

Perennial Forage Variety Evaluation

Thanks to the Alberta Beef Producers, the Alberta Livestock Meat Agency and several forage seed companies for supporting this project.

Background:

This project will provide performance information on a number of perennial grass and legume species and varieties. It is part of a provincial initiative with sites in 8 regions of Alberta. Establishment, winter survival and yield are being monitored.

Objective:

To provide unbiased, current and comprehensive regional data regarding the establishment, winter survival, yield and economics of specific species and varieties of perennial forage crops.

To identify perennial crop species/varieties that demonstrate superior establishment, hardiness, forage yield and nutritional quality characteristics in different eco-regions of Alberta.

To assess any benefits from growing mixtures of selected species.

Cooperator: Rude Farms, Sedalia SW 2-31-06-W4

Table 1 **Soil Quality**

Nutrient	Spring 2016
Nitrogen (0-24)	43 lb/A (Deficient)
Phosphorus (0-6)	75 lb/A (Optimum)
Potassium (0-6)	1200 lb/A (Optimum)
Sulfate (0-24)	36 lb/A (Excess)
Soil Salinity (E.C.)	0.39 (Good)
pH	7.8 (Slightly alkaline)

Table 2 **Precipitation (inches)**

Month	2016	2017	2018
April	1.2	0.6	0.1
May	2.7	1.6	0.6
June	3.2	2.3	2.4
July	3.1	0.9	1.9
August	2.1	1.1	0.7
Total	12.3	6.6	5.7

Description:

Seeding Date: June 6, 2016

Seeder: Henderson 500 plot drill with Morris contour openers

Seeding Rates: As listed below

Previous Crop: Canola stubble

Seedbed Preparation: Glyphosate was applied prior to seeding

Seeding Depth: ½ - 1 inch

Plot Size: 1.4 m by 5 m, replicated 4 times in randomized block design

Fertilizer: 50 lb/A 26-18-05-03

Herbicide: Basagran

Harvest: No harvest in 2016

July 5, 2017

August 1, 2018 (delayed due to scale problems)

Table 3 Varieties Seeded and Seeding Rates:

	Species	Variety	Seeding Rate (lb/A)	
Grasses	Meadow Brome	Fleet	14	
	Hybrid Brome	AC Admiral (<i>low germ</i>)	18	
		AC Knowles	12	
		AC Success	12	
	Wheatgrasses			
	Pubescent	Greenleaf	10	
	Crested	Kirk	6	
	Green Wheatgrass	AC Saltlander	9	
	Russian Wildrye	Tom	8	
	Fojtan Festulolium		20	
	Orchard Grass	Killarney (<i>low germ</i>)	10	
	Tall Fescue	Courtney	8	
	Timothy	Grinstad	4	
	Legumes	Alfalfa	20-10	8
44-44			8	
Assalt ST			8	
Dalton			8	
Halo			8	
PV Ultima			8	
Rangelander			8	
Rugged			8	
Spredor 4			8	
Spredor 5			8	
Yellowhead			8	
Sainfoin			AC Mountainview	30
			Nova	30
Cicer Milk Vetch		Veldt	13	
		Oxley 2	13	
Mixes		Mix 1	Fleet Meadow Brome	7
			Yellowhead Alfalfa	4
	Mix 2	AC Knowles Hybrid Brome	7	
		Yellowhead Alfalfa	4	
	Mix 3	Success Meadow Br	7	
		Yellowhead Alfalfa	4	
	Mix 4	Fleet Meadow Brome	7	
		Spredor 5 Alfalfa	4	
	Mix 5	AC Knowles Hybrid Brome	7	
		Spredor 5 Alfalfa	4	
	Mix 6	Success Meadow Brome	7	
		Spredor 5 Alfalfa	4	
	Mix 7	Fleet Meadow Brome	7	
		AC Mountainview Sainfoin	15	
	Mix 8	AC Knowles Hybrid Brome	7	
		AC Mountainview Sainfoin	15	
	Mix 9	Success Meadow Brome	8	
		AC Mountainview Sainfoin	15	

Results and Discussion

Table 4 Grass Height and Dry Matter Yield

	Height			Dry Matter Yield (lb/A)				Avg %
	2017	2018	Avg	2017	2018	Average	Fleet	
Greenleaf Pubescent Wheatgrass	97	73	85	5174 a	2551 a	3862 a	150	
AC Success Hybrid Brome	99	78	89	4891 a	2118 ab	3504 ab	132	
AC Saltlander Green Wheatgrass	89	65	77	4224 ab	1825 bcd	3024 bc	113	
AC Knowles Hybrid Brome	95	69	82	4381 ab	1345 def	2929 bc	99	
Fleet Meadow Brome	91	71	81	4088 ab	1476 cde	2782 c	100	
Kirk Crested Wheatgrass	80	62	71	3311 c	1989 bc	2650 c	108	
AC Admiral Hybrid Brome	93	75	84	3810 ab	1210 ef	2510 c	88	
Grindstad Timothy	66	52	59	2022 d	528 g	1274 d	43	
Tom Russian Wildrye Grass	85	80	83	1605 d	767 fg	1186 d	46	
Courtney Tall Fescue	69	65	67	1640 d	668 g	1154 d	43	
Killarney Orchard Grass	51	35	43	902 d	420 g	662 d	25	
Fojtan Festolium	50	45	48	573 d	0 h	573 e	14	
Mean	80	64	72	3052	1241	2176		

AC Success hybrid brome was the tallest of the grass varieties seeded at the Sedalia site, followed by Greenleaf pubescent wheatgrass. Greenleaf was the best yielding in each of 2017 and 2018. Other varieties showing good potential include AC Saltlander green wheatgrass, AC Knowles hybrid brome and Fleet meadow brome. Shortest and lowest yielding at this site in 2017 was Fojtan festolium and growth was too short to harvest on 2018. Average yield from the entire block in 2018 was less than half of the 2017 yield most likely due to cold growing conditions in the spring and lower precipitation levels.

Table 5 Legume Height and Dry Matter Yield

	Height			Dry Matter Yield (lb/A)			
	2017	2018	Average	2017	2018 ¹	Average	% Yellowhead
Yellowhead	49	43	46	4879 a	1979	3429 a	100
Rugged	52	45	49	4243 ab	2527	3367 a	107
20--10	55	46	51	4262 ab	1963	3112 ab	93
Spredor 4	54	47	51	3802 abc	2417	3110 ab	100
44--44	54	44	49	3997 abc	2091	3056 ab	94
Rangelander	58	45	52	3914 abc	2213	3044 ab	96
Assalt ST	56	50	53	3765 abc	2050	2932 abc	90
Dalton	58	49	54	3646 abc	2197	2913 abc	93
PV Ultima	51	42	47	3566 abc	2259	2908 abc	94
Halo	53	49	51	3372 abc	2545	2893 abc	99
Spredor 5	51	41	46	3552 abc	1679	2615 bcd	79
Oxley 2 Cicer Milk Vetch	36	31	34	2930 bc	2153	2542 bcd	84
Veldt Cicer Milk Vetch	38	24	31	3018 abc	1472	2215 cde	68
Nova Sainfoin	64	49	57	2654 bc	0	1819 de	27
AC Mountainview Sainfoin	65	45	55	2278 c	0	1442 e	23
Mean	53	43	48	3592	1836	2760	

¹ Differences were not significant

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Nova sainfoin topped the legume group in height at the Sedalia site. Yellowhead alfalfa, followed closely by Rugged, 20-10 and Spredor 4 alfalfa varieties, were the top yielding legumes. Similar to the grass block yields, legume yields dropped by 50% from 2017 to 2018.

Table 6 Grass/Legume Mix Height and Dry Matter Yield

	Height			Composition			Dry Matter Yield (lb/A)			
	2017	2018	Avg	2017	2018	Avg	2017	2018	Avg	% Check
Success Hybrid Brome	88	69	79	74	64	69	3995 a	2389 a	3192 a	102
Yellowhead Alfalfa	60	37	49	26	56	31				
Fleet Meadow Brome	92	69	81	72	61	67	4045 a	2274 a	3159 a	100
Yellowhead Alfalfa	52	36	44	28	39	33				
Knowles Hybrid Brome	88	70	79	38	53	46	4098 a	2205 ab	3151 a	99
Yellowhead Alfalfa	58	38	48	62	47	54				
Success Hybrid Brome	91	73	82	59	61	60	3866 ab	2276 a	3071 a	98
Spredor 5 Alfalfa	56	38	47	42	39	40				
Knowles Hybrid Brome	88	72	80	43	54	49	3710 ab	1888 abc	2799 ab	87
Spredor 5 Alfalfa	59	38	49	57	46	51				
Knowles Hybrid Brome	89	76	83	44	79	62	3396 abc	1541 cd	2469 bc	76
Mountainview Sainfoin	62	35	49	56	21	39				
Success Hybrid Brome	96	77	87	79	100	90	3189 bc	0	2414 bc	39
Mountainview Sainfoin	60	43	52	28	0	10				
Fleet Meadow Brome	54	71	63	46	58	52	3283 bc	1454 cd	2369 bc	73
Spredor 5 Alfalfa	46	25	36	55	42	49				
Fleet Meadow Brome	91	73	82	77	100	89	2792 c	0	2020 c	35
Mountainview Sainfoin	60	30	45	24	0	11				
Mean	72.4	55.3	64	52.1	54.1	52.4	3597	1559	2738	

Average yield from the mix of grass and alfalfa treatments was comparable to the straight legumes but greater than the straight grasses. The cold spring and low precipitation again influenced production as 2018 yields were 50% less as compared to 2017. All three combinations including Yellowhead alfalfa were amongst the top yielding in the trial. Success hybrid brome and Spredor 5 alfalfa yielded slightly less. The percent composition of the legume in the various combinations tended to drop from 2017 to 2018. This was particularly evident in the brome/sainfoin combinations.

Nutritional Components – Individual Sites (as contributed by Barry Yaremci, M. Sc., P. Ag., Beef and Forage Specialist, Alberta Agriculture and Forestry)

After reviewing the data, there are differences in forage quality between years and also between the entries within each site. Comments will be made by individual sites. If no comment is made about an individual nutrient, they are considered to be within normal ranges found in Alberta. The comparisons are based on data summarized from feed test results obtained from the Soil and Animal Nutrition Lab that was located at the O. S. Longman Building and compiled from 1976 to 1986 (AgDex 100/81-6). Nutrient values comparisons are “% of normal” compared to averages.

Comparing nutrients concentrations found in forages (Table 7) to animal requirements (Table 8) are summarized in the tables below. Discussion will be limited to mature cows. Nutrient requirements for other classes of animals vary.

Table 7 Average Nutrient Concentrations Found in Alberta Forages

	Grass Forages	Legume Forages	Mixed Grass / Legume Hay
All nutrients listed on a dry matter basis			
Protein (%)	10.3	18.5	12.5
Calcium (%)	0.4	1.6	1.0
Acid Detergent Fibre (%)	38.0	33.0	36.0
Phosphorus (%)	0.15	0.21	0.18
Magnesium (%)	0.15	0.3	0.22
Potassium (%)	1.15	1.75	1.5
Sodium (%)	0.03	0.04	0.02
Sulfur (%)	0.15	0.20	0.16
Copper (mg/kg)	4.5	5.5	6.5
Manganese (mg/kg)	65	35	45
Zinc (mg/kg)	25	22	24

Table 8 Animal Requirements

	Cows Mid Pregnancy	Cows Late Pregnancy	Cows Post Calving
1400 pound animal All nutrients listed on a dry matter basis			
Protein (%)	7	9	11
Digestible Energy (mcal)	30.8	35.0	47.0
Calcium (%)	0.4	0.4	0.5
Phosphorus (%)	0.2	0.2	0.25
Magnesium (%)	0.2	0.2	0.25
Potassium (%)	0.7	0.7	0.8
Sodium (%)	0.09	0.09	0.09
Sulfur (%)	0.15	0.15	0.15
Copper (mg/kg)	12	12	12
Manganese (mg/kg)	47	47	47
Zinc (mg/kg)	35	35	35

When using the tables from the forage associations, the calculation to obtain the actual value of a nutrient is (actual value + (actual value x percentage)). For example: if the manganese is 75% above average for a grass hay: $(65 + (65 \times 75/100)) = 114.75$.

Table 9 **Select Nutritional Components – Grasses**

	Average Feed Values (%) (2017 ¹ & 2018 ²)								
	CP	TDN	ADF	NDF	Ca	P	K	Mg	S
Greenleaf Pubescent Wheatgrass	7.72	55.62	42.73	63.11	0.21	0.11	1.74	0.09	0.10
	6.81	58.17	39.45	57.68	0.37	0.12	0.94	0.13	0.10
AC Success Hybrid Brome	7.98	56.59	41.48	61.57	0.21	0.12	1.84	0.11	0.10
	6.62	56.34	41.81	60.77	0.46	0.11	1.20	0.19	0.11
AC Saltlander Green Wheatgrass	7.77	57.83	39.90	59.22	0.29	0.11	1.76	0.12	0.11
	7.77	58.07	39.59	57.03	0.52	0.13	1.28	0.16	0.12
AC Knowles Hybrid Brome	8.23	58.47	39.07	60.20	0.27	0.12	1.91	0.13	0.12
	8.85	57.77	39.97	54.57	0.57	0.12	1.33	0.25	0.13
Fleet Meadow Brome	7.43	54.63	44.00	64.01	0.33	0.14	2.33	0.15	0.10
	8.58	55.39	43.02	59.47	0.55	0.13	1.40	0.22	0.10
Kirk Crested Wheatgrass	6.80	57.36	40.50	59.66	0.20	0.11	1.30	0.09	0.09
	6.30	58.04	39.61	58.24	0.30	0.13	0.80	0.13	0.12
AC Admiral Hybrid Brome	7.07	56.94	41.04	61.37	0.28	0.13	1.91	0.14	0.10
	9.06	56.38	41.75	54.77	0.62	0.15	1.59	0.25	0.11
Grindstad Timothy	7.67	56.79	41.23	60.84	0.28	0.16	1.64	0.16	0.11
	8.72	59.11	38.25	53.43	0.50	0.21	1.46	0.25	0.14
Tom Russian Wildrye Grass	8.75	55.15	43.33	62.62	0.38	0.11	2.72	0.23	0.12
	9.45	57.11	40.82	61.11	0.68	0.13	2.11	0.35	0.16
Courtney Tall Fescue	9.98	56.03	42.20	58.16	0.37	0.14	2.08	0.22	0.15
	9.53	59.63	37.58	53.52	0.60	0.27	2.08	0.32	0.18
Killarney Orchard Grass	9.93	55.19	43.27	57.51	0.42	0.20	2.95	0.21	0.19
	10.33	58.64	38.85	53.88	0.65	0.34	2.33	0.33	0.19
Fojtan Festolium	9.08	56.04	42.19	61.08	0.33	0.19	1.72	0.18	0.15
Mean	8.31	56.97	42.19	58.95	0.40	0.15	1.75	0.19	0.13

¹2017 values are topline²2018 values are second line

The following comments regarding the nutritional components were provided by Barry Yaremco

2017 Grasses

- Protein values are 40% below to 10% above average
- Cutting date was late (2 -3 weeks) based on reported Acid Detergent Fibre values
- Neutral Detergent Fibre values are average
- Calcium values are 50%below to 10% below average
- Phosphorus values are 35% below to 25% above average
- Magnesium values are 45% below to 50% above average
- Potassium values are average to 240% above average
- Sodium values are 65% below to 35% above average
- Sulfur values are 50% below to 35% above average
- Copper values are 15 below to 60% above average
- Manganese values are 55% below to 220% above average
- Zinc values are 65% below to 10% above average

2018 Grasses

- Protein values are 45% below to 15% above average
- Cutting date was late (2 to 3 weeks) based on reported Acid Detergent Fibre values
- Some samples have Neutral Detergent Fibre values > 60%. Can reduce voluntary feed intakes
- Calcium values are 35% below to 75% above average
- Phosphorus values are 20% below to 245% above average
- Magnesium values are 25% below to 240% above average
- Potassium values are 35% below to 235% above average
- Sodium values are 35% below to 230% above average
- Sulfur values are 40% below to 35% above average
- Copper values are 25% below to 40% above average

- Manganese values are 15% to 295% above average
- Zinc values are average to 60% below average

Table 10 **Select Nutritional Components – Legumes**

	Average Feed Values (%) (2017 ¹ & 2018 ²)								
	CP	TDN	ADF	NDF	Ca	P	K	Mg	S
Yellowhead	15.47	58.51	39.02	53.06	1.37	0.16	2.64	0.34	0.24
	16.79	60.79	36.09	47.91	1.86	0.22	2.35	0.54	0.26
Rugged	16.60	58.84	38.59	50.58	1.79	0.14	2.63	0.35	0.29
	15.33	56.37	41.76	49.25	1.99	0.22	2.74	0.62	0.28
20--10	15.73	58.89	38.53	50.60	1.65	0.13	2.59	0.35	0.27
	15.85	59.15	38.19	47.02	2.06	0.21	2.53	0.57	0.25
Spredor 4	15.18	58.07	39.58	52.05	1.51	0.13	2.44	0.29	0.25
	15.80	58.98	38.42	47.43	1.89	0.21	2.57	0.55	0.25
44--44	16.80	60.04	37.06	48.92	1.94	0.15	2.75	0.35	0.30
	15.92	58.46	39.09	45.93	2.21	0.21	2.48	0.58	0.28
Rangelander	13.35	56.19	41.99	56.63	1.27	0.14	2.53	0.30	0.23
	16.49	56.85	41.14	46.76	2.09	0.23	2.59	0.59	0.28
Assalt ST	15.43	58.80	38.65	53.32	1.17	0.15	2.40	0.30	0.29
	15.38	57.94	39.75	47.32	1.71	0.22	2.46	0.60	0.27
Dalton	15.56	59.44	37.82	51.53	1.68	0.14	2.53	0.37	0.26
	16.36	56.98	40.99	46.97	1.91	0.25	2.65	0.62	0.28
PV Ultima	15.79	58.98	38.42	52.41	2.05	0.14	2.63	0.38	0.31
	14.84	57.08	40.85	46.38	1.93	0.28	2.92	0.63	0.30
Halo	15.73	59.06	38.31	52.28	1.58	0.13	2.39	0.29	0.25
	15.74	57.87	39.83	45.14	1.67	0.27	2.83	0.58	0.30
Spredor 5	16.68	60.03	37.06	50.94	1.75	0.15	2.87	0.35	0.30
	16.80	59.21	38.12	46.51	1.91	0.24	2.73	0.58	0.26
Oxley 2 Cicer Milk Vetch	18.01	61.73	34.89	45.65	1.32	0.16	4.11	0.37	0.23
	17.28	59.94	37.18	43.71	1.86	0.23	3.28	0.58	0.28
Veldt Cicer Milk Vetch	18.90	61.49	35.19	45.30	1.11	0.17	4.12	0.36	0.25
	16.11	58.77	38.69	43.98	1.53	0.28	3.28	0.65	0.29
Nova Sainfoin	13.30	54.20	44.55	57.37	0.99	0.18	2.07	0.30	0.18
AC Mountainview Sainfoin	12.96	55.81	42.49	54.92	1.08	0.16	1.97	0.33	0.20
Mean									

¹2017 values are topline²2018 values are second line**2017 Legumes**

- Protein values are 35% below to 5% above average
- Cutting date was 1 – 2 weeks late based on reported Acid Detergent Fibre values
- Neutral Detergent Fibre values are average
- Calcium values are 50% below to 35% above average
- Phosphorus values are 10% to 50% below above average
- Magnesium values are 15% below to 40% above average
- Potassium values are average to 275% above average
- Sodium values are 50% below to 300% above average
- Sulfur values are 15% below to 50% above average
- Copper values are 20% below to 30% above average
- Manganese values are average to 85% above average
- Zinc values are 20% below to 45% above average

2018 Legumes

- Protein values are 5% to 30% below average
- Cutting date was late (1 week) based on reported Acid Detergent Fibre values
- Neutral Detergent Fibre values are average
- Calcium values are average to 55% above average

- Phosphorus values are 15% below to 30% above average
- Magnesium values are 60% to 240% above average
- Potassium values are 15% to 95% above average
- Sodium values are 50% below to 250% above average
- Sulfur values are 20% to 55% above average
- Copper values are 10% below to 75% above average
- Manganese values are 210% to 765% above average
- Zinc values are 30% to 230% above average

Table 11 **Select Nutritional Components – Grass/Legume Mixes**

	Average Feed Values (%) (2017 ¹ & 2018 ²)								
	CP	TDN	ADF	NDF	Ca	P	K	Mg	S
AC Success Hybrid Brome	11.47	58.52	39.01	56.24	0.75	0.16	2.38	0.24	0.16
Yellowhead Alfalfa	12.72	57.53	40.28	52.88	1.17	0.15	1.51	0.39	0.19
Fleet Meadow Brome	9.94	55.76	42.54	60.00	0.57	0.14	2.14	0.21	0.14
Yellowhead Alfalfa	12.64	57.26	40.62	53.46	1.01	0.15	1.79	0.39	0.17
AC Knowles Hybrid Brome	13.04	57.81	39.92	54.46	0.94	0.15	2.31	0.29	0.19
Yellowhead Alfalfa	13.83	57.67	40.09	51.40	1.30	0.15	1.55	0.42	0.18
AC Success Hybrid Brome	13.97	59.38	37.90	54.57	1.02	0.14	2.42	0.22	0.21
Spredor 5 Alfalfa	12.74	57.75	39.99	53.65	1.08	0.15	1.52	0.33	0.19
AC Knowles Hybrid Brome	10.07	58.01	39.66	57.95	0.68	0.12	2.11	0.19	0.16
Spredor 5 Alfalfa	13.78	58.82	38.62	51.01	1.08	0.15	1.61	0.33	0.18
AC Knowles Hybrid Brome	8.00	57.69	40.07	61.22	0.33	0.12	1.92	0.18	0.12
AC Mountainview Sainfoin	10.04	57.95	39.73	56.05	0.55	0.13	1.20	0.24	0.13
AC Success Hybrid Brome	7.51	56.46	41.65	60.39	0.34	0.12	1.62	0.17	0.12
AC Mountainview Sainfoin	8.62	57.54	40.26	58.90	0.44	0.14	1.06	0.20	0.12
Fleet Meadow Brome	12.67	57.65	40.13	54.75	1.05	0.16	2.52	0.30	0.21
Spredor 5 Alfalfa	13.35	57.78	39.96	52.31	1.02	0.17	1.92	0.38	0.18
Fleet Meadow Brome	7.03	55.50	42.88	64.79	0.26	0.14	1.93	0.16	0.09
AC Mountainview Sainfoin	10.36	56.66	41.40	55.49	0.56	0.16	1.44	0.27	0.13
Mean	11.82	44.63	32.85	44.64	4.38	3.95	5.30	4.03	0.16

2017 Mixed Grass/Legumes

- Protein values are 40% below to 35% above average
- Cutting date was 1 – 2 weeks late based on reported Acid Detergent Fibre values
- Some samples have Neutral Detergent Fibre values > 60%. Can reduce voluntary feed intakes
- Calcium values are 75% below to 20% above average
- Phosphorus values are 5 to 40% below average
- Magnesium values are 5% to 225% above average
- Potassium values are average to 75% above average
- Sodium values are average to 50% below average
- Sulfur values are 50% below to 50% above average
- Copper values are 5% to 55% below average
- Manganese values are average to 290% above average
- Zinc values are 65% below to 365% above average

2018 Mixed Grasses

- Protein values are 25% below to 25% above average
- Cutting date was late (1 week) based on reported Acid Detergent Fibre values
- Neutral Detergent Fibre values are average
- Calcium values are 65% below to 85% above average
- Phosphorus values are 10% to 40% below average
- Magnesium values are 25% below to 205% above average
- Potassium values are 35% below to 25% above average
- Sodium values are 50 % to 200% above average
- Sulfur values are 30% below to 20% above average
- Copper values are 10% to 50% below average

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- Manganese values are 240% to 470% above average
- Zinc values are 350% below to 20% above average

Project Summary

A selection of perennial forages species and varieties were seeded in 2016 at 8 sites in Alberta to evaluate establishment, yield and nutritional quality. Trial treatments were divided into 3 blocks: Grasses (12 entries), Legumes (15 entries) and Grass/Legume Mixes (9 entries). Data was collected from the sites in 2017 and 2018. Growth was challenged at some sites by adverse conditions both at seeding time and in the 2 years following seeding. Information collected from the sites was grouped by agro-eco regions for reporting. Highest yielding varieties for the Mixed Grassland region (southern part of the province) over the two years in southern Alberta included Greenleaf pubescent wheatgrass and AC Success hybrid brome; Yellowhead and Rugged alfalfas and mixes AC Success hybrid and Fleet meadow bromes with Yellowhead alfalfa. In the Boreal Transition region of central Alberta, AC Success hybrid brome, Rangelander and Yellowhead alfalfas and the AC Knowles/AC Mountainview sainfoin and the AC Success hybrid brome/Yellowhead alfalfa combinations were the top yielding entries. AC Saltlander green wheatgrass, Greenleaf pubescent wheatgrass and AC Admiral meadow brome were top yielding grasses in the Peace Lowland region. There was no significant difference amongst the legume entries in the Peace trials. Fleet meadow brome/Yellowhead alfalfa was the highest yielding grass/legume mix. Average yields at most sites were much less in 2018 versus 2017, most likely due to a cold, dry spring. Yields of the Fojtan Festulolium, Killarney orchard grass and Courtney tall fescue grasses dropped considerably at most sites between 2017 and 2018, indicating a lack of tolerance to winter and other weather stressors. The AC Mountainview sainfoin and the cicer milk vetch varieties do not appear to persist as well as the majority of the alfalfas.

This study has demonstrated the challenges in evaluating perennial forages in a short term study. The wide range of growing conditions which occurred during the course of this project (both geographically and year to year) make it difficult to develop sound recommendations on variety selection for producers. Further evaluation of the establishment, production and longevity of perennial species and varieties is strongly recommended.