

Final Cross-seeding Update

Under the conditions of the research trials, cross-seeding has showed an extra \$74/ac profit that could be realized.



In 2017 a new technique to Northern Ontario was demonstrated called cross-seeding (or cross drilling) in Algoma, Thunder Bay and Emo. Cross-seeding is a technique for establishing a crop where half the seed is planted in a conventional drive pattern using a seed drill. The other half of the seed is drilled at a 45 degree angle to the original pass in order to achieve better ground coverage. Better coverage can help reduce soil erosion and assist sown forage crops out-compete weeds, resulting in better quality and higher yielding forage.

This part of the project was conducted in order to assess if a second pass on a field resulted in a significant enough yield to make it worth the time and fuel. There were three locations in Algoma, two locations in Thunder Bay and two locations in Emo comparing a cross seeded side and a conventionally seeded side. In all locations, sides were treated the same (fertilizer, cover crop, etc.) and cut and baled at the same time. Throughout the three years that this trial was being monitored, each year a DM yield was recorded and analyzed.

First year showed that the conventionally seeded side out yielded on every location, but only by a very small percentage (2%) in Algoma. However, at both the Thunder Bay and Emo locations, cross-seeded out yielded by over 3%.

Second year showed that the cross-seeded side out yielded on every field by more than 3% in Algoma, Thunder Bay and Emo.

Third year showed that the cross-seeded side out yielded on $\frac{3}{4}$ of the sites by more than 4%.

With this information, an economical analysis was conducted in order to see if the extra yields could not only cover the cost of the extra pass on the field but also turn a profit. On average it costed an extra 0.63 cents/acre in fuel to cross-seed, and an extra \$45/ac (for labour time) to cross-seed. With an average of an extra 1.5 bales/acre on the cross-seeded side (\$80/bale), looking at a profit of an extra \$120/ac.

Under the conditions of the research trials, cross-seeding has showed an extra \$74/ac profit that could be realized.



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Alternative Legumes- 2019 update

Though all five of these legumes have been tested before, they were not previously grown in the same area to allow for direct comparisons. Due to the lack of rain throughout the summer of 2019, the sainfoin and galega did not produce a yield. The plants only grew a couple of inches and stopped. However, the red clover and birdsfoot trefoil out preformed the alfalfa.



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In spring of 2018, five legumes were planted at the Algoma Community Pasture to show alternative legumes that could be potentially utilized in Northern Ontario climate. Alfalfa is commonly grown as a forage crop in Ontario, but due to its sensitivity to wet and cold conditions, it may not be the most suited to a Northern Ontario climate. By evaluating how alternative perennial legumes perform in Northern Ontario, in comparison to alfalfa, the objective was to find the forage that best suits the needs of local farmers and give them the opportunity to choose between comparable forages.

The five legumes that are being compared include; galega, red clover, sainfoin, birdsfoot trefoil, and alfalfa as a control. The seeding rates are as followed:

Alfalfa at 13 kg/ha

Galega at 35 kg/ha

Red clover at 11 kg/ha

Sainfoin at 30 kg/ha

Birdsfoot trefoil at 9 kg/ha

Though all five of these legumes have been tested before, they were not previously grown in the same area to allow for direct comparisons. A yield comparison was not taken in the first year of establishment, but a forage sample was taken from each legume. In spring of 2019, documentation took place to see how each legume survived over the winter. Each legume made it through the winter and continued to grow through the season. Due to the lack of rain throughout the summer of 2019 the sainfoin and galega did not produce a yield. The plants only grew a couple of inches and stopped. However, the red clover and birdsfoot trefoil out preformed the alfalfa. Yields reported as below:

Harvested July 4 th , 2019- 1 st cut	
Birdsfoot Treefoil	12,563.20 kg/DM/ha*
Red Clover	11,306.88 kg/DM/ha*
Alfalfa	9,808.96 kg/DM/ha *

*Kilograms of dry matter per hectare

Due to the dry season, a second cut was not achieved. This trial was duplicated in Thunder Bay at the Lakehead Agriculture Research Station. In Thunder Bay, red clover and alfalfa out yielded the other legumes. There will be one more year looking at winter survivability and yield.



Weed Control in Galega- 2019 update



Through Partnership with LUARS (Lakehead University Agriculture Research Station), RAIN has developed a research project in order to find the optimum seeding time of galega in its establishment year, in terms of weed control and yield. Taking place in Algoma and Thunder Bay, the project is currently in its second year, with one more year in 2020.

The galega grew very well this year and had an exceptional yield. The 2019 summer in Algoma was very dry in the beginning, and then very wet towards the end but the galega still thrived. With the galega trial in Algoma, there are two separate areas of galega. One planted in mid-June (early planting) and one planted mid-July (late planted). The mid-July planted galega was planted after the weeds had grown up and then been sprayed off. This method was used in order to see if the galega would be able to establish better without the pressure of weeds but much later in the season.

Overall yields showed that the mid-June planted area had a much higher yield, but a much higher percentage of weeds. The July planted galega had a lower yield but a much lower percentage of weeds. Off the 8 acres where the galega grew, 44 bales (1500 lbs each) were harvested. The galega grew shoulder height and flowered bright purple flowers.

In Thunder Bay, the galega did not grow as well as previous years. It was pale and gave less dry matter yield than alfalfa. However, it was noted that some treatments; especially Basagram Forte spray was quite effective in weed control in the galega.

The third year of this trial will be focusing on overall yield but also on what percentage of weeds are still present in each trial in the third year of establishment. After the third year of results have been collected and analyzed, there will be a weed control recommendation for galega as a result of this trial.



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Algoma- Malting Barley-2019

Synergy out yielded on both locations, with NewDale coming close in second. Metcalfe yielded significantly lower than the other varieties at both locations.



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Northern Ontario has a similar climate to western Canada and is a promising location for malting barley production. However, the grain needs appropriate management practices to meet the strict quality requirements for brewing. Since growing conditions vary across northern Ontario, research on varieties and nutrient management techniques are essential to allow farmers to anticipate yields and returns for their farms.

2019 was the second year for this trial, with one more year to go in 2020. Three varieties (AC NewDale, ACC Synergy, and AC Metcalfe) were planted in Algoma at two different locations. Both locations established well.

Location 1 is located on a certified organic farm therefore, practices were different compared to location 2, which is a conventional farm. Location 1 did not receive herbicide treatment or fertilizer (other than manure). All varieties were planted on May 31st, 2019 where an acre was dedicated to each variety. All varieties were harvested on September 2nd, 2019. Location 2 was sprayed with Cubutox herbicide, fertilized with 8-32-16 and under-seeded with an alfalfa clover mix. All varieties were planted on June 4th, 2019 where an acre was dedicated to each variety. All varieties were harvested on September 3rd, 2019. Both locations were planted on tiled ground where base soil samples were taken before planted for nutrient management.

Location	Variety	Yield
Woolcott	Metcalfe	200 kg/ac
Woolcott	Synergy	900 kg/ac
Woolcott	NewDale	730 kg/ac
Prestedge	Metcalfe	150 kg/ac
Prestedge	Synergy	775 kg/ac
Prestedge	NewDale	575 kg/ac

Synergy out yielded on both locations, with NewDale coming close in second. Metcalfe yielded significantly lower than the other varieties at both locations. Samples were sent to Canada Malt in Alberta, where they were analyzed for malt quality and with recommendations on what malt houses look for.

This trial is led by NOFIA as part of a pan-northern project with Thunder Bay, Emo, New Liskeard and Algoma. For more information on the project go to ["nofia-agri.com"](http://nofia-agri.com).

