

# Cover Crop Variety Tests in Tennessee

**2019 - 2020**

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# COVER CROP VARIETY TESTS IN TENNESSEE

2019 - 2020

## Experimental Procedures

Cover crop variety tests were conducted at the East Tennessee (Knoxville; ETREC), Middle Tennessee (Spring Hill; MTREC), and Milan (Milan; RECM) AgResearch & Education Centers (REC). All locations were planted with a drill to a length of 30 ft. Plot widths varied slightly by location based on equipment. Plots were planted at ETREC in 8 rows on 7.5 in. spacing, at MTREC in 7 rows on 7 in. spacing, and at RECM in 10 rows on 7.5 in. spacing. Plots were planted in a randomized complete block design and replicated three times at each location. Varieties were planted at the appropriate seeding depth for each species (Table 1). The trial included varieties within the broader groups of brassicas, cereals, and legumes; however, all varieties were evaluated in a single trial in order to provide a better head-to-head comparison of the many cover crop varieties available. Contact information and websites for seed suppliers are summarized in Table 2.

A September and October planting date were planned for this study; however, due to extreme drought in the fall of 2019, only the earlier planting date was cut. All plots were planted in early to mid-October (Table 3).

## Assessment of Ground Cover

Two 15 in. x 15 in. PVC square were randomly placed in each plot and photographed. These photographs were then analyzed for percent green cover using Canopeo software (Oklahoma State University Department of Plant and Soil Sciences, Stillwater, OK). Plots were photographed one month after planting (mid-Nov), in mid-Feb, early April, and early May; however, the height of many of the cereal and brassica species made this method ineffective and these data are not presented.

## Assessment of Height

Height of cover crop varieties was measured in November, February, April, and May for species taller than 4 in. Species shorter than 4 in. were not measured but recorded as 1 in. for statistical purposes.

## Assessment of Biomass

Cover biomass was measured in a single, randomly selected, 15 in. x 15 in. square area within each plot. Biomass within that square was cut to a height of 1 in. above the soil surface. Biomass was dried to a constant weight and dry matter biomass was calculated on a per acre basis.

## Interpretation of Data

The tables on the following pages have been prepared with the entries sorted by group (brassica, cereal, legume), species, and variety. Biomass, cover, and height data were analyzed using the MIXED procedure in SAS v. 9.4 (Cary, NC) with mean separation performed using the Fisher's

Protected LSD (Least Significant Difference) test. All analyses used a mixed model with treatment as a fixed effect and replicate and location as random effects with an alpha level of 0.05 to determine significance. The model for cover also included sample as a random effect. Mean separation letters have been listed next to mean values for each trait. Varieties that have any letter in common within a column are not significantly different at the 5% level of probability. Varieties with performance statistically equivalent to the top performing variety will have an “A” included in the list of mean separation letters next to that entry. Additionally, mean values between the 50<sup>th</sup> and 75<sup>th</sup> percentile are highlighted in light orange and above the 75<sup>th</sup> percentile are highlighted in dark orange.

## **Results**

Sixty varieties were evaluated in the 2019 – 2020 cover crop variety trial (Table 2). Treatments fell into three groups, brassicas (11 varieties), cereals (20 varieties), and legumes (29 varieties). Species with the greatest representation included radish (6 varieties), barley (5 varieties), cereal rye (9 varieties), crimson clover (6 varieties), hairy vetch (5 varieties), and winter pea (7 varieties).

Variety performance is given across locations (Table 4) and for each individual location, Milan (RECM; Table 5), Spring Hill (MTREC; Table 6), and Knoxville (ETREC; Table 7). Variety performance differed significantly among locations ( $P < 0.001$ ). A side-by-side summary of all data is given in tables 8 to 11. While most species performed similarly across locations, the varieties of radish generally exhibited very poor performance at MTREC, while performing above average at the RECM and ETREC locations (Table 8). Crimson clover varieties also exhibited location differences, with all varieties exhibiting above average biomass in April and May at MTREC, while at the RECM and ETREC, fewer varieties were top-performers (Table 8). These differences may have been due to environmental differences among the locations. Both temperature and precipitation immediately prior to planting and during early establishment can have a significant impact on successful cover crop establishment. Among the three locations, MTREC had the largest rain event immediately prior to planting which may account for the better performance of the clovers at this location. However, it is unclear why the Brassica species did not perform well at MTREC. Brassica species tend to be more prone to winterkill; however, the MTREC location had similar average and minimum monthly temperatures to ETREC.

Varieties that had high biomass in April, generally also had high biomass in May. Overall, top performers for biomass (>75<sup>th</sup> percentile) in both months were dominated by three species, hairy vetch, winter pea, and cereal rye (Tables 4-8).

Top-performers (>75<sup>th</sup> percentile) for percent cover varied by evaluation month (Table 4). One month after planting, all top-performers for percent cover were cereal species, with the cereals averaging 22% cover, compared with only 9% for brassicas and 4% for legumes. However, by February, legumes were dominating the top, in particular varieties of common, hairy, and woolypod vetch, and winter pea. In February, legumes averaged 31% cover, compared to 21% in brassicas, and 24% in cereals.

Height may be important for producers interested in grazing cover crops. Cereal varieties were among the tallest in all four evaluation months (Table 4). In April, some brassica species were also included in the top 25% for height, due primarily to the rapid elongation of flowering stalks. By May, several legumes were also in the top 25% for height; however, the “A group” was still dominated by the cereals, with a maximum height of 60 in.

Significant differences were observed among varieties within species. Within top-performing species, cereal rye exhibited the greatest difference in biomass between top and bottom performing varieties, with a difference of 0.9 DM tons/ac in April and 1 DM ton/ac in May. This was also true for hairy vetch varieties, with a difference in top and bottom performing varieties of 0.5 DM tons/ac in April and 0.7 DM tons/ac in May. For winter pea, varieties differences were less pronounced in April (0.2 DM tons/ac), but increased by May (0.6 DM tons/ac).

Overall, results from this trial illustrate the variation both among species and among varieties within species as well as highlight top-performing varieties for East, Middle, and West Tennessee.

**Table 1. Characteristics of cover crop varieties evaluated during 2019-2020.**

Group	Species	Variety/Hybrid	Company	Seeding Depth (in)
Brassica	Brassica	Extender	Green Cover Seed	0.25 - 0.5
Brassica	Collards	Impact	Green Cover Seed	0.25 - 0.5
Brassica	Hyb. Brassica	Viva	Mountain View Seeds	0.25 - 0.5
Brassica	Hyb. Brassica	Vivant	Mountain View Seeds	0.25 - 0.5
Brassica	Radish	Aerifi	Mountain View Seeds	0.25 - 0.5
Brassica	Radish	Digger	OreGro	0.25 - 0.5
Brassica	Radish	SERALPHA	Smith Seed	0.25 - 0.5
Brassica	Radish	SERWF19	Smith Seed	0.25 - 0.5
Brassica	Radish	Smart	Green Cover Seed	0.25 - 0.5
Brassica	Radish, Daikon	Driller	GrasslandOregon	0.25 - 0.5
Brassica	Turnip	Jackpot	Mountain View Seeds	0.25 - 0.5
Cereal	Annual Ryegrass	Centurion	Mountain View Seeds	1 - 2
Cereal	Annual Ryegrass	Lowboy	Smith Seed	1 - 2
Cereal	Barley	140760	OreGro	1 - 2
Cereal	Barley	140789	OreGro	1 - 2
Cereal	Barley	140797	OreGro	1 - 2
Cereal	Barley	SB255	Seedway	1 - 2
Cereal	Barley	Secretariat	Virginia Tech	1 - 2
Cereal	Cereal Rye	Bates RS4	Noble Research Institute	1 - 2
Cereal	Cereal Rye	Elbon (1)	Noble Research Institute	1 - 2
Cereal	Cereal Rye	Elbon (2)	Green Cover Seed	1 - 2
Cereal	Cereal Rye	Goku	OreGro	1 - 2
Cereal	Cereal Rye	NF95319B	Noble Research Institute	1 - 2
Cereal	Cereal Rye	NF97325	Noble Research Institute	1 - 2
Cereal	Cereal Rye	NF99362	Noble Research Institute	1 - 2
Cereal	Cereal Rye	Wintergrazer 70	Pennington Seed	1 - 2
Cereal	Cereal Rye	Yankee	Green Cover Seed	1 - 2
Cereal	Oats, Black	Cosaque	Green Cover Seed	1 - 2
Cereal	Oats, Winter	Bob	Green Cover Seed	1 - 2
Cereal	Wheat	Hilliard	Virginia Tech	1 - 2
Cereal	Wheat	Liberty 5658	Virginia Tech	1 - 2
Legume	Clover, Balansa	FIXatioN	GrasslandOregon	0.25 - 0.5
Legume	Clover, Balansa	Paradana	Smith Seed	0.25 - 0.5
Legume	Clover, Balansa	Viper	Smith Seed	0.25 - 0.5
Legume	Clover, Berseem	Balady	Smith Seed	0.25 - 0.5
Legume	Clover, Berseem	Frosty	GrasslandOregon	0.25 - 0.5
Legume	Clover, Crimson	AU Sunrise	Pennington Seed	0.25 - 0.5
Legume	Clover, Crimson	Bolsena	OreGro	0.25 - 0.5
Legume	Clover, Crimson	Dixie	Smith Seed	0.25 - 0.5
Legume	Clover, Crimson	Kentucky Pride	GrasslandOregon	0.25 - 0.5
Legume	Clover, Crimson	SECCM18	Smith Seed	0.25 - 0.5
Legume	Clover, Crimson	White Cloud	OreGro	0.25 - 0.5
Legume	Clover, Red	Big Red	Green Cover Seed	0.25 - 0.5
Legume	Clover, Red	Blaze	Mountain View Seeds	0.25 - 0.5
Legume	Clover, Red	GA9909	Smith Seed	0.25 - 0.5
Legume	Clover, Red	VNS	Green Cover Seed	0.25 - 0.5
Legume	Vetch, Common	VNS	Green Cover Seed	1 - 2
Legume	Vetch, Hairy	AU Merit	Smith Seed	1 - 2
Legume	Vetch, Hairy	Patagonia Inta	Smith Seed	1 - 2
Legume	Vetch, Hairy	Purple Bounty	Green Cover Seed	1 - 2
Legume	Vetch, Hairy	Villana	OreGro	1 - 2
Legume	Vetch, Hairy	WinterKing	Smith Seed	1 - 2
Legume	Vetch, Woolypod	Namoi	Green Cover Seed	1 - 2
Legume	Winter Pea	Double OO	OreGro	1 - 2

**Table 1. Characteristics of cover crop varieties evaluated during 2019-2020.**

Group	Species	Variety/Hybrid	Company	Seeding Depth (in)
Legume	Winter Pea	Survivor	GrasslandOregon	1 - 2
Legume	Winter Pea	VNS (1)	Green Cover Seed	1 - 2
Legume	Winter Pea	VNS (2)	Smith Seed	1 - 2
Legume	Winter Pea	Windham	Smith Seed	1 - 2
Legume	Winter Pea	WyoWinter (1)	Green Cover Seed	1 - 2
Legume	Winter Pea	WyoWinter (2)	Smith Seed	1 - 2

**Table 2. Contact information for cover crop seed companies submitting varieties evaluated in tests in Tennessee during 2019 - 2020.**

Company	Contact	Phone	Email	Web site
GrasslandOregon	Jerry Hall	503-566-9900	<a href="mailto:info@goseed.com">info@goseed.com</a>	<a href="http://grasslandoregon.com">grasslandoregon.com</a>
Green Cover Seed	Keith Berns	402--469-6784	<a href="mailto:keith@greencoverseed.com">keith@greencoverseed.com</a>	<a href="http://greencoverseed.com">greencoverseed.com</a>
Mountain View Seeds	Mark Thomas	903-949-7099	<a href="mailto:markt@mtviewseeds.com">markt@mtviewseeds.com</a>	<a href="http://www.mtviewseeds.com">www.mtviewseeds.com</a>
Noble Research Institute	Jeff Moen	580-224-6205	<a href="mailto:jsmoen@noble.org">jsmoen@noble.org</a>	<a href="http://noble.org">noble.org</a>
OreGro	Dustin Herb	541-990-2141	<a href="mailto:dustin.herb@nutrien.com">dustin.herb@nutrien.com</a>	<a href="http://oregroseeds.com">oregroseeds.com</a>
Pennington Seed	Drew Denman	706-612-8534	<a href="mailto:ddenman@central.com">ddenman@central.com</a>	<a href="http://pennington.com">pennington.com</a>
Seedway, LLC	Jerry Davis	610-967-4131	<a href="mailto:jdavis@seedway.com">jdavis@seedway.com</a>	<a href="http://seedway.com">seedway.com</a>
Smith Seed Services	Jonathan Rupert	888-550-2930	<a href="mailto:jrupert@smithseed.com">jrupert@smithseed.com</a>	<a href="http://smithseed.com">smithseed.com</a>
Virginia Tech	Phillip Browning	804-472-3500	<a href="mailto:vcia.manager@gmail.com">vcia.manager@gmail.com</a>	<a href="http://virginiacrop.org">virginiacrop.org</a>

**Table 3. Location information from University of Tennessee AgResearch and Education Centers where crop variety trials were conducted during 2019-2020.**

Location	AgResearch and Education Center	Planting	Fall Eval.	Winter Eval.	Spring Eval. 1	Spring Eval. 2	Soil Type
Knoxville	East Tennessee	8-Oct-2019	13-Nov-2019	11-Feb-2020	1-Apr-2020	1-May-2020	Shady Loam
Spring Hill	Middle Tennessee	11-Oct-2019	14-Nov-2019	19-Feb-2020	2-Apr-2020	30-Apr-2020	Dickson Silt Loam
Milan	Milan	10-Oct-2019	13-Nov-2019	11-Feb-2020	1-Apr-2020	1-May-2020	Loring Silt Loam

**Table 4. Across location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
Extender	Brassica	Brassica	0.4 M-T	0.6 Y-BB	4 L-P	15 L-P	2 Q-S	4 H-M	20 D	24 H-L
Impact	Collards	Brassica	0.3 Q-W	0.7 X-BB	4 O-R	13 M-Q	2 Q-S	2 S-U	4 T-X	21 K-Q
Viva	Hyb. Brassica	Brassica	0.4 L-S	0.9 U-AA	14 E-H	29 E-G	2 N-Q	3 M-R	25 C	31 E
Vivant	Hyb. Brassica	Brassica	0.2 S-W	0.4 AA-BB	10 H-K	17 H-O	2 N-Q	3 Q-S	13 H-M	22 H-O
Aerifi	Radish	Brassica	0.5 J-P	1.2 P-W	11 G-J	24 E-K	2 N-P	5 E-J	18 D-F	19 M-R
Digger	Radish	Brassica	0.4 L-S	1.2 Q-X	10 F-I	24 E-K	3 M-O	5 G-K	19 DE	18 N-R
SERALPHA	Radish	Brassica	0.5 K-Q	1.3 L-U	7 I-N	27 E-G	3 M-O	5 E-H	19 D-F	17 P-R
SERWF19	Radish	Brassica	0.6 G-M	1.3 M-U	8 H-K	24 E-L	2 N-P	5 F-K	21 D	20 L-Q
Smart	Radish	Brassica	0.5 J-P	1.2 Q-X	14 D-G	25 E-I	3 MN	4 H-N	25 C	23 H-N
Driller	Radish, Daikon	Brassica	0.3 P-V	1.0 T-Z	7 H-L	23 E-L	2 P-R	3 M-R	18 D-F	17 P-R
Jackpot	Turnip	Brassica	0.3 P-V	0.8 V-BB	8 H-L	16 K-O	2 O-Q	4 L-R	21 D	24 H-L
Centurion	Annual Ryegrass	Cereal	0.3 Q-W	1.0 S-Z	4 K-P	26 E-G	4 J-L	4 H-N	8 N-R	21 J-P
Lowboy	Annual Ryegrass	Cereal	0.1 W	0.4 AA-BB	3 N-Q	16 J-O	3 M	1 U	3 V-X	11 TU
140760	Barley	Cereal	0.4 L-S	1.4 I-U	23 A-D	23 E-L	5 D-G	5 E-H	11 K-O	23 H-O
140789	Barley	Cereal	0.5 K-Q	1.4 K-U	24 A-D	27 E-G	5 GH	5 G-L	7 P-T	20 L-Q
140797	Barley	Cereal	0.4 M-T	1.2 O-W	28 A-C	27 E-G	5 B-G	5 G-K	9 N-Q	23 H-M
SB255	Barley	Cereal	0.4 M-S	1.3 N-V	22 A-D	22 G-M	5 D-G	4 K-Q	13 H-M	23 H-M
Secretariat	Barley	Cereal	0.4 L-R	1.4 H-T	15 C-E	22 F-L	4 I-K	4 H-N	11 J-N	20 L-Q
Bates RS4	Cereal Rye	Cereal	1.2 AB	2.3 AB	33 A	26 E-G	6 AB	10 A	33 AB	53 BC
Elbon (1)	Cereal Rye	Cereal	0.8 D-H	1.9 A-H	28 A-C	26 E-G	5 C-G	4 I-O	25 C	57 AB
Elbon (2)	Cereal Rye	Cereal	0.6 G-M	1.6 E-Q	29 AB	26 E-G	5 C-G	3 M-R	21 D	54 BC
Goku	Cereal Rye	Cereal	0.7 F-K	1.8 B-M	25 A-C	22 E-L	6 A-D	6 DE	26 C	54 BC
NF95319B	Cereal Rye	Cereal	1.1 AB	2.1 A-E	26 A-C	25 E-J	6 A	8 BC	32 B	56 A-C
NF97325	Cereal Rye	Cereal	1.1 A-C	1.9 A-H	20 B-E	26 E-G	6 A-C	9 AB	32 B	59 A
NF99362	Cereal Rye	Cereal	1.0 B-E	1.9 A-I	24 A-C	25 E-G	5 B-F	7 CD	27 C	52 C
Wintergrazer 70	Cereal Rye	Cereal	0.9 B-F	1.9 B-K	21 A-D	24 E-K	6 A-C	9 AB	36 A	60 A
Yankee	Cereal Rye	Cereal	0.3 P-V	1.3 N-V	30 AB	22 E-L	5 B-E	3 O-S	10 L-P	40 D
Cosaque	Oats, Black	Cereal	0.6 H-P	1.5 F-R	23 A-D	25 E-H	5 F-H	5 E-I	10 K-O	19 L-R
Bob	Oats, Winter	Cereal	0.6 G-O	1.7 D-P	22 A-D	26 E-G	5 F-H	6 DE	13 I-M	30 EF
Hilliard	Wheat	Cereal	0.7 G-L	1.8 B-L	16 B-E	26 E-G	5 D-G	6 DE	16 E-H	26 F-I
Liberty 5658	Wheat	Cereal	0.5 I-P	1.4 J-U	15 C-F	23 E-L	5 B-G	6 D-G	16 F-I	26 F-H

**Table 4. Across location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
FIXation	Clover, Balansa	Legume	0.3 O-U	1.2 Q-W	3 ST	12 N-Q	0 Y	1 U	5 R-X	20 L-Q
Paradana	Clover, Balansa	Legume	0.2 R-W	0.7 W-BB	2 TU	9 O-Q	1 W-Y	1 U	4 S-X	10 UV
Viper	Clover, Balansa	Legume	0.4 M-S	1.8 D-O	2 ST	16 I-O	0 XY	1 U	6 Q-V	15 R-T
Balady	Clover, Berseem	Legume		0.3 AA-BB	1 U	5 Q	1 U-W	1 U	2 X	6 V
Frosty	Clover, Berseem	Legume	0.2 R-W	1.1 R-Y	2 T	13 N-Q	1 U-X	1 TU	7 P-T	18 O-R
AU Sunrise	Clover, Crimson	Legume	0.5 K-Q	1.7 D-O	6 I-M	27 E-G	1 TU	1 U	7 O-T	21 J-P
Bolsena	Clover, Crimson	Legume	0.5 J-Q	1.6 E-R	5 I-N	26 E-G	1 T-V	1 U	6 Q-W	21 J-P
Dixie	Clover, Crimson	Legume	0.5 K-Q	1.6 E-Q	6 H-L	23 E-L	1 TU	1 U	7 P-U	21 I-P
Kentucky Pride	Clover, Crimson	Legume	0.3 O-U	1.5 F-S	5 J-O	24 E-K	1 T-V	1 U	4 S-X	17 P-R
SECCM18	Clover, Crimson	Legume	0.5 I-P	2.0 A-F	7 I-N	28 E-G	2 R-T	2 S-U	7 P-T	21 K-P
White Cloud	Clover, Crimson	Legume	0.3 N-U	1.2 P-W	6 I-L	21 G-N	1 ST	1 U	6 Q-W	16 Q-S
Big Red	Clover, Red	Legume	0.1 VW	0.6 Z-BB	3 Q-S	7 PQ	1 U-W	1 U	2 WX	8 UV
Blaze	Clover, Red	Legume	0.1 W	0.4 AA-BB	3 O-R	9 O-Q	1 V-Y	1 U	4 T-X	9 UV
GA9909	Clover, Red	Legume	0.1 T-W	0.7 W-BB	3 RS	11 O-Q	1 U-W	1 U	3 V-X	11 S-U
VNS	Clover, Red	Legume	0.1 U-W	0.5 Z-BB	3 RS	9 O-Q	1 U-Y	1 U	3 U-X	9 UV
VNS	Vetch, Common	Legume	0.6 G-M	2.2 A-D	4 M-Q	27 E-G	4 I-K	5 E-H	13 I-M	17 P-R
AU Merit	Vetch, Hairy	Legume	1.2 A	2.3 A-C	7 I-N	75 A	4 IJ	6 D-F	14 G-J	23 H-M
Patagonia Inta	Vetch, Hairy	Legume	1.0 A-D	1.9 A-I	5 I-N	71 A	4 HI	5 F-K	14 G-J	23 H-M
Purple Bounty	Vetch, Hairy	Legume	0.8 E-I	1.9 A-H	3 P-R	50 BC	4 I-K	3 N-R	16 E-G	26 F-J
Villana	Vetch, Hairy	Legume	0.7 G-L	1.6 E-R	2 P-S	40 D	4 I-K	4 K-Q	14 G-J	25 G-K
WinterKing	Vetch, Hairy	Legume	1.2 AB	1.8 C-N	3 M-Q	53 B	4 IJ	4 H-N	16 E-H	24 H-L
Namoi	Vetch, Woolypod	Legume	0.8 C-G	1.5 G-T	3 RS	52 B	5 E-H	7 D	14 G-K	21 I-P
Double OO	Winter Pea	Legume	0.7 G-L	1.8 B-K	7 G-K	31 E	4 KL	3 O-R	10 M-P	30 EF
Survivor	Winter Pea	Legume	0.8 D-I	2.4 A	7 G-K	46 B-D	4 I-K	3 O-R	13 G-K	26 F-H
VNS (1)	Winter Pea	Legume	0.7 E-K	1.9 A-J	6 H-L	41 D	4 J-L	4 L-R	13 H-M	27 E-H
VNS (2)	Winter Pea	Legume	0.7 E-K	2.0 A-G	7 G-K	43 CD	4 L	3 Q-S	13 G-L	29 E-G
Windham	Winter Pea	Legume	0.6 G-N	1.8 C-N	7 G-J	31 EF	4 IJ	2 R-T	7 O-S	18 N-R
WyoWinter (1)	Winter Pea	Legume	0.6 G-M	1.9 A-H	5 H-L	40 D	4 J-L	3 P-S	11 J-N	26 F-J
WyoWinter (2)	Winter Pea	Legume	0.8 E-J	1.9 A-H	7 G-J	43 CD	4 I-K	4 J-P	14 G-K	26 F-H

**Table 4. Across location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
<b>Across Groups</b>										
Average			0.6	1.4	11	27	3	4	14	26
Standard Error			0.1	0.3	2	5	0	1	2	3
Min			0.1	0.3	1	5	0	1	2	6
Max			1.2	2.4	33	75	6	10	36	60
Range			1.2	2.0	32	71	6	9	34	54
<b>Brassicas</b>										
Average			0.4	1.0	9	21	2	4	18	21
Min			0.2	0.4	4	13	2	2	4	17
Max			0.6	1.3	14	29	3	5	25	31
Range			0.4	0.9	10	16	1	4	21	14
<b>Cereals</b>										
Average			0.6	1.6	22	24	5	5	18	36
Min			0.1	0.4	3	16	3	1	3	11
Max			1.2	2.3	33	27	6	10	36	60
Range			1.1	1.9	29	11	3	9	33	49
<b>Legumes</b>										
Average			0.6	1.5	4	31	2	2	9	20
Min			0.1	0.3	1	5	0	1	2	6
Max			1.2	2.4	7	75	5	7	16	30
Range			1.2	2.0	6	71	5	6	14	24
<b>ANOVA p-values</b>										
- Variety			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Variety x Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).  
 light orange highlights values between the 50th and 75th percentile  
 dark orange highlights values greater than the 75th percentile

**Table 5. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee AgResearch and Education Center at Milan in Milan, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
Extender	Brassica	Brassica	0.5 I-R	1.0 I-R	3 L-U	21 J-R	2 H-K	2 IJ	24 C-E	25 E-L
Impact	Collards	Brassica	0.2 S-X	0.6 QR	2 S-X	18 M-V	2 I-L	1 J	3 ST	28 D-H
Viva	Hyb. Brassica	Brassica	0.5 K-U	0.8 L-R	6 F-Q	36 GH	2 H-L	3 F-I	24 C-E	34 D
Vivant	Hyb. Brassica	Brassica	0.3 P-X	0.5 R	6 C-N	21 K-S	2 HI	3 G-I	13 I-M	27 D-J
Aerifi	Radish	Brassica	0.7 E-L	1.7 B-M	5 I-R	18 M-U	2 H-J	5 C-F	21 E-G	26 D-K
Digger	Radish	Brassica	0.5 H-R	1.3 E-R	6 D-N	23 I-P	2 HI	5 D-G	19 F-H	26 D-K
SERALPHA	Radish	Brassica	0.6 G-P	1.2 E-R	4 J-S	22 J-Q	2 H	5 C-E	23 D-F	24 F-M
SERWF19	Radish	Brassica	0.7 D-K	1.7 B-L	4 G-Q	21 J-Q	2 HI	6 C-E	22 D-F	26 D-K
Smart	Radish	Brassica	0.4 K-U	1.2 E-R	10 A-J	27 G-M	2 HI	3 F-I	26 CD	28 D-H
Driller	Radish, Daikon	Brassica	0.5 H-R	0.9 K-R	5 E-Q	36 GH	2 HI	3 F-I	21 E-G	26 D-K
Jackpot	Turnip	Brassica	0.2 P-X	0.8 L-R	9 B-L	15 N-W	2 HI	3 F-I	22 D-F	27 D-I
Centurion	Annual Ryegrass	Cereal	0.4 K-V	1.6 B-N	3 L-U	34 G-I	4 G	6 B-D	8 N-R	30 D-F
Lowboy	Annual Ryegrass	Cereal	0.1 WX	0.6 P-R	2 S-X	21 J-Q	4 G	1 J	3 R-T	16 M-R
140760	Barley	Cereal	0.4 K-U	1.2 E-R	18 AB	23 J-P	5 A-C	5 C-E	9 L-P	25 D-L
140789	Barley	Cereal	0.3 O-X	1.2 F-R	15 A-E	21 K-R	5 A-E	3 G-I	5 O-T	20 H-Q
140797	Barley	Cereal	0.3 N-X	1.0 H-R	19 A-C	26 G-M	5 A	5 C-F	7 N-S	24 F-M
SB255	Barley	Cereal	0.4 K-V	1.5 C-P	14 A-F	22 J-Q	5 AB	3 G-I	13 I-M	26 D-K
Secretariat	Barley	Cereal	0.4 M-X	1.3 E-R	13 A-G	24 I-O	4 E-G	5 C-F	12 I-N	18 K-R
Bates RS4	Cereal Rye	Cereal	0.8 B-J	1.8 B-K	17 A-C	22 J-Q	5 A-E	7 A-C	29 BC	55 B
Elbon (1)	Cereal Rye	Cereal	0.7 F-N	1.7 B-M	14 A-H	24 I-N	5 A-E	4 E-H	22 D-F	61 AB
Elbon (2)	Cereal Rye	Cereal	0.4 K-U	1.4 C-P	16 A-D	26 H-M	5 A-E	1 J	14 H-K	56 AB
Goku	Cereal Rye	Cereal	0.5 J-T	1.6 B-N	16 A-D	20 K-T	5 A-D	5 C-E	21 D-F	53 BC
NF95319B	Cereal Rye	Cereal	0.9 B-G	1.9 B-G	12 A-I	29 G-L	5 A-E	8 AB	31 AB	60 AB
NF97325	Cereal Rye	Cereal	0.8 C-J	2.0 B-F	11 B-M	19 L-T	5 A	8 A	28 BC	60 AB
NF99362	Cereal Rye	Cereal	0.9 B-I	1.8 B-J	14 A-F	24 I-O	5 A-E	6 B-D	23 D-F	45 C
Wintergrazer 70	Cereal Rye	Cereal	1.1 A-D	2.1 B-E	11 A-J	24 I-N	5 AB	8 A	36 A	64 A
Yankee	Cereal Rye	Cereal	0.2 R-X	1.1 G-R	22 A	19 K-T	4 B-G	2 IJ	9 M-Q	46 C
Cosaque	Oats, Black	Cereal	0.5 I-S	1.6 B-N	16 A-D	21 J-Q	5 A-E	5 C-E	10 K-O	22 F-O
Bob	Oats, Winter	Cereal	0.4 K-U	1.7 B-K	18 AB	23 I-P	4 B-G	6 B-D	11 J-N	33 DE
Hilliard	Wheat	Cereal	0.4 K-U	1.9 B-H	11 A-I	22 J-Q	5 A-E	6 C-E	14 H-L	24 F-M
Liberty 5658	Wheat	Cereal	0.6 G-N	1.4 D-P	10 A-K	23 I-P	4 A-F	6 B-D	16 HI	29 D-G

**Table 5. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee AgResearch and Education Center at Milan in Milan, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
FIXatioN	Clover, Balansa	Legume	0.6 H-Q	1.5 C-O	1 V-Z	10 T-X	0 QR	1 J	4 Q-T	24 F-M
Paradana	Clover, Balansa	Legume	0.2 Q-X	1.1 F-R	0 (-A)	10 S-X	0 R	1 J	5 O-T	11 RS
Viper	Clover, Balansa	Legume	0.5 J-T	1.9 B-F	0 Z-A	10 S-X	0 R	1 J	5 P-T	14 O-R
Balady	Clover, Berseem	Legume		0.8 M-R	1 X-A	3 X	1 O-Q	1 J	1 T	4 S
Frosty	Clover, Berseem	Legume	0.2 P-X	1.9 B-H	1 V-Z	12 Q-X	0 P-R	1 J	9 M-Q	25 D-L
AU Sunrise	Clover, Crimson	Legume	0.3 O-X	1.5 C-P	3 N-V	15 N-W	1 M-O	1 J	4 Q-T	19 J-R
Bolsena	Clover, Crimson	Legume	0.4 L-W	1.0 G-R	3 L-U	19 L-T	1 L-O	1 J	4 Q-T	18 K-R
Dixie	Clover, Crimson	Legume	0.2 R-X	1.6 B-M	4 H-R	10 S-X	2 K-M	1 J	4 Q-T	23 F-M
Kentucky Pride	Clover, Crimson	Legume	0.1 WX	1.0 J-R	3 M-V	11 R-X	1 M-O	1 J	2 T	17 L-R
SECCM18	Clover, Crimson	Legume	0.2 T-X	1.6 B-N	2 P-V	13 P-X	1 L-N	1 J	4 R-T	18 K-R
White Cloud	Clover, Crimson	Legume	0.2 P-X	0.6 P-R	3 L-U	13 O-X	2 J-M	1 J	3 R-T	13 P-R
Big Red	Clover, Red	Legume	0.1 U-X	0.8 L-R	1 W-A	6 WX	1 O-Q	1 J	2 T	13 P-R
Blaze	Clover, Red	Legume	0.0 V-X	0.7 O-R	2 O-V	8 U-X	1 O-Q	1 J	2 T	14 N-R
GA9909	Clover, Red	Legume	0.0 U-X	0.8 N-R	0 Z-A	7 WX	1 N-P	1 J	3 R-T	16 M-R
VNS	Clover, Red	Legume	0.0 X	0.6 P-R	4 U-Y	7 V-X	1 O-Q	1 J	3 R-T	12 QR
VNS	Vetch, Common	Legume	0.7 D-K	3.2 A	2 Q-W	30 G-K	4 B-G	5 C-E	16 G-I	20 H-Q
AU Merit	Vetch, Hairy	Legume	1.3 A	1.9 B-G	3 R-X	72 AB	4 D-G	5 C-E	15 H-J	20 H-Q
Patagonia Inta	Vetch, Hairy	Legume	1.1 A-E	1.5 C-P	4 K-T	77 A	4 D-G	4 E-H	13 I-M	17 L-R
Purple Bounty	Vetch, Hairy	Legume	0.8 C-J	1.6 B-N	1 T-X	47 EF	4 B-G	1 J	16 G-I	19 I-R
Villana	Vetch, Hairy	Legume	0.9 B-H	1.8 B-I	2 S-X	48 E	4 B-G	1 J	15 H-J	21 G-P
WinterKing	Vetch, Hairy	Legume	1.2 AB	1.6 B-O	2 N-V	65 BC	4 G	3 F-I	15 H-J	18 K-R
Namoi	Vetch, Woolypod	Legume	0.6 F-O	1.4 E-Q	0 Y-A	63 B-D	4 E-G	7 A-C	13 I-M	18 K-R
Double OO	Winter Pea	Legume	0.7 F-M	1.9 B-I	6 D-O	37 FG	4 C-G	1 J	7 N-S	28 D-H
Survivor	Winter Pea	Legume	0.9 B-G	2.4 AB	5 F-Q	60 CD	4 A-F	1 J	15 H-J	22 F-N
VNS (1)	Winter Pea	Legume	0.8 B-J	2.0 B-E	3 L-U	48 E	4 G	2 IJ	13 I-M	25 D-L
VNS (2)	Winter Pea	Legume	1.0 A-F	2.3 B-D	6 D-N	61 CD	4 FG	2 IJ	14 H-L	21 G-P
Windham	Winter Pea	Legume	0.6 G-N	1.9 B-H	4 G-Q	32 G-J	4 A-F	1 J	5 O-T	21 G-Q
WyoWinter (1)	Winter Pea	Legume	0.8 B-J	2.3 A-C	4 G-Q	56 C-E	4 B-G	1 J	11 J-N	24 F-M
WyoWinter (2)	Winter Pea	Legume	1.1 A-C	1.8 B-J	5 E-P	53 DE	4 B-G	2 H-J	15 H-J	23 F-M

**Table 5. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee AgResearch and Education Center at Milan in Milan, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
<b>Across Groups</b>										
Average			0.5	1.5	7	27	3	3	13	27
Standard Error			0.1	0.3	2	5	0	1	2	3
Min			0.0	0.5	0	3	0	1	1	4
Max			1.3	3.2	22	77	5	8	36	64
Range			1.3	2.7	22	74	5	7	35	60
<b>Brassicac</b>										
Average			0.5	1.1	5	23	2	4	20	27
Min			0.2	0.5	2	15	2	1	3	24
Max			0.7	1.7	10	36	2	6	26	34
Range			0.6	1.2	8	21	1	5	23	10
<b>Cereals</b>										
Average			0.5	1.5	14	23	4	5	16	38
Min			0.1	0.6	2	19	4	1	3	16
Max			1.1	2.1	22	34	5	8	36	64
Range			1.0	1.4	21	15	1	7	33	48
<b>Legumes</b>										
Average			0.6	1.6	3	31	2	2	8	19
Min			0.0	0.6	0	3	0	1	1	4
Max			1.3	3.2	6	77	4	7	16	28
Range			1.3	2.6	5	74	4	6	15	24
<b>ANOVA p-values</b>										
- Variety			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Variety x Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).

light orange highlights values between the 50th and 75th percentile

dark orange highlights values greater than the 75th percentile

**Table 6. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee Middle Tennessee AgResearch and Education in Spring Hill, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
Extender	Brassica	Brassica	0.0 U	0.2 VW	3 YZ	9 VW	1 N-R	1 I	10 L-P	13 L-O
Impact	Collards	Brassica	0.1 P-U	0.2 VW	3 W-Z	11 S-W	1 N-S	2 G-I	3 W-Y	2 ST
Viva	Hyb. Brassica	Brassica	0.0 TU	0.2 VW	6 M-W	12 R-W	1 N-S	1 I	13 H-L	13 L-O
Vivant	Hyb. Brassica	Brassica	0.0 U	0.2 VW	5 T-Z	12 R-W	1 N-S	1 I	6 Q-X	5 Q-T
Aerifi	Radish	Brassica	0.1 R-U	0.2 U-W	5 S-Z	10 U-W	1 O-S	1 I	5 S-Y	2 ST
Digger	Radish	Brassica	0.0 TU	0.2 VW	4 S-Z	10 T-W	1 N-S	1 I	11 K-O	5 Q-T
SERALPHA	Radish	Brassica	0.1 R-U	0.1 W	3 Z	8 W	1 N-S	1 I	3 W-Y	1 T
SERWF19	Radish	Brassica	0.1 R-U	0.2 T-W	3 YZ	11 S-W	1 O-S	1 I	6 P-X	4 R-T
Smart	Radish	Brassica	0.0 U	0.1 W	12 I-R	10 VW	1 O-S	1 I	5 R-Y	11 M-Q
Driller	Radish, Daikon	Brassica	0.0 U	0.2 VW	5 R-Z	11 S-W	1 O-S	1 I	8 N-V	1 T
Jackpot	Turnip	Brassica	0.1 S-U	0.2 VW	4 W-Z	10 U-W	1 N-S	2 G-I	17 D-H	7 O-T
Centurion	Annual Ryegrass	Cereal	0.1 R-U	0.7 P-V	5 N-Y	20 M-R	4 G-K	2 G-I	9 L-R	16 H-M
Lowboy	Annual Ryegrass	Cereal	0.0 U	0.3 T-W	4 V-Z	13 P-W	3 M	1 I	4 W-Y	8 O-S
140760	Barley	Cereal	0.2 M-U	0.9 L-S	8 I-R	14 P-W	4 H-L	5 B-E	10 K-P	21 E-K
140789	Barley	Cereal	0.1 R-U	0.7 O-U	11 D-L	21 M-Q	4 H-K	4 D-F	6 P-X	15 J-N
140797	Barley	Cereal	0.1 P-U	1.0 J-R	13 C-J	19 M-U	5 F-J	4 D-F	8 N-V	16 I-M
SB255	Barley	Cereal	0.2 L-U	1.1 I-Q	15 A-D	21 M-R	5 E-I	4 D-F	10 L-P	21 E-K
Secretariat	Barley	Cereal	0.2 M-U	1.3 G-N	10 D-L	18 M-V	4 K-M	4 C-F	9 M-S	18 F-L
Bates RS4	Cereal Rye	Cereal	0.6 A-H	1.3 G-M	21 A	20 M-S	5 C-G	6 AB	21 B-E	43 C
Elbon (1)	Cereal Rye	Cereal	0.3 K-S	1.2 H-P	14 A-G	19 M-S	5 F-J	3 E-G	17 D-G	48 BC
Elbon (2)	Cereal Rye	Cereal	0.4 E-M	1.4 F-M	19 AB	26 J-M	5 C-H	4 C-F	18 B-F	48 BC
Goku	Cereal Rye	Cereal	0.4 F-N	1.5 E-J	18 A-C	19 M-T	5 C-F	5 B-E	18 C-G	48 BC
NF95319B	Cereal Rye	Cereal	0.7 A-D	1.7 C-H	20 AB	22 M-P	6 AB	6 A	22 AB	48 BC
NF97325	Cereal Rye	Cereal	0.5 B-J	1.6 D-I	14 A-G	19 M-T	5 D-I	5 A-D	21 B-D	54 AB
NF99362	Cereal Rye	Cereal	0.5 C-K	1.3 G-M	15 A-D	20 M-S	6 B-D	6 A-D	22 A-C	50 AB
Wintergrazer 70	Cereal Rye	Cereal	0.5 E-K	1.4 F-L	14 A-F	19 M-U	6 A-C	6 A	26 A	55 A
Yankee	Cereal Rye	Cereal	0.1 R-U	0.8 M-S	15 A-E	18 M-V	5 C-H	1 HI	9 M-T	31 D
Cosaque	Oats, Black	Cereal	0.2 L-U	0.9 K-R	14 B-I	16 N-W	5 F-J	5 B-E	9 M-T	16 I-M
Bob	Oats, Winter	Cereal	0.3 K-S	1.0 J-R	10 D-L	15 N-W	5 D-I	5 A-D	11 J-N	24 EF
Hilliard	Wheat	Cereal	0.3 I-Q	1.2 G-O	10 D-K	25 J-M	5 F-J	6 A-C	14 G-K	22 E-I
Liberty 5658	Wheat	Cereal	0.5 E-L	1.1 I-P	14 A-H	22 M-Q	5 C-F	6 A-C	17 D-H	24 E-G

**Table 6. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee Middle Tennessee AgResearch and Education in Spring Hill, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
FIXatioN	Clover, Balansa	Legume	0.2 M-U	0.9 M-S	9 J-S	21 M-R	0 RS	1 I	7 O-W	17 G-L
Paradana	Clover, Balansa	Legume	0.1 N-U	0.6 Q-W	5 O-Y	13 P-W	1 P-S	1 I	5 Q-Y	9 N-R
Viper	Clover, Balansa	Legume	0.1 O-U	0.8 N-T	6 M-W	18 M-V	1 P-S	1 I	5 S-Y	12 L-P
Balady	Clover, Berseem	Legume	0.0 U	0.1 W	2 (-A	9 VW	0 S	1 I	4 V-Y	1 T
Frosty	Clover, Berseem	Legume	0.3 J-R	1.1 I-P	4 T-Z	22 M-Q	1 O-S	2 G-I	8 N-U	18 F-L
AU Sunrise	Clover, Crimson	Legume	0.5 E-L	2.0 B-E	8 I-R	36 F-H	1 N-R	1 I	8 N-U	22 E-I
Bolsena	Clover, Crimson	Legume	0.6 A-G	2.2 A-C	7 I-R	36 F-H	1 N-Q	1 I	9 L-Q	23 E-H
Dixie	Clover, Crimson	Legume	0.6 A-I	2.1 A-D	7 J-T	34 F-K	1 N-S	1 I	10 L-P	21 E-J
Kentucky Pride	Clover, Crimson	Legume	0.7 A-C	2.5 AB	8 I-Q	33 F-L	1 N-P	1 I	8 N-V	18 F-L
SECCM18	Clover, Crimson	Legume	0.5 B-I	2.0 A-D	9 F-M	39 E-G	2 N	3 E-G	10 L-P	20 E-K
White Cloud	Clover, Crimson	Legume	0.4 E-M	1.9 C-F	9 E-M	34 F-J	2 NO	1 I	10 L-P	19 F-L
Big Red	Clover, Red	Legume	0.1 Q-U	0.4 S-W	6 O-Y	11 S-W	1 N-S	1 I	2 XY	6 P-T
Blaze	Clover, Red	Legume	0.0 U	0.2 VW	5 P-Y	13 Q-W	1 Q-S	1 I	1 Y	6 Q-T
GA9909	Clover, Red	Legume	0.0 U	0.3 T-W	5 M-X	14 P-W	1 O-S	1 I	4 U-Y	7 O-T
VNS	Clover, Red	Legume	0.2 M-U	0.5 R-W	4 W-Z	15 O-W	1 O-S	1 I	5 T-Y	9 N-R
VNS	Vetch, Common	Legume	0.2 N-U	0.5 R-W	5 Q-Y	8 W	4 I-L	3 F-H	10 L-P	13 L-O
AU Merit	Vetch, Hairy	Legume	0.5 B-J	2.5 AB	8 H-O	69 A	5 C-G	5 A-D	15 F-I	24 D-F
Patagonia Inta	Vetch, Hairy	Legume	0.6 A-E	2.0 A-E	7 J-T	61 AB	6 B-E	4 B-E	15 F-I	23 E-G
Purple Bounty	Vetch, Hairy	Legume	0.6 A-F	2.2 A-C	4 X-Z	49 CD	5 E-I	3 E-G	18 D-G	26 DE
Villana	Vetch, Hairy	Legume	0.6 A-G	1.4 F-K	4 U-Z	35 F-I	4 G-K	4 D-F	15 F-J	22 E-I
WinterKing	Vetch, Hairy	Legume	0.8 A	2.1 A-C	4 T-Z	53 BC	6 B-E	4 B-E	18 C-G	24 E-G
Namoi	Vetch, Woolypod	Legume	0.6 A-I	1.2 G-O	5 Q-Y	26 I-M	7 A	4 C-F	13 I-M	21 E-J
Double OO	Winter Pea	Legume	0.3 H-P	1.9 C-F	8 I-R	24 K-N	3 LM	2 G-I	10 K-P	26 DE
Survivor	Winter Pea	Legume	0.5 D-K	2.5 A	9 G-N	32 G-L	4 H-L	3 E-G	12 I-N	23 E-G
VNS (1)	Winter Pea	Legume	0.8 AB	1.8 C-G	8 I-P	42 D-F	4 I-L	3 E-G	17 E-H	26 DE
VNS (2)	Winter Pea	Legume	0.3 K-T	1.6 D-I	6 L-V	24 L-O	4 K-M	1 I	11 J-N	24 EF
Windham	Winter Pea	Legume	0.5 D-K	1.7 C-H	8 I-R	22 M-Q	5 E-I	1 I	9 L-Q	14 K-N
WyoWinter (1)	Winter Pea	Legume	0.3 G-O	1.5 E-J	7 K-U	27 H-M	4 J-M	2 G-I	11 I-N	23 E-G
WyoWinter (2)	Winter Pea	Legume	0.6 A-E	2.5 AB	9 E-M	46 C-E	4 I-L	5 B-E	15 F-I	27 DE

**Table 6. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee Middle Tennessee AgReserch and Education in Spring Hill, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
<b>Across Groups</b>										
Average			0.3	1.1	8	23	3	3	11	20
Standard Error			0.1	0.3	2	5	0	1	2	3
Min			0.0	0.1	2	8	0	1	1	1
Max			0.8	2.5	21	69	7	6	26	55
Range			0.8	2.4	19	62	6	5	24	54
<b>Brassicas</b>										
Average			0.0	0.2	5	10	1	1	8	6
Min			0.0	0.1	3	8	1	1	3	1
Max			0.1	0.2	12	12	1	2	17	13
Range			0.1	0.1	9	4	1	1	14	12
<b>Cereals</b>										
Average			0.3	1.1	13	19	5	4	14	31
Min			0.0	0.3	4	13	3	1	4	8
Max			0.7	1.7	21	26	6	6	26	55
Range			0.7	1.4	16	13	3	5	22	48
<b>Legumes</b>										
Average			0.4	1.5	6	30	3	2	10	18
Min			0.0	0.1	2	8	0	1	1	1
Max			0.8	2.5	9	69	7	5	18	27
Range			0.8	2.4	7	62	6	4	17	26
<b>ANOVA p-values</b>										
- Variety			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Variety x Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).  
 light orange highlights values between the 50th and 75th percentile  
 dark orange highlights values greater than the 75th percentile

**Table 7. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee East Tennessee AgResearch and Education Center in Knoxville, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
Extender	Brassica	Brassica	0.6 L-T	0.7 J-P	6 J-L	15 K-T	3 N-P	10 BC	25 FG	33 D-H
Impact	Collards	Brassica	0.5 M-T	1.3 F-O	6 J-O	11 N-T	3 M-O	2 MN	6 N-T	32 E-K
Viva	Hyb. Brassica	Brassica	0.8 I-Q	1.7 C-L	30 A-E	39 D-I	4 F-L	6 G-L	36 B-D	48 B
Vivant	Hyb. Brassica	Brassica	0.3 Q-T	0.7 K-P	18 F-J	18 J-T	4 I-N	4 K-M	20 G-I	34 D-F
Aerifi	Radish	Brassica	0.8 J-R	1.8 B-K	23 A-G	44 D-H	5 F-I	9 CD	28 EF	28 E-N
Digger	Radish	Brassica	0.7 K-R	2.1 B-I	18 C-I	39 D-I	5 E-H	9 C-E	29 D-F	24 H-Q
SERALPHA	Radish	Brassica	0.9 H-P	2.6 B-D	15 E-J	49 C-E	4 F-K	9 CD	31 C-F	27 F-O
SERWF19	Radish	Brassica	1.0 F-N	2.0 B-I	17 D-I	38 D-J	4 F-J	8 C-H	34 C-E	29 E-M
Smart	Radish	Brassica	1.1 E-L	2.2 B-H	21 B-I	38 D-J	5 D-F	8 C-G	43 AB	30 E-L
Driller	Radish, Daikon	Brassica	0.4 N-T	1.8 B-K	11 I-K	24 H-R	3 L-O	6 F-L	25 FG	25 G-P
Jackpot	Turnip	Brassica	0.7 K-S	1.3 F-O	11 J-L	23 I-S	3 K-O	5 H-L	24 FG	37 C-E
Centurion	Annual Ryegrass	Cereal	0.3 P-T	0.7 K-P	4 J-O	23 I-S	4 I-N	5 J-L	8 L-T	17 P-T
Lowboy	Annual Ryegrass	Cereal	0.1 T	0.2 OP	4 J-O	13 L-T	2 O-Q	1 N	2 ST	10 T-V
140760	Barley	Cereal	0.7 K-R	2.0 B-I	42 A-D	33 E-L	6 BC	6 G-L	12 J-P	22 L-R
140789	Barley	Cereal	1.1 E-L	2.2 B-I	47 A-D	39 D-I	6 CD	7 D-J	9 J-S	25 G-P
140797	Barley	Cereal	0.7 J-R	1.7 B-L	53 AB	37 D-J	7 A-C	5 H-L	11 J-R	30 E-M
SB255	Barley	Cereal	0.6 L-T	1.2 G-P	38 A-D	22 I-S	6 CD	4 K-M	16 H-K	23 K-R
Secretariat	Barley	Cereal	0.8 I-R	1.7 C-M	22 A-H	25 F-Q	5 D-G	4 L-N	12 J-O	23 I-Q
Bates RS4	Cereal Rye	Cereal	2.1 A	3.9 A	61 A	37 D-J	8 A	16 A	49 A	62 A
Elbon (1)	Cereal Rye	Cereal	1.5 B-G	2.9 AB	57 A	35 D-K	7 A-C	5 I-L	35 C-E	63 A
Elbon (2)	Cereal Rye	Cereal	1.0 E-M	2.1 B-I	52 A-C	27 F-O	6 BC	5 I-L	30 C-F	58 A
Goku	Cereal Rye	Cereal	1.2 D-K	2.3 B-H	41 A-D	28 F-N	7 A-C	9 C-F	37 BC	63 A
NF95319B	Cereal Rye	Cereal	1.7 A-D	2.7 B-D	46 A-D	22 I-S	7 AB	10 BC	43 AB	60 A
NF97325	Cereal Rye	Cereal	2.0 AB	2.3 B-H	36 A-D	38 D-I	7 AB	12 B	48 A	64 A
NF99362	Cereal Rye	Cereal	1.5 A-F	2.6 B-E	43 A-D	33 E-L	6 B-D	9 CD	37 BC	61 A
Wintergrazer 70	Cereal Rye	Cereal	1.3 D-J	2.1 B-I	38 A-D	29 E-N	6 BC	12 B	46 A	61 A
Yankee	Cereal Rye	Cereal	0.7 J-R	1.9 B-I	52 A-C	30 E-N	7 AB	5 H-L	13 I-O	44 BC
Cosaque	Oats, Black	Cereal	0.9 G-O	2.0 B-I	39 A-D	39 D-I	6 C-E	6 H-L	13 H-O	21 M-R
Bob	Oats, Winter	Cereal	1.1 E-M	2.5 B-F	39 A-D	41 D-I	6 C-E	7 D-I	16 H-J	33 D-H
Hilliard	Wheat	Cereal	1.2 D-K	2.3 B-H	27 A-F	29 E-N	6 BC	7 D-I	20 GH	32 E-J
Liberty 5658	Wheat	Cereal	0.6 L-T	1.6 D-M	21 B-I	24 G-R	6 BC	6 H-L	14 H-M	26 F-P

**Table 7. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee East Tennessee AgResearch and Education Center in Knoxville, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
FIXatioN	Clover, Balansa	Legume	0.3 Q-T	1.2 G-P	0 RS	7 O-T	0 T	1 N	4 P-T	19 N-S
Paradana	Clover, Balansa	Legume	0.2 R-T	0.5 M-P	0 ST	3 ST	1 R-T	1 N	2 ST	9 T-V
Viper	Clover, Balansa	Legume	0.6 L-T	2.6 B-E	1 PQ	21 I-T	0 ST	1 N	8 K-T	18 O-T
Balady	Clover, Berseem	Legume	0.1 T	0.1 P	0 T	1 T	2 P-R	1 N	1 T	14 R-V
Frosty	Clover, Berseem	Legume	0.1 ST	0.3 N-P	0 ST	4 R-T	1 Q-S	1 N	4 Q-T	11 S-V
AU Sunrise	Clover, Crimson	Legume	0.7 J-R	1.7 C-L	7 I-K	31 E-N	1 Q-S	1 N	10 J-S	23 J-Q
Bolsena	Clover, Crimson	Legume	0.6 L-T	1.7 B-L	5 J-M	22 I-S	1 R-T	1 N	3 R-T	22 L-R
Dixie	Clover, Crimson	Legume	0.8 J-R	1.2 G-P	6 J-L	25 F-P	1 R-T	1 N	6 O-T	21 M-R
Kentucky Pride	Clover, Crimson	Legume	0.2 Q-T	1.0 I-P	4 J-O	30 E-N	1 R-T	1 N	4 Q-T	16 Q-U
SECCM18	Clover, Crimson	Legume	0.9 G-O	2.3 B-G	10 I-K	32 E-L	1 Q-S	1 N	7 M-T	24 I-Q
White Cloud	Clover, Crimson	Legume	0.4 O-T	1.1 H-P	6 J-L	15 K-T	1 R-T	1 N	4 Q-T	16 Q-U
Big Red	Clover, Red	Legume	0.1 ST	0.6 L-P	1 N-Q	5 Q-T	1 R-T	1 N	3 ST	6 V
Blaze	Clover, Red	Legume	0.1 T	0.3 N-P	2 O-Q	8 O-T	1 R-T	1 N	8 K-T	7 UV
GA9909	Clover, Red	Legume	0.2 R-T	1.2 G-P	2 L-Q	11 M-T	1 R-T	1 N	2 ST	11 S-V
VNS	Clover, Red	Legume	0.1 T	0.4 N-P	1 QR	6 P-T	1 R-T	1 N	2 ST	7 UV
VNS	Vetch, Common	Legume	1.0 F-N	3.0 A-C	3 K-Q	45 D-G	4 F-K	8 C-H	12 J-P	18 O-T
AU Merit	Vetch, Hairy	Legume	1.9 A-C	2.5 B-F	8 G-J	85 A	4 I-N	7 D-I	12 J-P	26 F-P
Patagonia Inta	Vetch, Hairy	Legume	1.4 B-H	2.2 B-H	5 J-N	73 AB	4 G-M	6 E-K	15 H-M	30 E-L
Purple Bounty	Vetch, Hairy	Legume	0.9 G-O	1.9 B-I	3 K-P	55 B-D	4 H-M	5 I-L	15 H-K	32 E-K
Villana	Vetch, Hairy	Legume	0.6 L-T	1.6 D-M	2 L-Q	37 D-J	4 G-M	6 F-L	13 I-O	32 D-I
WinterKing	Vetch, Hairy	Legume	1.6 A-E	1.6 D-M	3 K-P	41 D-I	3 J-O	5 H-L	15 H-K	31 E-L
Namoi	Vetch, Woolypod	Legume	1.4 C-I	1.8 B-K	3 M-Q	68 A-C	4 F-K	9 CD	15 H-L	25 F-P
Double OO	Winter Pea	Legume	1.0 F-N	1.8 B-K	7 I-K	32 E-M	4 H-M	6 F-L	12 J-P	36 C-E
Survivor	Winter Pea	Legume	1.0 G-N	2.1 B-I	7 I-K	45 D-F	4 F-L	5 I-L	14 H-N	34 D-G
VNS (1)	Winter Pea	Legume	0.6 L-T	1.9 B-J	7 I-K	33 E-L	4 H-M	5 H-L	9 J-S	29 E-M
VNS (2)	Winter Pea	Legume	0.9 H-P	2.1 B-I	8 H-K	44 D-H	3 K-O	5 I-L	15 H-L	41 B-D
Windham	Winter Pea	Legume	0.7 K-S	1.7 B-L	10 E-J	38 D-J	4 H-M	5 H-L	8 L-T	20 N-S
WyoWinter (1)	Winter Pea	Legume	0.7 K-S	2.0 B-I	5 J-M	37 D-J	4 G-M	5 H-L	12 J-O	30 E-M
WyoWinter (2)	Winter Pea	Legume	0.5 M-T	1.4 E-N	7 H-K	31 E-N	4 F-K	5 I-L	11 J-Q	30 E-M

**Table 7. By location mean biomass, cover, and height of 60 cover crop varieties evaluated in small plot replicated trials at the University of Tennessee East Tennessee AgReserch and Education Center in Knoxville, TN during 2019-2020.**

Variety	Species	Group	Biomass (tons DM/ac)		Cover (%)		Height (in)			
			Apr <sup>†</sup>	May	Nov	Feb	Nov	Feb	Apr	May
<b>Across Groups</b>										
Average			0.8	1.7	18	30	4	5	17	30
Standard Error			0.1	0.3	2	5	0	1	2	3
Min			0.1	0.1	0	1	0	1	1	6
Max			2.1	3.9	61	85	8	16	49	64
Range			2.0	3.8	61	83	7	15	48	58
<b>Brassicac</b>										
Average			0.7	1.7	16	31	4	7	27	31
Min			0.3	0.7	6	11	3	2	6	24
Max			1.1	2.6	30	49	5	10	43	48
Range			0.8	1.9	24	38	3	8	36	24
<b>Cereals</b>										
Average			1.1	2.0	38	30	6	7	24	40
Min			0.1	0.2	4	13	2	1	2	10
Max			2.1	3.9	61	41	8	16	49	64
Range			2.0	3.7	57	27	5	15	47	54
<b>Legumes</b>										
Average			0.7	1.5	4	31	2	3	9	22
Min			0.1	0.1	0	1	0	1	1	6
Max			1.9	3.0	10	85	4	9	15	41
Range			1.8	2.9	10	83	4	8	14	35
<b>ANOVA p-values</b>										
- Variety			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Variety x Location			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).

light orange highlights values between the 50th and 75th percentile

dark orange highlights values greater than the 75th percentile

**Table 8. Location comparison of mean biomass of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Biomass (g DW)							
			Apr <sup>†</sup>				May			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
Extender	Brassica	Brassica	0.4 M-T	0.5 I-R	0.0 U	0.6 L-T	0.6 Y-BB	1.0 I-R	0.2 VW	0.7 J-P
Impact	Collards	Brassica	0.3 Q-W	0.2 S-X	0.1 P-U	0.5 M-T	0.7 X-BB	0.6 QR	0.2 VW	1.3 F-O
Viva	Hyb. Brassica	Brassica	0.4 L-S	0.5 K-U	0.0 TU	0.8 I-Q	0.9 U-AA	0.8 L-R	0.2 VW	1.7 C-L
Vivant	Hyb. Brassica	Brassica	0.2 S-W	0.3 P-X	0.0 U	0.3 Q-T	0.4 AA-BB	0.5 R	0.2 VW	0.7 K-P
Aerifi	Radish	Brassica	0.5 J-P	0.7 E-L	0.1 R-U	0.8 J-R	1.2 P-W	1.7 B-M	0.2 U-W	1.8 B-K
Digger	Radish	Brassica	0.4 L-S	0.5 H-R	0.0 TU	0.7 K-R	1.2 Q-X	1.3 E-R	0.2 VW	2.1 B-I
SERALPHA	Radish	Brassica	0.5 K-Q	0.6 G-P	0.1 R-U	0.9 H-P	1.3 L-U	1.2 E-R	0.1 W	2.6 B-D
SERWF19	Radish	Brassica	0.6 G-M	0.7 D-K	0.1 R-U	1.0 F-N	1.3 M-U	1.7 B-L	0.2 T-W	2.0 B-I
Smart	Radish	Brassica	0.5 J-P	0.4 K-U	0.0 U	1.1 E-L	1.2 Q-X	1.2 E-R	0.1 W	2.2 B-H
Driller	Radish, Daikon	Brassica	0.3 P-V	0.5 H-R	0.0 U	0.4 N-T	1.0 T-Z	0.9 K-R	0.2 VW	1.8 B-K
Jackpot	Turnip	Brassica	0.3 P-V	0.2 P-X	0.1 S-U	0.7 K-S	0.8 V-BB	0.8 L-R	0.2 VW	1.3 F-O
Centurion	Annual Ryegrass	Cereal	0.3 Q-W	0.4 K-V	0.1 R-U	0.3 P-T	1.0 S-Z	1.6 B-N	0.7 P-V	0.7 K-P
Lowboy	Annual Ryegrass	Cereal	0.1 W	0.1 WX	0.0 U	0.1 T	0.4 AA-BB	0.6 P-R	0.3 T-W	0.2 OP
140760	Barley	Cereal	0.4 L-S	0.4 K-U	0.2 M-U	0.7 K-R	1.4 I-U	1.2 E-R	0.9 L-S	2.0 B-I
140789	Barley	Cereal	0.5 K-Q	0.3 O-X	0.1 R-U	1.1 E-L	1.4 K-U	1.2 F-R	0.7 O-U	2.2 B-I
140797	Barley	Cereal	0.4 M-T	0.3 N-X	0.1 P-U	0.7 J-R	1.2 O-W	1.0 H-R	1.0 J-R	1.7 B-L
SB255	Barley	Cereal	0.4 M-S	0.4 K-V	0.2 L-U	0.6 L-T	1.3 N-V	1.5 C-P	1.1 I-Q	1.2 G-P
Secretariat	Barley	Cereal	0.4 L-R	0.4 M-X	0.2 M-U	0.8 I-R	1.4 H-T	1.3 E-R	1.3 G-N	1.7 C-M
Bates RS4	Cereal Rye	Cereal	1.2 AB	0.8 B-J	0.6 A-H	2.1 A	2.3 AB	1.8 B-K	1.3 G-M	3.9 A
Elbon (1)	Cereal Rye	Cereal	0.8 D-H	0.7 F-N	0.3 K-S	1.5 B-G	1.9 A-H	1.7 B-M	1.2 H-P	2.9 AB
Elbon (2)	Cereal Rye	Cereal	0.6 G-M	0.4 K-U	0.4 E-M	1.0 E-M	1.6 E-Q	1.4 C-P	1.4 F-M	2.1 B-I
Goku	Cereal Rye	Cereal	0.7 F-K	0.5 J-T	0.4 F-N	1.2 D-K	1.8 B-M	1.6 B-N	1.5 E-J	2.3 B-H
NF95319B	Cereal Rye	Cereal	1.1 AB	0.9 B-G	0.7 A-D	1.7 A-D	2.1 A-E	1.9 B-G	1.7 C-H	2.7 B-D
NF97325	Cereal Rye	Cereal	1.1 A-C	0.8 C-J	0.5 B-J	2.0 AB	1.9 A-H	2.0 B-F	1.6 D-I	2.3 B-H
NF99362	Cereal Rye	Cereal	1.0 B-E	0.9 B-I	0.5 C-K	1.5 A-F	1.9 A-I	1.8 B-J	1.3 G-M	2.6 B-E
Wintergrazer 70	Cereal Rye	Cereal	0.9 B-F	1.1 A-D	0.5 E-K	1.3 D-J	1.9 B-K	2.1 B-E	1.4 F-L	2.1 B-I
Yankee	Cereal Rye	Cereal	0.3 P-V	0.2 R-X	0.1 R-U	0.7 J-R	1.3 N-V	1.1 G-R	0.8 M-S	1.9 B-I
Cosaque	Oats, Black	Cereal	0.6 H-P	0.5 I-S	0.2 L-U	0.9 G-O	1.5 F-R	1.6 B-N	0.9 K-R	2.0 B-I
Bob	Oats, Winter	Cereal	0.6 G-O	0.4 K-U	0.3 K-S	1.1 E-M	1.7 D-P	1.7 B-K	1.0 J-R	2.5 B-F
Hilliard	Wheat	Cereal	0.7 G-L	0.4 K-U	0.3 I-Q	1.2 D-K	1.8 B-L	1.9 B-H	1.2 G-O	2.3 B-H
Liberty 5658	Wheat	Cereal	0.5 I-P	0.6 G-N	0.5 E-L	0.6 L-T	1.4 J-U	1.4 D-P	1.1 I-P	1.6 D-M

**Table 8. Location comparison of mean biomass of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Biomass (g DW)							
			Apr <sup>†</sup>				May			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
FIXatioN	Clover, Balansa	Legume	0.3 O-U	0.6 H-Q	0.2 M-U	0.3 Q-T	1.2 Q-W	1.5 C-O	0.9 M-S	1.2 G-P
Paradana	Clover, Balansa	Legume	0.2 R-W	0.2 Q-X	0.1 N-U	0.2 R-T	0.7 W-BB	1.1 F-R	0.6 Q-W	0.5 M-P
Viper	Clover, Balansa	Legume	0.4 M-S	0.5 J-T	0.1 O-U	0.6 L-T	1.8 D-O	1.9 B-F	0.8 N-T	2.6 B-E
Balady	Clover, Berseem	Legume			0.0 U	0.1 T	0.3 AA-BB	0.8 M-R	0.1 W	0.1 P
Frosty	Clover, Berseem	Legume	0.2 R-W	0.2 P-X	0.3 J-R	0.1 ST	1.1 R-Y	1.9 B-H	1.1 I-P	0.3 N-P
AU Sunrise	Clover, Crimson	Legume	0.5 K-Q	0.3 O-X	0.5 E-L	0.7 J-R	1.7 D-O	1.5 C-P	2.0 B-E	1.7 C-L
Bolsena	Clover, Crimson	Legume	0.5 J-Q	0.4 L-W	0.6 A-G	0.6 L-T	1.6 E-R	1.0 G-R	2.2 A-C	1.7 B-L
Dixie	Clover, Crimson	Legume	0.5 K-Q	0.2 R-X	0.6 A-I	0.8 J-R	1.6 E-Q	1.6 B-M	2.1 A-D	1.2 G-P
Kentucky Pride	Clover, Crimson	Legume	0.3 O-U	0.1 WX	0.7 A-C	0.2 Q-T	1.5 F-S	1.0 J-R	2.5 AB	1.0 I-P
SECCM18	Clover, Crimson	Legume	0.5 I-P	0.2 T-X	0.5 B-I	0.9 G-O	2.0 A-F	1.6 B-N	2.0 A-D	2.3 B-G
White Cloud	Clover, Crimson	Legume	0.3 N-U	0.2 P-X	0.4 E-M	0.4 O-T	1.2 P-W	0.6 P-R	1.9 C-F	1.1 H-P
Big Red	Clover, Red	Legume	0.1 VW	0.1 U-X	0.1 Q-U	0.1 ST	0.6 Z-BB	0.8 L-R	0.4 S-W	0.6 L-P
Blaze	Clover, Red	Legume	0.1 W	0.0 V-X	0.0 U	0.1 T	0.4 AA-BB	0.7 O-R	0.2 VW	0.3 N-P
GA9909	Clover, Red	Legume	0.1 T-W	0.0 U-X	0.0 U	0.2 R-T	0.7 W-BB	0.8 N-R	0.3 T-W	1.2 G-P
VNS	Clover, Red	Legume	0.1 U-W	0.0 X	0.2 M-U	0.1 T	0.5 Z-BB	0.6 P-R	0.5 R-W	0.4 N-P
VNS	Vetch, Common	Legume	0.6 G-M	0.7 D-K	0.2 N-U	1.0 F-N	2.2 A-D	3.2 A	0.5 R-W	3.0 A-C
AU Merit	Vetch, Hairy	Legume	1.2 A	1.3 A	0.5 B-J	1.9 A-C	2.3 A-C	1.9 B-G	2.5 AB	2.5 B-F
Patagonia Inta	Vetch, Hairy	Legume	1.0 A-D	1.1 A-E	0.6 A-E	1.4 B-H	1.9 A-I	1.5 C-P	2.0 A-E	2.2 B-H
Purple Bounty	Vetch, Hairy	Legume	0.8 E-I	0.8 C-J	0.6 A-F	0.9 G-O	1.9 A-H	1.6 B-N	2.2 A-C	1.9 B-I
Villana	Vetch, Hairy	Legume	0.7 G-L	0.9 B-H	0.6 A-G	0.6 L-T	1.6 E-R	1.8 B-I	1.4 F-K	1.6 D-M
WinterKing	Vetch, Hairy	Legume	1.2 AB	1.2 AB	0.8 A	1.6 A-E	1.8 C-N	1.6 B-O	2.1 A-C	1.6 D-M
Namoi	Vetch, Woolypod	Legume	0.8 C-G	0.6 F-O	0.6 A-I	1.4 C-I	1.5 G-T	1.4 E-Q	1.2 G-O	1.8 B-K
Double OO	Winter Pea	Legume	0.7 G-L	0.7 F-M	0.3 H-P	1.0 F-N	1.8 B-K	1.9 B-I	1.9 C-F	1.8 B-K
Survivor	Winter Pea	Legume	0.8 D-I	0.9 B-G	0.5 D-K	1.0 G-N	2.4 A	2.4 AB	2.5 A	2.1 B-I
VNS (1)	Winter Pea	Legume	0.7 E-K	0.8 B-J	0.8 AB	0.6 L-T	1.9 A-J	2.0 B-E	1.8 C-G	1.9 B-J
VNS (2)	Winter Pea	Legume	0.7 E-K	1.0 A-F	0.3 K-T	0.9 H-P	2.0 A-G	2.3 B-D	1.6 D-I	2.1 B-I
Windham	Winter Pea	Legume	0.6 G-N	0.6 G-N	0.5 D-K	0.7 K-S	1.8 C-N	1.9 B-H	1.7 C-H	1.7 B-L
WyoWinter (1)	Winter Pea	Legume	0.6 G-M	0.8 B-J	0.3 G-O	0.7 K-S	1.9 A-H	2.3 A-C	1.5 E-J	2.0 B-I
WyoWinter (2)	Winter Pea	Legume	0.8 E-J	1.1 A-C	0.6 A-E	0.5 M-T	1.9 A-H	1.8 B-J	2.5 AB	1.4 E-N

**Table 8. Location comparison of mean biomass of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Biomass (g DW)							
			Apr <sup>†</sup>				May			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
<b>Across Groups</b>										
Average			0.6	0.5	0.3	0.8	1.4	1.5	1.1	1.7
Standard Error			0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.4
Min			0.1	0.0	0.0	0.1	0.3	0.5	0.1	0.1
Max			1.2	1.3	0.8	2.1	2.4	3.2	2.5	3.9
Range			1.2	1.3	0.8	2.0	2.0	2.7	2.4	3.8
<b>Brassicac</b>										
Average			0.4	0.5	0.0	0.7	1.0	1.1	0.2	1.7
Min			0.2	0.2	0.0	0.3	0.4	0.5	0.1	0.7
Max			0.6	0.7	0.1	1.1	1.3	1.7	0.2	2.6
Range			0.4	0.6	0.1	0.8	0.9	1.2	0.1	1.9
<b>Cereals</b>										
Average			0.6	0.5	0.3	1.1	1.6	1.5	1.1	2.0
Min			0.1	0.1	0.0	0.1	0.4	0.6	0.3	0.2
Max			1.2	1.1	0.7	2.1	2.3	2.1	1.7	3.9
Range			1.1	1.0	0.7	2.0	1.9	1.4	1.4	3.7
<b>Legumes</b>										
Average			0.6	0.6	0.4	0.7	1.5	1.6	1.5	1.5
Min			0.1	0.0	0.0	0.1	0.3	0.6	0.1	0.1
Max			1.2	1.3	0.8	1.9	2.4	3.2	2.5	3.0
Range			1.2	1.3	0.8	1.8	2.0	2.6	2.4	2.9

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).

light orange highlights values between the 50th and 75th percentile

dark orange highlights values greater than the 75th percentile

**Table 9. Location comparison of mean cover of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Cover (%)							
			Nov				Feb			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
Extender	Brassica	Brassica	4 L-P	3 L-U	3 YZ	6 J-L	15 L-P	21 J-R	9 VW	15 K-T
Impact	Collards	Brassica	4 O-R	2 S-X	3 W-Z	6 J-O	13 M-Q	18 M-V	11 S-W	11 N-T
Viva	Hyb. Brassica	Brassica	14 E-H	6 F-Q	6 M-W	30 A-E	29 E-G	36 GH	12 R-W	39 D-I
Vivant	Hyb. Brassica	Brassica	10 H-K	6 C-N	5 T-Z	18 F-J	17 H-O	21 K-S	12 R-W	18 J-T
Aerifi	Radish	Brassica	11 G-J	5 I-R	5 S-Z	23 A-G	24 E-K	18 M-U	10 U-W	44 D-H
Digger	Radish	Brassica	10 F-I	6 D-N	4 S-Z	18 C-I	24 E-K	23 I-P	10 T-W	39 D-I
SERALPHA	Radish	Brassica	7 I-N	4 J-S	3 Z	15 E-J	27 E-G	22 J-Q	8 W	49 C-E
SERWF19	Radish	Brassica	8 H-K	4 G-Q	3 YZ	17 D-I	24 E-L	21 J-Q	11 S-W	38 D-J
Smart	Radish	Brassica	14 D-G	10 A-J	12 I-R	21 B-I	25 E-I	27 G-M	10 VW	38 D-J
Driller	Radish, Daikon	Brassica	7 H-L	5 E-Q	5 R-Z	11 I-K	23 E-L	36 GH	11 S-W	24 H-R
Jackpot	Turnip	Brassica	8 H-L	9 B-L	4 W-Z	11 J-L	16 K-O	15 N-W	10 U-W	23 I-S
Centurion	Annual Ryegrass	Cereal	4 K-P	3 L-U	5 N-Y	4 J-O	26 E-G	34 G-I	20 M-R	23 I-S
Lowboy	Annual Ryegrass	Cereal	3 N-Q	2 S-X	4 V-Z	4 J-O	16 J-O	21 J-Q	13 P-W	13 L-T
140760	Barley	Cereal	23 A-D	18 AB	8 I-R	42 A-D	23 E-L	23 J-P	14 P-W	33 E-L
140789	Barley	Cereal	24 A-D	15 A-E	11 D-L	47 A-D	27 E-G	21 K-R	21 M-Q	39 D-I
140797	Barley	Cereal	28 A-C	19 A-C	13 C-J	53 AB	27 E-G	26 G-M	19 M-U	37 D-J
SB255	Barley	Cereal	22 A-D	14 A-F	15 A-D	38 A-D	22 G-M	22 J-Q	21 M-R	22 I-S
Secretariat	Barley	Cereal	15 C-E	13 A-G	10 D-L	22 A-H	22 F-L	24 I-O	18 M-V	25 F-Q
Bates RS4	Cereal Rye	Cereal	33 A	17 A-C	21 A	61 A	26 E-G	22 J-Q	20 M-S	37 D-J
Elbon (1)	Cereal Rye	Cereal	28 A-C	14 A-H	14 A-G	57 A	26 E-G	24 I-N	19 M-S	35 D-K
Elbon (2)	Cereal Rye	Cereal	29 AB	16 A-D	19 AB	52 A-C	26 E-G	26 H-M	26 J-M	27 F-O
Goku	Cereal Rye	Cereal	25 A-C	16 A-D	18 A-C	41 A-D	22 E-L	20 K-T	19 M-T	28 F-N
NF95319B	Cereal Rye	Cereal	26 A-C	12 A-I	20 AB	46 A-D	25 E-J	29 G-L	22 M-P	22 I-S
NF97325	Cereal Rye	Cereal	20 B-E	11 B-M	14 A-G	36 A-D	26 E-G	19 L-T	19 M-T	38 D-I
NF99362	Cereal Rye	Cereal	24 A-C	14 A-F	15 A-D	43 A-D	25 E-G	24 I-O	20 M-S	33 E-L
Wintergrazer 70	Cereal Rye	Cereal	21 A-D	11 A-J	14 A-F	38 A-D	24 E-K	24 I-N	19 M-U	29 E-N
Yankee	Cereal Rye	Cereal	30 AB	22 A	15 A-E	52 A-C	22 E-L	19 K-T	18 M-V	30 E-N
Cosaque	Oats, Black	Cereal	23 A-D	16 A-D	14 B-I	39 A-D	25 E-H	21 J-Q	16 N-W	39 D-I
Bob	Oats, Winter	Cereal	22 A-D	18 AB	10 D-L	39 A-D	26 E-G	23 I-P	15 N-W	41 D-I
Hilliard	Wheat	Cereal	16 B-E	11 A-I	10 D-K	27 A-F	26 E-G	22 J-Q	25 J-M	29 E-N
Liberty 5658	Wheat	Cereal	15 C-F	10 A-K	14 A-H	21 B-I	23 E-L	23 I-P	22 M-Q	24 G-R

**Table 9. Location comparison of mean cover of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Cover (%)							
			Nov				Feb			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
FIXatioN	Clover, Balansa	Legume	3 ST	1 V-Z	9 J-S	0 RS	12 N-Q	10 T-X	21 M-R	7 O-T
Paradana	Clover, Balansa	Legume	2 TU	0 (-A	5 O-Y	0 ST	9 O-Q	10 S-X	13 P-W	3 ST
Viper	Clover, Balansa	Legume	2 ST	0 Z-A	6 M-W	1 PQ	16 I-O	10 S-X	18 M-V	21 I-T
Balady	Clover, Berseem	Legume	1 U	1 X-A	2 (-A	0 T	5 Q	3 X	9 VW	1 T
Frosty	Clover, Berseem	Legume	2 T	1 V-Z	4 T-Z	0 ST	13 N-Q	12 Q-X	22 M-Q	4 R-T
AU Sunrise	Clover, Crimson	Legume	6 I-M	3 N-V	8 I-R	7 I-K	27 E-G	15 N-W	36 F-H	31 E-N
Bolsena	Clover, Crimson	Legume	5 I-N	3 L-U	7 I-R	5 J-M	26 E-G	19 L-T	36 F-H	22 I-S
Dixie	Clover, Crimson	Legume	6 H-L	4 H-R	7 J-T	6 J-L	23 E-L	10 S-X	34 F-K	25 F-P
Kentucky Pride	Clover, Crimson	Legume	5 J-O	3 M-V	8 I-Q	4 J-O	24 E-K	11 R-X	33 F-L	30 E-N
SECCM18	Clover, Crimson	Legume	7 I-N	2 P-V	9 F-M	10 I-K	28 E-G	13 P-X	39 E-G	32 E-L
White Cloud	Clover, Crimson	Legume	6 I-L	3 L-U	9 E-M	6 J-L	21 G-N	13 O-X	34 F-J	15 K-T
Big Red	Clover, Red	Legume	3 Q-S	1 W-A	6 O-Y	1 N-Q	7 PQ	6 WX	11 S-W	5 Q-T
Blaze	Clover, Red	Legume	3 O-R	2 O-V	5 P-Y	2 O-Q	9 O-Q	8 U-X	13 Q-W	8 O-T
GA9909	Clover, Red	Legume	3 RS	0 Z-A	5 M-X	2 L-Q	11 O-Q	7 WX	14 P-W	11 M-T
VNS	Clover, Red	Legume	3 RS	4 U-Y	4 W-Z	1 QR	9 O-Q	7 V-X	15 O-W	6 P-T
VNS	Vetch, Common	Legume	4 M-Q	2 Q-W	5 Q-Y	3 K-Q	27 E-G	30 G-K	8 W	45 D-G
AU Merit	Vetch, Hairy	Legume	7 I-N	3 R-X	8 H-O	8 G-J	75 A	72 AB	69 A	85 A
Patagonia Inta	Vetch, Hairy	Legume	5 I-N	4 K-T	7 J-T	5 J-N	71 A	77 A	61 AB	73 AB
Purple Bounty	Vetch, Hairy	Legume	3 P-R	1 T-X	4 X-Z	3 K-P	50 BC	47 EF	49 CD	55 B-D
Villana	Vetch, Hairy	Legume	2 P-S	2 S-X	4 U-Z	2 L-Q	40 D	48 E	35 F-I	37 D-J
WinterKing	Vetch, Hairy	Legume	3 M-Q	2 N-V	4 T-Z	3 K-P	53 B	65 BC	53 BC	41 D-I
Namoi	Vetch, Woolypod	Legume	3 RS	0 Y-A	5 Q-Y	3 M-Q	52 B	63 B-D	26 I-M	68 A-C
Double OO	Winter Pea	Legume	7 G-K	6 D-O	8 I-R	7 I-K	31 E	37 FG	24 K-N	32 E-M
Survivor	Winter Pea	Legume	7 G-K	5 F-Q	9 G-N	7 I-K	46 B-D	60 CD	32 G-L	45 D-F
VNS (1)	Winter Pea	Legume	6 H-L	3 L-U	8 I-P	7 I-K	41 D	48 E	42 D-F	33 E-L
VNS (2)	Winter Pea	Legume	7 G-K	6 D-N	6 L-V	8 H-K	43 CD	61 CD	24 L-O	44 D-H
Windham	Winter Pea	Legume	7 G-J	4 G-Q	8 I-R	10 E-J	31 EF	32 G-J	22 M-Q	38 D-J
WyoWinter (1)	Winter Pea	Legume	5 H-L	4 G-Q	7 K-U	5 J-M	40 D	56 C-E	27 H-M	37 D-J
WyoWinter (2)	Winter Pea	Legume	7 G-J	5 E-P	9 E-M	7 H-K	43 CD	53 DE	46 C-E	31 E-N

**Table 9. Location comparison of mean cover of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Cover (%)							
			Nov				Feb			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
<b>Across Groups</b>										
Average			11	7	8	18	27	27	23	30
Standard Error			2	1	1	3	5	4	4	8
Min			1	0	2	0	5	3	8	1
Max			33	22	21	61	75	77	69	85
Range			32	22	19	61	71	74	62	83
<b>Brassicas</b>										
Average			9	5	5	16	21	23	10	31
Min			4	2	3	6	13	15	8	11
Max			14	10	12	30	29	36	12	49
Range			10	8	9	24	16	21	4	38
<b>Cereals</b>										
Average			22	14	13	38	24	23	19	30
Min			3	2	4	4	16	19	13	13
Max			33	22	21	61	27	34	26	41
Range			29	21	16	57	11	15	13	27
<b>Legumes</b>										
Average			4	3	6	4	31	31	30	31
Min			1	0	2	0	5	3	8	1
Max			7	6	9	10	75	77	69	85
Range			6	5	7	10	71	74	62	83

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).  
 light orange highlights values between the 50th and 75th percentile  
 dark orange highlights values greater than the 75th percentile

**Table 10. Location comparison of mean height in Nov. and Feb. of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Height (in)							
			Nov				Feb			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
Extender	Brassica	Brassica	1.9 Q-S	2.0 H-K	1.3 N-R	2.5 N-P	4.4 H-M	2.0 IJ	1.0 I	10.3 BC
Impact	Collards	Brassica	1.9 Q-S	1.8 I-L	1.1 N-S	2.8 M-O	1.7 S-U	1.0 J	2.0 G-I	2.0 MN
Viva	Hyb. Brassica	Brassica	2.3 N-Q	1.9 H-L	1.0 N-S	4.0 F-L	3.4 M-R	3.3 F-I	1.0 I	5.8 G-L
Vivant	Hyb. Brassica	Brassica	2.3 N-Q	2.2 HI	1.1 N-S	3.5 I-N	2.7 Q-S	3.0 G-I	1.0 I	4.0 K-M
Aerifi	Radish	Brassica	2.5 N-P	2.1 H-J	0.8 O-S	4.5 F-I	5.1 E-J	5.0 C-F	1.0 I	9.3 CD
Digger	Radish	Brassica	2.6 M-O	2.2 HI	1.0 N-S	4.7 E-H	4.8 G-K	4.7 D-G	1.0 I	8.7 C-E
SERALPHA	Radish	Brassica	2.6 M-O	2.4 H	1.2 N-S	4.2 F-K	5.2 E-H	5.3 C-E	1.0 I	9.3 CD
SERWF19	Radish	Brassica	2.5 N-P	2.2 HI	0.9 O-S	4.3 F-J	4.8 F-K	5.7 C-E	1.0 I	7.8 C-H
Smart	Radish	Brassica	2.7 MN	2.3 HI	0.9 O-S	5.0 D-F	4.2 H-N	3.3 F-I	1.0 I	8.3 C-G
Driller	Radish, Daikon	Brassica	2.0 P-R	2.2 HI	0.8 O-S	3.0 L-O	3.4 M-R	3.3 F-I	1.0 I	6.0 F-L
Jackpot	Turnip	Brassica	2.1 O-Q	2.2 HI	1.0 N-S	3.2 K-O	3.6 L-R	3.3 F-I	2.0 G-I	5.3 H-L
Centurion	Annual Ryegrass	Cereal	3.9 J-L	3.8 G	4.3 G-K	3.5 I-N	4.3 H-N	6.0 B-D	2.2 G-I	4.7 J-L
Lowboy	Annual Ryegrass	Cereal	3.0 M	3.8 G	2.9 M	2.3 O-Q	1.0 U	1.0 J	1.0 I	1.0 N
140760	Barley	Cereal	5.0 D-G	4.6 A-C	4.2 H-L	6.3 BC	5.2 E-H	5.3 C-E	4.5 B-E	5.8 G-L
140789	Barley	Cereal	4.9 GH	4.5 A-E	4.2 H-K	5.8 CD	4.7 G-L	3.0 G-I	4.0 D-F	7.0 D-J
140797	Barley	Cereal	5.3 B-G	4.9 A	4.5 F-J	6.5 A-C	4.8 G-K	5.0 C-F	4.0 D-F	5.3 H-L
SB255	Barley	Cereal	5.1 D-G	4.7 AB	4.7 E-I	5.8 CD	3.8 K-Q	3.0 G-I	4.0 D-F	4.3 K-M
Secretariat	Barley	Cereal	4.1 I-K	4.0 E-G	3.5 K-M	4.8 D-G	4.2 H-N	5.0 C-F	4.2 C-F	3.5 L-N
Bates RS4	Cereal Rye	Cereal	5.7 AB	4.5 A-E	5.2 C-G	7.5 A	9.6 A	6.7 A-C	5.8 AB	16.3 A
Elbon (1)	Cereal Rye	Cereal	5.2 C-G	4.5 A-E	4.5 F-J	6.7 A-C	4.0 I-O	4.0 E-H	3.0 E-G	5.0 I-L
Elbon (2)	Cereal Rye	Cereal	5.2 C-G	4.5 A-E	5.0 C-H	6.2 BC	3.3 M-R	1.0 J	4.2 C-F	4.8 I-L
Goku	Cereal Rye	Cereal	5.5 A-D	4.6 A-D	5.3 C-F	6.7 A-C	6.1 DE	5.3 C-E	4.5 B-E	8.5 C-F
NF95319B	Cereal Rye	Cereal	6.0 A	4.5 A-E	6.3 AB	7.0 AB	7.9 BC	7.7 AB	6.2 A	10.0 BC
NF97325	Cereal Rye	Cereal	5.6 A-C	4.8 A	4.8 D-I	7.2 AB	8.7 AB	8.3 A	5.5 A-D	12.3 B
NF99362	Cereal Rye	Cereal	5.4 B-F	4.5 A-E	5.7 B-D	6.0 B-D	6.9 CD	6.0 B-D	5.5 A-D	9.3 CD
Wintergrazer 70	Cereal Rye	Cereal	5.6 A-C	4.7 AB	5.8 A-C	6.2 BC	8.8 AB	8.3 A	6.2 A	12.0 B
Yankee	Cereal Rye	Cereal	5.4 B-E	4.2 B-G	5.0 C-H	7.0 AB	2.8 O-S	2.0 IJ	1.0 HI	5.3 H-L
Cosaque	Oats, Black	Cereal	4.9 F-H	4.5 A-E	4.5 F-J	5.7 C-E	5.2 E-I	5.3 C-E	4.5 B-E	5.7 H-L
Bob	Oats, Winter	Cereal	4.9 F-H	4.2 B-G	4.8 D-I	5.7 C-E	6.1 DE	6.0 B-D	5.0 A-D	7.3 D-I
Hilliard	Wheat	Cereal	5.1 D-G	4.5 A-E	4.5 F-J	6.2 BC	6.2 DE	5.7 C-E	5.6 A-C	7.3 D-I
Liberty 5658	Wheat	Cereal	5.3 B-G	4.4 A-F	5.3 C-F	6.2 BC	5.8 D-G	6.3 B-D	5.7 A-C	5.5 H-L

**Table 10. Location comparison of mean height in Nov. and Feb. of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Height (in)							
			Nov				Feb			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
FIXatioN	Clover, Balansa	Legume	0.3 Y	0.3 QR	0.5 RS	0.2 T	1.0 U	1.0 J	1.0 I	1.0 N
Paradana	Clover, Balansa	Legume	0.5 W-Y	0.2 R	0.7 P-S	0.6 R-T	1.0 U	1.0 J	1.0 I	1.0 N
Viper	Clover, Balansa	Legume	0.4 XY	0.2 R	0.7 P-S	0.3 ST	1.0 U	1.0 J	1.0 I	1.0 N
Balady	Clover, Berseem	Legume	0.9 U-W	0.8 O-Q	0.3 S	1.5 P-R	1.0 U	1.0 J	1.0 I	1.0 N
Frosty	Clover, Berseem	Legume	0.9 U-X	0.4 P-R	0.8 O-S	1.3 Q-S	1.3 TU	1.0 J	2.0 G-I	1.0 N
AU Sunrise	Clover, Crimson	Legume	1.3 TU	1.3 M-O	1.3 N-R	1.3 Q-S	1.0 U	1.0 J	1.0 I	1.0 N
Bolsena	Clover, Crimson	Legume	1.2 T-V	1.3 L-O	1.4 N-Q	1.0 R-T	1.0 U	1.0 J	1.0 I	1.0 N
Dixie	Clover, Crimson	Legume	1.3 TU	1.5 K-M	1.2 N-S	1.2 R-T	1.0 U	1.0 J	1.0 I	1.0 N
Kentucky Pride	Clover, Crimson	Legume	1.1 T-V	1.2 M-O	1.4 N-P	0.7 R-T	1.0 U	1.0 J	1.0 I	1.0 N
SECCM18	Clover, Crimson	Legume	1.5 R-T	1.4 L-N	1.8 N	1.3 Q-S	1.7 S-U	1.0 J	3.0 E-G	1.0 N
White Cloud	Clover, Crimson	Legume	1.5 ST	1.6 J-M	1.7 NO	1.2 R-T	1.0 U	1.0 J	1.0 I	1.0 N
Big Red	Clover, Red	Legume	0.9 U-W	0.8 O-Q	1.0 N-S	1.0 R-T	1.0 U	1.0 J	1.0 I	1.0 N
Blaze	Clover, Red	Legume	0.7 V-Y	0.8 O-Q	0.6 Q-S	0.8 R-T	1.0 U	1.0 J	1.0 I	1.0 N
GA9909	Clover, Red	Legume	0.9 U-W	0.9 N-P	0.9 O-S	0.8 R-T	1.0 U	1.0 J	1.0 I	1.0 N
VNS	Clover, Red	Legume	0.8 U-Y	0.8 O-Q	0.8 O-S	0.8 R-T	1.0 U	1.0 J	1.0 I	1.0 N
VNS	Vetch, Common	Legume	4.1 I-K	4.2 B-G	4.0 I-L	4.2 F-K	5.3 E-H	5.3 C-E	2.7 F-H	7.8 C-H
AU Merit	Vetch, Hairy	Legume	4.2 IJ	4.0 D-G	5.2 C-G	3.5 I-N	6.0 D-F	5.3 C-E	5.3 A-D	7.3 D-I
Patagonia Inta	Vetch, Hairy	Legume	4.5 HI	4.1 D-G	5.5 B-E	3.8 G-M	4.8 F-K	4.0 E-H	4.3 B-E	6.2 E-K
Purple Bounty	Vetch, Hairy	Legume	4.2 I-K	4.1 B-G	4.7 E-I	3.7 H-M	3.2 N-R	1.0 J	3.3 E-G	5.2 I-L
Villana	Vetch, Hairy	Legume	4.1 I-K	4.1 B-G	4.3 G-K	3.8 G-M	3.7 K-Q	1.0 J	4.0 D-F	6.0 F-L
WinterKing	Vetch, Hairy	Legume	4.2 IJ	3.8 G	5.5 B-E	3.3 J-O	4.3 H-N	3.3 F-I	4.3 B-E	5.3 H-L
Namoi	Vetch, Woolypod	Legume	4.9 E-H	4.0 E-G	6.7 A	4.2 F-K	6.6 D	6.7 A-C	4.2 C-F	9.0 CD
Double OO	Winter Pea	Legume	3.7 KL	4.1 C-G	3.3 LM	3.7 H-M	3.0 O-R	1.0 J	2.0 G-I	6.0 F-L
Survivor	Winter Pea	Legume	4.2 I-K	4.4 A-F	4.2 H-L	4.0 F-L	3.0 O-R	1.0 J	3.0 E-G	5.0 I-L
VNS (1)	Winter Pea	Legume	3.8 J-L	3.8 G	4.0 I-L	3.7 H-M	3.5 L-R	2.0 IJ	3.2 E-G	5.3 H-L
VNS (2)	Winter Pea	Legume	3.5 L	3.9 FG	3.5 K-M	3.2 K-O	2.6 Q-S	2.0 IJ	1.0 I	4.8 I-L
Windham	Winter Pea	Legume	4.3 IJ	4.4 A-F	4.7 E-I	3.7 H-M	2.4 R-T	1.0 J	1.0 I	5.3 H-L
WyoWinter (1)	Winter Pea	Legume	3.9 J-L	4.1 B-G	3.7 J-M	3.8 G-M	2.8 P-S	1.0 J	2.0 G-I	5.3 H-L
WyoWinter (2)	Winter Pea	Legume	4.1 I-K	4.2 B-G	4.0 I-L	4.2 F-K	3.9 J-P	2.3 H-J	4.5 B-E	5.0 I-L

**Table 10. Location comparison of mean height in Nov. and Feb. of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Height (in)							
			Nov				Feb			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
<b>Across Groups</b>										
Average			3	3	3	4	4	3	3	5
Standard Error										
Min			0.3	0.2	0.3	0.2	1.0	1.0	1.0	1.0
Max			6.0	4.9	6.7	7.5	9.6	8.3	6.2	16.3
Range			5.6	4.7	6.3	7.3	8.6	7.3	5.2	15.3
<b>Brassicac</b>										
Average			2	2	1	4	4	4	1	7
Min			2	2	1	3	2	1	1	2
Max			3	2	1	5	5	6	2	10
Range			1	1	1	3	4	5	1	8
<b>Cereals</b>										
Average			5	4	5	6	5	5	4	7
Min			3	4	3	2	1	1	1	1
Max			6	5	6	8	10	8	6	16
Range			3	1	3	5	9	7	5	15
<b>Legumes</b>										
Average			2	2	3	2	2	2	2	3
Min			0	0	0	0	1	1	1	1
Max			5	4	7	4	7	7	5	9
Range			5	4	6	4	6	6	4	8

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).  
 light orange highlights values between the 50th and 75th percentile  
 dark orange highlights values greater than the 75th percentile

**Table 11. Location comparison of mean height in Apr. and May. of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Height (in)							
			Apr				May			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
Extender	Brassica	Brassica	20 D	24 C-E	10 L-P	25 FG	24 H-L	25 E-L	13 L-O	33 D-H
Impact	Collards	Brassica	4 T-X	3 ST	3 W-Y	6 N-T	21 K-Q	28 D-H	2 ST	32 E-K
Viva	Hyb. Brassica	Brassica	25 C	24 C-E	13 H-L	36 B-D	31 E	34 D	13 L-O	48 B
Vivant	Hyb. Brassica	Brassica	13 H-M	13 I-M	6 Q-X	20 G-I	22 H-O	27 D-J	5 Q-T	34 D-F
Aerifi	Radish	Brassica	18 D-F	21 E-G	5 S-Y	28 EF	19 M-R	26 D-K	2 ST	28 E-N
Digger	Radish	Brassica	19 DE	19 F-H	11 K-O	29 D-F	18 N-R	26 D-K	5 Q-T	24 H-Q
SERALPHA	Radish	Brassica	19 D-F	23 D-F	3 W-Y	31 C-F	17 P-R	24 F-M	1 T	27 F-O
SERWF19	Radish	Brassica	21 D	22 D-F	6 P-X	34 C-E	20 L-Q	26 D-K	4 R-T	29 E-M
Smart	Radish	Brassica	25 C	26 CD	5 R-Y	43 AB	23 H-N	28 D-H	11 M-Q	30 E-L
Driller	Radish, Daikon	Brassica	18 D-F	21 E-G	8 N-V	25 FG	17 P-R	26 D-K	1 T	25 G-P
Jackpot	Turnip	Brassica	21 D	22 D-F	17 D-H	24 FG	24 H-L	27 D-I	7 O-T	37 C-E
Centurion	Annual Ryegrass	Cereal	8 N-R	8 N-R	9 L-R	8 L-T	21 J-P	30 D-F	16 H-M	17 P-T
Lowboy	Annual Ryegrass	Cereal	3 V-X	3 R-T	4 W-Y	2 ST	11 TU	16 M-R	8 O-S	10 T-V
140760	Barley	Cereal	11 K-O	9 L-P	10 K-P	12 J-P	23 H-O	25 D-L	21 E-K	22 L-R
140789	Barley	Cereal	7 P-T	5 O-T	6 P-X	9 J-S	20 L-Q	20 H-Q	15 J-N	25 G-P
140797	Barley	Cereal	9 N-Q	7 N-S	8 N-V	11 J-R	23 H-M	24 F-M	16 I-M	30 E-M
SB255	Barley	Cereal	13 H-M	13 I-M	10 L-P	16 H-K	23 H-M	26 D-K	21 E-K	23 K-R
Secretariat	Barley	Cereal	11 J-N	12 I-N	9 M-S	12 J-O	20 L-Q	18 K-R	18 F-L	23 I-Q
Bates RS4	Cereal Rye	Cereal	33 AB	29 BC	21 B-E	49 A	53 BC	55 B	43 C	62 A
Elbon (1)	Cereal Rye	Cereal	25 C	22 D-F	17 D-G	35 C-E	57 AB	61 AB	48 BC	63 A
Elbon (2)	Cereal Rye	Cereal	21 D	14 H-K	18 B-F	30 C-F	54 BC	56 AB	48 BC	58 A
Goku	Cereal Rye	Cereal	26 C	21 D-F	18 C-G	37 BC	54 BC	53 BC	48 BC	63 A
NF95319B	Cereal Rye	Cereal	32 B	31 AB	22 AB	43 AB	56 A-C	60 AB	48 BC	60 A
NF97325	Cereal Rye	Cereal	32 B	28 BC	21 B-D	48 A	59 A	60 AB	54 AB	64 A
NF99362	Cereal Rye	Cereal	27 C	23 D-F	22 A-C	37 BC	52 C	45 C	50 AB	61 A
Wintergrazer 70	Cereal Rye	Cereal	36 A	36 A	26 A	46 A	60 A	64 A	55 A	61 A
Yankee	Cereal Rye	Cereal	10 L-P	9 M-Q	9 M-T	13 I-O	40 D	46 C	31 D	44 BC
Cosaque	Oats, Black	Cereal	10 K-O	10 K-O	9 M-T	13 H-O	19 L-R	22 F-O	16 I-M	21 M-R
Bob	Oats, Winter	Cereal	13 I-M	11 J-N	11 J-N	16 H-J	30 EF	33 DE	24 EF	33 D-H
Hilliard	Wheat	Cereal	16 E-H	14 H-L	14 G-K	20 GH	26 F-I	24 F-M	22 E-I	32 E-J
Liberty 5658	Wheat	Cereal	16 F-I	16 HI	17 D-H	14 H-M	26 F-H	29 D-G	24 E-G	26 F-P

**Table 11. Location comparison of mean height in Apr. and May. of 60 cover crop varieties evaluated in small plot replicated trials at three University of Tennessee AgResearch and Education Center locations in Tennessee during 2019-2020.**

Variety	Species	Group	Height (in)							
			Apr				May			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
FIXatioN	Clover, Balansa	Legume	5 R-X	4 Q-T	7 O-W	4 P-T	20 L-Q	24 F-M	17 G-L	19 N-S
Paradana	Clover, Balansa	Legume	4 S-X	5 O-T	5 Q-Y	2 ST	10 UV	11 RS	9 N-R	9 T-V
Viper	Clover, Balansa	Legume	6 Q-V	5 P-T	5 S-Y	8 K-T	15 R-T	14 O-R	12 L-P	18 O-T
Balady	Clover, Berseem	Legume	2 X	1 T	4 V-Y	1 T	6 V	4 S	1 T	14 R-V
Frosty	Clover, Berseem	Legume	7 P-T	9 M-Q	8 N-U	4 Q-T	18 O-R	25 D-L	18 F-L	11 S-V
AU Sunrise	Clover, Crimson	Legume	7 O-T	4 Q-T	8 N-U	10 J-S	21 J-P	19 J-R	22 E-I	23 J-Q
Bolsena	Clover, Crimson	Legume	6 Q-W	4 Q-T	9 L-Q	3 R-T	21 J-P	18 K-R	23 E-H	22 L-R
Dixie	Clover, Crimson	Legume	7 P-U	4 Q-T	10 L-P	6 O-T	21 I-P	23 F-M	21 E-J	21 M-R
Kentucky Pride	Clover, Crimson	Legume	4 S-X	2 T	8 N-V	4 Q-T	17 P-R	17 L-R	18 F-L	16 Q-U
SECCM18	Clover, Crimson	Legume	7 P-T	4 R-T	10 L-P	7 M-T	21 K-P	18 K-R	20 E-K	24 I-Q
White Cloud	Clover, Crimson	Legume	6 Q-W	3 R-T	10 L-P	4 Q-T	16 Q-S	13 P-R	19 F-L	16 Q-U
Big Red	Clover, Red	Legume	2 WX	2 T	2 XY	3 ST	8 UV	13 P-R	6 P-T	6 V
Blaze	Clover, Red	Legume	4 T-X	2 T	1 Y	8 K-T	9 UV	14 N-R	6 Q-T	7 UV
GA9909	Clover, Red	Legume	3 V-X	3 R-T	4 U-Y	2 ST	11 S-U	16 M-R	7 O-T	11 S-V
VNS	Clover, Red	Legume	3 U-X	3 R-T	5 T-Y	2 ST	9 UV	12 QR	9 N-R	7 UV
VNS	Vetch, Common	Legume	13 I-M	16 G-I	10 L-P	12 J-P	17 P-R	20 H-Q	13 L-O	18 O-T
AU Merit	Vetch, Hairy	Legume	14 G-J	15 H-J	15 F-I	12 J-P	23 H-M	20 H-Q	24 D-F	26 F-P
Patagonia Inta	Vetch, Hairy	Legume	14 G-J	13 I-M	15 F-I	15 H-M	23 H-M	17 L-R	23 E-G	30 E-L
Purple Bounty	Vetch, Hairy	Legume	16 E-G	16 G-I	18 D-G	15 H-K	26 F-J	19 I-R	26 DE	32 E-K
Villana	Vetch, Hairy	Legume	14 G-J	15 H-J	15 F-J	13 I-O	25 G-K	21 G-P	22 E-I	32 D-I
WinterKing	Vetch, Hairy	Legume	16 E-H	15 H-J	18 C-G	15 H-K	24 H-L	18 K-R	24 E-G	31 E-L
Namoi	Vetch, Woolypod	Legume	14 G-K	13 I-M	13 I-M	15 H-L	21 I-P	18 K-R	21 E-J	25 F-P
Double OO	Winter Pea	Legume	10 M-P	7 N-S	10 K-P	12 J-P	30 EF	28 D-H	26 DE	36 C-E
Survivor	Winter Pea	Legume	13 G-K	15 H-J	12 I-N	14 H-N	26 F-H	22 F-N	23 E-G	34 D-G
VNS (1)	Winter Pea	Legume	13 H-M	13 I-M	17 E-H	9 J-S	27 E-H	25 D-L	26 DE	29 E-M
VNS (2)	Winter Pea	Legume	13 G-L	14 H-L	11 J-N	15 H-L	29 E-G	21 G-P	24 EF	41 B-D
Windham	Winter Pea	Legume	7 O-S	5 O-T	9 L-Q	8 L-T	18 N-R	21 G-Q	14 K-N	20 N-S
WyoWinter (1)	Winter Pea	Legume	11 J-N	11 J-N	11 I-N	12 J-O	26 F-J	24 F-M	23 E-G	30 E-M
WyoWinter (2)	Winter Pea	Legume	14 G-K	15 H-J	15 F-I	11 J-Q	26 F-H	23 F-M	27 DE	30 E-M

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Variety	Species	Group	Height (in)							
			Apr				May			
			Avg.	RECM	MTREC	ETREC	Avg.	RECM	MTREC	ETREC
<b>Across Groups</b>										
Average			14	13	11	17	26	27	20	30
Standard Error										
Min			2	1	1	1	6	4	1	6
Max			36	36	26	49	60	64	55	64
Range			34	35	24	48	54	60	54	58
<b>Brassicas</b>										
Average			18	20	8	27	21	27	6	31
Min			4	3	3	6	17	24	1	24
Max			25	26	17	43	31	34	13	48
Range			21	23	14	36	14	10	12	24
<b>Cereals</b>										
Average			18	16	14	24	36	38	31	40
Min			3	3	4	2	11	16	8	10
Max			36	36	26	49	60	64	55	64
Range			33	33	22	47	49	48	48	54
<b>Legumes</b>										
Average			9	8	10	9	20	19	18	22
Min			2	1	1	1	6	4	1	6
Max			16	16	18	15	30	28	27	41
Range			14	15	17	14	24	24	26	35

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD,  $P < 0.05$ ).  
 light orange highlights values between the 50th and 75th percentile  
 dark orange highlights values greater than the 75th percentile