

## Regional Silage Trial – Cereals

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### Objectives:

1. To determine the best yielding cereal forage varieties (barley, oats, triticale) for whole plant forage production in Northeastern Alberta.
2. To determine the best quality cereal forage varieties (barley, oats, triticale) for cattle feed in Northeastern Alberta.

### Background:

An important aspect of crop production is variety selection and, with new varieties continually becoming available, current and comprehensive forage variety yield and quality data is essential to producers. Previous experience with cereal grain production and the Regional Variety Trials has shown that there can be a 15% increase in production from selecting the best varieties, which, on average, can be an increase of \$25/acre.

Through the use of experience, neighbors and publications such as the Alberta Seed Guide ([seed.ab.ca](http://seed.ab.ca)), we make variety selection decisions to benefit producers. However, there has been a lack of whole-plant annual forage production information to aid us in making cropping decisions for forage production.

The purpose of this trial is to supply producers with current and comprehensive annual forage variety yield and quality data for silage, greenfeed or swath grazing in Northeastern Alberta (crop zones 3 and 5) and across the province.

### Method:

The cereal trials were grown in three blocks of plots: barley, oats and triticale/wheat, in two locations: Fort Kent (NE25-61-5-W4) and St. Paul (SE15-59-9-W4). The trial blocks were seeded as a randomized complete block design (RCBD) with four replicates to reduce error. The plots measured 1.15m by 6m in area.

Agronomic information on the trials can be found in table 1. The trials were seeded using the LARA five-row zero-till small plot drill and blend fertilizer was side-banded at the time of seeding. The trials in Fort Kent were seeded on May 18<sup>th</sup>, 2017 and the trials in St. Paul were seeded on May 17<sup>th</sup>, 2018. The trials were sprayed with a 3-point hitch sprayer once during the growing season.

Total rainfall at the St. Paul site was 274.9 mm and the Fort Kent site was 231.4 mm.

Crop height and stage of maturity was recorded prior to harvest with the LARA alfalfa-omega self-propelled forage harvester. The total plot weight was recorded and samples were taken to assess dry matter content. Additional composite samples were taken from each variety, frozen and sent to A & L Canada Laboratories for wet chemistry analysis. Statistical analysis of the data was conducted using ARM 9,  $P = 0.05$ .

The following varieties were grown in the Regional Silage Trials in 2017:

### **Barley**

- *Champion* – high yielding 2-row feed barley variety with excellent standability and improved disease resistance.
- *CDC Coalition* – high yielding 2-row feed barley variety.
- *CDC Cowboy* – tall, 2-row dual purpose barley variety that responds well to low moisture and low fertility.
- *CDC Austenson* – 2-row barley variety with semi-smooth awns, short and strong straw and high feed yield.
- *Claymore* – 2-row barley variety developed from CDC Copeland x Xena.
- *CDC Meredith* – outstanding 2-row malting barley variety with high grain yield.
- *Sundre* – high yielding 6-row barley variety with good disease resistance.
- *Amisk* -rough awned, 6-row, semi-dwarf general purpose barley with strong straw for decreased lodging.
- *CDC Maverick* – 2-row forage barley variety with high yields. Ideally suited to low input management and lighter soils or drought conditions.
- *Conlon* – early maturing, 2-row feed and malting barley variety with smooth awns.
- *Canmore* – high yielding 2-row general purpose barley variety with good resistance to lodging.
- *Gadsby* – rough awned, 2-row general purpose barley well adapted to the brown and black soil zones. Excellent disease resistance and good quality feed yield.
- *AC Ranger* – early maturing, 6-row silage barley with a flexible planting window.
- *Altorado* – 2-row, spring feed barley with good resistance to lodging and a fair to good resistance to drought conditions.

### **Oats**

- *CDC SO-1* – early maturing, very digestible brown feed oat variety with a high fat content and does not need to be rolled. Short, strong straw for reduced lodging.
- *AC Morgan* – High yielding, later maturing milling oat with good lodging resistance and is commonly used for silage or greenfeed.
- *AC Murphy* – widely adapted forage oat, with high yields, improved lodging resistance and is well suited for silage, swath grazing and green feed.
- *CDC Haymaker* – later maturing forage oat variety with high forage yield and quality.
- *CDC Seabiscuit* – high yielding milling oat variety with good straw strength for reduced lodging.
- *CDC Baler* – very leafy, forage oat variety.
- *AC Juniper* – early maturing general purpose oat variety with high yields and strong straw.
- *Waldern* – late maturing, high yielding feed oat variety with good lodging resistance.

- *AC Mustang* – high yielding silage and forage oat variety with good lodging resistance.

***Triticale and Wheat***

- *Bunker* – early maturing, reduced awn forage variety with great digestibility, high fat content and high silage yields.
- *Sunray* – early maturing, spring triticale variety with improved ergot resistance. Short statured for increased resistance to lodging.
- *Taza* – reduced awn forage and grain triticale variety with good lodging resistance.
- *Tyndal* – early maturing, reduced awn forage and silage variety with good lodging resistance.
- *AAC Chiffon* – high yielding soft white wheat variety that performs well in dry conditions.

**Table 1.** Agronomic Information, 2017.

Trial	Site	# of Varieties	Seeding Date	Seeding Rate	Fertility (lbs/ac)	Weed Control	Harvest Date
Barley	Fort Kent	14	18-May-17	250 pl/m <sup>2</sup>	33-5-6-5 @ 275 lbs/ac	Buctril M, Merango	09-Aug-17
	St. Paul	14	22-May-17	250 pl/m <sup>2</sup>	33-5-6-5 @ 275 lbs/ac	Buctril M, Merango	23-Aug-17
Oats	Fort Kent	9	19-May-17	250 pl/m <sup>2</sup>	33-5-6-5 @ 275 lbs/ac	Buctril M	10-Aug-17
	St. Paul	9	22-May-17	250 pl/m <sup>2</sup>	33-5-6-5 @ 275 lbs/ac	Buctril M	23-Aug-17
Triticale	Fort Kent	5	18-May-17	370 pl/m <sup>2</sup>	33-5-6-5 @ 275 lbs/ac	Buctril M, Merango	18-Aug-17
	St. Paul	5	22-May-17	370 pl/m <sup>2</sup>	33-5-6-5 @ 275 lbs/ac	Buctril M, Merango	23-Aug-17

**Results:**

***Barley***

The barley trials are aimed to be harvested at the soft dough stage. There were 14 barley varieties grown in the trials this year at both locations. The results of the Fort Kent and St. Paul trials can be found in table 2 and table 3, respectively. The Fort Kent trial was harvested after 90 days and the St. Paul trial was harvested after 92 days. High rainfall during seeding allowed for quick establishment of the trials at both sites. Average moisture content of the Fort Kent trial was 75% and the St. Paul trial was 50%.

The varieties yielded significantly higher at the St. Paul location, with the average yield in Fort Kent of 3.09 ton/acre compared to an average of 6.27 ton/acre achieved in St. Paul. The highest yielding variety in Fort Kent was Altorado at 4.63 ton/acre. Altorado was recently registered and has been grown in the RST trials over the past 2 years as TR13740. The second highest yielding variety was Canmore at 3.61 ton/acre, significantly lower than Altorado. Canmore was also one of the higher yielding varieties in St. Paul at 6.58 ton/acre. However, the highest yielding variety was CDC Cowboy at 6.95 ton/acre.

Similar to 2016, feed quality was higher in the barley varieties grown at the Fort Kent location when compared to the St. Paul trial. This is likely due to a later harvest stage for the St. Paul trial beyond the recommended soft dough stage, which is seen in the lower moisture content of the samples







**Table 7.** RST Triticale St. Paul, 2017 (ton/acre, 1 ton = 2000 lbs).

Variety	DM Yield		DM Yield (% Taza)	2017 Quality Data							
	(ton/ac)			CP (%)	ADF (%)	NDF (%)	TDN (%)	Ca (%)	P (%)	K (%)	M (%)
Bunker	6.86	a	104	11.03	32.98	51.23	63.21	0.24	0.21	1.34	0.15
Taza	6.62	a	100	10.61	32.93	52.60	63.25	0.20	0.23	1.40	0.13
Sunray	6.57	a	99	10.69	32.96	51.06	63.22	0.23	0.22	1.52	0.14
AAC Chiffon	6.56	a	99	10.15	34.21	52.99	62.25	0.24	0.24	1.97	0.16
Tyndal	6.44	a	97	10.72	32.88	51.78	63.29	0.21	0.23	1.40	0.13
Average	6.61			10.64	33.19	51.93	63.04	0.22	0.23	1.53	0.14
CV	6.85										

Look for province-wide results in the 2017 *Alberta Seed Guide*.