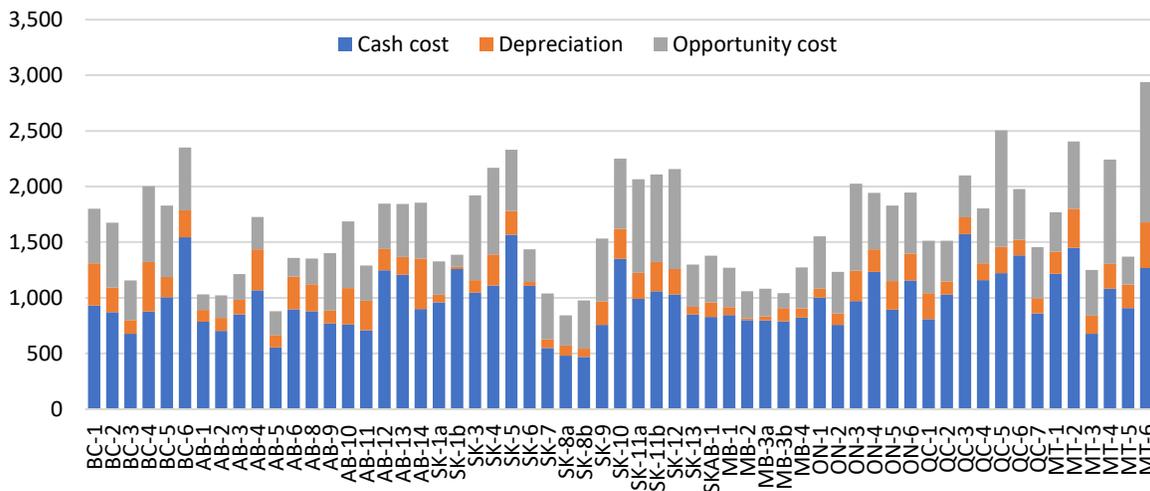
Nationally, average total production costs were \$1,638/cow in 2022. This ranged from a low of \$843/cow for SK-8a to \$2,937/cow for MT-6. When it came to cash costs, the range spanned from \$469 per cow for SK-8b to \$1,573 per cow for QC-3, with an average of \$972/cow.

While sample sizes are still small and therefore not representative of a true provincial average, the highest total costs were seen in the Maritimes (\$1,996/cow) and Quebec (\$1838/cow), and the lowest in Manitoba (\$1,145/cow) and Alberta (\$1,423/cow). Cash costs were highest in Quebec (\$1,147/cow) and the Maritimes (\$1,100/cow), and lowest in Manitoba (\$812/cow) and Alberta (\$872/cow). (See Figure 9 for a more detailed breakdown of per cow cash, depreciation, and opportunity costs by individual farm).

In 2022, average total costs increased by three per cent from the 2021 average, rising from \$1,586/cow to \$1,638/cow for the 59 benchmark farms. Cash, depreciation, and opportunity costs saw respective increases of two per cent, 10 per cent and five per cent. This surge in costs, particularly in cash costs, can be largely attributed to the inflation experienced in 2022.

Regionally, in western Canada, total production costs remained relatively stable compared to 2021. Feed costs eased lower with drought relief, which offset the increase in other input costs like fertilizer and fuel. In the East, however, total production costs surged by nine per cent compared to 2021.

Figure 9. Cash, depreciation, and opportunity costs (\$/cow) on benchmark farms in 2022

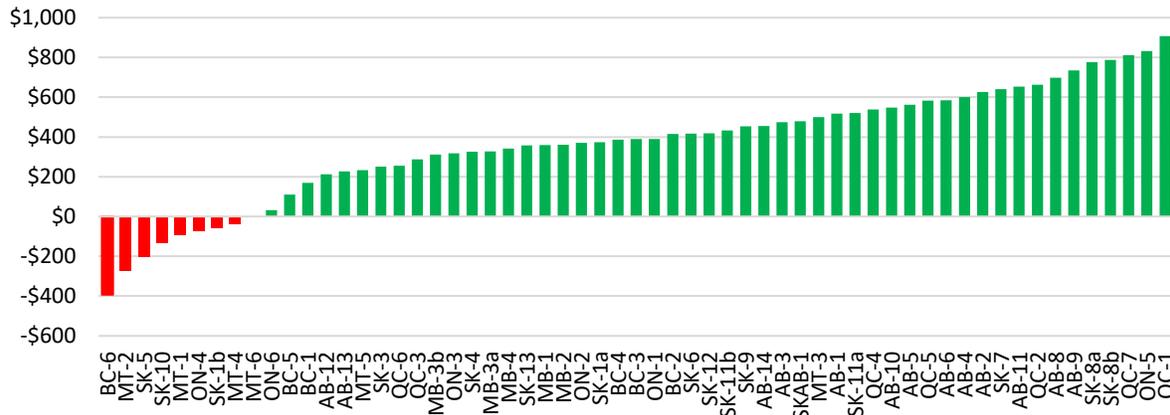


Source: Canfax Research Services, COP Network

In 2022, the average total revenue was \$1,341 per cow, up a significant 19 per cent from the previous year's \$1,122. This surge in revenue can be primarily attributed to sharp increase in cattle prices during the second half of 2022. It is worth noting that the extent of revenue increase varied for each benchmark farm, influenced by the timing of cattle sales throughout the year.

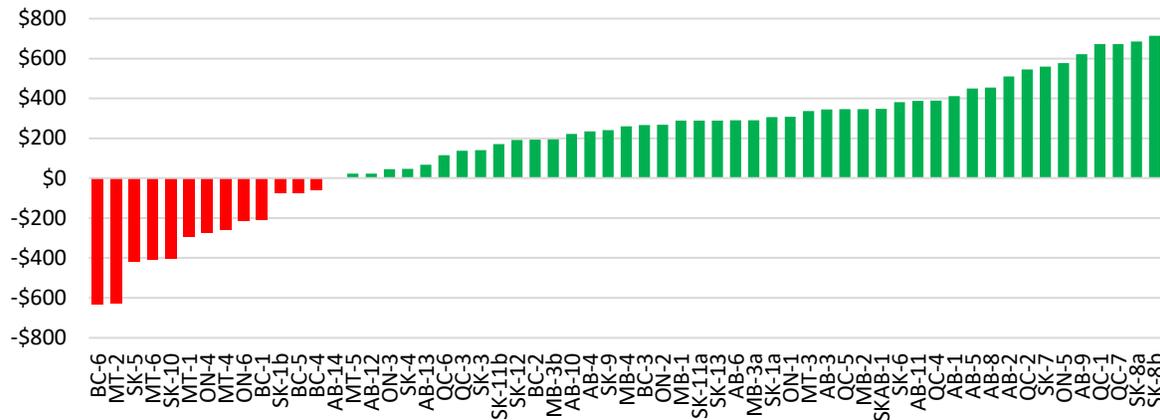
The 19 per cent increase in revenue had more than offset the modest three per cent rise in average total production costs, resulting in an improvement in profitability from 2021 to 2022. In 2022, 85 per cent of benchmark farms (50 of 59) managed to cover short-term (cash) costs (Figure 10a), with 78 per cent (46 of 59) also covering medium-term (cash and depreciation) costs (Figure 10b). About a third (32%) of farms (19 of 59) were able to cover long-term (cash, depreciation, and opportunity) costs (Figure 10c). This marks a notable improvement in profitability compared to 2021 when only 10 per cent of farms (6 out of 59) could cover their long-term costs (Figure 11).

Figure 10a. Short-term profits (returns less cash costs) (\$/cow) on benchmark farms in 2022



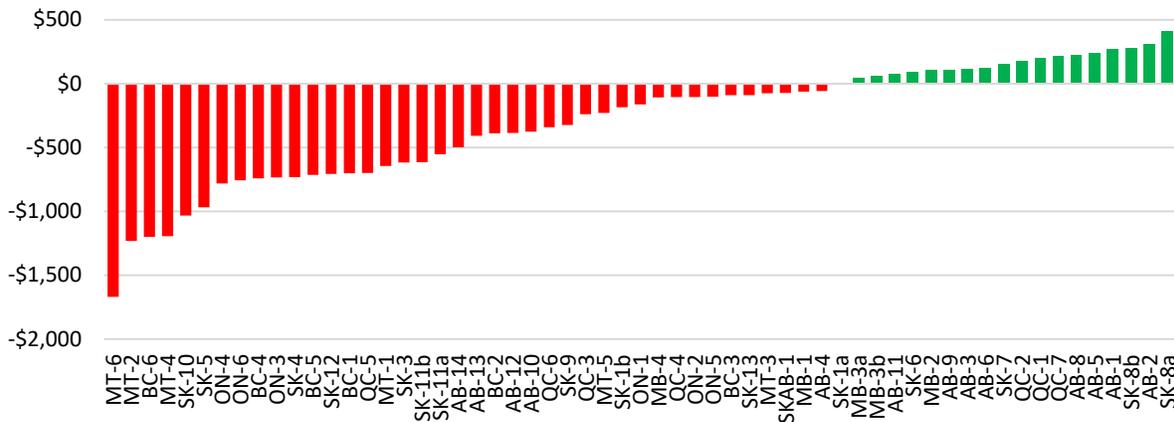
Source: Canfax Research Services, COP Network

Figure 10b. Medium-term profits (returns less cash and depreciation costs) (\$/cow) on benchmark farms in 2022



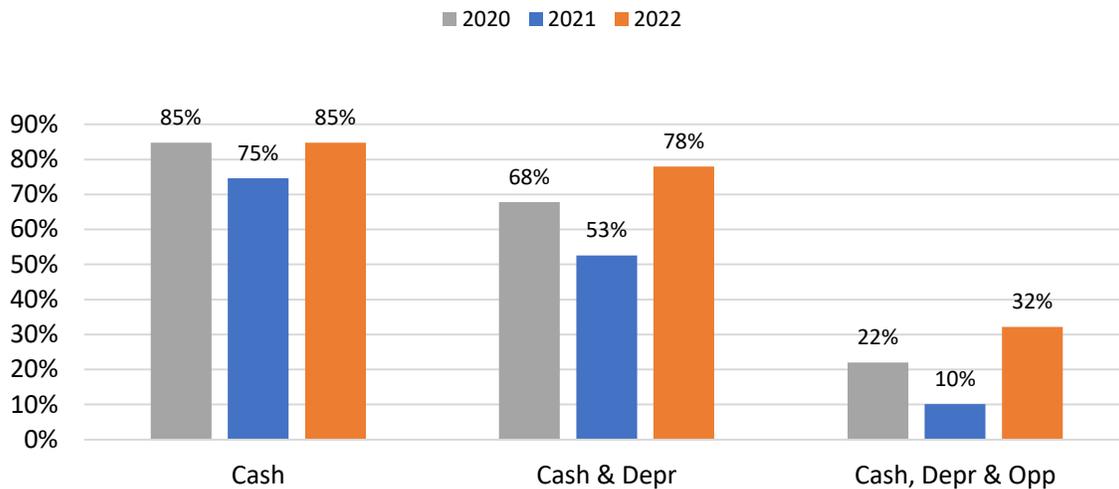
Source: Canfax Research Services, COP Network

Figure 10c. Long-term profits (returns - cash, depreciation, and opportunity costs) (\$/cow) on benchmark farms in 2022



Source: Canfax Research Services, COP Network

Figure 11. Percent of benchmark farms covering short-term (cash), medium-term (cash and depreciation), and long-term (cash, depreciation and opportunity) cost, 2020-2022



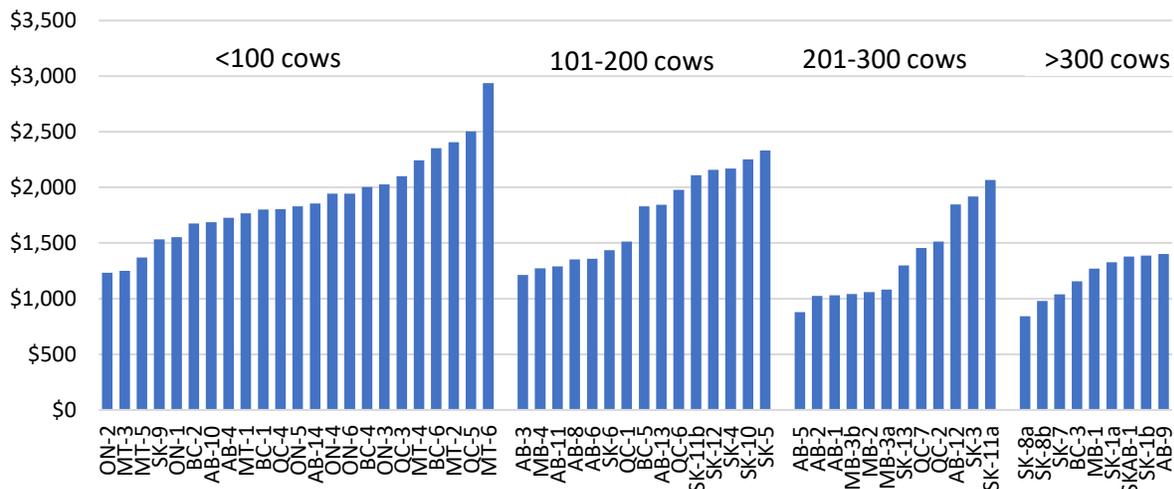
Source: Canfax Research Services, COP Network

Economies of Scale

Economies of scale are defined as decreasing production costs with increasing units of output. For farms within the COP Network, the economies of scale are clear: larger herd sizes consistently yield lower production costs per cow (Figure 12). Each herd size category shows an upward sloping curve, indicating opportunities for improvement in per cow costs within each group.

It is worth noting that even among the small-herd category, certain benchmark farms achieve total costs comparable to the larger operations. This means that it is possible for a small herd with fewer than 100 head to compete cost-effectively with larger operations. The key takeaway is to focus on getting better before you get bigger.

Figure 12. Total cost (\$/cow) by herd size on benchmark farms in 2022



Source: Canfax Research Services, COP Network

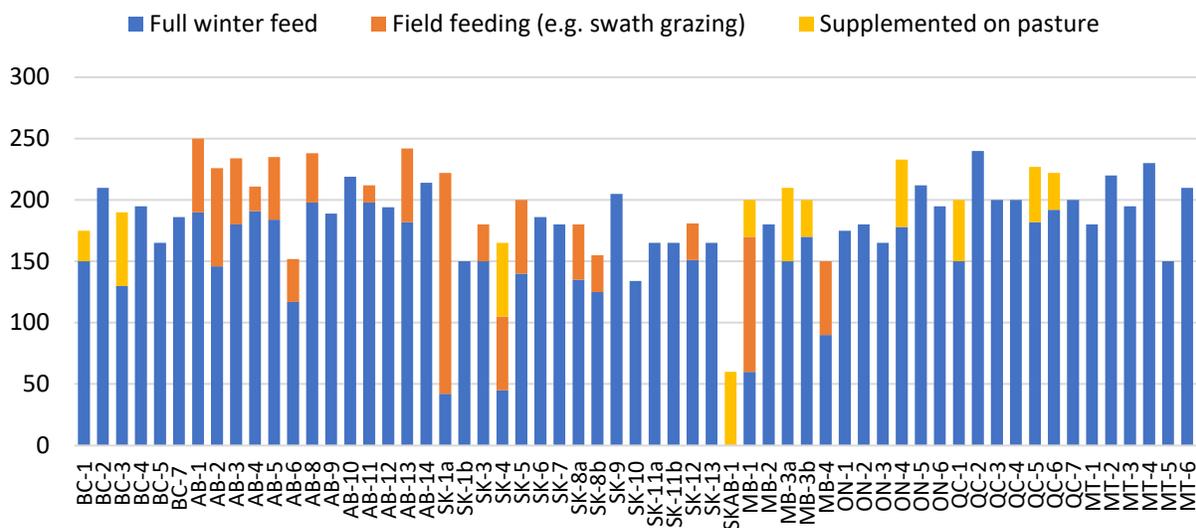
Winter Feeding Systems

Winter feed rations are a key part of cow-calf operations and are typically one of the highest costs incurred. The model uses the winter feed rations to calculate feed requirements and costs. Cost of production is used for homegrown feed and market value for any purchased feed. As rations are entered “as fed,” including moisture content, this may introduce error into the data, as moisture content of feedstuffs can vary with stage of maturity, weather and climate, and harvest conditions. All rations used were reviewed by a nutritionist familiar with regional weather conditions and the various feed ingredients used.

Winter feeding days

Total winter-feeding days on farms in the 2022 COP Network ranged from 60 days (SKAB-1, a year-round grazing operation) to 250 days (AB-1) (Figure 13). Total winter-feeding days include field feeding, supplementation on pasture, and full winter feeding. Forty-five per cent of the farms in the COP Network (27 of 59) used field feeding/extended grazing practices, such as swath or corn grazing, and/or supplemented animals with a partial ration on pasture, in addition to full winter feeding.

Figure 13. Winter feeding days on benchmark farms



Feed costs

A large proportion of cow-calf producers’ total cost of production is associated with winter feed costs. Winter feeding costs in 2022 were also influenced by drought recovery and inflation costs.

Cost of purchased feed and fertilizer, seed, and pesticide for producing homegrown feed averaged at \$302/cow for the benchmark farms in 2022, down 14 per cent from 2021 as expenses on purchased feed reduced significantly in the West with improved moisture conditions and yield compared to 2021.

However, when machinery cost and fuel are taken into account, the average approximate feed cost¹ is estimated at \$590/cow, steady with 2021. The approximate feed costs made up 37 per cent of total costs (cash + depreciation + opportunity costs) and 51 per cent of medium-term costs (cash costs + depreciation) in 2022. Compared to 2021, feed costs in western Canada have declined six per cent, as the provinces recovered from the drought, masking the costs of inflation. Although eastern Canada did not experience the drought and are now faced with inflation rates driving their feed cost up 14 per cent compared to 2021.

Average daily feed cost in 2022 was estimated at \$3.17/head/day, compared to \$3.23/head/day in 2021. The daily feed cost is calculated as approximate feed cost divided by total winter-feeding days, assuming the majority of the costs for feeding and feed productions are related to the winter-feeding period for most benchmark farms except the year-round operation.

The lowest daily feed cost in 2022 was observed in AB-9, at \$1.70/head/day (Table 1). Winter feeding on this farm consists of 189 days on hay and grain; only 1.4% of feedstuffs were purchased. The highest daily feed costs were \$8.49/head/day on SKAB-1 which is a year-round grazing group. The high daily feed cost of this farm was partly driven by the use of 100% purchased hay and elevated hay prices in 2022. But more importantly, the number was likely overestimated due to the short winter-feeding period. For a year-round grazing operation costs on machinery, fuel and land would be more likely to be related to grazing management. Also, SK-1b had high costs at \$6.70/head/day, where winter feeding consists of 150 days on purchased hay.

Table 1. Winter feeding systems on benchmark farms in 2022

	Winter feeding days	Daily feed cost (\$/head/day)	Primary feedstuff
BC-1	175	\$ 4.94	Hay
BC-2	210	\$ 3.20	Hay
BC-3	190	\$ 1.96	Hay
BC-4	195	\$ 3.81	Hay
BC-5	165	\$ 3.47	Annuals/Hay
BC-6	186	\$ 5.90	Hay
AB-1	250	\$ 1.91	Annuals/Hay/Silage
AB-2	226	\$ 1.91	Annuals/Hay/Silage
AB-3	234	\$ 2.24	Annuals/Hay/Silage
AB-4	211	\$ 4.09	Annuals/Hay
AB-5	235	\$ 1.88	Annuals/Hay/Silage
AB-6	152	\$ 3.92	Annuals/Hay
AB-8	238	\$ 3.47	Annuals/Hay/Silage

¹ Approximation of Feed Cost is calculated as feed cost (purchase feed + fertiliser, seed and pesticides for feed production) + machinery cost (machinery maintenance + depreciation + contractor) + fuel, energy, lubricants and water.

AB-9	189	\$ 1.70	Hay
AB-10	219	\$ 2.11	Hay
AB-11	212	\$ 2.53	Annuals/Hay
AB-12	194	\$ 2.77	Hay/Silage
AB-13	242	\$ 2.66	Annuals/Hay
AB-14	214	\$ 3.29	Hay
SK-1a	222	\$ 3.01	Annuals/Hay
SK-1b	150	\$ 6.70	Hay
SK-3	180	\$ 2.61	Annuals/Hay
SK-4	165	\$ 4.06	Annuals/Hay
SK-5	200	\$ 3.46	Annuals/Hay/Silage
SK-6	186	\$ 2.39	Hay/Silage
SK-7	180	\$ 1.77	Hay/Silage
SK-8a	180	\$ 1.78	Annuals/Hay
SK-8b	155	\$ 2.01	Annuals/Silage
SK-9	205	\$ 2.39	Annuals/Hay
SK-10	134	\$ 5.10	Hay
SK-11a	165	\$ 3.74	Annuals/Hay/Silage
SK-11b	165	\$ 3.84	Annuals/Hay/Silage
SK-12	181	\$ 3.58	Annuals/Hay
SK-13	165	\$ 3.43	Annuals/Hay
SKab-1	60	\$ 8.49	Hay
MB-1	200	\$ 2.13	Annuals/Hay
MB-2	180	\$ 2.43	Annuals/Hay/Silage
MB-3a	210	\$ 2.70	Annuals/Hay
MB-3b	200	\$ 2.88	Annuals/Silage
MB-4	150	\$ 2.05	Annuals/Hay
ON-1	175	\$ 2.69	Hay/Silage
ON-2	180	\$ 2.30	Hay
ON-3	165	\$ 2.64	Hay/Silage
ON-4	233	\$ 2.80	Hay/Silage
ON-5	212	\$ 2.66	Hay/Silage
on-6	195	\$ 3.67	Hay
QC-1	200	\$ 2.50	Hay
QC-2	240	\$ 2.88	Hay
QC-3	200	\$ 5.72	Hay
QC-4	200	\$ 4.12	Hay
QC-5	227	\$ 3.02	Hay
QC-6	222	\$ 3.46	Hay

QC-7	200	\$ 2.59	Hay/Silage
MT-1	180	\$ 4.40	Hay
MT-2	220	\$ 3.52	Hay
MT-3	195	\$ 2.21	Hay
MT-4	230	\$ 3.13	Hay
MT-5	150	\$ 2.52	Annuals/Hay/Silage
MT-6	210	\$ 3.22	Hay

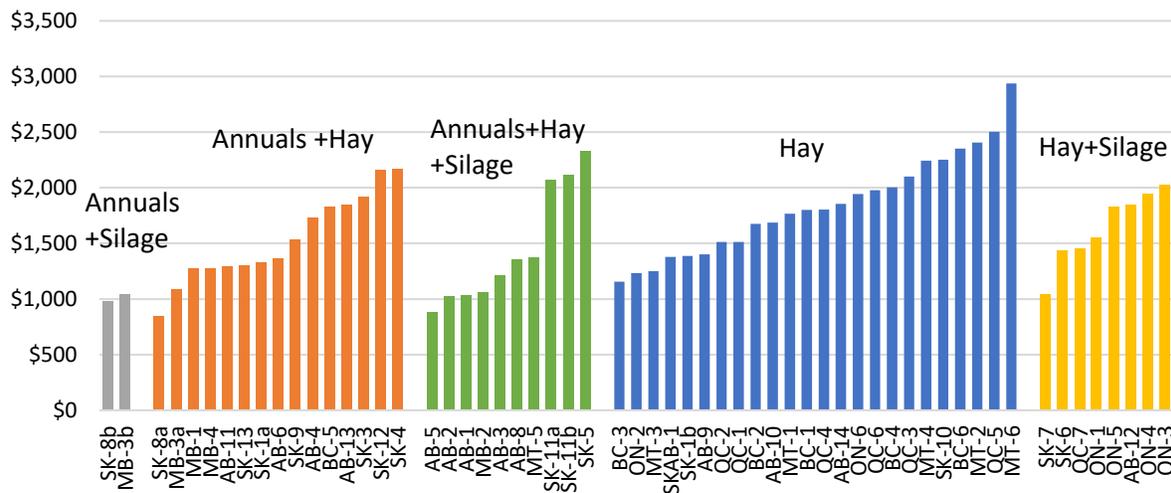
Benchmark farms were also categorized by primary forage of the winter diet. These were:

- Annuals: include greenfeed, straw, swath graze, corn graze, crop residues
- Hay: includes dry hay, haylage, grass silage
- Silage: includes oats silage, barley silage, pea silage, corn silage

Figure 14 presents the total production cost associated with each primary winter feedstuff. Hay stands out as the most prevalent choice among winter feed ingredients. Importantly, it is evident that farms employing any type of feedstuff can potentially fall into the high-cost or low-cost categories. In other words, high costs can occur in any feeding system, just as the potential for low costs is not limited to any specific feedstuff.

While there were no benchmark farms in the COP Network that fed primarily by-products, this is a potential area for future study, with growing research into processing and animal performance when using by-products.

Figure 14. Total costs (\$/cow) by primary feedstuff on benchmark farms in 2022



Source: Canfax Research Services, COP Network

Operation Finances

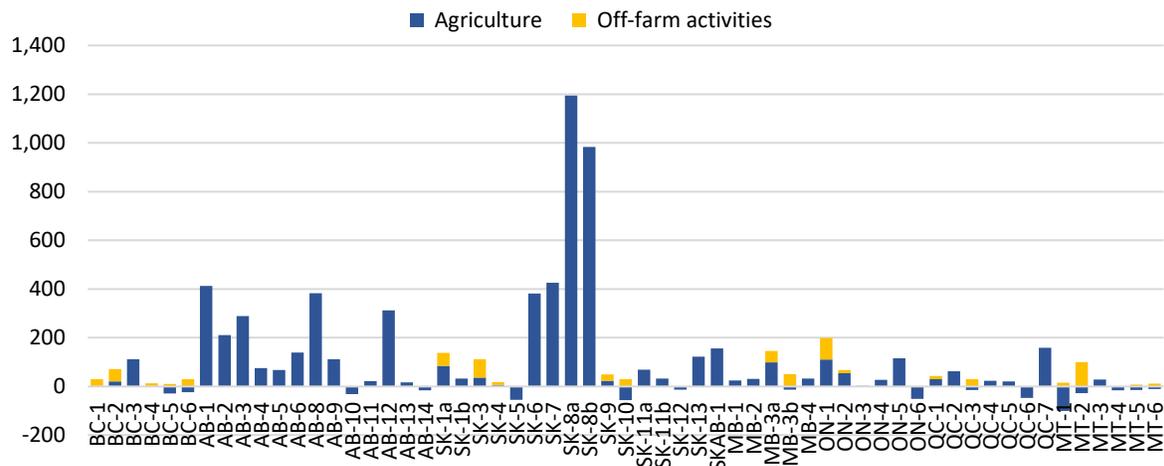
Off-farm income versus farm income

The COP Network consists of benchmark farms at various stages, including startups, medium, and mature ones. Across this spectrum, farm operators often explore diverse income streams through a combination of on-farm activities and supplementary off-farm income.

Of the farms within the COP Network, 29 per cent (20 of 59) generate both agricultural and off-farm income (Figure 15). The remaining farms primarily rely on on-farm income. Eight of these 20 farms with dual income sources relied on off-farm income to relieve the deficit of an unprofitable cow-calf enterprise and/or whole-farm operation in 2022.

In 2022, SK-8a and SK-8b continued to stand out with the highest agricultural income. This was primarily attributed to the large herd size and diversified farm enterprises. Both farms have beef cows and retain ownership enterprises, while SK-8a also has a cash crop enterprise.

Figure 15. Off-farm income versus farm income (\$1,000 CDN/year) on benchmark farms in 2021

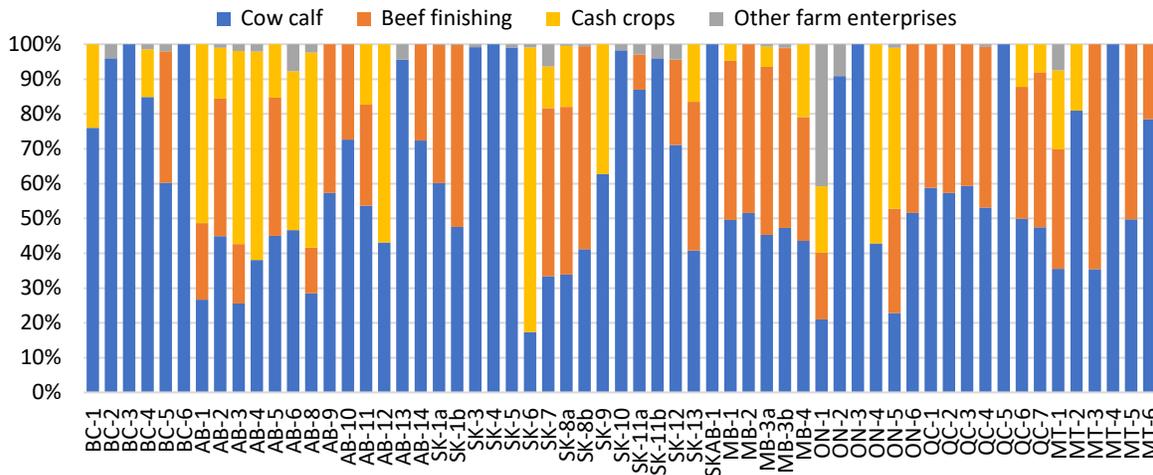


Source: Canfax Research Services, COP Network

Enterprise revenue

Diversification of income is often used as a risk management tool on cow-calf operations. As many farms operate multiple enterprises, whole-farm revenue can be broken down as such. Figure 16 shows the percentage of farm revenue attributed to the different farm enterprises on each benchmark farm. To calculate the costs of each enterprise, generic allocation was used for overhead costs. This method splits overhead costs based on the percent revenues from each enterprise. The main concern is that all the overheads are covered by a mix of commodities rather than each enterprise paying its own way. For more information on generic allocation, refer to the [Methodology Fact Sheet](#).

Figure 16. Breakdown of farm revenue (% of total) by farm enterprise on benchmark farms in 2022



Source: Canfax Research Services, COP Network

Seven farms in the 2022 COP Network received 100 per cent of income from the cow-calf enterprise. The cow-calf enterprise accounted for ≥ 50 per cent of whole-farm revenue on 44 per cent of farms (26 of 59), and 25-50 per cent of income on 39 per cent of farms (23 of 59). Only three farms (SK-6, ON-1 and ON-5) operated a cow-calf enterprise that accounted for ≤ 25 per cent of whole-farm revenue. Sixty-one per cent of farms also ran a retained ownership (pre-conditioning, yearling grasser, backgrounding, finishing) enterprise (36 of 59), 46 per cent produced cash crops (27 of 59), and 47 per cent had some other farm income (contract work, lease, etc.) (28 of 59).

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