AGRI-FACTS
Practical Information for Alberta's Agriculture Industry

January 2019 Agdex 120/32-1

Silage Varieties for Alberta

An important component of the annual feed supply for Alberta's cattle producers comes in the form of silage, green feed and swath grazing.

The selection of annual crop varieties that produce high forage yield and/or nutritional quality can be a significant factor influencing profitability.

Participating organizations

- Battle River Research Group, Forestburg, AB, (780) 582-7308
- Chinook Applied Research Association, Oyen, AB, (403) 664-3777
- Gateway Research Organization, Westlock, AB, (780) 349-4546
- Lakeland Agricultural Research Association, Bonnyville, AB, (780) 826-7260
- Mackenzie Applied Research Association, Fort Vermilion, AB (780) 927-3776
- Peace Country Beef and Forage, Fairview, AB, (780) 836-3354
- Smoky Applied Research and Demonstration Association, Falher, AB, (780) 837-2900
- West Central Forage Association, Entwistle, AB, (780) 727-4447

Major sponsors

- Alberta Agriculture and Forestry, Agriculture Opportunity Fund Program and Crop Development Centre North
- A & L Canada Laboratories Inc.
- Davidson Seeds, Degenhardt Farms, Dyck Seed Farm, Kevin Elmy, Fabian Seeds, Lindholm Seed Farm, Mastin Seeds, Solick Seeds, H. Warkington

Select crop varieties that produce high forage yield

Trial information

Silage trials on varieties of barley, oat and triticale commonly used for silage, green feed and swath grazing, as well as pea/cereal and fall/spring cereal mixtures, have been conducted by several applied research associations at sites across Alberta, from Oyen to Fort Vermilion. Nutritional analyses were conducted on all the varieties and variety mixtures.

Varieties of pea/cereal mixes and spring/fall cereal mixes have also been evaluated. Growing conditions at the trial sites in 2018 ranged from below average to excessive moisture.

The cereal trials (barley, oat and triticale) were planted at recommended seeding density rates with recommended fertility. The pea/cereal mixture trials were conducted with the intent of increasing the nutritional value of the silage while potentially reducing future nitrogen requirements.

These pea/cereal plots were seeded with 55 kg/ha (50 lbs./ac) of 11-52-0-0. The pea and cereal varieties were seeded at 75 and 50 per cent of their recommended seeding rates, respectively.

The spring/fall cereal mixtures were included in 2018 to evaluate options for fall grazing, as the winter cereal maintains vegetative growth after silage harvest, resulting in forage with high protein content later in the year. Target seeding rate of the spring component of the mix was 75 per cent of the recommended rate while the winter cereal was seeded at 50 per cent. These mixes were harvested at the soft dough stage of the spring cereal.

Data submitted in 2018 have been summarized by crop or crop mixture. Information collected since 2012 has been included in a separate summary below each table. The information is presented as compared to the check variety (**in bold**). Yield of the test varieties/ mixtures are expressed as wet tons/acre (i.e. 65 % moisture, which is typical of silage production). Data sets that did not meet minimum quality and experimental standards were excluded.

Test yield categories

The defined range for each Test Yield Category is provided in tons per acre. Variety/mixture yields are reported as average yields in Low, Medium and High Test Yield Categories. This presentation allows for comparison with the check when growing conditions, management regimes and/or target yields are anticipated to be of low, medium or high productivity.

Caution is advised when interpreting the data with respect to new varieties that have not been fully tested. It should also be noted that the indicated yield levels are those from small plot trials, which can be 15 to 20 per cent higher than yields expected under commercial production. When considering a variety for use alone or in a mixed silage blend, be sure to consider the disease resistance and other agronomic attributes that may also affect productivity.

Nutritional analysis

Nutrition information was assessed using NIRS for macro-nutrient assessments and wet chemistry for the micro-nutrients.

Full nutritional analysis was done on two sub-samples from each variety or mix from each location. Only six key nutritional categories are reported:

- crude protein (CP)
- total digestible nutrients (TDN), estimate of energy
- calcium (Ca)
- phosphorus (P)
- potassium (K)
- magnesium (Mg)

More information

For additional information, including varieties not listed in this publication, please call the Alberta Agriculture and Forestry Ag-Info Centre toll-free at 310-FARM (3276). For other cropping information, refer to the website at agriculture.alberta.ca

Variety tables

BARLEY

Variety	Overall Station Years of Testing	Overall Yield	Area: 2	3	4	5	6	Yield Category: Low < 9.0 (t/ac)	Medium 9.1 - 12.0 (t/ac)	High > 12.1 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to CDC Austenson)																
CDC Austenson (t/ac)		**10.6**	**9.3**	**12.1**	**11**	**11.3**	**8.7**	**7.1**	**11.4**	**14.7**	**10.3**	**67**	**0.3**	**0.2**	**1.4**	**0.2**
CDC Austenson	**45**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
AB Cattlelac	4	102	XX	XX	XX	99	109	106	XX	89	109	97	172	85	133	126
Altorado	26	102	102	92	99	103	103	106	98	101	100	99	102	101	102	93
Amisk	33	92	100	92	91	90	89	92	91	91	104	102	134	103	104	109
CDC Coalition	37	94	97	93	92	90	100	97	91	93	101	100	103	107	106	100
Canmore	26	100	101	99	93	102	100	104	95	100	99	99	120	101	98	103
Champion	26	102	103	97	100	103	102	106	99	101	99	101	105	99	104	99
Chigwell	23	92	80	95	87	91	96	94	91	88	102	100	158	99	105	118
Claymore	26	100	105	102	97	102	94	101	93	104	94	97	124	97	99	101
Conlon	31	87	83	95	86	85	89	84	88	90	98	102	129	112	99	104
Ranger	23	94	101	99	XX	94	88	93	96	87	100	99	157	104	121	126
Sundre	37	93	97	93	87	91	98	93	94	94	101	99	134	103	113	113
Previously tested varieties																
Busby	19	93	91	98	71	96	88	86	95	97	105	99	128	100	100	103
CDC Cowboy	33	101	101	103	98	102	101	105	99	100	96	99	117	110	108	117
Gadsby	33	99	95	106	94	99	100	101	101	98	96	100	127	100	96	101
CDC Maverick	35	104	105	96	96	104	107	110	102	102	96	99	122	108	95	116
CDC Meredith	22	100	108	106	93	98	103	101	102	100	95	98	99	101	102	94
Muskwa	13	90	101	93	XX	86	91	86	91	91	114	100	167	107	121	127
Ponoka	19	96	90	100	100	96	95	96	94	97	101	99	148	103	104	115
Ranger	13	95	104	99	XX	96	88	85	97	99	109	98	171	101	128	131
Seebe	19	96	95	103	92	95	95	95	96	97	109	96	136	109	113	103
Trochu	18	88	XX	91	73	91	85	82	89	92	103	101	139	107	109	119
Vivar	19	93	95	99	78	92	93	90	98	93	108	100	144	99	104	123
Xena	19	95	87	101	84	92	101	96	90	95	106	99	111	105	102	106

Remarks: For explanations on data summarization methods and other information, please see the comments at the beginning of this publication. The yield comparison is expressed in several ways. First, overall actual yield of the standard check in t/ac along with the number of station years of testing. Second, actual yield of the standard check in each growing area. Third, average yield of each variety is expressed in % relative to the standard check. And finally, yield performance is also expressed on the basis of environmental productivity (Yield Test Categories of Low, Medium and High). Consistent performance over all Yield Test Categories indicates that a variety may have good yield stability over a wide range of environments. XX - Insufficient data to describe.

OATS

Variety	Overall Station Years of Testing	Overall Yield	Area: 2	3	4	5	6	Yield Category: Low < 8.0 (t/ac)	Medium 8.1 - 10.0 (t/ac)	High > 10.1 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to CDC Baler)																
CDC Baler (t/ac)		**10.6**	**9.6**	**9.6**	**14.4**	**11.2**	**8.2**	**6**	**10**	**14.8**	**9.5**	**61.4**	**0.3**	**0.2**	**1.9**	**0.2**
CDC Baler	**43**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
AC Juniper	33	93	96	94	94	86	103	103	81	91	101	101	95	107	101	105
AC Morgan	42	100	105	100	94	96	109	104	95	100	99	101	100	112	99	97
CDC Haymaker	38	99	106	98	99	97	100	103	97	98	99	100	100	103	101	99
CDC Seabiscuit	16	99	88	103	107	98	101	97	97	102	99	101	96	99	96	98
CDC SO1	43	96	88	103	90	95	98	99	93	95	102	102	97	102	98	103
Murphy	37	102	104	105	101	102	102	104	101	102	93	96	96	98	101	98
ORe3542M	4	99	XX	97	96	84	119	97	119	90	110	103	100	118	89	98
Waldern	36	102	98	104	98	100	110	104	106	99	95	99	107	101	95	99
Previously tested varieties																
AC Mustang	39	98	99	97	95	99	99	96	99	99	101	99	99	103	101	99
Derby	6	96	100	XX	106	89	94	89	93	101	89	100	98	99	100	110
Everleaf	5	94	XX	113	106	72	XX	108	76	67	96	98	105	97	110	92
Foothills	21	99	103	95	101	99	103	99	96	102	99	98	103	103	102	100
Jordan	20	100	107	92	88	100	121	102	102	96	97	100	96	105	97	112

Remarks: For explanations on data summarization methods and other information, please see the comments at the beginning of this publication. The yield comparison is expressed in several ways. First, overall actual yield of the standard check in t/ac along with the number of station years of testing. Second, actual yield of the standard check in each growing area. Third, average yield of each variety is expressed in % relative to the standard check. And finally, yield performance is also expressed on the basis of environmental productivity (Yield Test Categories of Low, Medium and High). Consistent performance over all Yield Test Categories indicates that a variety may have good yield stability over a wide range of environments. XX - Insufficient data to describe.

PEA MIXTURES

Variety	Overall Station Years of Testing	Overall Yield	Area: 2	Area: 5	Area: 6	Yield Category: Low < 8.0 (t/ac)	Yield Category: Medium 8.1 - 10.0 (t/ac)	Yield Category: High > 10.1 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to CDC Austenson)														
CDC Austenson (t/ac)		**8.6**	**5.3**	**9.4**	**8.4**	**6.1**	**8.9**	**11.6**	**10.3**	**65.3**	**0.3**	**0.2**	**1.5**	**0.2**
CDC Austenson	**12**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
CDC Baler	12	108	111	102	114	101	114	97	96	96	107	107	117	114
Taza	12	106	110	96	117	107	109	94	96	96	76	113	96	83
CDC Austenson/CDC LeRoy	7	88	XX	88	89	104	87	82	124	98	186	119	114	129
CDC Austenson/CDC Meadow	12	100	105	98	102	102	102	92	113	90	172	106	110	140
CDC Baler/CDC LeRoy	7	97	XX	97	98	75	107	90	105	96	136	108	121	111
CDC Baler/CDC Meadow	12	103	105	99	108	96	110	87	107	98	153	108	114	131
Taza/CDC LeRoy	7	96	XX	89	106	96	104	80	114	96	171	112	98	118
Taza/CDC Meadow	12	100	99	94	107	100	107	78	109	97	183	111	102	129
Previously tested varieties														
CDC Austenson/CDC Horizon	5	105	109	100	107	108	102	XX	101	97	156	102	111	133
CDC Baler/CDC Horizon	5	101	111	102	96	113	94	XX	109	94	173	101	123	145
Taza/CDC Horizon	5	108	96	105	119	104	111	XX	116	96	179	106	106	137

Remarks: For explanations on data summarization methods and other information, please see the comments at the beginning of this publication. The yield comparison is expressed in several ways. First, overall actual yield of the standard check in t/ac along with the number of station years of testing. Second, actual yield of the standard check in each growing area. Third, average yield of each variety is expressed in % relative to the standard check. And finally, yield performance is also expressed on the basis of environmental productivity (Yield Test Categories of Low, Medium and High). Consistent performance over all Yield Test Categories indicates that a variety may have good yield stability over a wide range of environments. XX - Insufficient data to describe.

TRITICALE

Variety	Overall Station Years of Testing	Overall Yield	Area: 2	3	4	5	6	Yield Category: Low < 10.0 (t/ac)	Medium 10.1 - 12.5 (t/ac)	High > 12.6 (t/ac)	Nutritional Data: CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to Taza)																
Taza (t/ac)		**10.9**	**11**	**11.7**	**13.2**	**10.6**	**9.8**	**7.3**	**11.3**	**15.4**	**9.1**	**62.6**	**0.2**	**0.2**	**1.4**	**0.1**
Taza	**49**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Bunker	41	100	100	91	107	101	101	103	98	99	102	99	109	96	96	115
Sunray	42	101	99	99	103	102	103	102	102	100	103	103	105	103	103	109
T256	5	102	XX	98	96	105	XX	105	XX	98	95	100	107	107	90	127
Tyndal	48	100	101	102	107	99	98	102	99	100	103	100	101	103	96	106
Previously tested varieties																
94I043057	7	100	103	XX	110	93	101	89	103	100	106	102	91	102	90	108
AAC Chiffon	15	104	119	111	118	92	107	108	103	103	107	100	87	94	109	111
AAC Innova	8	104	121	119	123	83	102	95	107	107	108	100	87	106	109	107
AAC Ryley	8	97	108	104	87	87	110	86	100	101	103	100	95	106	89	117
AC Ultima	7	103	104	98	120	100	XX	109	100	104	110	100	101	93	97	122
Pasteur	8	94	110	96	97	84	103	91	99	91	107	103	96	99	107	117
Pronghorn	21	102	107	103	114	99	101	108	99	103	103	100	102	99	109	106
Sadash	8	102	111	102	109	91	121	101	108	97	99	99	88	91	110	105

Remarks: For explanations on data summarization methods and other information, please see the comments at the beginning of this publication. The yield comparison is expressed in several ways. First, overall actual yield of the standard check in t/ac along with the number of station years of testing. Second, actual yield of the standard check in each growing area. Third, average yield of each variety is expressed in % relative to the standard check. And finally, yield performance is also expressed on the basis of environmental productivity (Yield Test Categories of Low, Medium and High). Consistent performance over all Yield Test Categories indicates that a variety may have good yield stability over a wide range of environments. XX - Insufficient data to describe.

SRING-FALL SILAGE

Variety	Overall Station Years of Testing	Overall Yield	Area		Yield Category:			Nutritional Data:					
			3	5	Low < 8.0 (t/ac)	Medium 8.1 - 10.0 (t/ac)	High > 10.1 (t/ac)	CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2018 trials (Yield and agronomic data only directly comparable to CDC Austenson)													
CDC Austenson (t/ac)		**11.5**	**8.6**	**14.4**	**8.6**	**XX**	**14.4**	**8.3**	**60.4**	**0.3**	**0.1**	**2.1**	**0.1**
CDC Austenson	**2**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
CDC Baler	2	93	95	91	95	XX	91	124	101	104	121	112	124
Taza	2	68	43	94	43	XX	94	149	109	109	227	152	130
AC Radiant/CDC Austenson	2	110	115	104	115	XX	104	111	102	91	140	104	106
AC Radiant/CDC Baler	2	86	82	89	82	XX	89	116	103	98	141	113	118
AC Radiant/CDC Taza	2	100	106	94	106	XX	94	112	100	69	156	94	90
Metzger/CDC Austenson	2	97	106	89	106	XX	89	105	104	96	134	94	100
Metzger/CDC Baler	2	89	74	105	74	XX	105	110	101	86	131	105	106
Metzger/Taza	2	86	82	90	82	XX	90	119	104	78	144	96	96
Prima/CDC Austenson	2	95	82	107	82	XX	107	110	101	115	136	104	133
Prima/CDC Baler	2	81	64	99	64	XX	99	111	98	96	121	115	116
Prima/CDC Taza	2	103	112	94	112	XX	94	118	103	69	142	93	104

Remarks: For explanations on data summarization methods and other information, please see the comments at the beginning of this publication. The yield comparison is expressed in several ways. First, overall actual yield of the standard check in t/ac along with the number of station years of testing. Second, actual yield of the standard check in each growing area. Third, average yield of each variety is expressed in % relative to the standard check. And finally, yield performance is also expressed on the basis of environmental productivity (Yield Test Categories of Low, Medium and High). Consistent performance over all Yield Test Categories indicates that a variety may have good yield stability over a wide range of environments. XX - Insufficient data to describe.