Lead-follow grazing system demonstration project

Kapuskasing, Ontario

Results and recommendations

FINAL REPORT

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Introduction

Beef production is declining in Ontario, which has implications for jobs and income for the province, as well as industry infrastructure such as processing plants and auction markets. Currently, approximately 13 million acres of land in Ontario are being farmed, and high land prices, growing regulatory pressure and urban encroachment make industry entry or expansion challenging for most beef farmers.

Northern Ontario's Great Clay Belt offers millions of acres of affordable land for farmers looking to enter or expand in the Ontario beef industry – land that while not well suited for cropping, lends itself well to livestock production. That's a driving force behind Beef Farmers of Ontario's (BFO) Beef North expansion initiative.

To assist with market swings and to use infrastructure and resources to maximum efficiency, diversification of a farm business can be crucial, especially when establishing a new operation. The pasture production practice known as lead-follow grazing – the rotational grazing of two (or more) groups of ruminants, one following the other, on shared plot(s) of pasture – between beef cattle and sheep could potentially contribute to the sustainability and economic viability of beef operations in Northern Ontario.

In 2017, a demonstration project was run on a research site in the Kapuskasing area with the intent to demonstrate and evaluate a lead-follow grazing system with beef cattle and sheep. The project included investigation and reporting on how this grazing system affects the livestock and pasture.

This report contains recommendations and information intended to assist producers in establishing livestock operations that are resilient to outside factors through diversification of beef and sheep production and use of the innovative practice of lead-follow grazing.

About the Project Site

The project site was on a former Agriculture and Agri-Food Canada research facility purchased by Kapuskasing Economic Development Corporation in 2015 as a regional economic development tool for the agricultural sector in the area. The project site's partners include the town of Kapuskasing, Kapuskasing Economic Development Corporation and Collège Boréal.

Project purpose and background

The lead-following grazing project was launched for two main reasons: to evaluate pasture utilization and to better understand the impact that grazing multiple species would have on labour in pasture.

In the winter season, the labour requirements of livestock herds primarily involve bringing feed to the animals. It is the opposite in the summer when labour is directed toward continual movement of animals to new pastures and bringing animals to the feed.

The project site typically follows managed intensive grazing where livestock is moved every 24 to 48 hours, so labour requirements during the grazing season can be significant. The farm has both a beef herd and a sheep flock that are grazed, which contributed to it being an ideal location for the demonstration project.

The primary hypothesis of the project was that ewes following the lead group of heifers would make better use of the grass, and that labour requirements would be reduced due to fences being moved less often.

Access to labour in Northern Ontario can be limited and costly. As well, there was a desire at the site to keep the level of management relatively flat by not employing many outside staff.

Grazing project set-up

The project was completed in the summer of 2017, starting mid-June and wrapping up at the end of September. A herd of 38 yearling replacement heifers was split into two equal groups of 19 animals each. One group was followed by a flock of 78 mostly mature East Friesian-cross dairy ewes, whereas the other group of heifers, serving as a control group, grazed without being followed.

Adjacent fields 220 feet wide were established on the grazing circuit with permanent fencing, and poly wire was used to cross-fence fields of various sizes. For the lead-follow group, three poly wires at 10-inch height intervals were used to ensure fencing was adequate and low enough for the ewes. A single wire was used in the cattle-only group.

About 70 acres were stripped with permanent posts placed every 50 feet, allowing for fine-tuning of the field size based both on soil conditions and how the pasture grew. Efforts were made to keep the two cattle groups as close to each other as possible in order to give them fairly comparable locations throughout the project.

The 220-foot-wide fields had a water line at intervals of every other fence line, allowing water access to be shared on either side of the fence. This meant water could be brought to livestock anywhere in the field instead of forcing them to move to the water source. The reasoning behind this approach is nutrient mining: since ruminant livestock put most of what they consume back into the field through urine and manure, the goal was to keep their nutrients close to where they harvested it as forage. This improves soil organic matter and helps with repopulation of the soil.

The pasture was a mixture of brome grass, orchard grass and timothy, with about five per cent in clover (mostly white) and approximately five per cent in trefoil and forbes (i.e. weeds that cattle will eat). Dandelion and thistle populations were high in some portions of the pasture, but that is fairly typical of

pastures in the region. The pasture had been an existing hay field for more than five years and while it was grazed by sheep in 2016, this year was the first time it was used for beef grazing.

Because livestock at the project site are grazed on clay soil, weather and soil conditions have a major impact in how cattle are grazed. A major challenge for the project was the amount of rainfall. In June, it rained approximately 20 days of the month, resulting in serious problems on the clay soil. Cattle were pulled off the pasture for about three weeks in order to keep the field from sustaining too much damage from the high density of livestock on a relatively small area. Black muck field areas seemed to recover better from the extreme moisture than soils that were clay-based.

Findings

Labour savings

The expected labour savings did not materialize. In fact, labour output was almost the same in both grazing scenarios. In fields where cattle were followed by sheep, livestock had to be moved with twice the frequency in order to leave enough pasture for the sheep following behind to graze. As these sheep were lactating ewes milked twice daily, they needed choice grass in order to maintain milk production.

Due to the inclement weather and its interruption of grazing, some silage was harvested off the pasture in early July. The livestock grazed the regrowth later in the summer. Although it is preferable to have cattle graze, the pasture grew too rapidly to be managed solely through grazing, resulting in the need to harvest silage.

Pasture utilization

Grass utilization was far superior in fields where sheep followed the cattle. When the sheep finished grazing, the pasture overall was nicely trimmed and in more ideal condition for quick regrowth. The pasture where only cattle grazed had a very ragged appearance by comparison, as cattle are more selective grazers than sheep. An evenly trimmed pasture will be in better condition to enter its winter rest period as there is less competition among plant species.

On the second pass around the pasture circuit, the lead-follow group and the solo group switched pasture “runways” to help even out the pasture balance. The sheep continued following the same group of heifers throughout the entire grazing season.

No difference was observed in the number of days cattle and sheep in the lead-follow group were able to graze on the regrowth during the second pass through the pasture circuit compared to the solo group. There was also no noticeable difference in the length of time that was needed for pasture to regrow after the first pass or the quantity of pasture available for the second pass. The pasture will be evaluated in the spring for any differences in how well it will have rebounded after the winter season.

After a lot of rain in the month of June, there was very little rain in July, which brought pasture regrowth to a virtual stop. Luckily, enough pasture area remained available for livestock to move through. This is

important to consider as weather is a factor outside of producer control and irrigation is not economically feasible in the area. August rebounded with timely rains and temperate weather that kept pasture conditions ideal. September, surprisingly, ended up as the month of the season with conditions most conducive to grazing.

Climate has significant influence over the success or failure of this type of grazing system. Grass grows well in northeastern Ontario as days are cool – temperatures don't move far above the 22C to 24C range during the summer – and nights are regularly in the low teens. Humidity is also low due to the distance from the Great Lakes, and days are extremely long due to the northern latitude. All of this means grass stays vegetative and green for longer before going into its reproductive stage, making it ideal for pasture-based production.

Dairy sheep condition and performance

The lead-follow group included several guardian dogs with the sheep, which were fed when the sheep were milked twice daily in the barn. Depending on where in the pasture circuit the sheep were, they had to walk between 500 and 2,500 feet each way to reach the barn for milking. The entire dairy ewe flock was part of the lead-follow group, and all the walking they had to do for milking helped improve their conditioning.

The ewes' body condition at the end of the season was comparable to previous years when they did not follow a cattle group in the pasture. Their milk production was satisfactory over the summer months, but it is not known whether following and grazing behind cattle had any positive or negative impact on the level of their production. It is also important to note that the population contained a considerable number of ewe lambs as the flock was still being built and they generally have lower production than more mature ewes. However, the ewes milked well through until Thanksgiving which is an indicator of good overall body condition and health.

Cattle condition and performance

The solo group was moved every other day but the lead-follow group was moved to fresh pasture daily in order to leave more grass available for the sheep flock following behind. It was hypothesized that the lead-follow cattle, with access to more premium grasses, could potentially gain more weight and be in better condition than the solo group at the end of the grazing season. However, when the two cattle groups were mingled into a single group when they came off pasture in the fall, there was no noticeable difference in terms of body condition score or performance. Overall, both groups of cattle did very well on the pasture and the heifers came off pasture with good body condition: fleshy with cover on their hips and good shine on their coats.

Conclusion

The overall outcome of the project was positive, though the system would be even better if the ewe flock was being raised for meat production. The dairy ewes needed to be milked twice daily, and it took

time and labour to move the animals to and from the parlour for each milking. With a meat flock of sheep, the animals would benefit greatly from following beef heifers or stockers.

Lead-follow grazing resulted in better pasture utilization, and although fences had to be built more often because the animals were moving faster across the field, fences and water troughs were in close proximity to each other when they had to be moved. Although no real labour savings were realized, it was found to be a very convenient set up, especially when compared to other types of pasturing systems.

Overall, lead-follow grazing can be a good fit for Northern Ontario operations with ruminant animals seeking to diversify. Sheep are more flexible than cattle in terms of their grazing needs, and the wide variety of breeds with varying feed quality requirements means they can fit well into a range of production systems. In addition to diversification, complementing beef production with sheep also helps with labour utilization on-farm – being able to provide work to employees year-round can improve retention, for example.

Recommendations

The following considerations are offered to farmers considering implementing a lead-follow grazing system in Northern Ontario.

Fencing: Sheep are harder to contain than cattle so it is important to have a sturdy, well-maintained fencing system without holes and with good voltage. If guard dogs run with the sheep, keep in mind that some dog species, such as Great Pyrenees, like to control much larger areas than a small one-acre grazing module, so the fences must also be strong enough to keep the dogs with the flock.

Water: The intensive grazing modules of the lead-follow system require more flexibility in water systems than most cattle producers are used to having. Bringing water to the animals instead of forcing them to walk to the water source is recommended. Water is also needed inside the pasture if guard dogs are running with a sheep flock.

Predation: A sheep flock will need protection against predators. The project site has had the best success with guard dogs, but each operation should seek a solution that works best for their specific circumstances.

Labour: Livestock in a lead-follow system will have to be moved every day. There was as much time and effort spent moving livestock during the grazing season this year as was spent bringing feed to cattle during the winter. Lead-follow grazing requires more management and labour, but it does improve pasture performance.

Soil and weather: The clay soils of Northeastern Ontario are very sensitive to water saturation and damage from treading on them when they're soaked. The damage caused by equipment or livestock moving on saturated soils is about equal, so producers need a backup plan on how to manage livestock

in case conditions become too wet. When a pasture becomes damaged, it can take a long time to bring it back up to suitable grazing condition.