

SOUTH DAKOTA– Rye Research Continues at South Dakota State University

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This year marks the 4th year winter annual forage and more specifically, rye research, has taken place at the Southeast Research Farm near Beresford, SD. As of 2021, additional trial locations in southeastern SD have been added. Rye is gaining popularity in this area for many reasons: it is winterhardy (surviving in soil temperatures as low as -30°F); it can be quite drought tolerant; it is considered dual purpose and can serve as an alternative feed source; it is quite competitive with weeds; and the local market is not yet saturated.

In 2019, rye research began at the southeast farm, and interest has grown since. When viewing data from 2019-2021 (2022 data not yet available), we can see a couple of trends. On average, hybrid rye out-yields common open pollinated (OP) lines in grain trials. When we consider an average of ~15- to 20-bushel yield gains over OP lines and take higher seed cost of hybrid rye into consideration, data shows an economic advantage to hybrid rye under current market conditions.

Since rye is a dual-purpose crop, variety testing also took place under a forage scenario. Forage yields can be quite dependent on fall planting dates, weather, and spring burndown timing. When we take data from 2019-2021 into account, we see OP lines are quite competitive with the newer hybrid lines in a forage setting. When taking seed cost into consideration, this data implies OP lines are likely just as cost-effective as hybrid lines in these particular growing situations. It is important for farmers to remember rye forage quality begins to drop quickly after boot stage (like many small grains), and they should decide if their main goal is tonnage, quality, or a happy medium.

The 2022 rye forage research trials can be viewed in Table 1; rye lines all had statistically similar yields with Hazlet OP rye being near the top numerically, as it has been in the past. Fridge triticale was statistically similar to other rye lines, but by a very slight amount. In addition, rye lines all show better vigor ratings coming into spring than triticale or wheat lines. This has been observed in previous years' trials as well, especially when there is minimal snow cover. As rye continues to gain popularity, work will likely continue on these trials.

Table 1. Winter annual forage trial. Beresford, SD. May 20, 2022 harvest.

Line ¹	Type	Oct 22 Stand (%)	March 31 Stand ² (%)	March 31 Vigor (0 to 10)	Feeke's Stage	Height (inches)	DM (ton/ac)	Hay (ton/ac)	Silage (ton/ac)
KWS Aviator	HY-rye	93.3	94.5	7.0	10.2	34.3	2.96	3.49	8.46
Hazlet	OP-rye	94.3	95.0	7.0	10.3	34.8	2.72	3.20	7.76
Elbon	OP-rye	95.0	95.8	7.5	10.5	39.0	2.70	3.18	7.73
KWS Propower	HY-rye	89.3	96.0	6.5	10.0	29.0	2.70	3.18	7.72
KWS Progas	HY-rye	95.0	98.0	6.0	10.1	33.8	2.67	3.14	7.62
Fridge	Trit.	96.3	95.8	3.5	8.5	30.3	2.65	3.12	7.57
Forage FX 1001	Trit.	95.8	95.3	4.0	9.0	30.5	2.48	2.92	7.08
Tulus	Trit.	87.5	93.3	3.8	8.5	22.3	2.36	2.78	6.74
Nitrous	Trit.	86.0	88.5	4.0	8.5	24.3	2.34	2.75	6.69
Jerry	Wheat	93.3	91.5	2.8	7.5	25.3	2.29	2.69	6.53
Willow Creek	Wheat	95.5	94.8	2.8	7.0	24.3	2.11	2.48	6.03
	Mean	92.8	94.4	5.0	9.1	29.8	2.54	2.99	7.27
	CV (%)	---	---	11.7	3.7	5.0	11.3	11.3	11.3
	LSD (0.10)	---	---	0.7	0.4	1.8	0.34	0.40	0.98

¹At each site, lines not significantly different ($P < 0.10$) from the highest-ranking rye variety are marked in **bold font**.

²Stand percent and vigor ratings are based on a visual rating of plots on given date.