Climate Action Initiative
BC AGRICULTURE & FOOD

BRITISH COLUMBIA FORAGE COUNCIL

Cariboo-Chilcotin forage variety trials (2009-2012)*

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Cariboo Agricultural Research Alliance

Geographic Applicability This study was conducted in the Cariboo-Chilcotin, but may be applicable in the surrounding areas that exhibit similar growing conditions.

Commodity Relevance This study was conducted on alfalfa, sainfoin and clover, but may be applicable to other forage legumes.

Timeline 2009-2012

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The BC Forage Council conducted the variety trials to provide producers with data on new forage varieties, so producers could select the most suitable varieties for their specific agronomic conditions. The study established four research sites across the Cariboo-Chilcotin, and tested new varieties of perennial grasses and legumes, as well as non-traditional legume crops sainfoin and birdsfoot trefoil, and varieties of annual crops. This factsheet focuses on the legume trial results of the study.

Study Objectives

- To test new forage legume varieties of alfalfa and clover to specific agronomic conditions (e.g. varying soil conditions, irrigation vs. dryland) and evaluate their performance;
- To test non-traditional forage legumes, such as sainfoin, and evaluate suitability;
- To improve BC forage producers ability to select the most economically viable forage crops for the changing growing conditions throughout the Cariboo-Chilcotin region.

*Funding and support for this research was provided in part by**: IAF, NDIT, CIDC and local producer associations.**

Key Findings

- **It is possible to establish legume crops within the Cariboo region,** including areas where it is traditionally thought not possible.
- Livestock, particularly cattle, may cause significant damage to young plants through trampling and/or heavy grazing. Keep livestock off these fields during sensitive seasons.
- It is recommended that producers start with a clean seed-bed before starting legume forage crops.
- Wildlife (e.g. deer, elk) may cause significant damage to fields; while reportedly a rare issue, monitoring wildlife activity is recommended.

Table 1. Williams Lake, BC weather station data for 2010-2012. (Elevation 940m) Source: climate.weather.gc.ca

Williams Lake Weather Station	2010	2011	2012
Mean Annual Temperature (°C)	5.5	3.7	5.3
Mean Summer Temperature (°C) (*May-July*)	12.7	11.4	12.9
Total Annual Precipitation (mm)	298.8	522.6	393.9
Total Summer Precipitation (mm) (*May-July*)	95.5	289.4	173.8

Design

This project was conducted on 4 sites located across the Cariboo-Chilcotin:

- *Williams Lake*: High-elevation with irrigation
- *Miocene*: High-elevation dryland without irrigation
- *Redstone:* Mid-elevation with irrigation
- *Kaufman:* River bottom with irrigation

Each site contained variety plots and samples were collected from 4 sub-plots in each field. Harvest was conducted on the same date at all sites for comparison purposes.

Limitations

Two sites were lost: William's Lake due to excessive weed issues, and Miocene due to deer damage. Therefore, limited data from those sites were gained, and data reflects conditions of river bottom site with sandy gravel only. It is preferred to have 3-5 years of data for accurate variety evaluation.

Next steps

To build on this work further and ensure quality data collection, a key next step would be to establish long-term permanent field sites, in conjunction with acquiring localized climate data. More research is also needed to measure Nitrogen fixing capacity of various legumes in these trials, and developing mixed species trials, particularly in areas with significant weed pressure.

Climate Adaptation Implications

Many crop varieties are developed outside of the Cariboo region; therefore, it is necessary to evaluate newly released varieties to determine their suitability to local conditions. Finding varieties that can provide sustained yield over numerous years and under stress conditions, would help contribute to a resilient, economically thriving livestock industry within the Cariboo-Chilcotin region.

Climate change may enable the growth of crops previously believed to be unsuitable (e.g. like legumes in the Cariboo). Developing local crop and variety trials provides producers with valuable information, and reduces the producers' risk of trying new practices. A key to this adaptation is comparing past yield results (Fig. 1 and Table 2) to the climate data from the trial years (Table 1), and compare to more recent weather/climate trends to determine suitability.

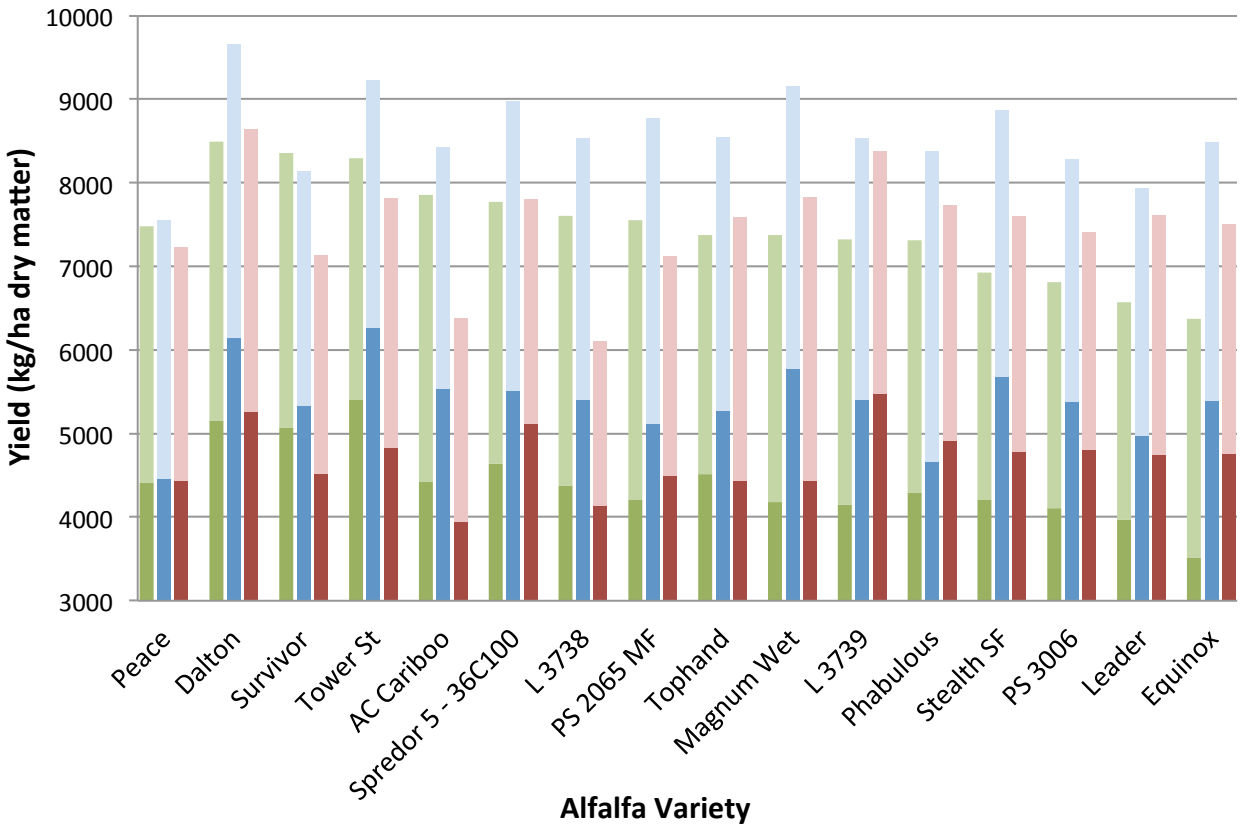

Figure 1 (above). Alfalfa yield data from the Kaufman Site (sandy gravel, river bottom) in Soda Creek, BC. 'Peace' was the check variety used in the trial.

Table 2 (right). Non-traditional legume yield from the Kaufman Trial Site for 2011, in Soda Creek, BC.

Non-traditional Legume Yield (kg/ha dry matter)			
	Cut 1	Cut 2	Total
Sainfoin			
LRC 3401	5312	-	5312
LRF 3519	6038	-	6038
Birdsfood Trefoil			
Bull	4036	-	4036
Leo	4426	-	4426
Cider Milkvetch			
Oxley	4937	-	4937
Veldt	4693	-	4693
Clover			
Altaswede Red Clover	5557	4494	10051
Tempus DC Red Clover	5612	2066	7678
Dawn Alsike	5012	-	5012
Aurora Alsike	4361	-	4361

Links

The complete set of data, including grass variety trial and annual crop trial portion of this research, is available on the CARA Database, as well as at the BC Forage Council's website:

http://www.bcforagecouncil.ca/page/

For weather data, climate adaptation information, weather based farm calculators and more, visit Farmwest:

www.farmwest.com

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