

Winter Cereals as a Forage Crop

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Winter cereals can be utilized as a forage crop for both grazing and haying. The use of winter cereals as a forage is one method of integrating cropland into a livestock system. Areas with milder climates allow forages to be grazed late into the fall and even throughout the winter months. In harsher northern climates like North Dakota, fall grazing is limited, although spring grazing is a possibility as these crops are some of the first plants to initiate growth and accumulate biomass in the spring. Overall the use of winter cereals as a forage crop not only provides winter cover and early growth in the spring, they can provide quality forage that is harvested early which may allow double cropping possibilities.

The CREC evaluated fall planted winter cereals as a forage crop during the 2003 to 2008 growing seasons. Winter cereals used in these trials include rye, triticale, wheat, and spelt. The trial's objective was to identify the performance differences with the cereal types as compared to variety differences within cereal types. All trials were sown on ground that was previously cropped to flax, buckwheat or a cereal grain. Trials were also sown into untilled stubble (direct seeded). Targeted planting dates generally were September 15, although actual planting dates ranged from September 14 to October 10 depending on moisture and harvest dates of the previous crop. Varieties used for these trials differed over the years. The varieties used were Frank winter spelt, Elkhorn and Jerry winter wheat, Frostat and Boreal winter triticale, and Musketeer and Rymin winter rye. Planting rates used in these trials was 1 to 1.2 million PLS/ac for wheat, rye, and triticale with spelt being sown at 100 to 110 lbs/ac. Forage treatment harvest dates were determined by the growth stage of the forage each year. Rye was harvested first, followed by triticale, wheat and then spelt. Harvest stage for all treatments was early to mid-anthesis or 5-10 days after heading depending on forage species.

Results (Table 1) illustrate the relative differences among the winter cereal types evaluated. Spring stand data gathered show that rye is the most winter hardy compared to the other crops used in these trials. Stand data gathered demonstrate that after rye, wheat, spelt, and triticale display the greatest winter hardiness, respectively, from the crop varieties used. Average heading dates gathered over the years show the differences among the crop types in maturity. Winter rye was the first to reach 50 percent heading with winter spelt last. The difference to heading date between rye and spelt was 26 days. Forage yields were similar for wheat, triticale and rye during the years of these trials. Winter spelt demonstrated a 22 to 27 percent yield increase when compared to wheat, rye, or triticale. These yield differences may in part be due to the later maturity of spelt.



Spelt is less winter hardy than rye and wheat.

Table 1. Winter Cereal Forage.**Carrington**

Crop Type	Spring Stand ¹	Heading Date	Harvest Date	Plant Height	Harvest Moisture	Yield ²		Crude Protein ³	----- Quality Data ³ -----								
	%			inch	%	15% M ton/ac	DM ton/ac	%	ADF %	NDF %	TDN %	RFV %	Ca %	Ph %	Mg %	K %	S %
Wheat	92	June 17	June 24	39	71	3.1	2.6	13.5	36.7	60.0	58.2	93.6	0.56	0.29	0.15	2.25	0.20
Spelt	75	June 28	July 5	47	66	3.7	3.2	12.2	37.8	59.3	57.7	93.4	0.56	0.26	0.15	2.20	0.21
Triticale	67	June 15	June 21	50	77	2.9	2.5	13.6	38.0	61.6	57.6	89.6	0.51	0.31	0.15	2.65	0.21
Rye	98	June 2	June 12	48	74	3.0	2.5	12.4	33.3	53.2	55.9	85.3	0.52	0.28	0.16	2.05	0.21

¹ Spring stand - 3-year average² Yield data - 6-year average³ Quality data - 2-year average

Forage quality differed slightly among the crops used in this study. Crude protein tended to be the highest for wheat and triticale with wheat having the highest TDN values. Although differences are minimal, data gathered illustrates a trend for rye to be the lowest quality with wheat having the highest quality forage.

The CREC continues to evaluate winter cereals for forage. This article's main focus is the differences that exist between the crop types and not between varieties within a crop. Choosing superior varieties within the crop types will have an impact on overall performance of the forage. Variety performance among the crop types has been evaluated and is available in past reports and on the CREC website. This past growing season the CREC evaluated a winter triticale forage trial to determine variety differences. Yields were higher along with an earlier harvest as compared to the six-year trial average. Mean yields for the varieties in 2012 ranged from 2.6 to 3.9 DM ton/ac. Harvest date for the trial occurred on June 15 due to the early spring.