Wheat, Triticale and Cereal Rye Varietal Differences in Cover Cropping Potential

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Winter small grain crops, such as wheat, barley, cereal rye, canola, oats and triticale are an important part of Kentucky's agricultural economy and also serve as winter cover crops. Cover cropping is an essential component of sustainable agricultural practices. Cover crops reduce soil erosion, add organic matter to the soil, provide moisture conserving residues and reduce ground water contamination by utilizing residual fertilizer from the previous crop.

Cereal rye is known for its robust fall growth and is often used specifically for cover cropping. Wheat however, is more commonly used as a cover crop because seed is readily available and it is a primary grain crop in Kentucky. Triticale is a cross between wheat and cereal rye and has good cover cropping potential, but its use is not common.

The objective of this study was to evaluate the cover cropping potential of wheat, triticale and cereal rye varieties. There were 11 cereal rye, 11 triticale and 84 wheat entries planted October 23, 2020, in Lexington, KY. The trials were set up in randomized complete block design with 4 replications. Cover crop potential was an estimate of the amount of biomass accumulated during the fall and winter growing periods and measured on January 22, 2021 using the Canopeo app. Higher levels of winter biomass, provide greater levels of protection from erosion and foster the other fore mentioned benefits of cover cropping.

In 2021, cereal rye averaged 44% canopy coverage among varieties and ranged from 32–59% (Table 1). The "SH" hybrids had the highest level of canopy coverage. These "SH" lines are facultative lines, which are spring types that also function as winter types. Other hybrid lines tended to have more biomass than the traditional open pollenated cereal rye varieties. The same trends (facultative lines having high levels and open pollenated varieties having lower canopy coverage) were observed in 2020 (data not shown).

Triticale varieties averaged 32% canopy coverage in 2021 and ranged from 20–51% (table 1). This was 12% lower on average than the cereal rye trial. In 2020 however, the triticale averaged 10% greater canopy levels than the cereal rye (data not shown), indicating a seasonal variability response and that triticale also has high cover cropping potential.

Wheat varieties averaged 19% canopy cover in 2021 and ranged from 8-35% (Table 2). This was about half of the average cereal rye canopy coverage.

The results indicate that cereal rye and triticale have superior cover cropping potential over wheat in terms of fall/winter biomass accumulation. Wheat seed is however, widely available and commonly used for cover cropping. The results of the wheat trial indicate that there is a wide range in genetic differences

in fall/winter biomass accumulation among varieties. Wheat varieties with high cover crop potential are similar to average cereal rye and triticale varieties. For wheat producers, use of high grain yielding varieties with high cover cropping potential allows growers to benefit from maximizing short term grain production profitability while utilizing sustainable practices for the future.

Table 1. 2021 Kentucky Cereal Rye and Triticale Cover Crop Variety Trial.

Cereal Rye Variety	Cover Crop^ Canopy (%)	Triticale Variety	Cover Crop^ Canopy (%)
KWS SH4 **	59	Trical Merlin Max	51
KWS SH6 **	57	Trical Gunner	47
KWS SH3 **	56	Trical Thor	41
KWS SH5 **	54	Trical Exp 20T02	36
KWS Serafino **	43	Trical Flex 719	33
KWS Receptor **	43	Trical Surge	30
Aroostook	39	Arcia	28
Aventino	37	Trical Gainer 154	27
KWS Bono **	35	SS1414	22
Guardian	34	LAX Nitrous	21
Spooner	32	SY TF813	20
AVERAGE	**44**	**AVERAGE**	**32**

Location: Fayette Co. (Lexington, KY). Planting date: 10-23-2020; Conventional tillage.
^ Winter Cover Crop/Grazing biomass estimate (% Canopy coverage using Canopeo): Measured: 1-22-2021.
**Hybrid Cereal Rye

Table 2. 2021 Kentucky Wheat Variety Cover Crop Trial.				
Wheat Variety	**Cover Crop* Canopy (%)**		**Wheat Variety**	**Cover Crop* Canopy (%)**
X11-0130-13-2-3	35		AgriMAXX 498	18
X11-0120-12-4-3	31		AgriMAXX 454	18
Liberty 5658	31		AgriPro 100	18
X11-0170-52-3-3	31		Dyna-Gro 9692	17
X11-0039-1-17-5***	31		USG 3329	17
AC-2-17-5-5	30		MI16R0898	17
KY06C-1178-16-10-3-34	30		AgriMAXX 505	17
X11-0374-104-13-5**	30		KAS ADAMS	17
X12-920-39-9-5	29		USG 3562	17
USG 3118	28		USG 3352	16
KWS291	28		Dyna-Gro WX20738	16
X12-3051-53-17-3	27		GROWMARK FS 623	16
13VTK429-3	26		Dyna-Gro 9120	16
X12-3010-4-4-1	26		Dyna-Gro 9172	16
AgriMAXX EXP 2009	26		GROWMARK FS WX21B	16
KWS375	26		Pioneer variety 26R41	16
KWS338	26		Dyna-Gro 9941	16
AgriMAXX 492	25		PROGENY #BULLET	16
X11-0357-24-13-5***	25		AgriMAXX 503	16
GROWMARK FS 624	25		KAS 20X16	15
VA 17W-74	25		Pioneer variety 26R10	15
PEMBROKE 2021	24		PROGENY #BLAZE	15
MI16R0906	23		AgriMAXX 513	15
AgriMAXX 514	23		AgriMAXX 516	15
GoWheat 2059	22		MI16R0720	15
Bess	22		AgriMAXX 485	14
PEMBROKE 2016	22		Pioneer variety 26R45	14
AgriPro 576	21		AgriPro SREXP0119	14
Truman	21		Dyna-Gro WX20734	13
Pioneer variety 26R36	21		Pioneer variety 26R59	13
Go Wild Feral Forage	20		KAS 19X24	13
KAS 20X47	20		AgriPro Viper	13
GROWMARK FS 600	20		AgriPro Richie	13
USG 3316	20		USG 3472	13
GROWMARK FS 616	20		Dyna-Gro 9002	12
LOCAL LW2848	20		Go Wheat 4059S	12
LOCAL LW2169	19		AgriPro 547	11
KWS340	19		PROGENY PGX18-7	11
Dyna-Gro 9151	19		Dyna-Gro WX21741	10
GROWMARK FS 601	19		AgriPro SREXP0117	10
LOCAL LW2068	19		GoWheat 2058	10
LOCAL LW2148	19		KAS 20X29	8
			AVERAGE	**19**

Location: Bluegrass Region - Fayette Co.; Planting date: 10-23-2020; Conventional tillage.
* Winter Cover Crop / Grazing biomass estimate (% Canopy coverage using Canopeo): measured: 1-22-2021.