

High Legume Pasture Project

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Peace Country Beef and Forage Association
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Objectives:

1. To determine establishment and longevity of high legume pasture stands.
2. To explore increased productivity, increased forage quality, drought aversion and nitrogen fixing benefits within a high legume stand.
3. To determine high legume pasture stands performance under grazing pressure.
4. To assess bloat mitigation potential of sainfoin in pasture stands.

Background:

It is well known that the inclusion of legume crops improves the protein content and digestibility of your forage stand resulting in improved overall quality of livestock feed whether utilized as hay, silage or pasture. However, livestock producers often shy away from high legume pastures due to the risk of bloat in ruminant. To help minimize this risk, there are multiple alternative legume varieties that are considered to be bloat-safe, one of which is sainfoin.

Sainfoin contains condensed tannins which are a compound in the plant that attaches themselves to the bloat-inducing proteins in alfalfa, thus helping to eliminate the potential for bloat. The new sainfoin variety, AC Mountainview, that has been developed at the Lethbridge Research centre is proving to be competitive in forage stands and has higher regrowth than previous varieties, allowing it to regrow at the same rate as alfalfa. Livestock producers could now use AC Mountainview as a natural bloat control and graze higher legume pastures confidently.

To test the new AC Mountainview Sainfoin variety in an applied research setting, 9 of the Agricultural Research and Extension Council's member associations teamed up with Alberta Agriculture and Forestry. Fourteen demonstration sites were established with a 60% AC Mountainview/Alfalfa and 40% grass mixture across the province and one site in the BC Peace (figure 1).

The goal of this project is to provide farmers with the knowledge necessary to establish a high legume pasture (60+ legumes) and then graze that pasture effectively the year after establishment. High legume pastures have a greater capacity to withstand drought conditions and can be extremely productive, meaning producers could keep livestock on pasture for longer while maintaining good gains.

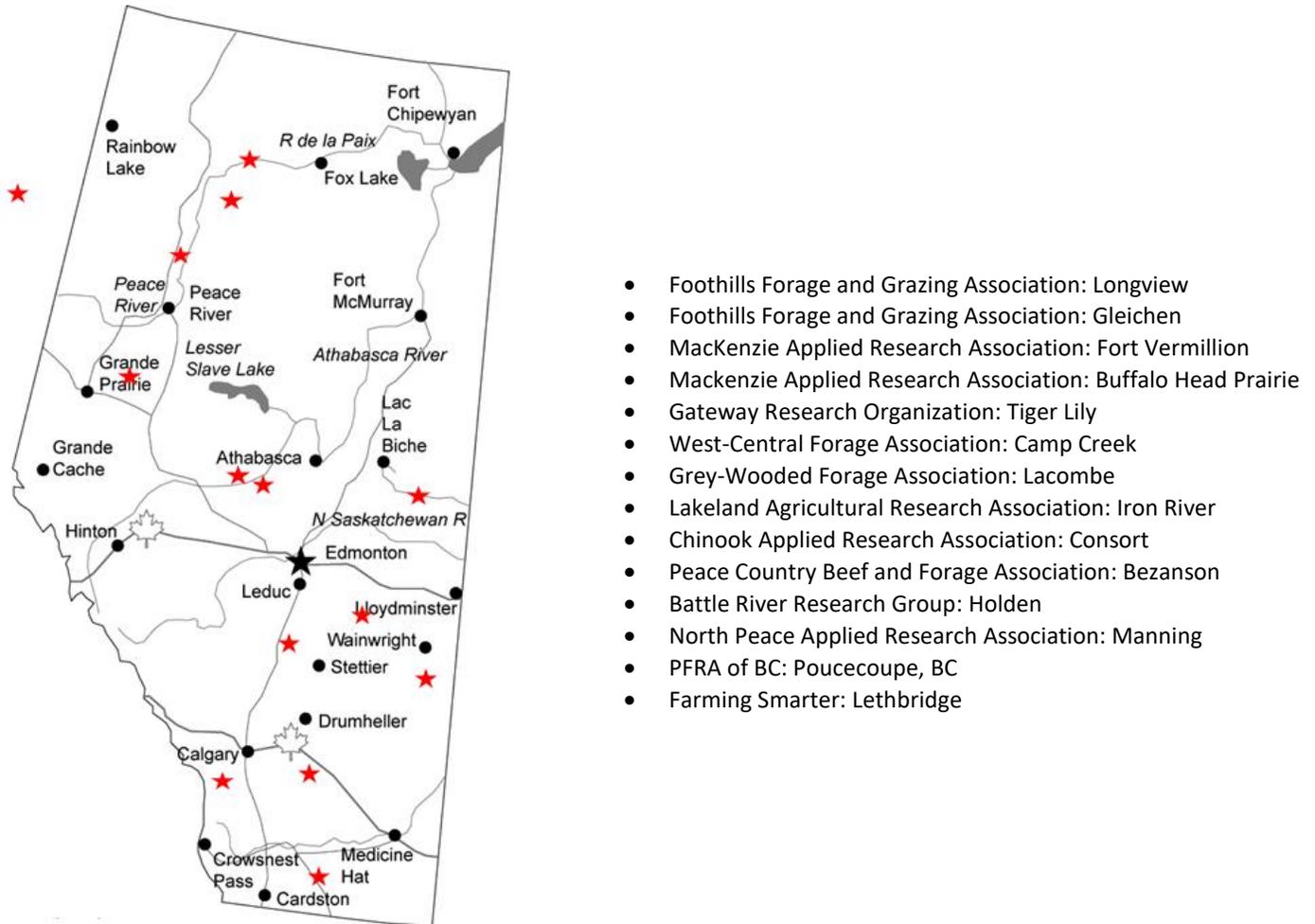


Figure 1. High Legume Pasture Project and Demonstration Site Locations, 2016.

Method:

The trial was seeded on June 8, 2016 to an area of 9.3 acre near Iron River, Alberta (NW34-63-7-W4). Prior to seeding the site was sprayed with Glyphosate on June 1, 2016 at a rate of 0.7 L per acre for control of perennial and annual weeds. Weeds identified at the time of spraying included Foxtail barley, Flixweed, Storks Bill and Canada Thistle. The seedbed was prepared firm with zero-tillage for optimal seed to soil contact.

Seeding was done with an Air Disk Drill with Barton Openers to a depth of 0.5 to 0.75 inches and 15-20-15-10 fertilizer was applied in the seed row at seeding. Due to the ability of legumes to fix nitrogen,

application of high amounts of nitrogen fertilizers can impede legume establishment and overall stand production. AC Mountainview sainfoin and AC Grazeland alfalfa were seeded first and hybrid bromegrass (6 lbs/acre) was seeded after at a 90-degree angle to the legumes.

Dry conditions experienced at the site (20 mm of rain in June) caused germination and establishment to be slow. On June 25, 2015, the field was sprayed with Matador for control of grasshoppers. A cover crop of Cerise Red Proso Millet was seeded on June 27, 2016 at 15 lbs/acre with the Air Disk Drill. No additional fertilizer was applied at seeding.

To determine germination and stand establishment, plant counts were conducted on August 30, 2016 to an area of ¼ m squared at 10 locations throughout the field.

Results:

The results of germination and establishment counts are summarized in table 1. Unfortunately, due to dry conditions experienced throughout the growing season, establishment was slow and patchy, with the final counts indicating a poor plant stand. Touch-up seeding will be conducted in the early spring after snow melt to fill in the stand.

In many perennial forage stands, complete germination does not occur in the year of establishment, but many producers find that growth continues into year two as more seeds germinate.

Table 1. Higher Legume Pasture Plant Counts Iron River, 2016.

Toss	Sainfoin (plants per 1/4 m2)	Alfalfa (plants per 1/4 m2)	Grass (plants per 1/4 m2)
1	0	4	1
2	1	3	0
3	1	0	0
4	3	0	0
5	1	0	0
6	2	0	0
7	0	0	0
8	1	1	1
9	2	2	1
10	1	2	0
Average	1.2	1.2	0.3



Higher Legume Pasture Project – August 4, 2016.



Higher Legume Pasture Project after swathing – August 30, 2016