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Profits Through the Supply Chain

THE PROFIT CYCLE

It is challenging, but not unheard of, for all sectors of the supply chain to be profitable at the same time, as the output from one sector (e.g. feeder or fed cattle) are the inputs for the next. So that high prices received in one place, imply higher costs for another. In addition, as the cattle cycle progresses leverage shifts up and down the supply chain. Each sector has experienced times of abnormally large margins and abnormally large losses. This stresses the importance of risk management and protecting equity at every stage (e.g. cow-calf, feedlot, packer).

The cattle cycle occurs as producers respond to the profit cycle which is impacted by supply and demand at each stage in the supply chain. The broader industry situation of being in a supply push or demand pull situation can vary from one stage of the supply chain to another as bottlenecks occur in the system. In addition, inflation and input costs can occur faster than output prices at different rates for each sector, impacting profitability.

Pricing and Assumptions

Canadian cattle producers throughout the entire supply chain are known as price takers – that is, individual Canadian beef producers have no influence on market price at any stage of supply. The price for calves and fed cattle are set in the larger U.S. marketplace. Feeder and calf prices are impacted by feedlot willingness to pay driven by the live cattle futures, exchange rate, basis, and local feed costs.

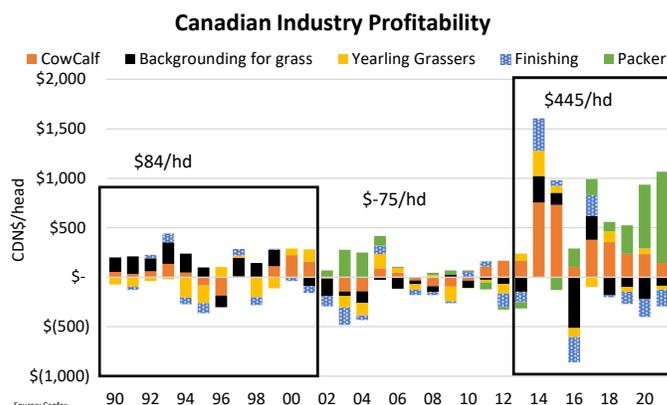
Analysis throughout this Fact Sheet assumes no risk management strategies are employed: either in the form of forward contracting, private agreements between seller and purchaser, or western livestock price insuranceⁱ. It should be recognized that some sectors, such as the feedlots, have employed sophisticated risk management strategies in recent years to support margins.

The modelled profits presented here are averages for each sector, recognizing that significant variation is present

throughout the supply chain. Estimates for labour, land and capital costs are included, therefore these reflect total costs (cash, depreciation, and opportunity costs). It should be remembered that opportunity costs put a market value return to land, labour and capital; and therefore, margins with total costs are driven to zero in a competitive sector with low barriers to entry.

INDUSTRY PROFITABILITY

Several factors determine sector and sub-sector profitability within the beef industry. Some of these factors are economies of scale and how production systems impact input costs and competitiveness.



Industry profitability has been cyclical for some sub-sectors more so than others. Intermediate steps in the beef supply chain appear to fluctuate between profit and loss annually, while cow-calf operations and packing plant profits follow more closely with the cattle cycle in the last 20 years.

Total margins throughout the supply chain averaged \$84 per head from 1990 to 2001. From 2002 to 2011, little opportunity existed for profits within the supply chain, as the consequences of BSE rippled through the industry. Industry-wide net losses were seen in seven out of ten years with average net losses of \$75 per head. From 2012 to 2021, average industry wide profits increased to \$445 per head. Industry margins will need to continue to increase in order to keep up with inflation and interest

rates; and to keep the Canadian beef cattle sector competitive.

Average Profit by Sector			
\$/head	90-01	02-11	12-21
Cow-calf (AB)	46.63	-31.15	326.54
Background for Feedlot	219.12	36.37	112.20
Background for Grasser	103.83	-64.87	-68.76
Yearling Grasser	-50.52	-25.89	18.62
Finishing (AB cash)	-17.30	-24.68	-39.61
Packer	N/A	71.57	208.48

Cow-calf operations have been profitable for most of the 1990's as well as the second half of the 2010's. Winter backgrounding operations were profitable for most of the 1990's, however since 2000, consistent profitability has not been seen in winter backgrounding operations; as there have only been four years of profit in the 23 years since 2000. Yearling grassers have alternated between profits and losses inconsistently since 2000. Combining winter backgrounding activities with summer grass activities and selling 925 lb grass yearlings, rather than 700 lb winter backgrounded cattle resulted in average net losses of \$50.15 per head from 2012 to 2021. Backgrounding cattle for the winter to a selling weight of 800 lbs, to go straight into a finishing feedlot in the spring resulted in opportunities for profitability averaging \$112 per head during the same time. Retained ownership of backgrounded cattle to put on additional weight provides additional profitability opportunities.

The feedlot industry typically cycles between large financial losses and small financial losses, with generally small, annual profits interspersed. The exception was 2014, when profits approaching \$330 per head were seen (on a cash sale). Specific quality or branding premiums provided to feedlot producers through the use of AMA'sⁱⁱ and other risk management strategies have been increasingly important in the last decade. There can be a case made that risk management strategies has supported profitability in this sector, given the expansion of bunk capacity reported.

Packing plants also saw consistent profits in the last half of the 2010's. Excessive profits were estimated in 2020 and 2021, averaging over \$800 per head (Grier, 2022). Grier (2022) estimated that packing plants share of the beef retail value increased from 51 per cent in 2016 to 59 per cent in 2021. Canfax estimates put average packer profits for the last ten years at \$208 per head and average 20-year profits at \$140 per head.

COW-CALF

Throughout the beef supply chain, the output of one sector is used as an input for another sector, with the exception of the cow-calf sector. Revenues are determined by averaging a six-week window in October and November of all Alberta auction mart prices. Costs are calculated at market value with homegrown feed at market prices, pasture at \$1 per cow per day, and current labour rates (therefore providing a market value return to land and labour). Costs include hay, barley, supplement, summer grazing, herd depreciation, veterinary services, medications, yardage, labour, building maintenance and equipment depreciation. Assuming a 95% reproductive efficiency and 5% death loss.

The Canadian cow-calf sector has seen significant profit margins, on average, in the last 10 years. International demand for beef in the second half of 2013, through 2014 and into the first half of 2015 drove up prices for feeder cattle through 2014 to January 2016. This allowed record profits to be realized for two years for cow-calf producers.

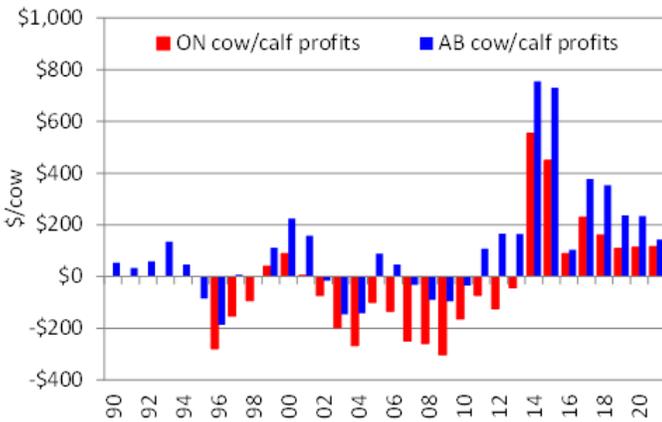
During these two years, however, heifers approached 50 per cent of fed slaughter and heifers that otherwise would have been kept back for replacement breeding animals were moved into feedlots, as cow-calf operators weighed future revenue potential from replacement heifers against the present value of heifers being sold to feedlots.

Average Feeder Heifer Price			
\$/cwt	2017-21	2012-21	2002-21
AB 550 lb heifers	192.34	193.63	151.40
AB 850 lb heifers	167.94	166.83	131.46
ON 550 lb heifers	179.11	183.31	144.36
ON 850 lb heifers	155.28	156.96	125.38

Alberta

Alberta costs were estimated using: a 1200 lb cow weaning a 550 lb calf. For the past five years, average Alberta cow/calf net returns have been above \$200 per cow; but with a steady decline since 2017. Evolving management strategies and an ability to take advantage of market signals has enabled these producers to maintain positive profits in 23 of the last 32 years; of which two of those years were severely impacted by BSE. Average Alberta cow-calf net returns from 1990-2021 were \$110 per cow assuming a calf weaning weight of 550 lbs.

AB & ON Cow/Calf Returns



Source: Canfax Research

Ontario

Using the same revenue and cost structure, Ontario cow-calf returns are estimated assuming a 1,500 lb cow weaning a 575 lb calf. This reflects regional differences in management practices between Alberta and Ontario producers. Ontario cow-calf returns averaged \$148 per cow since 2017, after two years of record high profits in 2014 and 2015.

Ontario cow-calf producers appear more vulnerable to the cattle cycle/ profit relationship; and have not been able to maintain profit margins to the same degree as their western counterparts. Ontario cow-calf producers saw financial profits in only 11 out of 26 years since 1996. Average Ontario cow-calf net returns from 1996-2021 were -\$21 per cow. During the same time, Alberta cow-calf net return averaged \$126 per cow.

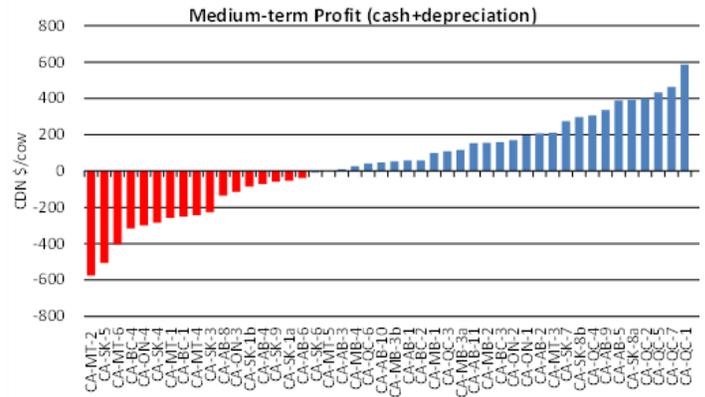
	Average Cow/calf Returns		
\$/head	2017-21	2012-21	2002-21
Alberta	269.36	326.54	147.70
Ontario	145.85	165.39	-8.12

COP Network

There is a lot of variation in the cow-calf sector, that is shown in the Canadian Cow-Calf Cost of Production Network (COP Network). The COP Network provides benchmarks for different production systems, operating in different environmental conditions across the country.

The COP Network reported that in 2021 the top third of benchmark farms had break-evens 23 per cent lower than the bottom two-thirds with a difference of \$564 per cow in medium term profits (cash and depreciation) from a profit of \$320 per cow for the top-third to a loss of \$244 per cow

for the bottom third. Cost control is critical for this sector, and this is where most variation is seen.



Source: agri benchmark

On average cow-calf operations have total costs broken down into 61 per cent as cash costs, 10 per cent as depreciation and 28 per cent of costs are opportunity costs (unpaid labour, land and capital). Opportunity costs are about getting the market value return to investment in land, labour and capital. When operations are covering medium-term costs (cash and depreciation) they are making an accounting profit. But anything less than covering total costs, including opportunity costs, indicates a lower than market value return to assets.

The COP network shows that in 2021 most operations (79 per cent) were covering short-term (cash) costs, approximately 57 per cent were covering medium-term (cash and depreciation) costs, but only a few (12 per cent) are covering total costs (including opportunity costs).

BACKGROUNDING

The backgrounding industry is typically a small margin industry. Profitability is influenced by both spring and fall seasonal price trends. For this analysis, backgrounded cattle are assumed to have an in-weight of 480 lbs. Backgrounding activities were segregated into four sub-sectors:

1. winter backgrounding where the cattle are sold into a feedlot the following spring at 800 lb;
2. winter backgrounding to sell into the yearling grasser market at 700 lb;
3. purchase of feeders in the spring at 700 lbs to take to grass, selling at 850 lb or 925 lbs;

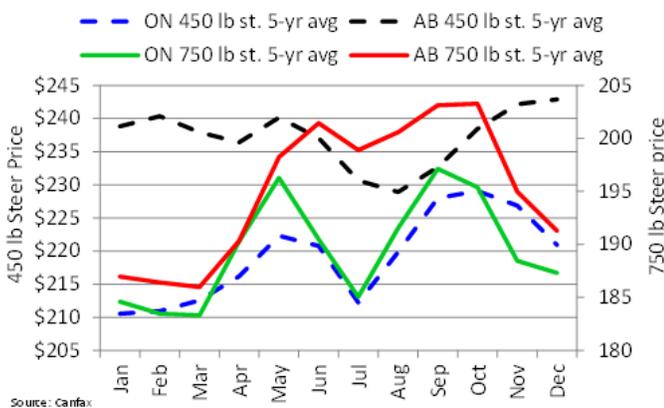
- 4. winter backgrounding with retained ownership where the cattle are sold at either 850 lbs or 925 lbs as yearling grassers in September.

Winter backgrounding

Backgrounding producers are subject to fluctuations in calf prices in the fall when they purchase cattle, as well as feeder prices in the spring/summer when they sell.

The Alberta and Ontario steer price graph shows some of the challenges within the backgrounding sector when attempting to determine the optimal month to purchase cattle for winter feeding. The five-year (2017-2021) average Alberta 450 lb calf price increased two per cent from October to December, whereas the Ontario 450 lb calf price declined four per cent during the same time. Similar challenges are seen when determining the optimal month to sell winter backgrounded calves in the spring as 700 lb grass steers or as 800 lb steers for feedlots. From March to May, the five-year average indicates prices of 750 lb steers increase monthly, regardless of region. Price divergence by region occurs from May to June, further contributing to the profitability challenges in this sector.

AB and ON Steer Prices

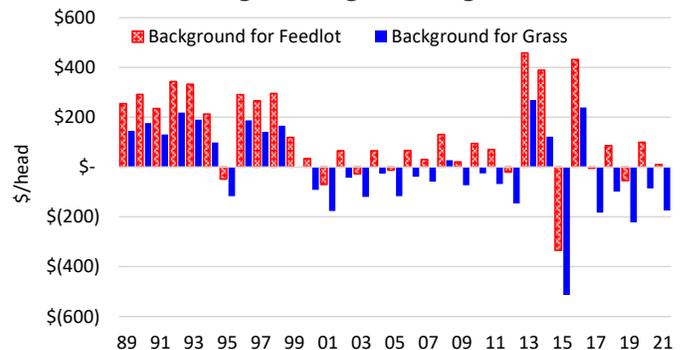


Average daily gain is directly related to profitability in the backgrounding sector. Assuming 180 days in a winter backgrounding program with an in-weight of 480 lbs, steers destined for grass in the spring at 700 lbs gained 1.22 lbs per day and steers destined for the feedlot at 800 lbs gained 1.78 lbs per day. The extra weight gained per day by steers moved into feedlots, despite the extra feed inputs, positively affected profit margins in all years; in some years by reducing losses and by increasing profits in other years.

Winter backgrounding for grass to 700 lbs without any form of retained ownership in the spring (sold as yearling grassers) has resulted in financial losses most years since

2000. Calves are purchased in the fall as prices begin to rise from their yearly lows, which are typically in August. The calves are then sold the following spring, as prices begin to rise, but prior to the June high. In addition, winter background producers are susceptible to increases in feed costs, which typically occur post-harvest and throughout the winter. From 1990 to 2021, an average financial loss of \$3 per head was determined. While backgrounding for the feedlot to 800 lbs had a long-term (1990-21) margin of \$128 per head.

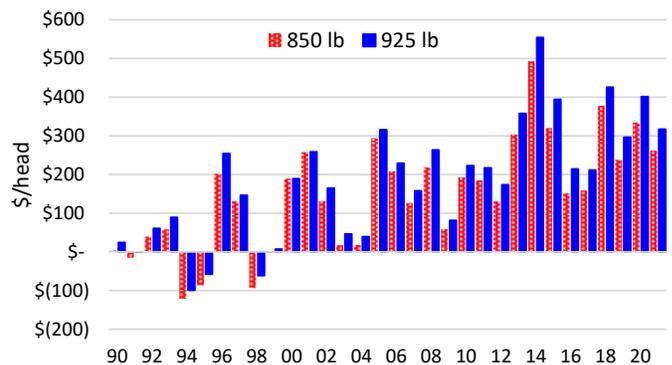
Backgrounding Net Margins



Yearling Grassers

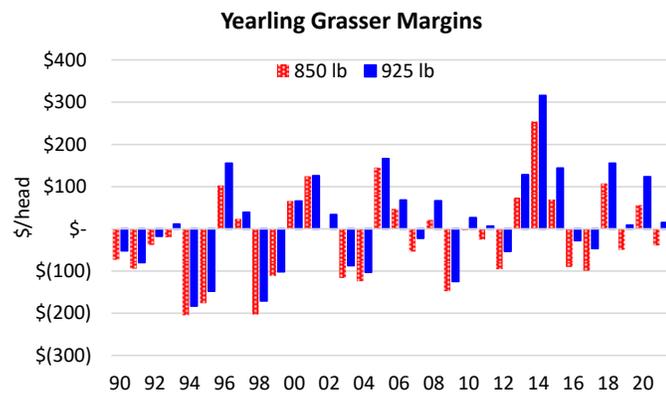
Winter backgrounded cattle are assumed to be purchased during a six-week window during April and May at 700 lbs as grass cattle. They will then be sold the same year in late August to early September as yearling grassers into feedlots. Susceptibility to price cycles is front-of-mind when pricing cattle in the spring for grass. Transportation, mineral, veterinary and medicine costs are all minimal for yearling grassers. Leaving margins largely determined by price spreads and the cost of grass (owned or rented). Production risk is largely associated with drought and the availability of grass.

Yearling Grasser Gross Margins (sale - purchase price)



Gross margins for yearling grassers (feeder sale – purchase price) has increased steadily since 2009. Cost of grass is assumed to be a cash rental that increases with the cost of hay/land values. The cost of grass is indexed to the average rental price of CLI4 and CLI5 land in Alberta.

During the 1990’s cattle over 900 lbs were discounted by feedlots for being over-weight, resulting in losses that were similar to the smaller weight class (800 lb). From 2000 on, heavier weights were desired, and a separation between the two weight classes began to emerge. Heavier yearling cattle (925 lb) going into feedlots provided smaller losses than their lighter weight counterparts (850 lb). In some years, these heavier weight cattle even resulted in profits to the producer compared to losses for the lighter weight category.



Source: CRS

Margins on yearling grassers turned positive in the last decade (2012-21) at \$19 per head. It should be remembered that this is based on using cash rent for grass. Producers who own grass, could be in the black prior to 2012.

Background and Grass

Retaining ownership of backgrounded cattle through the summer and selling them in the fall provided a long-term (1990-21) loss of \$24 per head. After being positive in the 1990s, this sector turned negative in the 2000s and while the losses have shrunk in the last decade, they remain negative as losses over the winter backgrounding period are not covered during the summer grass phase.

FEEDLOTS

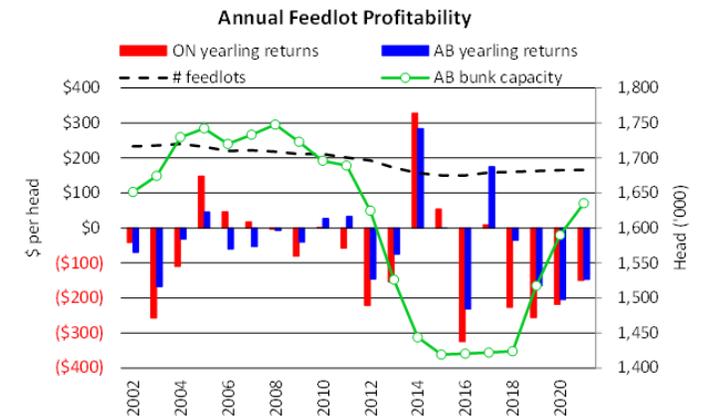
Feedlot operations typically operate on small net margins per head. Feedlot profit margins are based selling into the cash market at the time of sale or a hedgeable margin off of the CME live cattle futures at the time of feeders being

placed. Costs used to determine fed cattle profits include feeder cattle, feed, transportation, vet and medicine, interest, overhead, and death loss.

Since 2008, Alberta feedlots have only had positive margins four times (2010, 2011, 2014 and 2017) when selling on the cash market. Both the five-year average and the ten-year average hedgeable margin indicate that profitability has been unattainable in the feedlot industry regularly since 2012. Ontario feedlots have also only realized positive profits four times in that period (2010, 2014, 2015 and 2017).

Feedlot Profitability by Region		
\$/head	5-yr (17-21)	10-yr (12-21)
ON (cash)	-168.59	-116.05
AB (cash)	-75.59	-54.73
AB (hedgeable)	-10.78	-8.34

Other factors must be at play, as the number of Alberta and Saskatchewan feedlots with a one-time capacity of 1,000 head or more has increased 13 per cent from 2015-2021. During the same time, bunk capacity increased 19 per cent to 1.69 million head. Indicating that feedlots have been successful in utilizing risk management strategies to support margins. This highlights the importance of risk management to the feedlot sector.



Source: Canfax TRENDS, BFO

Ontario feedlot net returns have closely mirrored Alberta feedlots since 2012, though per head profits are mostly smaller and per head losses larger. The exception was in 2014 and 2015, when Ontario profits exceeded Alberta profits by \$45-55 per head.

PACKING PLANTS

Canadian feedlot producers have few options with which to send their cattle. Western Canada has three large packing plants, while Eastern Canada only has one. Cargill,

JBS and Harmony have had a packer concentration in the West of 95 per cent since 2012. In the East, Cargill, accounts for 60-73 per cent of market share in the last five years (Smith, 2022).

Packing plant profit margins (before operating costs) were within normal ranges from 2015 to 2017 ranging between \$100-300 per head, before moving into what is considered a “very profitable” range in 2018-2019 around \$450 per head, then moving further, into “exceptional profitability” in 2020-2021 in the range of \$800 per head (Grier, 2022). Grier (2022) determines that several factors contributed to the exceptional profits realized by packing plants in 2020 and 2021.

On the demand side, beef demand increased substantially, with retail, foodservice and distributors aggressively bidding to procure beef. Export demand was strengthening, reducing the availability of beef domestically. On the supply side, fed cattle were becoming slaughter-weight ready at a faster pace than hook capacity.

The shutdown of Tyson Foods Finney County plant in August 2019 reduced slaughter capacity temporarily; but supplies of fed cattle for slaughter remained constant. In March and April 2020, slaughter capacity was reduced short-term, resulting in a medium-term backlog of slaughter-ready fed cattle. At the same time, strong demand as consumers found out how much further the food dollar would go at retail kept retail prices strong. These events combined to give packing plants considerable leverage to prices paid upstream to feedlot producers and prices charged downstream to retailers and restaurants.

Packer margins have moved back into the “normal” range in the third quarter of 2022 as fed cattle prices increase and cutout values remain steady. Smaller cattle marketings are projected in both Canada and the U.S. in 2023. This will reduce utilization levels and increase competitive bidding. As North American cattle supplies tighten, leverage will shift from the packer to the feedlot.

Data limitations

The fed cattle cash market does not take into account any premiums or discounts for quality grading, timely and consistent marketing, branded programs, and preferred producer status. Feedlot costs assume cash purchases of feed grains in the month the feeder is purchased with no risk management.

Risk management in the form of Livestock Price Insurance for Western Canadian producers, private marketing arrangements between producers throughout the supply chain, value-added programs such as the Verified Beef Plus Program, hedging activities or forward contracting of cattle or grains are excluded from this analysis and can have a substantial impact for individual operations.

Canadian Boxed Beef price reporting was discontinued in March 2020, with prices since then obtained from USDA and adjusted for currency. While the Canadian and U.S. cutout values have historically followed similar trends, there have been differences due to the fact that Canada is more export dependent with some items consistently undervalued compared to the U.S. market.

CONCLUSION

Profits have been observed in most sectors in the last ten years. It is not a lack of profits within the industry that drive discontent, but the distribution between sectors in the supply chain and significant variation seen within sectors.

The cow-calf sector, while seeing large profits in recent years, is based on one calf per cow per year. As measured by Statistics Canada, the average beef cow herd size is 69 headⁱⁱⁱ, requiring consistent, adequate profitability to maintain Canada’s beef herd. Economies of scale in the backgrounding and finishing sectors allows for smaller profits to be realized per head, while still maintaining position in their respective industries.

The intermediary sectors (winter backgrounding, summer grassers and feedlot) require significant management of inputs, and considerable knowledge of price cycles. In some instances, knowledge of when the cost of inputs (price of cattle in the fall) is greater than outputs (price of cattle in the spring), or when the difference between the price received for feeder cattle and the price paid for calves the previous year is not large enough to accommodate feed, maintenance and overhead costs.

Profits move to where there is a bottleneck, giving that sector the most leverage. This was the case with the packing sector during covid. Smaller North American cattle supplies are expected in 2023-2025, shifting leverage from the packers and transfer it to the finishing sector.

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ⁱ Western Livestock Price Insurance Program (WLPIP) provides opportunities to minimize risk in the calf, feeder and fed industries. More information can be found at: <https://lpi.ca/>

ⁱⁱ AMAs (Alternative Marketing Arrangements) are defined as any possible alternative to the cash market (Koontz, 2022)

ⁱⁱⁱ Taken from Table 32-10-0130-01