MINNESOTA– Winter Cereal Forages

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There has been significant interest in producing forage from winter cereal crops in recent years. A trial was initiated in the fall of 2018 to evaluate yield, forage quality, and agronomic characteristics of both hybrid and open-pollinated rye, triticale, and winter wheat varieties. The ongoing trials have been conducted at Crookston, Lamberton, and Rosemount, MN, for the past two years. The study seeded winter cereal crops according to UM recommendations, seeding in mid-to-late September, targeting an initial plant population of 23 plants/ft^2, and fertilized for an 80-bu/ac yield goal. Fall and spring vigor, winter survival, and growth and development were monitored in addition to plant height, biomass yield, and quality at the soft dough stage. Winter cereal yields were minimal in the spring of 2019 due to the winter and spring conditions across locations, averaging only 1.3 tons DM/ac when harvested at the soft dough stage. Although there were no differences among varieties at Crookston and Lamberton in 2019, the hybrid rye varieties KWS Progas and KWS Propower did yield significantly more biomass at Rosemount compared to all other winter cereals.

Table 1. Forage yield of seven varieties of winter rye, winter triticale, and winter wheat at the soft dough stage in three locations in Minnesota in 2020.

Variety	Species	Rosemount	Lamberton	Crookston	Combined
		Tons DM/ac			
Elbon	Rye (OP[1])	3.7	4.0	2.1	3.3
Rymin	Rye (OP[1])	3.5	4.1	1.8	3.3
KWS Progas	Rye (hybrid)	3.6	4.7	2.8	3.9
KWS Propower	Rye (hybrid)	4.2	4.4	2.5	3.6
Jerry	Winter Wheat	3.7	4.5	3.8	4.0
SY Wolf	Winter Wheat	2.5	4.0	2.8	3.4
Tulus	Triticale	4.7	4.2	2.8	3.6
(LSD 0.05)[2]		*0.8*	*0.5*	*0.6*	*0.4*

[1]Open Pollinated; [2]Least Significant Difference ($P \leq 0.05$)

Substantially more forage was produced in 2020, with 3.6 tons DM/ac on average across locations and varieties. There were differences in total forage production among varieties at all locations in 2020 (Table 1). In terms of total forage production, the open-pollinated rye varieties Rymin and Elbon were among the lowest-yielding across locations. However, there was no clear advantage of one species over another, where the winter wheat variety Jerry, the hybrid rye varieties KWS Progas and KWS Propower, and the triticale variety Tulus were all among the highest-yielding varieties in 2020 across locations. Forage quality data indicated winter wheat and triticale varieties tended to be slightly higher quality than the rye varieties in 2019, though 2020 data has yet to be analyzed. This study will continue in 2021 to gain a better understanding of winter cereal forage yield, quality, and economics over time.

Key Findings:

- Winter wheat varieties typically were shorter in height compared to rye and triticale varieties.
- Despite plant height differences, winter wheat varieties often yielded similarly to hybrid rye and triticale varieties.
- Substantial forage can be produced regardless of which winter cereal is seeded. Other factors, including herbicide carryover concerns, agronomic adaptation, and seed cost are all important considerations in determining the best variety to seed.