COLORADO

2021 Forage Trial - Akron, CO

Variety	Forage Type	Early Cut Silage Yield (Tons/Acre)	Late Cut Silage Yield (Tons/Acre)
KWS Progas	Hybrid Rye	10.82	16.47
KWS Bono	Hybrid Rye	10.79	15.28
KWS Propower	Hybrid Rye	9.87	14.45
KWS Serafino	Hybrid Rye	10.62	14.45
Gainer154	Triticale	7.93	14.08
KWS Tayo	Hybrid Rye	9.44	13.93
Thor	Triticale	9.00	13.41
Flex 719	Triticale	8.06	13.35
Pika	Triticale	7.92	12.47
NE 441T	Triticale	7.41	11.62
UKR 04	Triticale	5.83	11.62
Presto	Triticale	7.44	11.53
Langin	Wheat	5.72	10.21

Trial Highlights -

Location: Great Plains Research Station at Akron, CO
This location is non-irrigated, dry land.

Harvest Date - Early cut was harvested on May 27, 2021. Late cut was harvested on June 11, 2021.

**Due to extreme drought last fall with very little growth potential, the decision was made not to plant in fall of 2021 for 2022 harvest.

KANSAS

2022 Kansas Forage Trials

Variety	Forage Type	Garden City		Hays		Scandia		Average
		Boot Cut Silage Yield (Tons/Acre)	Soft Dough Silage Yield (Tons/Acre)	Boot Cut Silage Yield (Tons/Acre)	Soft Dough Silage Yield (Tons/Acre)	Boot Cut Silage Yield (Tons/Acre)	Soft Dough Silage Yield (Tons/Acre)	Silage Yield (Tons/Acre)
KWS Aviator	Hybrid Rye	5.64	10.57	7.02	13.49	7.02	16.51	10.04
Fridge	Triticale	8.39	11.12	4.12	10.75	9.00	15.15	9.8
KWS Progas	Hybrid Rye	5.32	9.33	3.72	12.13	6.28	15.47	8.71
KWS Propower	Hybrid Rye	3.87	7.97	5.71	11.21	5.67	13.77	8.03
Ray	Wheat	8.05	9.75	2.49	8.15	7.37	11.41	7.87
OK Corral	Wheat	4.78	7.15	2.81	8.25	9.30	12.84	7.52

Trial Highlights -

Location: Garden City, KS. This is irrigated land. The Hybrid Rye at this location was harvested on April 30, 2022 and June 2-6, 2022 for boot cut and soft dough respectively. Other cereals were harvested on May 6-11, 2022 and June 2, 2022. Garden City farm applied 60 lbs N as Urea.
Location: Hays, KS. This is non-irrigated dry land. All crops were planted September 27, 2021. Hybrid Rye was harvested on May 10-16, 2022 and June 8-16, 2022. Other cereals were harvested on May 14-24, 2022 and June 3, 2022. The Hays location was very dry early in the season and the data shows that KWS Aviator and KWS Propower outperformed the other cereals because of better water use efficiency. Some rain prior to milk cut helped final tonnage.
Location: Scandia, KS. This is non-irrigated dry land. Hybrid Rye was harvested on May 10, 2022 and June 7 2022. Other cereals were harvested on May 10-20, 2022 and June 7 2022.

MICHIGAN

2022 Forage Trial - Michigan

Variety	Forage Type	Silage Yield (Tons/Acre)	Cutting Date
Gainer 154	Triticale	9.16	5/17
Flex 719	Triticale	8.57	5/20
Aroostook	Rye	8.06	5/11
Hazlet	Rye	7.72	5/13
KWS Progas	Hybrid Rye	7.59	5/13
KWS Propower	Hybrid Rye	7.40	5/13
Wheeler	Rye	7.25	5/13
Swift	Triticale	6.18	5/11
Surge	Triticale	3.29	5/20

Trial Highlights -

Location: Mason City, MI. This is non-irrigated dry land.

Winter was not kind to triticale varieties which showed severe winter damage as compared to KWS Progas and KWS Propower. The ryes in the trials averaged 4" taller (3 – 12") than the triticales in the trial. Very little lodging in this trial with very good yields.

September 18, 2021 - Fertilized 300 lbs/acre 19-19-19
September 19, 2021 - Seeded plots into prepped ground (Not cultipacked). Cultipacked with the rows after seeding
March 15, 2022 - Fertilized 100 lbs N as Urea.
Harvest Dates: There were 4 harvest dates based on maturity. Goal was to harvest at boot stage.

NEW YORK

2020-2022 Forage Rye Trial

Variety	Forage Type	2020		2021		2022	
		Flag Leaf Cut Silage Yield (Tons/Acre)	Milk Stage Cut Silage Yield (Tons/Acre)	Flag Leaf Cut Silage Yield (Tons/Acre)	Milk Stage Cut Silage Yield (Tons/Acre)	Flag Leaf Cut Silage Yield (Tons/Acre)	Milk Stage Cut Silage Yield (Tons/Acre)
KWS Propower	Hybrid Rye	5.24	12.20	9.41	8.02	5.73	12.25
KWS Aviator	Hybrid Rye	-	-	-	-	6.64	10.55
KWS Progas	Hybrid Rye	5.64	12.70	9.72	7.98	6.93	10.08
Hazlet	Rye	5.02	10.80	8.02	6.50	7.11	7.92
Danko	Rye	4.50	11.18	8.28	6.71	5.65	7.71

Trial Highlights -

Location: Cornell University - New York
Planted on October 1, 2021. Top dressed with 60 lbs/A N on April 14, 2022.
Harmony and Axial herbicide blend applied on May 5, 2022.
Some water and winter injury.
Harvest Date - Flag Leaf was harvested on May 16, 2022 and milk stage on June 10, 2022.

NORTH CAROLINA

2022 Forage Trial - North Carolina

Variety	Forage Type	Rowan Milk Stage Silage Yield (Tons/Acre)	Perquimans Milk Stage Silage Yield (Tons/Acre)	Average Silage Yield (Tons/Acre)
KWS Progas	Hybrid Rye	11.20	10.50	10.85
KWS Serafino	Hybrid Rye	11.90	9.20	10.55
KWS Tayo	Hybrid Rye	10.50	8.70	9.60

Trial Highlights -

Location: Rowan County location planted near the White Hat Seed Farm near New Hope, NC. Pequimans County location planted at the NCDA & CS Piedmont Research Station near Salisbury, NC
Excellent forage trials at both location with harvest occurring around April 25, 2022 with traditional Serafino and Tayo winter grain rye as checks.

PENNSYLVANIA

2020-2022 Forage Rye Trial - Penn State University

Variety	Forage Type	2020	2021	2022				
		Silage Yield (Tons/ Acre)	Silage Yield (Tons/ Acre)	Silage Yield (Tons/ Acre)	Cutting Date	CP, %	NDFD 30 hr.	TTNDFD
KWS Propower	Hybrid Rye	14.09	9.06	13.77	5/12/22	13.41	65.63	53.21
KWS Progas	Hybrid Rye	14.51	11.03	13.54	5/9/22	15.14	71.17	51.22
Aroostook	Rye	9.77	7.11	10.38	5/2/22	14.60	57.38	56.59
Hazlet	Rye	-	8.91	-	-	-	-	-
Wheeler	Rye	-	8.83	-	-	-	-	-

Trial Highlights -

Location: Penn State University - Trials are conducted at Russell E. Larson Agricultural Research Center at Rock Spring and/or the Southeast Research and Extension Center at Landisville.

This is non-irrigated dry land. All 2022 crops were planted October 15, 2021 and harvested at boot stage of growth. Cutting dates vary per forage. Excellent growing conditions.

SOUTH DAKOTA

2020 - 2022 Southeast Research Farm - SDSU

Variety	Forage Type	2020 Silage Yield (Tons/Acre)	2021 Silage Yield (Tons/Acre)	2022 Silage Yield (Tons/Acre)
KWS Aviator	Hybrid Rye	-	-	8.46
Hazlet	Rye	12.09	9.11	7.77
KWS Propower	Hybrid Rye	11.60	8.80	7.71
Elbon	Rye	11.26	-	7.71
KWS Progas	Hybrid Rye	9.91	9.80	7.63
Fridge	Triticale	8.86	-	7.57
Nitrous	Triticale	7.34	7.87	6.69
Willow Creek	Winter Wheat	-	6.00	6.03

Trial Highlights -

Location: Beresford, SD - SDSU Southeast Research Farm
This is non-irrigated dry land. These varieties were harvested at boot stage.

Inputs: N = 110 lb/ac; S = 15 lb/ac; P&K as per soil test;
Hybrid lines were seeded at 800,000 seeds/ac and OP rye lines and Triticale at 1.2 million seeds per acre. Seeding Depth = 1" ;
Yields were lower than expected because of the very hot and dry weather that occurred from the middle of June and lasted until the end of July with little or no precipitation.

VIRGINIA

2020 - 2022 Forage Variety Trial - Virginia Cooperative Extension

Variety	Forage Type	2020 Silage Yield (Tons/Acre)	2021 Silage Yield (Tons/Acre)	2022 Silage Yield (Tons/Acre)	2022 Cutting Date	2022 CP	2022 ADF	2022 NDF	2022 TDN
KWS Progas	Hybrid Rye	9.74	7.65	7.31	4/20/22	14.33	29.53	51.89	66
Hirondella	Barley	-	4.37	6.23	4/20/22	13.60	29.00	53.30	64
Flavia	Barley	8.54	4.86	5.31	4/20/22	12.00	30.50	54.60	62
Nomini	Barley	-	3.37	4.23	4/14/22	16.30	28.30	51.60	65
Outlaw	Triticale	-	-	3.89	4/25/22	13.30	27.10	50.00	65
KWS Propower	Hybrid Rye	11.71	8.57	3.83	4/25/22	20.67	22.40	40.51	71

Trial Highlights -

Location: Northern Piedmont Center, Orange, Virginia

2022 Trial Highlights: Pre-plant fertilizer of 30-60-30 was applied on October 12, 2021. Plots were planted on Oct. 14, 2021. Nitrogen, as UAN, was applied at a rate of 50 lb of N per acre on February 11, and March 26. All plots were targeted for harvest when each entry reached the boot stage (GS 45-50).

Warm and dry conditions prevailed in the first two weeks of October 2021. Dry conditions persisted into December in many areas resulting in later planted fields showing delayed emergence. January and February were generally cold with rain and snow amounts of three to six inches in most places, yet abnormally dry conditions persisted over much of the state. Temperatures and rainfall were near normal in April.

Forage yield, over all entries in 2022, averaged 1.2 ton/ac less than forage yield in 2021. Crude protein was 14.4% in 2022 compared to 13.4 % last year. TDN values were 64.6% in 2022 and 60.8% in 2021. Overall, the Rye and Barley lines had the highest yield averages of 5.1 ton/ac and 5.0 ton/ac, respectively with KWS Progas (Hybrid Rye) producing the highest yield overall.

Hybrid Rye Facts:

- Hybrid Rye has a very strong winter hardiness, standability and disease tolerance.
- Feeding studies on hogs and cattle have shown Hybrid Rye can easily replace a percentage of corn in the ration without a decrease in productivity.
- Hybrid Rye makes high quality straw.
- Good utilization of manure applied both in Autumn and Spring.

FORAGE SUMMARY

2022 Forage Variety Trial - Forage Analysis Summary By Region

	East		South Central		Midwest	Pacific Northwest
	Early Cut	Late Cut	Early Cut	Late Cut	Early Cut	Early Cut
DM	16.36 ± 0.42	28.37 ± 1.72	26.43 ± 3.16	27.03 ± 2.86	19.07 ± 1.17	19.06 ± 0.57
as % DM						
CP	16.13 ± 0.80	9.28 ± 0.36	14.86 ± 1.69	12.42 ± 1.01	15.10 ± 0.25	14.16 ± 0.82
ADF	30.76 ± 1.75	38.77 ± 0.16	31.31 ± 1.47	35.70 ± 1.22	31.55 ± 0.08	27.77 ± 0.04
aNDFom	51.35 ± 2.28	60.17 ± 0.44	50.41 ± 1.76	53.57 ± 1.04	47.94 ± 0.29	45.22 ± 0.21
RFV	116.94 ± 8.35	88.95 ± 0.59	117.59 ± 6.50	103.56 ± 3.52	118.84 ± 0.28	132.98 ± 0.58
NFC	22.20 ± 2.29	18.10 ± 0.55	22.28 ± 1.83	21.55 ± 0.99	27.02 ± 0.50	28.17 ± 1.03
TDN	65.68 ± 1.27	64.18 ± 0.05	66.49 ± 0.45	65.13 ± 0.38	64.32 ± 0.06	67.58 ± 0.01
as Mcal/cwt						
NEM	57.64 ± 1.13	52.21 ± 0.20	57.99 ± 1.04	55.83 ± 0.67	58.29 ± 0.05	59.85 ± 0.33
NEG	31.77 ± 1.03	26.80 ± 0.19	32.10 ± 0.95	30.12 ± 0.61	32.37 ± 0.05	33.80 ± 0.30
NEL	67.75 ± 1.41	66.02 ± 0.06	68.59 ± 0.51	67.08 ± 0.42	66.26 ± 0.07	69.81 ± 0.02
as %NDFom						
uNDFom30	15.40 ± 1.33	34.63 ± 0.83	-	-	14.88 ± 0.54	10.97 ± 0.37
NDFD 30	71.40 ± 1.52	42.34 ± 1.54	-	-	68.94 ± 1.26	75.75 ± 0.92
uNDFom48	12.74 ± 1.33	30.37 ± 0.89	-	-	13.33 ± 0.39	8.74 ± .40
NDFD48	76.39 ± 1.67	49.42 ± 1.75	-	-	72.19 ± 0.86	80.67 ± 0.98

Data was collected from Kansas State University to represent the South-Central Region. There were 3 locations (Hays, KS, Garden City, KS, and Scandia, KS) from which 9 forage samples were used for this summary for early cut and 9 samples were used for the late cut quality summary. In the East data was collected from the University of Kentucky, Virginia Tech, Cornell, North Carolina State University, and Penn State University at 6 locations (Lexington, KY, Orange, VA, Caldwell, NY, Perquimans, NC, Rowan, NC, and Rockspring, PA) where 9 samples were used to summarize early cut quality and 6 samples were used to summarize late cut quality. Three samples of forage were collected from Beresford, SD by South Dakota State University to represent the Midwest Region. Data was collected from the University of Idaho in Rexburg, ID to represent the forage quality of the Pacific Northwest. Two forage samples were used for this summary. *Samples were analyzed at Dairyland Labs; Arcadia, WI.