



Small Grain Forage Variety Testing, 2021

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Introduction

A forage production trial of commercial barley, oats, rye, triticale, and wheat cultivars has been conducted yearly from 1994-2020 at the Northern Piedmont Center, Orange. Results from the 2020-21 crop season are presented in this report.

Management and Weather

Pre-plant fertilizer of 30-80-60 was applied on October 13, 2020. Plots were planted on Oct. 15, 2020 and were seven, seven-inch rows wide by 13 feet long, trimmed to 9 feet for harvest. Nitrogen as UAN at a rate of 40 lb of N per acre was applied February 17, 2021 and at a rate of 80 lb of N per acre along with 0.5 oz per acre Harmony Extra on March 15, 2021. A second application of 0.6 oz per acre Harmony Extra on March 29, 2021. All plots were targeted for harvest when each entry reached the boot (GS 45-50) stage, and the average growth stage was 48 at harvest timing. Two rows, the entire length of the plots, were harvested with a 12-inch Jari sickle-bar mower and weighed with an electronic hanging scale.

Fall of 2020 had near-normal temperatures and significant rainfall in many areas of the Commonwealth. Some farmers took advantage of favorable weather and by the end of September, 19% of the intended wheat acres has been seeded compared to the 5-year average of 9%. Wet conditions persisted with 20% of the state have 'surplus' soil moisture in late October. By November 8, 66% of wheat acres were planted, exactly matching the 5-year average. Temperatures in late November were above normal, with a little less rain in some areas, but more than 10% of intended acres were still not planted due to wet soils. For the 2020 calendar year, Richmond received 15 more inches of rainfall than the long-term average. Wet weather persisted in many areas in January and February, delaying nitrogen fertilizer applications on many fields and leaving many fields with dead spots due to standing water. This results in only 26% of the crop rated good or excellent in late February. Wet weather and warm temperatures were the norm in March and crop condition improved to 39% of the crop rated good or excellent. The weather pattern persisted into mid-April. Seven percent of the crop had headed by April 18, compared to the five-year average of 11% by this date. Wheat condition improved through early May with heading still 13% behind average date. May was warm and dry for most areas, with over half the state reporting soil moisture deficits. On June 13, 52% of the wheat crop was rated good or excellent. By this date, 30% of barley and 18% of wheat acres were harvested, both behind the normal pace. The Virginia field office of USDA's National Agricultural Statistics Service estimates that Virginia will produce 7.8 million bushels of winter wheat in 2021, unchanged from 2020. Yield is estimated at 60 bu/ac, unchanged from 2020.

Farmers planted 220,000 acres in the 2020-21 crop year with 130,000 acres to be harvested for grain.

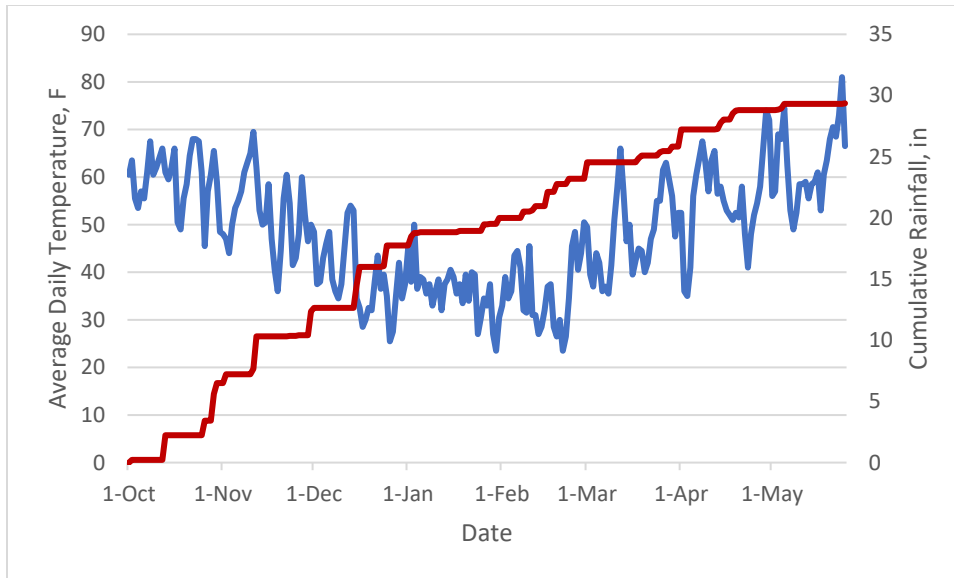


Figure 1. 2020-21 mean daily temperature and cumulative precipitation during the growing season measured at the Northern Piedmont Center, Orange, VA

Results

Results are reported for 35 percent dry matter (DM) yield, DM yield, and nutritive value for all crops including mixtures.

Experimental plots vary in yield and other measurements due to their location in the field and other factors which cannot be controlled. The statistics given in the tables are intended to help the reader make valid comparisons between cultivars. The magnitude of differences which may have been due to experimental error has been computed for the data and listed at the bottom of columns as the LSD (.05) (least significant difference with 95 percent confidence). Differences must be greater than the LSD to be believed to truly exist.

Compared to 2020, forage yield over all entries was 2.9 tons per acre less than 2020. Crude protein was 13.4 % in 2021 compared to 16% last year. TDN values were 60.8% in 2021 and 61.5% in 2020. Overall, the triticale lines had the highest yield average of 6.4 ton/ac with NT13416 producing the highest yield overall. Barley entries VA16BFHB-273 NA, VA16BFHB-269 NA and VA16BFHB-268 NA and TriCal Exp 19R01 rye reached harvest maturity prior to other entries. This difference in maturity should be considered when evaluating the performance among species.

Table 1. Small Grain Forage Variety Test, Northern Piedmont AREC, Orange, Va, 2020-2021, Boot Stage Harvest.

Northern Piedmont Center, Orange, Va 2020-21											
Boot Stage											
Cultivar	Species [†]	Harvest Date	Zadoks Maturity	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Flavia	B	21-Apr	50	27	0	12.94	31.70	56.18	61.34	4.85	1.70
VA16BFHB-273 NA	B	12-Apr	52	29	0	16.88	31.25	55.69	63.10	4.80	1.68
Hirondella	B	20-Apr	46	30	0	12.63	32.63	56.83	60.51	4.38	1.53
VA16BFHB-269 NA	B	12-Apr	49	26	0	16.73	31.57	56.28	62.80	4.16	1.46
VA16BFHB-279 NA	B	12-Apr	48	26	0	15.95	30.95	55.86	63.00	3.68	1.29
VA16BFHB-268 NA	B	20-Apr	49	26	0	14.96	31.16	54.64	62.47	3.49	1.22
Nomini	B	20-Apr	50	26	0	15.25	30.13	54.25	63.38	3.37	1.18
KWS Propower	R	26-Apr	45	35	0	11.17	35.65	60.20	57.66	8.57	3.00
KWS Progas	R	23-Apr	46	35	1	12.54	36.42	60.19	57.56	7.65	2.68
KWS Problend	R	22-Apr	45	32	0	12.93	33.95	57.83	59.60	5.97	2.09
TriCal Exp 19R01	R	14-Apr	45	29	0	17.02	34.16	55.99	60.91	4.00	1.40
NT13416	T	29-Apr	52	40	0	11.34	34.40	59.00	58.68	9.59	3.36
BCT19003	T	29-Apr	45	35	0	11.88	33.89	58.07	59.27	8.54	2.99
NT11406	T	29-Apr	51	30	0	12.77	32.85	58.38	60.39	8.11	2.84
TriCal Exp 20T02	T	26-Apr	45	29	0	13.24	30.36	53.63	62.48	7.44	2.60
TriCal Gainer 154	T	23-Apr	45	28	0	12.59	33.01	55.21	60.20	7.41	2.60
NT14407	T	26-Apr	46	29	0	13.94	31.65	54.21	61.73	7.40	2.59
NT14433	T	29-Apr	48	38	0	12.39	32.97	58.63	60.16	7.14	2.50
TriCal Gunner	T	30-Apr	48	39	0	11.89	36.73	59.68	57.09	7.00	2.45
TriCal Flex 719	T	30-Apr	45	38	0	11.59	36.79	60.26	56.94	6.66	2.33
NT96T441 (NE96T441)	T	27-Apr	45	39	0	12.84	33.29	58.20	60.07	6.63	2.32
NT11428	T	30-Apr	52	41	0	11.73	35.58	59.06	57.91	6.58	2.30
TriCal Surge	T	28-Apr	45	32	0	12.91	33.45	58.06	59.98	6.56	2.29
TriCal Thor	T	30-Apr	45	35	0	11.30	35.72	58.88	57.66	6.47	2.27
BCT18001	T	28-Apr	45	31	0	11.55	32.67	56.39	60.09	6.46	2.26
BCT19005	T	28-Apr	49	32	0	11.16	33.61	58.47	59.23	6.39	2.24
BCT18002	T	30-Apr	57	38	0	11.00	37.35	61.85	56.29	6.29	2.20
NT12404-1	T	26-Apr	47	30	0	12.64	31.16	54.56	61.64	6.25	2.19
BCT19004	T	29-Apr	51	37	0	11.53	35.39	59.98	57.99	6.10	2.13
BCT19007	T	30-Apr	45	32	0	14.00	31.32	53.99	62.01	5.71	2.00
Tricanto	T	30-Apr	55	32	0	12.49	33.52	56.48	59.78	5.31	1.86
TriCal Merlin Max	T	30-Apr	49	32	0	13.03	33.96	56.83	59.63	5.29	1.85
NT12434	T	30-Apr	45	36	0	10.78	36.91	60.23	56.55	5.21	1.83
NT09423	T	30-Apr	51	32	0	13.56	33.20	58.47	60.41	5.10	1.79
NT12403	T	20-Apr	45	30	0	13.41	31.87	56.08	61.38	5.05	1.77
TriCal Exp 20T06	T	26-Apr	45	30	0	14.55	31.93	56.25	61.74	4.83	1.69
NT13443	T	30-Apr	46	38	0	12.28	33.28	58.34	59.88	4.38	1.54
TriCal Exp 21T01	T	18-Apr	47	24	0	17.31	29.48	54.14	64.62	3.70	1.30
Liberty 5658	W	28-Apr	46	28	0	12.21	29.62	52.71	62.68	6.30	2.21
SSI130-06	W	30-Apr	57	23	0	12.79	31.08	54.14	61.76	3.72	1.30
LSD 0.05			4	3	1	2.10	2.43	3.04	2.49	1.38	0.48

[†] B - Barley, O - Oats, R - Rye, T - Triticale, W- Wheat

Entries

Elsoms Ackermann Barley Limited, Albert Warehouse, Pinchbeck Road, Spalding, Lincolnshire, England, PE11 1QG – Flavia and Hirondeella.

KWS Cereals, 495 County Road 1300 N, Champaign, IL 61822 – KWS Progas, KWS Propower, and KWS Problend.

TriCal Superior Forage, 12167 Hwy 70S, Vernon, TX 76184 – TriCal Flex 719, TriCal Surge, TriCal Merlin Max, TriCal Thor, TriCal Gunner, TriCal Exp 20T04, TriCal Gainer 154, TriCal Exp20T02, TriCal Exp 20T06, TriCal Exp 21T01, and TriCal Exp 19R01.

University of Nebraska-Lincoln, 1071 County Road G Room C, Ithaca, NE 68033 – NE96T441, NT09423, NT11406, NT11428, NT12403, NT12404-1, NT12434, NT13416, NT13443, NT14407, and NT14433.

Seed-Link Inc., 208 St. David Street, Lindsay, Ontario K9V 4Z4 – BCT18001, BCT18002, BCT19003, BCT19004, BCT19005, BCT19007, and Tricanto.

Specialty Seeds, Inc., 132 Ferry Road, Anguilla, MS 38721 – SSI30-06.

Virginia Tech and Virginia Crop Improvement Association (VT and VCIA), 9142 Atlee Station Road, Mechanicsville, VA 23111 –Amaze 10, Liberty 5658, Nomini, Secretariat, Thoroughbred, and all lines prefixed by VA.

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