Barley

Yield and percentage of dry forage matter in ten varieties of Barley seeded in St Paul, Alberta and percentage (dry matter) of crude protein (CP), Acid and Neutral detergent fibre (ADF and NDF respectively), total digestible nutrients (TDN), starch, water soluble carbohydrates (WSC) and digestibility after 30 hours ingestion.

			% Dry matter						
				Detergent fibre					
Variety	Yield (% of CDC Austenson)		CP	Acid	Neutral	TDN	Starch	WSC	True Invitro Digestibility (30 hrs)
KWS KELLIE	121	a	10.53 abc	– –	– –	65.88 a	16.35 b	10.51 bcd	74.53 ab
CDC DURANGO	120	a	– –	31.99 abc	49.18 abc	64.46 abc	16.21 b	11.01 bc	73.36 abc
CDC FRASER	120	ab	11.31 a	32.27 ab	48.69 abc	– –	– –	9.91 cd	73.25 abc
CDC RENEGADE	118	ab	10.49 abc	32.04 abc	49.09 abc	64.41 abc	– –	13.14 ab	74.54 ab
AB MAXIMIZER	115	ab	– –	32.30 ab	49.89 ab	– –	17.31 ab	8.72 cd	72.18 bc
AB HAGUE	110	ab	10.67 abc	32.17 ab	51.21 a	64.27 bc	14.86 b	8.67 cd	– –
CANTU	109	ab	10.59 abc	– –	47.33 abc	65.22 ab	15.17 b	13.80 a	76.85 a
AAC LARIAT	104	ab	10.20 abc	33.15 a	51.21 a	– –	– –	– –	– –
CDC AUSTENSON	100	bc	10.23 abc	32.16 ab	51.11 a	64.27 bc	15.21 b	8.70 cd	– –
AB STANDSWELL	81	c	– –	– –	– –	65.25 ab	21.52 a	– –	73.45 abc
Results									
Average	8763.32	g/plot	10.34	31.85	48.83	64.61	16.07	9.82	72.99
ANOVA p–value	0.01	*	0.39 NS	0.11 NS	0.05 NS	0.12 NS	0.16 NS	1.3 x10–3 **	0.14 NS
CV%	10.54		9.04	2.67	4.71	1.41	17.64	16.16	3.45

Values followed by different letters are statistically different. (*=P<0.05 **P=0.01). Yield adjusted to 65% moisture.

Yield and percentage of dry forage matter in ten varieties of Barley seeded in St Paul, Alberta and percentage (dry matter) of Phosphorus, Potassium and Magnesium elements.

Variety	Yield (% of CDC Austenson)		% Dry matter							
			Ca		P		K		Mg	
KWS KELLIE	121	a	0.64	ab	–	–	–	–	0.25	ab
CDC DURANGO	120	a	0.55	abc	0.25	ab	2.26	abcd	0.24	bc
CDC FRASER	120	ab	0.63	abc	0.26	a	2.34	abcd	–	–
CDC RENEGADE	118	ab	0.59	abc	0.25	ab	–	–	0.25	abc
AB MAXIMIZER	115	ab	–	–	0.26	a	2.44	abc	0.24	bc
AB HAGUE	110	ab	0.59	abc	–	–	2.15	abcd	0.24	bc
CANTU	109	ab	0.55	abc	0.26	ab	2.49	a	–	–
AAC LARIAT	104	ab	0.65	a	–	–	–	–	0.25	abc
CDC AUSTENSON	100	bc	0.56	abc	0.26	a	2.43	abc	0.24	bc
AB STANDSWELL	81	c	–	–	0.27	a	2.52	a	0.25	ab
Results										
Average	8763.32	g/plot	0.58		0.25		2.31		0.24	
ANOVA p-value	0.01	*	0.38	NS	0.15	NS	0.07	NS	0.07	NS
CV%	10.54		12.88		5.57		9.7		4.48	

Values followed by different letters are statistically different. (*=P<0.05). Yield adjusted to 65% moisture.

Barley was affected by the dry months of July and August and hence it was really short and matured faster. It is possible this may explain the values observed in yield, crude protein, detergent fibre (acid and neutral), total digestible nutrients, starch, water soluble carbohydrates and true in vitro digestibility. KWS Kellie and CDC Durango were outstanding varieties that surpassed the yield of CDC Austenson by 21% and 20% respectively. On the other hand, AB Standswell barley was 19% less yielding than barley stands from CDC Austenson. Crude protein, ADF and NDF values were the same across all barley varieties. Total Digestible Nutrients extracted from biomass of the KWS Kellie barley variety however was greater than that extracted from barley biomass of AB Hague and CDC Austenson varieties. Starch values were greater in barley biomass taken from AB Standswell variety compared to that of all other varieties except AB Maximizer, which were the same. Water soluble carbohydrates were more concentrated in biomass taken from Cantu barley compared to that from all other varieties, except from that of CDC Renegade. Finally, true in vitro digestibility was greater in barley biomass from Cantu variety compared to that of AB

Maximizer, whereas WSC from biomass of all other varieties were significantly the same. Values for Calcium, Phosphorus, Potassium and Magnesium were the same across in biomass of all varieties. In can be concluded that (a)AB Standswell grew poorly compared to the control variety but had greater starch content than the majority of the other varieties. Aside from that all varieties had similar outcomes in all responses tested from biomass harvested.

Oat

Yield and percentage of dry forage matter in four varieties of Barley seeded in St Paul, Alberta and percentage (dry matter) of crude protein (CP), Acid and Neutral detergent fibre (ADF and NDF respectively), total digestible nutrients (TDN), starch, water soluble carbohydrates (WSC) and digestibility after 30 hours ingestion.

			% Dry matter						
				Detergent fibre					
Variety	Yield (% of CDC Baler)		CP	Acid	Neutral	TDN	Starch	WSC	True Invitro Digestibility (30 hrs)
CDC BALER	100	a	12.89 a	33.54 abc	52.54 ab	62.81 abc	7.24 b	11.59 a	73.60 a
AAC DOUGLAS	82	bc	10.68 bc	32.19 bc	50.85 ab	64.25 ab	15.87 a	7.30 bc	72.75 a
AAC WESLEY	75	dc	10.19 c	31.87 c	48.48 b	64.59 a	18.72 a	5.72 c	74.52 a
OREBOOST	70	dc	11.98 ab	34.64 a	54.82 a	61.63 c	7.53 b	10.00 ab	70.83 a
Results									
Average	1555.63	g/plot	11.72	33.26	51.87	63.1	10.99	9.58	72.97
ANOVA p-value	2.9X10-3	**	0.02 *	0.05 NS	0.20 NS	0.05 NS	6.0 X 10-4 ***	0.01 *	0.68 NS
CV%	11.84		7.34 %	3.02 %	5.21 %	1.7 %	22.87 %	20.11 %	3.8 %

Values followed by different letters are statistically different. (*=P<0.05 **P<0.01 ***P<0.001). Yield adjusted to 65% moisture.

Yield and percentage of dry forage matter in four varieties of Barley seeded in St Paul, Alberta and percentage (dry matter) of Phosphorus, Potassium and Magnesium elements.

			% Dry matter			
Variety	Yield (% of CDC Baler)		Ca	P	K	Mg
CDC BALER	100	a	0.73 a	0.25 ab	2.30 ab	0.22 a
AAC DOUGLAS	82	bc	0.59 bc	0.22 b	1.88 b	0.24 a
AAC WESLEY	75	dc	0.56 c	0.26 a	2.12 ab	0.25 a
OREBOOST	70	dc	0.69 ab	0.25 ab	2.23 ab	0.23 a
Results						
Average	1555.63	g/plot	0.66	0.26	2.2	0.24
ANOVA p-value	2.9 X10-3	**	0.03 *	0.18 NS	0.18 NS	0.68 NS
CV%	11.84	%	9.26 %	3.4 %	10.76 %	12.01 %

Values followed by different letters are statistically different. (*P<0.05). Yield adjusted to 65% moisture.

Oat varieties were not as affected as barley with the drought. However, some of the varieties matured earlier than others by the time of harvest. Biomass harvested from all oat varieties underyielded below the control (CDC Baler) by 18 (AAC Douglas), 25 (AAC Wesley) and 30% (OREBoost) respectively. Acid Detergent fibre was less concentrated in biomass taken from AAC Douglas and AAC Wesley varieties compared to that of OREBoost biomass. However, ADF extracted from biomass of these varieties were statistically the same as that from the biomass of the control. OREBoost biomass had a greater percentage of NDF compared to biomass harvested from the AAC Wesley variety but NDF content extracted from either OREBoost or AAC Wesley biomass were the same as those found in biomass of CDC Baler and AAC Douglas varieties. Starch content was greater in biomass from AAC Douglas and AAC Wesley varieties compared to that extracted from CDC Baler and OREBoost biomass. Water soluble carbohydrates (WSC) from CDC Baler and OREBoost biomass were similar compared to that from the control biomass. But these two varieties had higher WSC content in their biomass than the WSC found in biomass from AAC Wesley. As for true in vitro digestibility values, there was no difference between oat variety biomasses.

Phosphorus and Potassium values were statistically the same in biomass from AAC Wesley and OREBoost oat varieties in comparison to those found in CDC Baler biomass. However, Calcium content was similar in OREBoost and CDC Baler biomass, but Ca content in biomass from AAC Wesley and AAC Douglas biomass Ca content was significantly lower than that from the control biomass. There was no difference in Magnesium content from either oat variety biomass. As a conclusion, (a) all varieties underperformed in yield CDC Baler; (b) OREBoost had similar CP, ADF, NDF, starch, and WSC values but less nutrients (TDN) compared to CDC Baler; (c) in contrast, AAC Douglas and AAC Wesley had less crude protein, and WSC but more starch than CDC Baler and (d) Calcium, Phosphosrus and Potassium in CDC Baler and OREBoost were the same, whereas AAC Wesley and AAC Douglas had same P and K content as CDC Baler but less Calcium.

Triticale

Yield and percentage of dry forage matter in two varieties of wheat and one variety of triticale seeded in St Paul, Alberta and percentage (dry matter) of crude protein (CP), Acid and Neutral detergent fibre (ADF and NDF respectively), total digestible nutrients (TDN), starch, water soluble carbohydrates (WSC) and digestibility after 30 hours ingestion.

			% Dry matter									
				Detergent fibre								
Variety	Yield (% of AC Sadash)		CP	Acid		Neutral	TDN	Starch	WSC		True Invitro Digestibility – 30 hrs (%DM)	
AC SADASH	100	a	10.37 ab	33.31	a	51.22 a	63.05 a	14.14 a	8.10	cd	69.91	a
AAC GALORE	93	ab	10.36 ab	32.82	a	50.98 a	63.58 a	13.80 a	10.57	cb	71.81	a
ALOTTA	91	ab	9.82 b	32.81	a	49.70 a	63.58 a	15.27 a	11.90	b	71.75	a
Results												
Average	4588.78	g/plot	10.32	33.13		51.43	63.24	13.01	10.64		70.28	
ANOVA p–value	0.04	*	0.04 *	0.99	NS	0.94 NS	0.99 NS	0.05 *	6.0 x 10–4	***	0.3768	NS
CV%	11.80		7.18	6.80		9.86	3.81	25.91	12.83	%	3.56	%

Values followed by different letters are statistically different. (*=P<0.05 **P<0.01 ***P<0.001). Yield adjusted to 65% moisture.

Yield and percentage of dry forage matter in two varieties of wheat and one variety of triticale seeded in St Paul, Alberta and percentage (dry matter) of Phosphorus, Potassium and Magnesium elements.

			% Dry matter			
Variety	Yield (% of AC Sadash)		Ca	P	K	Mg
AC SADASH	100	a	0.64 ab	0.24 a	1.95 a	0.25 a
AAC GALORE	93	ab	0.58 b	0.25 a	2.14 a	0.24 a
ALOTTA	91	ab	0.57 b	0.25 a	2.06 a	0.24 a
Results						
Average	4588.78	g/plot	0.62	0.24	1.97	0.24
ANOVA p–value	0.04	*	0.04 *	0.27 NS	0.36 NS	0.86 NS
CV%	11.80		12.13	6.26	13.51	9.36

Values followed by different letters are statistically different. (*=P<0.05). Yield adjusted to 65% moisture.)

Triticale varieties seemed least affected by the drought compared to barley and oat as maturity occurred at a later time compared to the former cereals. Triticale values from biomass were statistically the same across all varieties in yield, crude protein, acid and neutral detergent fibre, total digestible nutrients starch and true in vitro digestibility. In contrast, water soluble carbohydrates were greater in the Alotta triticale biomass variety compared to the control biomass, AC Sadash. However, AC Sadash and AAC Galore biomass had similar WSC values. Calcium, Phosphorus, Potassium and Magnesium content from biomass of triticale varieties was similar for the 2024 growing season.