

**B.C. FORAGE COUNCIL – HIGHWAY 16 CROP TESTING UNIT  
2003-2006 FORAGE & CEREAL VARIETY EVALUATION**

**OBJECTIVES**

1. to identify superior alfalfa and grass varieties which will increase yield or improve survivability of forage for the hay, pasture and livestock industry
2. to identify new high yielding oat and barley varieties for grain and/or forage
3. to create a producer-managed Crop Testing Unit based out of Glen Dale Agra Services
4. to create seasonal employment opportunities and technical training for producers and student technicians

**SUMMARY**

The Highway 16 Crop Testing Unit (CTU) established 24 varieties of grass and an equal number of alfalfa varieties at three sites each in 2003. These were harvested in one to two cuts as rainfall produced measurable dry matter in 2004 to 2006 except for the alfalfa test at Mapes which winterkilled in January 2005. A fourth grass test was reseeded at Mapes in 2004 and harvested in 2005 and 2006. A total of twenty varieties of oats and barley were sown and harvested for cereal silage at four sites in all years. Fourteen of these varieties were also evaluated for grain production at the same 4 sites (Mapes, Fort Fraser, Francois Lake and Smithers). The CTU greatly appreciates the assistance of Glen Dale Agra Services in providing a work station, fertilizer and other support.

With the assistance of Traugott Klein, Plot Foreman; Manfred Kutzner, plot worker and Jim Tingle, Technical Advisor; the CTU was able to complete all test objectives under budget. In 2006 the Ministry of Agriculture and Lands contributed student labour and the use of a vehicle for plot harvests. The extreme drought of 2006 further reduced the number of harvests and thus field expenses.

Extension highlights for 2005 included a June 13th tour of the Vanderhoof area grass tests by timothy breeder Hideki Yatsu from Hokkaido , Japan and sales representative Edward Mercer from Oregon ;both from Snow Brand Seeds. They concluded that their current entry SBT 9501 was too early maturing to compete with Climax and that they would enter later-maturing lines in future tests.

Field tours of all test sites were sponsored on Aug 3-4, 2005 featuring alfalfa breeder Dr. Surya Acharya from the AAFC Lethbridge Research Station.

The July 2006 Field Tours featured Alberta barley breeder Dr. Pat Juskiw as speaker. The Vanderhoof area tour was also combined with a project tour by Directors of the Cattle Industry Development Council.

Chair Dave Merz has presented the three year summary data at the Lakes Cattlemen AGM and at three Highway 16 area Cattlemen's meetings.

Combined year data has been published on the farmwest.com website.

**CROP and SITE HIGHLIGHTS**

**Alfalfa** – AC Cariboo, Phabulous, Magnum Wet and Chinook 421 out yielded check variety Peace at Fort Fraser and Smithers on three year average dry matter production. Peace DM yields in kg/ha for

2004/2006 were 6262 and 2292 at Fort Fraser and Smithers, respectively. Two cuts were harvested at Fort Fraser and a single cut was recorded at Smithers each year.

The results of these trials have already changed the alfalfa seeding practices of Highway 16 farmers and a seed company is utilizing the data for registration support for Phabulous and Grandeur.

**Grass** – Timpro, LMR 72 and Talon timothy averaged slightly higher yields than check variety Climax across sites and years.

Kay was the best orchardgrass variety across sites and years. Okay out yielded Kay and Early Arctic at the Smithers site.

MB 15 hybrid bromegrass out yielded Carlton smooth bromegrass only at Fort Fraser. Peak did not yield as well as Carlton at any site.

Carnival tall fescue significantly out yielded Courtenay at Mapes and Decker Lake and was equal to Courtenay at Fort Fraser and Smithers. The cultivars EA 79 and Hoedown suffered winter injury at Decker Lake.

The following are check variety DM yields (kg/ha) by location:  
(Mapes is 2005/2006; other sites are combined 2004 to 2006 data)

<u>Variety- Species</u>	<u>Mapes</u>	<u>Fort Fraser</u>	<u>Decker Lake</u>	<u>Smithers</u>
Climax- timothy	5453	4869	5427	4818
Kay- orchardgrass	5735	4629	4540	3915
Carlton- bromegrass	5974	5004	4753	5196
Courtenay- tall fescue	6018	4911	3255	5275

The average grass yields in 2006 were only 55% of the previous two year average due to the severe drought across Highway 16. All grass tests should be harvested for another year because of the drought effects.

**Cereal Silage** – Cereal silage tests were harvested at Mapes, Fort Fraser, Francois Lake and Smithers. Three year average check variety DM yields in kg/ha were:

	<u>Mapes</u>	<u>Fort Fraser</u>	<u>Francois Lake</u>	<u>Smithers</u>
Derby oats	4354	2759	4810	3132
AC Lacombe barley	7142	4578	5240	3620

All cereal yields were significantly reduced by the drought in 2006.

Forage oats CDC Bell and CDC Baler averaged 117% and 113%, respectively, of the three year average yield of Derby. CDC Bell and CDC Baler had the best regrowth of any cereal cultivar.

Across four sites and years, Ponoka barley (115%), Seebee ( 111%) and Helgasen (108%) out yielded the check variety AC Lacombe. Ponoka out yielded AC Lacombe by 31% as did CDC Cowboy by 26%

at the two western test sites. Manny did not yield as well as Ponoka and dropped to equal to AC Lacombe average across sites and years.

Four new forage barley cultivars and two Ponoka/pea mixtures were planted in 2006. Two of the new cultivars out yielded Ponoka at two sites. The pea mixtures did not yield well due to the drought.

**Cereal Grain** – Eleven barley varieties were harvested at Mapes, Fort Fraser, Francois Lake and Smithers by hand and threshed and cleaned at the Vanderhoof work station. Three oat varieties were harvested in 2004/2005 except at Francois Lake in 2005 where they failed to mature. Boyer oats outyielded Derby at all sites harvested.

By location, the barley varieties which outperformed AC Lacombe on three year averages were:

- Mapes – Vivar and Manny
- Fort Fraser – Manny
- Francois Lake – all but Dillon
- Smithers – Ponoka, Manny and Vivar

## **METHODS**

All crop tests were planted in four replicate randomized block or split plot designs. Annual yields were compared to standard check varieties as determined by the Forage Cultivar Evaluation Committee for BC.

Perennial forage was planted at Mapes, Fort Fraser, Decker Lake and Smithers in 2003 and harvested at three sites in 2004. Alfalfa at Decker Lake failed to achieve a satisfactory stand and winterkilled in January 2005 at Mapes due to severe icing. The grass test was resown at Mapes.

Fertilizer was broadcast in late October each year in lbs/acre for :

- Alfalfa - 34N - 40 P2O5 – 59 K2O – 31S – 2B
- Grass - 72N – 42 P2O5 – 60 K2O – 30S

The grasses received 200 lb /acre of 21-0-0 after first cut in 2005.

Cereal grain and silage had 200 lbs of 17-20-0-14 drilled in with the seed and 28N-20 P2O5- 60 K2O broadcast and harrowed prior to planting.

Dry matter yields were harvested on 30 square feet with a Swift Current harvester. Green yields were weighed, subsampled and frozen for later DM determination at 70C for 48 hours in a forced air convection oven.

Cereal grain plots were harvested by hand (2 rod rows on 9 inch spacing ) and threshed and cleaned at Glen Dale Agra Services.

## **EXTENSION**

- A timothy breeder's tour of Vanderhoof sites was held on June 13, 2005
- Field Days were held at all test sites during 2005 and 2006
- All field days had articles written in Vanderhoof and Smithers press.

- Pictures and test data were displayed at three fall fairs.
- Pictures and articles have been published on the Farmwest website and in the BCFC newsletter.
- 2004 Highlights were presented at the 2005 Forage/Beef Seminar at Williams Lake and at several Highway 16 producer meetings.
- Three-year results were presented in 2007 at regional and local cattlemen meetings
- CTU Directors meetings were held in December each year in Fraser Lake to review the results and to plan future direction.
- The three year average results have been posted on the farmwest.com website.

## **ACKNOWLEDGEMENTS**

All funding sponsors have been recognized on site signs, field day and seminar handouts, displays, and the Farmwest.com website. Significant funding sources include:

Beef Cattle Industry Development Fund  
 BC Investment Agriculture Foundation  
 Nechako/Kitimaat Development Fund  
 Glen Dale Agra Services  
 BC Forage Council  
 Sinkut Mountain Cattlemen's Association  
 Fort Fraser Cattlemen's Association  
 Lakes District Cattlemen's Association  
 Smithers Farmer's Institute

Special thanks are due to the farm co-operators who provide land, labour assistance, and fencing and who also serve on the Highway 16 CTU Management Committee:

Mapes – Monroe and Cindy Muir , Stump Road – alfalfa, grass and cereals  
 Fort Fraser – Art and Audrey Wiens , Highway 16 – alfalfa, grass and cereals  
 Francois Lake – Peebles Ranch , Walker Road – cereal grain and silage  
 Decker Lake – Herb Neville , Palling Road E. – grass  
 Smithers – Leroy Taylor, Snake Road – alfalfa, grass and cereals

Other members of the Management Committee include Graeme Johnstone and Shirley Hamblin of Smithers , Glen Birky and Norm Dueck of Glen Dale Agra Services and Brent Barclay from the Ministry of Agriculture and Lands.

## **CONCLUSION**

The project has met all of the objectives set out in the funding applications. New varieties of alfalfa, grass, oats and barley have been identified and recommended for hay, pasture, silage or grain. The Crop Testing Unit has been established in Vanderhoof to serve all of the Highway 16 area. Seasonal labour and technical training has been created for producers and student technicians.

Further collection of data occurred in 2007 with no additional funding to help overcome: the significant negative effect of the 2006 drought on grass and cereal yields; to further evaluate alfalfa longevity and grass cultivars at the Mapes site, and; to further evaluate new forage barley cultivars. This additional year of data will be analyzed and results published on [www.farmwest.com](http://www.farmwest.com) by March 31, 2008.

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