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Why is Birdsfoot Trefoil Called “The Pasture Legume”?

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“The birdsfoot trefoil worked better than I thought. I wish I had seeded this demo on land that I own so I could try fall grazing it.”
Andrew Clarke
Baldonnel, BC

Relevant Factsheets:

Forage Fact #97: Legumes for Resiliency & Non Bloating

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Introducing This Factsheet

This forage fact is part of the project “Innovative Management Practices for Resiliency”. The project works with farmers and ranchers to identify and evaluate nutrient or cropping management practices that will be more resilient to climate change extremes.

This forage fact builds on the information summarized in *Forage Fact # 97 Legumes for Resiliency & Non Bloating*. It compiles experiences of various producers in the Peace region:

1. Andrew & Brian Clarke (demo plot seeded in 2015)
2. Gordon & Brenda Lazinchuk (seeded 2005, 2014)
3. Ron & Karen Buchanan (seeded in 2008, 2015)
4. Paul & Susan Wuthrich (certified seed grower)
5. Keith & Marilyn Carroll (plots in community pastures & their pastures)



Andrew Clarke seeding demo.

Clarks' Field Demo

Shaun Grant of South Peace Grain Coop in Dawson Creek helped us source the birdsfoot trefoil seed from growers in Saskatchewan. Andrew seeded plots with a Brillion seeder on June 15, 2015. (see *setup of plots pg 2*).

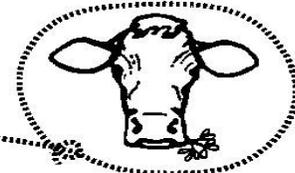
We monitored emergence and plant growth 5 times over the last two growing seasons. Andrew gave the field one full season rest, and cut it for hay for the first time on August 12, 2016. Hay samples were analyzed for feed quality (see *pg 3 for results*).



Andrew seeded the legume /grass mix with a Brillion seeder. Birdsfoot trefoil likes shallow seeding with good soil to seed contact.



Peace River Forage Association
of British Columbia



How were the farm scale demos laid out & monitored?



Map Legend:

— Treatment edges

Types of treatment or demo test strips:

A = Alfalfa (50%)

Smooth bromegrass (30%)

Timothy (20%)

B = Alfalfa (25%)

Birdsfoot trefoil (25%)

Smooth bromegrass (30%)

Timothy (20%)

C = Birdsfoot trefoil (50%)

Smooth bromegrass (30%)

Timothy (20%)

Please note: % are by seed count basis.

Benchmarks for monitoring:

A1 A2 A3 = benchmarks for A treatment test strip

B1 B2 B3 = benchmarks for B treatment test strip

C1 C2 C3 = benchmarks for C treatment test strip

Andrew Clarke divided the field into 3 plot treatments or test strips of 5 acres each. Each strip was seeded to a different seed mixture. The seed mixtures for each treatment are listed above. In each strip or treatment, we set up 3 benchmarks to monitor each time we visited the field. These are shown on the map as A1, A2, A3, B1, B2, etc. The photos at the right give glimpses of our field methods.

In the droughty conditions in 2015, birdsfoot trefoil was quicker to germinate than the alfalfa. Throughout the season, the plant counts and percentages of desirable plants were higher in the plots with birdsfoot trefoil in them (**B & C**) compared to the alfalfa plots (**A**). These differences carried through into the 2016 season.

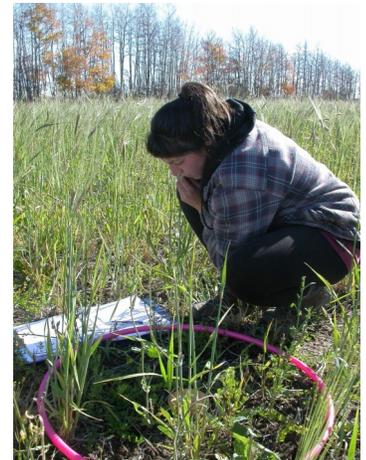
These results were surprising as birdsfoot trefoil has the reputation of being hard to establish. Several producers report mixed success, especially with broadcasting it into a mature pasture plant community.

Keith Carroll found that it did establish on his farm where he seeded in areas with higher soil moisture. He also had success on his family farm in Ontario where cut thorn bushes protected the tiny seedlings from grazing for the early years.

To improve stand establishment and longevity, birdsfoot trefoil needs:

- ⇒ to be seeded alone or with less competitive forages & no cover crop
- ⇒ 4" stubble left after cutting or grazing
- ⇒ to be used lightly in fall
- ⇒ to set seed every 2 to 3 years.

Letting birdsfoot trefoil set seed every 2 to 3 years is critical here but it still can be used in that season. It has an indeterminate growth habit, so that if you leave 4" average height after cutting or grazing, there should be enough seed pods left to maintain the stand. This is unlike most grasses or alfalfa which have to rest most of the season if you want them to set seed.



Alicia Lewis counting birdsfoot trefoil plants on Oct 5, 2015.



How does yield & quality compare with alfalfa?

The yield and quality of the birdsfoot trefoil was higher than expected.

Andrew Clarke cut hay on Aug 12, 2016 & he baled it on Aug 16, 2016. BC Agri Crop Insurance helped weigh bales & we sent 3 composite hay samples to A& L Labs. (see table below.)



Garry Pringle with BC Agri Business Risk Management helped weigh the bales at the Clarkes’ demonstration plot.



Each sample is a composite of 10 to 12 cores with feed probe.

Andrew was surprised when the yields for the strips with birdsfoot trefoil were higher than the alfalfa bales. **Arnold Bennett** was not surprised, and he remembers baling **Ben Hansen’s** trefoil hay with a 14 ft swather and could hardly get it done. **Gordon Lazinchuk** had good trefoil yields in 2015.

There were several certified seed growers in the Peace who grew birdsfoot trefoil. **Paul Wuthrich** grew birdsfoot trefoil for seed about 25 years ago. In those days, it was difficult to harvest, hard to clean and even more challenging to sell. Most of the seed was sold to BC Ministry of Highways for road repairs.

“Birdsfoot trefoil is my ‘anything I want crop’. Some years I hay it, some I graze it, and in some years I take it for seed.”
Bruce McDougall, 1998

Table 1: Hay yield & quality indicators for 4 types of forage stands at Clarkes & Lazinchuks.

	Alfalfa/ grass hay	Alfalfa/ birdsfoot/ grass hay	Birdsfoot trefoil/ grass hay	Lazin- chuk birdsfoot trefoil hay	Mid Pregnancy Needs for Cows	Late Pregnancy Needs for Cows
Label on map pg 2	A	B	C			
# bales/ plot	10	14.5	15	50		
Total lb/ ac	3000	4050	4150	3890		
TDN % dry basis	57.4	56.1	53.9	56.5	55	60
Protein% dry basis	10.1	10.4	7.6	10.7	7	9
Ca : P ratio	7:1	9:1	6:1	9:1	2:1 to 7:1	2:1 to 7:1
Relative feed value	97	92	84	111		

TDN % or energy values are adequate for all 4 hays to meet early pregnancy requirements but need to be watched in later pregnancy stages.

Protein % are good for all the hay types for both early and mid pregnancy requirements for cows.

Ca: P ratio should be at least 2:1 so that the phosphorus can be absorbed. All hay types had less than the minimal P values of 0.2% but ratios are good.

Relative feed value is an index that ranks cool season forages by potential digestible dry matter intake. The RFV = digestible dry matter x dry matter intake as a % of body weight ÷ 1.29. Forages are ranked relative to alfalfa at full bloom, based on digestibility & fiber values (RFV =100 at this growth stage.) Since RFV was developed using legume hays & intake responses of lactating dairy cows, it is best used in that situation and it should not be used for beef ration formulation.

“It’s recommended for sheep to not graze or be fed a high alfalfa ration during the flushing season before breeding, because of the phytoestrogen in alfalfa. New Liskeard College in NE Ontario did a trial comparing trefoil and alfalfa during flushing with significantly higher lambing % from the ewes flushed on trefoil.”
Keith Carroll, Dawson Creek

“Birdsfoot trefoil does not take care of itself, so you need to manage it wisely. When it is cut or grazed in the growing season, it needs to have enough green residue left to photosynthesize carbohydrates for regrowth.”
Grant Lastiwka, AB Ag

*“For my situation,
I am convinced
birdsfoot trefoil
is the legume for me.
My field lasts longer and
the cows like it better.”
Gordon Lazinchuk,
Dawson Creek*



Fall 2015 regrowth in 7th year birdsfoot trefoil hayfield during dry season at Buchanans.

*“Coming from Eastern
Canada, birdsfoot trefoil
was considered
‘the pasture legume’.
A lot of beef operations
considered it to be dual
purpose for both hay and
grazing, and ideal for
poorly drained
or acidic ground.”
Keith Carroll, DC*

Other Producers’ Experiences

Several producers in the Peace region have experience with birdsfoot trefoil. **Gordon Lazinchuk** seeded birdsfoot trefoil twice. In 2005 he direct seeded a hay mixture of Leo birdsfoot trefoil and AC Knowles hybrid brome grass. This field persisted so well, he seeded only Leo birdsfoot trefoil in the adjacent field in 2014 (*photo on front page*). He has found that with his acidic soils, no matter what he tries to do to prevent it, his alfalfa tends to die out after just a few years. He has been pleased with how he can keep his birdsfoot trefoil forage stands healthy longer.

Ron Buchanan bought a field pH kit & tested his forage fields. Many of them were slightly acidic, so he decided to include birdsfoot trefoil in his seed mix in 2008 and again in 2015. He appreciates that it gives his fields more longevity. Even more important is the possibility of a late season grazing of the regrowth in many years with birdsfoot trefoil.



Birdsfoot trefoil seeded in 1982 & thriving 18 years later at Farrell Creek.

Keith Carroll is a promotor of birdsfoot trefoil. He has revisited plots seeded in several community pastures by **Ross Green** et al, years after seeding and found the following species to be long term survivors:

Bear Mtn: 8 to 9 yr after seeding, Cree birdsfoot trefoil & Henrichs alfalfa got the highest ratings;
Cecil Lake: 13 yr after seeding, birdsfoot trefoil & Anik alfalfa;
Farrell Creek: 25 yr after seeding, birdsfoot trefoil & alsike clover.

Relevant Research & Selected References

The following is a tiny glimpse of some of the research and resources available to review when considering seeding birdsfoot trefoil:

1. Interactive seeding webtool to compare & source forage seed in the Peace
<http://www.peaceforagetool.ca/>
2. Dobb, A. & S. Burton, 2013. Rangeland Seeding Manual for British Columbia, B.C. Min. of Agri, Sust. Agri. Mgmt. Br., Abbotsford, BC. 282 pg.
3. Aasen, A. & M Bjorge. 2009. Alberta Forage Manual, 2nd Edition. AB Agric Agdex 120/20-1, Edmonton, AB. 348 pg.
4. Papadopoulos, Y. et al. 2013. Forage Seed Mixtures for Different Regions of Canada. BCRC Research Facts.
<http://www.beefresearch.ca/research-topic.cfm/stand-mixtures-44>
5. MacAdam, J. et al. 2013. The Benefits of Tannin-Containing Forages. Utah State University Plants, Soils & Climate. AG/Forages/2013-03pr

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With Contributions from: Ron Buchanan, Gordon Lazinchuk, Paul Wuthrich & Grant Lastiwka.

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