



Small Grain Forage Variety Testing, 2020

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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 AREC, Orange. Results from the 2019-20 crop season are presented in this report.

Management and Weather

Pre-plant fertilizer of 30-60-60 was applied on October 14, 2019. Plots were planted on Oct. 15, 2019 and were seven, seven inch rows wide by 13 feet long, trimmed to 9 feet for harvest. Nitrogen as UAN at a rate of 60 lb of N per acre was applied February 18, 2020. All plots were targeted for harvest when each entry reached the boot (GS 45-50) stage, and the average growth stage was 47 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.

Early fall, 2019 was unseasonably warm and dry in most of the Commonwealth, delaying planting in some areas. Rain in mid to late October mitigated the dry conditions but also slowed planting. By October 25, 58% of intended acres were planted, increasing to 71% by November 3 which was more than a 20% increase over 2018-19. In December over 90% of the state reported adequate moisture and 69 and 62% of wheat and barley were reported to be in good condition. January and February were relatively warm and wet resulting in muddy fields. Reports held that 78% of wheat was in good or excellent condition. March brought more rain and cooler than normal temperatures with 80% of wheat acres in good or excellent condition. By mid-April, wheat condition continued to be very good with 3% of the crop headed, compared with 11% on this date last year. Cooler weather continued through the month with only 13% of the crop headed by April 20. There were also areas that experienced frost. On May 6, 51% of the wheat crop had headed, compared with the 5-year average of 55%. Over 80% of the crop continued to be rated good or excellent. Frost damage and moisture stress caused the percentage of the wheat crop rated good to decline to 66% by mid-May. A late frost event on the weekend of May 9 caused significant damage in some fields, resulting in near total loss, though this was not widespread. By May 20, 91% of wheat had headed and 2% of barley was harvested. Wheat harvest began in early June with 11% of the crop harvested by June 10. Some areas experienced rain but harvest increased to 20% of acres by June 17. By July 1, 91% of barley and 73% of wheat acres were harvested, 7% greater than the 5-year average. Farmers are expected to harvest 11.0 million bushels of winter wheat during 2020 according to the Virginia field office of USDA's National Agricultural Statistics Service. The expected crop for 2020 would be up 69% from the previous year. The forecast was based on crop conditions as of June 1 and decreased 6% from the May forecast. Growers expect a yield of 61.0 bushels per acre, down 1.0 bushels from 2019 and down 4.0 bushels from May. Farmers seeded 260,000 acres last fall with 180,000 acres to be harvested for grain. Acres for other uses totaled 80,000 acres and will be used as cover crop for tobacco or cut as silage or hay.

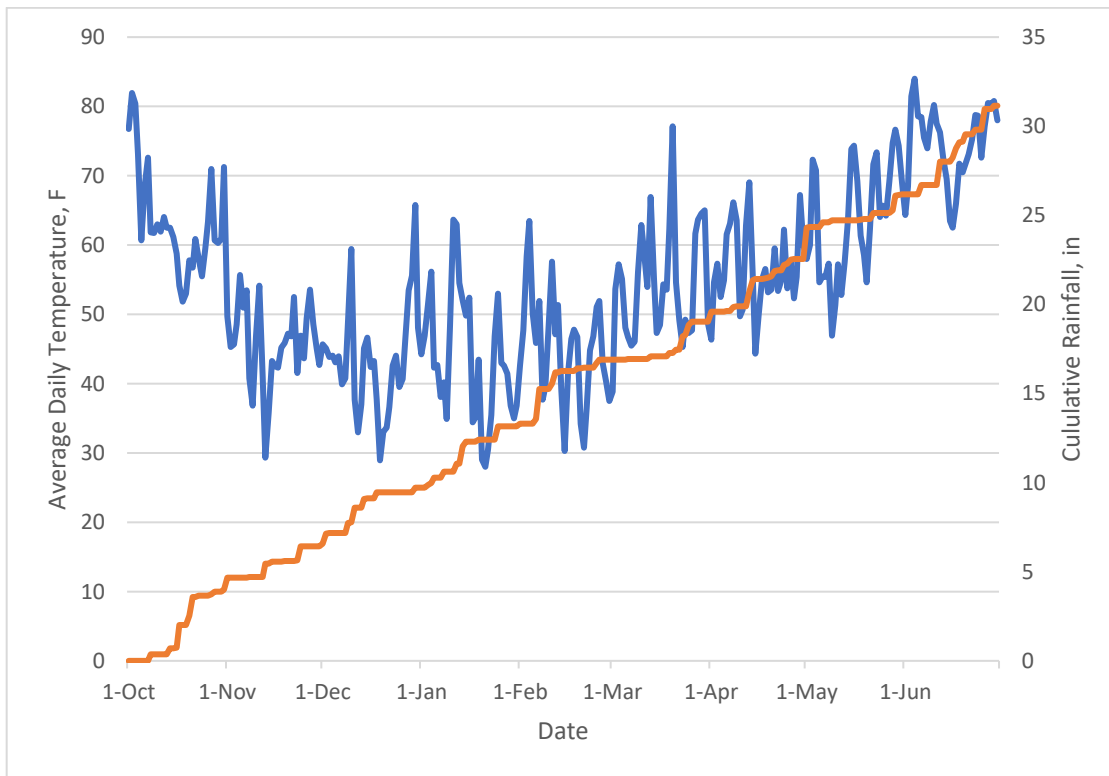


Figure 1. 2019-20 mean daily temperature and cumulative precipitation during the growing season measured at the Northern Piedmont Center, Orange, VA

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 2019, forage yield over all entries was slightly greater than in 2019. Crude protein was also similar at 16% in 2020 vs 15.8 in 2019. TDN values were 1% greater in 2020. Overall, the triticale lines had the highest yield average of 10 ton/ac with TriCal Flex 719

producing the highest yield overall. Barley entries, Dura Forage Rye, and the Triticale lines TriCal Flex 719, TriCal Exp 20T04, NT13443, NT09423, NT12434, TriCal Merlin Max, NT96T441 (NE96T441), TriCal Exp 20T02, TriCal Exp 20T05, NT13416, NT09404, NT07403, NT11428, NT11406, TriCal Thor, TriCal Surge, NT12403, NT12414, Mercer Brand Tri-Cow 814, TriCal Gainer 154 and TriCal Exp 20T03 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 2018-2019, Boot Stage Harvest.

Northern Piedmont Center, Orange, Va 2019-20											
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	13-Apr	50	31	0	15.24	34.27	60.25	60.19	8.54	2.99
VA16BFHB-268 NA	B	3-Apr	46	32	0	15.78	34.80	59.11	59.98	7.86	2.75
Thoroughbred	B	8-Apr	47	32	0	17.99	30.56	56.16	64.04	7.82	2.74
Valor	B	11-Apr	48	34	0	17.69	31.98	58.31	62.83	7.55	2.64
Hirondella	B	10-Apr	45	36	0	17.46	33.98	58.94	61.20	6.54	2.29
VA16BFHB-279 NA	B	6-Apr	52	33	0	17.23	31.66	58.01	62.91	6.41	2.24
Nomini	B	6-Apr	49	34	0	16.25	32.16	57.35	62.17	5.61	1.96
VA16BFHB-173 NA	B	6-Apr	51	35	0	16.33	32.37	58.10	62.04	5.36	1.88
VABFHB-269 NA	B	6-Apr	49	35	0	15.74	33.57	59.68	60.91	5.28	1.85
Secretariat	B	6-Apr	50	30	0	15.58	32.38	58.07	61.77	5.09	1.78
KWS Propower	R	20-Apr	46	36	0	15.13	33.73	59.85	60.56	11.71	4.10
KWS Progas	R	14-Apr	44	35	2	16.10	33.39	59.71	61.17	9.75	3.41
Dura Forage Rye	R	10-Apr	45	33	1	18.31	33.46	58.52	61.91	8.94	3.13
TriCal Exp 19R01	R	30-Mar	46	39	1	17.06	37.54	63.95	58.32	6.05	2.12
TriCal Flex 719	T	20-Apr	47	42	0	15.50	36.80	62.62	58.34	18.27	6.39
TriCal Exp 20T04	T	20-Apr	45	41	0	14.09	37.11	62.31	57.59	18.16	6.36
NT13443	T	17-Apr	45	43	0	14.56	34.44	61.07	59.81	16.28	5.70
NT09423	T	20-Apr	45	35	0	15.45	32.84	59.10	61.36	16.14	5.65
NT12434	T	20-Apr	44	35	0	16.69	34.78	60.04	60.32	15.69	5.49
TriCal Merlin Max	T	20-Apr	46	39	0	13.06	36.77	62.71	57.48	13.62	4.77
NT96T441 (NE96T441)	T	20-Apr	44	42	0	14.65	33.81	60.63	60.33	12.39	4.34
TriCal Exp 20T02	T	3-Apr	45	28	0	20.31	31.27	54.34	64.32	10.18	3.56
TriCal Exp 20T05	T	8-Apr	47	36	0	15.18	36.67	63.11	58.32	9.85	3.45
NT13416	T	10-Apr	45	38	0	14.33	36.23	61.37	58.35	9.29	3.25
NT09404	T	16-Apr	47	35	0	15.45	30.71	56.39	63.01	8.85	3.10
NT07403	T	8-Apr	47	38	0	16.75	32.98	59.71	61.72	8.44	2.95
NT11428	T	11-Apr	47	40	0	17.75	32.13	57.73	62.74	7.84	2.75
NT11406	T	16-Apr	44	33	0	17.38	28.87	54.37	65.12	7.76	2.72
TriCal Thor	T	12-Apr	45	37	0	18.44	33.62	58.91	61.84	7.56	2.65
TriCal Surge	T	14-Apr	46	37	0	17.65	33.85	59.26	61.37	7.33	2.56
NT12403	T	10-Apr	45	34	0	18.00	33.77	58.69	61.56	7.31	2.56
NT12414	T	14-Apr	44	35	0	16.24	31.13	56.89	62.96	6.84	2.39
Mercer Brand Tri-Cow 814	T	6-Apr	45	32	0	15.98	33.81	60.12	60.81	6.64	2.32
TriCal Gainer 154	T	6-Apr	46	34	0	17.19	30.79	57.64	63.57	6.34	2.22
TriCal Exp 20T03	T	6-Apr	45	32	0	20.45	29.57	55.13	65.68	5.72	2.00
Hilliard	W	14-Apr	49	30	0	14.40	31.19	58.01	62.25	6.63	2.32
LSD 0.05			3	1	2.41	2.99	3.42	3.00	3.00	3.15	1.10

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

Entries

Eddie Mercer Agri-Services, Inc, 6900 Linganore Rd, Frederick, MD 21701 – Mercer Brand Tri-Cow 814.

Greener Valley Supply, LLC, 963 Laurel Hill Rd, Verona, VA 24401 – Dura Forage Rye.

KWS Cereals, USA, LLC, 4101 Colleen Dr, Champaign, IL 61822 – KWS Progas and KWS Propower.

University of Nebraska-Lincoln, 1071 County Road G, Room C, Ithaca, NE 68033 – (all triticales) NT12403, NT12414, NT96T441 (NE96T441), NT12434, NT13416, NT13443, NT07403, NT09404, NT11406, NT11428, NT09423.

TriCal Superior Forage, 12167 Hwy 70S, Vernon, TX 76384 – (all triticales unless otherwise noted) TriCal Gainer 154, TriCal Flex 719, TriCal Thor, TriCal Merlin Max, TriCal Surge, TriCal Exp 20T02, TriCal Exp 20T03, TriCal Exp 20T04, TriCal Exp 20T05, TriCal Exp 19R01 (rye), and Valor (barley.)

Virginia Crop Improvement Association, 9142 Atlee Station Rd, Mechanicsville, VA 23111 – Nomini, Secretariat, Thoroughbred, Flavia, Hirondeella, VA16BFHB-268 NA barley and Hilliard wheat.

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