ALBERTA AGRISYSTEMS LIVING LAB

Swath Grazing in Canada

July 2025 (Preliminary Results)

Swath grazing can help cow-calf producers stretch their feed supplies and cut wintering costs, all while reducing time, fuel use, and manure handling. It's not a perfect fit for everyone, but under the right conditions, swath grazing can be a practical, low-cost winter feeding option. Swath grazing involves planting a late-season annual crop (such as oats or barley), cutting it, and leaving it in swaths in the field for cattle to graze over winter. This eliminates the need to bale, haul, and feed — and the nutrients are deposited directly back onto the field.

This study analyzed how swath grazing performs across a range of cow-calf operations in Canada. The goal was to assess the full-farm economic and environmental impacts of adopting swath grazing. The modelling was based on benchmark farms from the Canadian Cow-Calf Cost of Production (COP) Network and Alberta AgriSystems Living Lab participants, drawing on real-world data from different regions and operation sizes, using 2022 data. The modelled scenarios explored how swath grazing could fit into different farm strategies by varying land use, feed management, and infrastructure investments.

The modelled scenarios included swath grazing (SG) with:

- EH: Excess Hay
  - CEH: Carry over Excess Hay
  - CEH_WS: Carry over Excess Hay with Water System
  - CEH_WS_F: Carry over Excess Hay with Water System and Funding
  - SEH: Sell Excess Hay
  - SEH_WS: Sell Excess Hay with Water System
  - SEH_WS_F: Sell Excess Hay with Water System and Funding
- RRL: Reduce Rented land
- RRL_WS: Reduce Rented land with Water System
- RRL_WS_F: Reduce Rented land with Water System and Funding
- SEG: Sell Excess Grain

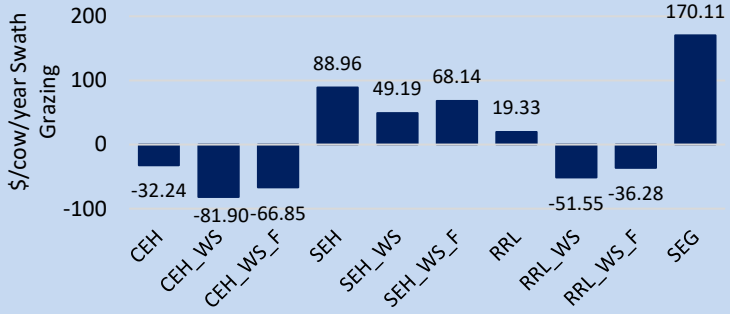
Key question: Who does swath grazing actually work for?

- **Economically**: Large herds benefit from economies of scale when winterized water infrastructure is needed. Additionally, if excess hay or grain is sold, it can increase cash flow. However, the risk of drought or severe weather should be carefully evaluated, as retaining hay for carryover might be a more prudent strategy in uncertain conditions.
- **Environmentally**: All scenarios demonstrated a similar reduction in emissions. However, swath grazing resulted in higher forage yields, leading to reallocation and more efficient land use.

Economic Results

One of the most important questions producers ask is whether swath grazing will actually save money. The answer depends on several factors, including herd size, what you do with any excess land or feed, and whether you need to invest in new infrastructure like a water system and fencing.

***Figure 1**. Western provincial average change in net income per cow per year under each scenario, compared to drylot feeding*



CEH: Carry over Excess Hay, CEH_WS: Carry over Excess Hay with Water System, CEH_WS_F: Carry over Excess Hay with Water System and Funding, SEH: Sell Excess Hay, SEH_WS: Sell Excess Hay with Water System, SEH_WS_F: Sell Excess Hay with Water System and Funding, RRL: Reduce Rented land, RRL_WS: Reduce Rented land with Water System, RRL_WS_F: Reduce Rented land with Water System and Funding, SEG: Sell Excess Grain

Swath grazing boosts feed yield per acre compared to traditional hay systems, making it a land-efficient strategy. Higher yields mean the same number of cattle can be supported with less land. This opens up opportunities to reduce rented land, saving on lease costs, or free up acreage for additional hay production or a cash crop rotation. Either strategy strengthens the overall financial position of the farm and improves land resource use. Across the modeled scenarios, financial outcomes ranged from Western Canada average annual savings of $170 per cow to additional annual costs of $97 per cow (Figure 1). On average, producers who sold excess hay or grain realized the strongest economic benefits. These scenarios generated additional revenue streams while reducing the need for purchased feed. For example, farms that sold excess grain saw the highest returns, with an average gain of $170 per cow per year, although this came with more variability. Selling excess hay also improved profitability, with returns averaging $89 per cow per year.

***Table 1**. Provincial average change in net income per cow per year under each scenario, compared to drylot feeding*

	Province			
	BC	AB	SK	MB
CEH	-85.41	-10.75	-19.04	-27.23
CEH_WS	-82.32	-101.09	-66.24	-47.18
CEH_WS_F	-50.64	-111.17	-54.09	
SEH	**66.19**	**100.78**	**133.36**	
SEH_WS	**13.07**	**64.02**	**127.69**	
SEH_WS_F	**45.28**	**70.85**	**131.05**	
RRL		**17.12**	**19.03**	**32.02**
RRL_WS		-89.48	-35.15	**12.07**
RRL_WS_F		-86.02	-35.15	
SEG		**195.84**	**66.69**	

Note: Positive returns are **bolded**. Not all scenarios were tested in every province.

In contrast, carrying over excess hay rather than selling it often reduced income, especially when combined with the upfront cost of installing water infrastructure. For instance, carrying over hay while also investing in a winter water system reduced income by an average of $82 per cow annually. Though this strategy provides a feed buffer against drought or adverse weather, it ties up capital in non-liquid inventory. Compounding this issue, hay quality deteriorates over time, especially when stored outdoors or under sub-optimal conditions, potentially resulting in downgraded feed value. An alternative approach is to sell excess hay in good production years and reserve the proceeds in a dedicated fund to buy

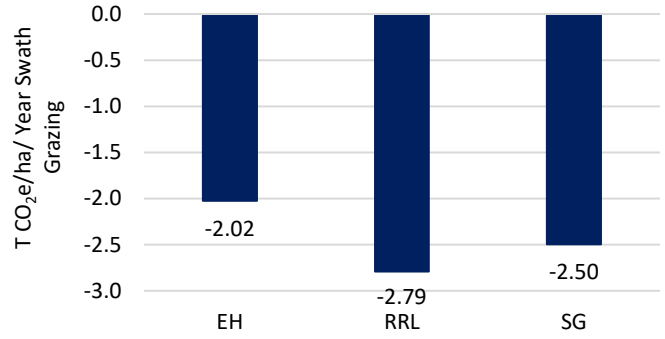
bales later if needed. This allows farms to maintain feed security while avoiding the nutritional loss and shrinkage associated with long-term hay storage. It also offers financial flexibility and reduces the risk of sunk costs in feed.

Herd size played a key role in economic performance. Larger herds (150+ head) were more likely to benefit financially by spreading infrastructure costs across more animals. Where infrastructure (fencing, water) was already in place, profitability improved across most scenarios. In regions where grants cover water system installation (e.g., up to 70% in BC), farms saw better financial outcomes. Moreover, the more days cattle spent swath grazing, the better the returns—thanks to feed and labor savings.

Environmental Results

Swath grazing does not just impact the bottom line; it also impacts a farm's environmental footprint. By shifting winter feeding from confined pens to swath fields, producers can reduce greenhouse gas (GHG) emissions. However, environmental outcomes vary depending on how the practice is implemented.

Figure 2. *Western provincial average change in emissions per cow per year per ha under each scenario, compared to drylot*



The biggest emission reductions were seen in scenarios where rented land was no longer needed due to higher yields from swath grazing. Shown in Figure 2, these farms cut emissions by an average 2.8 tonnes of CO_2e per hectare. Similarly, the excess hay scenarios lowered emissions by 2.02 tonnes CO_2e per hectare. The excess grain scenario, where surplus land was converted to cash crops, showed an emission reduction of 2.5 tonnes CO_2e per hectare. The reduction in direct GHG emissions was due to less confined manure handling.

Table 2*. Provincial average change in emissions per cow per year per ha under each scenario, compared to drylot feeding*

	Province			
	BC	AB	SK	MB
EH	-1.69	-2.28	-2.06	-1.24
RRL		-3.13	-1.98	-4.02
SEG		-3.28	**0.62**	

Note: Scenarios that increased emissions are **bolded**. Not all scenarios were tested in every province.

Methane (CH_4) emissions dropped across most scenarios, particularly on farms shifting from drylot to extensive feeding. This is due to better forage quality and more distributed manure in extended systems, which reduces anaerobic decomposition. Shown in Figure 2 one exception is Saskatchewan swath grazing with excess grain (SEG) increase in emissions was due to increased enteric CH_4 emissions due to the forage quality in swath grazing being lower than the forage fed prior to adoption. Carbon dioxide (CO_2) emissions from fuel use fell, thanks to fewer feeding trips and reduced equipment use. However, nitrous oxide (N_2O) emissions were slightly higher in swath grazing scenarios due to increased manure on fields and potential runoff risks, especially in wetter regions.

Taken together, the swath grazing scenarios with the largest environmental gains were those that reduced land base, minimized tillage, and replaced confined feeding. These scenarios improved nutrient cycling, reduced fuel and input needs, and avoided the need to spread manure from storage.

Is Swath Grazing Right for Your Operation?

***Table 3**. Who Does Bale Grazing Work For?*

Category	Economically	Environmentally
Land Use Strategy	Swath grazing allows for more efficient land use due to increased forage yield per acre. This can reduce the need for rented land, cutting lease expenses, or free up land for additional hay or cash crops, adding flexibility to the farm plan. Producers should also consider the trade-offs of carrying over hay versus selling it and setting aside funds. While hay carryover is a buffer against feed shortages, selling hay at peak value and repurchasing as needed may offer better long-term feed quality and financial agility.	Reducing rented land offered the largest emissions reduction. Carrying over excess hay also reduces emissions. Selling grain increases emissions due to tillage.
Herd Size	Herds over 150 head benefit most by spreading infrastructure costs (e.g., water systems, fencing) over more animals.	Emission reductions do not depend strongly on herd size, but larger herds moving from drylot to swath grazing can see larger total reductions.
Current Feeding System	Works best for farms shifting from confined drylot feeding. These farms see the greatest savings in labour, fuel, and manure handling.	Switching from confined systems offers the most environmental benefit due to lower methane from manure storage and improved nutrient distribution. Additionally, higher forage and feed quality reduced enteric CH_4 emissions.
Infrastructure	Most profitable when fencing and water systems already exist, or when funding is available. Infrastructure costs are the biggest barrier for small herds.	Environmental benefits improve when infrastructure allows for longer swath grazing days, reducing confined manure periods.
Climate	Works best in drier regions with predictable winters. Wetter areas face higher risk of feed spoilage and soil compaction, reducing economic viability.	Wetter regions may see increased N_2O emissions from runoff but still see improvements from less confined manure storage. Drier areas show more stable emission reductions.
Management Factors	Best suited to farms that can manage wildlife risks, monitor snow and ice conditions, and provide backup feed if needed.	Best for farms that can rotate fields annually, avoid grazing on wet soils, and manage nutrient concentration around water sources.