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COVER CROP VARIETY TESTS IN TENNESSEE

2021

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Cover Crop Variety Tests in Tennessee

2021

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Experimental Procedures

Cover crop variety tests were conducted at the East Tennessee (Knoxville) and Middle Tennessee (Spring Hill) AgResearch and Education Centers. All locations were planted with a drill to a length of 15 feet. Plot widths varied slightly by location based on equipment. Plots were planted at the East Tennessee Center in 16 rows on 7.5-inch spacing and at the Spring Hill Center in 14 rows on 7-inch 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.

Trials were conducted under two planting dates to represent environmental conditions typical for planting cover crops following corn (early October) and soybeans/cotton (early November) in Tennessee. Entrants were allowed to participate in one or both planting dates; therefore, not all varieties are present in the November planted trial.

Assessment of Canopy Cover

Canopy cover was assessed in the fall (late November/early December) and winter (early February) using digital image analysis. Two 21-by-21-inch PVC squares were randomly placed in each plot and photographed. These photographs were then analyzed for percent green cover using APS Assess software (APS Press, St. Paul, Minnesota). The height of many of the cereal and brassica species made this method ineffective for assessing cover in the spring. Because of this, percent canopy cover was rated visually in early April and early May.

Assessment of Height

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

Assessment of Biomass

Cover crop biomass was measured for two, randomly selected, 21-by-21-inch square areas within each plot. Biomass within each square was cut to a height of 1 inch above the soil surface using handheld electronic clippers. Biomass was dried to a constant weight and dry matter biomass was calculated on a tons per acre basis.

Assessment of Forage Quality

One sample from each plot was dried and ground using a Wiley Mill (Thomas Scientific, Swedesboro, New Jersey) to pass a 2-millimeter screen; then, finished by passing through a Cylcotec (Foss North America, Eden Prairie, Minnesota) with a 1-millimeter screen. Samples

were dried to a consistent moisture level and scanned on a Foss DS2500F Near infrared Spectrometer (Foss North American, Eden Prairie, Minnesota). Calibrations used were from the NIRS Consortium (Berea, Kentucky). All forage quality data is reported at 100 percent dry matter.

Assessment of Nitrogen Content and Nitrogen Release

NIRS estimated CP, ADF, NDF, lignin and ash were used to derive the following values, according to Woodruff et al. (2008): percent nitrogen (CP/6.25), carbohydrates (NFC + CP + fat), cellulose (ADF – (Lignin + Ash)), and hemicellulose (NDF - ADF). Mean values for lignin, carbohydrates, and cellulose + hemicellulose were normalized to 100% and input into the University of Georgia cover crop nitrogen calculator (aesl.ces.uga.edu/mineralization, Gaskin, 2016), along with mean percent nitrogen and biomass, to estimate nitrogen release. This cover crop nitrogen calculator incorporates weather data into the prediction model; however, the calculator does not currently include any Tennessee locations. Therefore, the Walker County, Georgia, location (bordering Hamilton County, Tennessee) was selected as the most representative of the trial locations. For background options, "no" for high organic matter soil, and "left on surface" for cover crop residue, were selected.

Interpretation of Data

The tables on the following pages have been prepared with the entries sorted by group (brassica, cereal, legume), common name and variety. Biomass, cover, height data, total nitrogen, NIRS quality constituents, and estimated nitrogen were analyzed using the MIXED procedure in SAS v. 9.4 (Cary, North Carolina) with mean separation performed using the Fisher's Protected LSD (Least Significant Difference) test. All analyses used a mixed model with variety and location as fixed effects and block as a random effect with an alpha level of 0.05 to determine significance. The models for cover and biomass also included sample as a random effect. Mean separation letters have been listed next to mean values for each trait. Across all entries, varieties that have any letter in common within a column are not significantly different at the 5 percent level of probability. Varieties with performance statistically equivalent to the highest value for each respective trait will have an "A" included in the list of mean separation letters next to that entry. Mean separation letters of "A-group" varieties are highlighted in dark orange. Additionally, within functional group (brassicas, cereals, legumes) mean values between the 50th and 75th percentile are highlighted in light orange and above the 75th percentile are highlighted in dark orange.

Results

Thirty-six varieties (6 brassica, 12 cereals, 18 legumes) were evaluated in the October planted trial and 18 varieties (3 brassicas, 7 cereals, 8 legumes) were evaluated in the November planted trial. Both trials also included eight cereal/legume mixes (Table 2). Mixes are listed by the cereal and legume components at their respective seeding rates compared to a monoculture. For example, Bates RS4 (20 percent) + Dixie (80 percent) indicates a mix in which Bates RS4 was planted at 20 percent of the monoculture rate for cereal rye and Dixie was planted at 80 percent of the monoculture rate for crimson clover.

Variety performance is given across locations (October planted — Tables 4 to 8; November planted — Tables 19 to 33) and for each individual location, Knoxville (East Tennessee AgResearch and Education Center; October planted — Tables 9 to 13; November planted — Tables 24 to 28) and Spring Hill (Middle Tennessee AgResearch and Education Center; October planted — Tables 14 to 18; November planted — Tables 29 to 33). Results are also presented for each evaluated trait in a side-by-side comparison of locations, which is available as a downloadable Excel table on search.utcrops.com (Appendix A, Appendix B).

Varieties differed significantly among all evaluated traits. Within both planting dates, most traits exhibited a significant interaction between variety and location, indicating variety differences differed by location. However, top performers tended to be consistent across locations.

Early October Planted Covers

Bates RS4 cereal rye, Elbon cereal rye, NF95319B cereal rye, NF97325 cereal rye, NF99362 cereal rye, TriCal Ray triticale and TriCal Exp 20T06 triticale were top performers (upper 25 percent or not statistically different from the highest value) for April and May biomass among all varieties/species. April biomass averaged 1.8 ton/ac (3,604 lb/ac), and May biomass averaged 3.2 ton/ac (6,455 lb/ac). Of these, Bates RS4, NF95319B, NF97325, TriCal Ray and TriCal EXP 20T06 were also top performers for fall cover (76 percent) and provided above average winter cover (55 percent). Over a 12-week growing period, top-performing biomass varieties would be expected to release an average of 10 lb/ac of N with an April termination, and 1 lb/ac of N with a May termination. All cereal rye varieties, with exception to Elbon, produced a nitrogen deficit over a 12-week period following a May termination.

AU Merit hairy vetch, WinterKing hairy vetch and Survivor winter pea were top performers for fall cover (71 percent) and winter cover (68 percent). Among all species/varieties, AU Merit and WinterKing had above average biomass in April (1 ton/ac; 2,012 lb/ac), and Survivor had above average biomass in both April (1.2 ton/ac; 2,456 lb/ac) and May (1.5 ton/ac; 3,000 lb/ac). However, these varieties had statistically lower biomass compared with the highest biomass yielding species/varieties, which were all cereals. This is dissimilar from the 2019-2020 Tennessee cover crop variety trial results (Sykes et al., 2020) in which these varieties exhibited statistically equivalent biomass to the top-performing cereal varieties. This is likely due to cool, wet weather during early spring 2021. Over a 12-week period, these three varieties would be expected to release an average of 47 lb/ac of N with an April termination and 65 lb/ac of N with a May termination. While the clovers did not provide high fall and winter cover like hairy vetch and winter pea, Lightning berseem clover had above average biomass with an April termination (0.9 ton/ac; 1,845 lb/ac), and Dixie and Kentucky Pride crimson clover had above average biomass with a May termination (1.6 ton/ac; 3,223 lb/ac). The brassica varieties were not as competitive as the cereals and legumes in terms of fall and winter cover, spring biomass, or nitrogen release.

Bates RS4 (20 percent) + Dixie (80 percent) and Bates RS4 (20 percent) + AU Merit (80 percent) mixes were top performers for fall cover (72 percent), winter cover (63 percent), April biomass (1.9 ton/ac; 3,828 lb/ac) and May biomass (3.3 ton/ac; 6,530 lb/ac) among all varieties/species. These mixes had statistically equivalent yields to the monoculture cereals.

Because of the legume component within these mixes, they were also able to provide a significant amount of nitrogen, averaging 39 lb/ac with an April termination and 63 lb/ac with a May termination.

Grazing cover crops can add value to some systems. Forage quality is dependent on species/variety and termination timing. AU Merit hairy vetch, Patagonia hairy vetch and WinterKing hairy vetch had the highest crude protein (CP) among all variety/species, averaging 23 percent with an April termination and increasing to 25 percent with a May termination. Brassicas had intermediate CP values, averaging 15 percent with an April termination, and decreasing to 12 percent with a May termination. Cereals had the lowest CP values, averaging 10 percent with an April termination and decreasing to 7 percent with a May termination.

Forage quality among the mixes varied considerably. For an April termination, mixes with Bates RS4, which is a highly aggressive cereal rye, had average CP values of 15 percent and NDF values of 49 percent. In mixes with the less aggressive varieties/species, Yankee cereal rye and TN1902 wheat, CP was higher (19 percent) and NDF lower (37 percent). With a May termination, differences in forage quality among mixes were also apparent, but those differences appeared to be more related to the legume species contained within the mix. Mixes containing Dixie crimson clover had lower CP, averaging 13 percent, compared with mixes containing AU Merit hairy vetch, in which CP averaged 18 percent. However, values for NDF continued to be higher among the mixes containing BatesRS4 cereal rye.

Early November Planted Covers

When subjected to a later planting date, Bates RS4 cereal rye, Elbon cereal rye, NF95319B and NF97325 continued to be top performers among all species/varieties for April biomass (0.8 ton/ac; 1,639 lb/ac), May biomass (2.0 ton/ac; 3,944 lb/ac), fall cover (44 percent) and winter cover (38 percent). Biomass among these top performers was around 1 to 1.3 ton/ac (3,671 to 6,558 lb/ac) lower than biomass from cover crops planted in early October. Nitrogen release over a 12-week period was low, averaging 8 lb/ac with an April termination and 2 lb/ac with a May termination, but did not cause a deficit.

November planted legumes and brassicas exhibited low fall and winter cover, which consisted primarily of winter weeds. As in the earlier planted trial, AU Merit hairy vetch, Patagonia hairy vetch and WinterKing hairy vetch were top performers among the legume species but had statically lower biomass compared with the cereal monocultures. April biomass averaged 0.4 ton/ac (814 lb/ac) while May biomass averaged 1.2 ton/ac (2,440 lb/ac), approximately half the biomass produced by the October planted trial. Nitrogen release from the April termination among these varieties was lower compared with the October planted trial, releasing 21 lb/ac N compared with 47 lb/ac N over a 12-week period. However, N content within the May terminated material was higher in the November planted trial compared with the October planted trial, resulting in higher N release, 74 lb/ac N compared with 65 lb/ac N, despite lower biomass.

Across locations, the mixes of Bates RS4 (10 percent) + Dixie (90 percent) and Bates RS4 (10 percent) + AU Merit (90 percent) were statistically equivalent to the highest May biomass across all varieties/species. Unlike the October planted trial, none of the mixes had the statistically highest April biomass among all varieties/species. This is likely due to the poorer legume

performance in a later planted trial. The mix of Bates RS4 (20 percent) + AU Merit (80 percent) was among the top 25 percent for April biomass and all mixes containing Bates RS4 had above average April and May biomass. Mixes containing hairy vetch generally had the highest N release, averaging 16 lb/ac N with an April termination and 58 lb/ac N with a May termination.

Forage quality was similar to the October planted trial. AU Merit hairy vetch, Patagonia hairy vetch and WinterKing hairy vetch again had the highest crude protein (CP), averaging 23 percent with an April termination and increasing to 27 percent with a May termination. Brassicas had intermediate CP values, averaging 15 percent with an April termination, and decreasing to 13 percent with a May termination. Cereals had the lowest CP values, averaging 11 percent with an April termination and decreasing to 8 percent with a May termination.

Forage quality rankings among mixes were similar between an April and May termination and were similar to differences observed in the May termination of the October planted trial. Mixes containing Dixie crimson clover generally had lower CP, averaging 14 percent in April and May, compared with mixes containing AU Merit hairy vetch, in which CP averaged 18 percent in April and 21 percent in May. As in the October planted trial, values for NDF continued to be higher among the mixes containing BatesRS4 cereal rye.

Overall, results from this trial illustrate the variation both among species and among varieties within species as well as highlight top-performing varieties for Tennessee. It is important to consider the specifics of a production system and select varieties that will excel under those conditions. Selecting a mix of top-performing varieties that offer complementary benefits, such as early season cover, biomass at termination, and nitrogen release after termination, can help maximum the benefits of cover crops to a succeeding cash crop system.

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Table 1. Characteristics of cover crop varieties evaluated during 2020-2021.

Group	Common Name	Variety/Hybrid	Company	Seeding Depth (in)	Early Planted Trial	Late Planted Trial
Brassica	Hybrid (turnip x rapeseed)	Vivant	Mountain View Seeds	0.25 - 0.5	1	1
Brassica	Radish	Aerifi	Mountain View Seeds	0.25 - 0.5	1	1
Brassica	Radish	CCS-779	Smith Seed Services	0.25 - 0.5	1	
Brassica	Radish	Driller	GrasslandOregon	0.25 - 0.5	1	
Brassica	Radish	FragiBlaster	Smith Seed Services	0.25 - 0.5	1	
Brassica	Turnip	Jackpot	Mountain View Seeds	0.25 - 0.5	1	1
Cereal	Cereal Rye	Bates RS4	Noble Foundation	1 - 2	1	1
Cereal	Cereal Rye	Elbon	Noble Foundation	1 - 2	1	1
Cereal	Cereal Rye	NF95319B	Noble Foundation	1 - 2	1	1
Cereal	Cereal Rye	NF97325	Noble Foundation	1 - 2	1	1
Cereal	Cereal Rye	NF99362	Noble Foundation	1 - 2	1	1
Cereal	Cereal Rye	TriCal Ray	TriCal Superior Forage	1 - 2	1	
Cereal	Cereal Rye	Yankee	Green Cover Seed	1 - 2	1	1
Cereal	Triticale	TriCal EXP 20T06	TriCal Superior Forage	1 - 2	1	
Cereal	Triticale	TriCal EXP 21T01	TriCal Superior Forage	1 - 2	1	
Cereal	Triticale	TriCal Flex 719	TriCal Superior Forage	1 - 2	1	
Cereal	Triticale	TriCal Surge	TriCal Superior Forage	1 - 2	1	
Cereal	Wheat	TN1902	Univ. of TN	1 - 2	1	1
Legume	Clover, Balansa	FIXatioN	GrasslandOregon	0.25 - 0.5	1	
Legume	Clover, Balansa	Paradana	Smith Seed Services	0.25 - 0.5	1	1
Legume	Clover, Balansa	Taipan	Smith Seed Services	0.25 - 0.5	1	1
Legume	Clover, Balansa	Viper	Smith Seed Services	0.25 - 0.5	1	1
Legume	Clover, Berseem	Frosty	GrasslandOregon	0.25 - 0.5	1	
Legume	Clover, Berseem	Lightning	Smith Seed Services	0.25 - 0.5	1	1
Legume	Clover, Crimson	*UF_CC_17	Univ. of FL	0.25 - 0.5	1	
Legume	Clover, Crimson	Dixie	Smith Seed Services	0.25 - 0.5	1	1
Legume	Clover, Crimson	Kentucky Pride	GrasslandOregon	0.25 - 0.5	1	
Legume	Clover, Persian	GO-PER-12	GrasslandOregon	0.25 - 0.5	1	
Legume	Clover, Red	Dynamite	GrasslandOregon	0.25 - 0.5	1	
Legume	Clover, Red	Q (FL24D)	GrasslandOregon	0.25 - 0.5	1	
Legume	Clover, White	*UF_WC_LateOcoee	Univ. of FL	0.25 - 0.5	1	
Legume	Clover, White	*UF_WC_ML17	Univ. of FL	0.25 - 0.5	1	
Legume	Vetch, Hairy	AU Merit	Smith Seed Services	1 - 2	1	1
Legume	Vetch, Hairy	Patagonia	Smith Seed Services	1 - 2	1	1
Legume	Vetch, Hairy	WinterKing	Smith Seed Services	1 - 2	1	1

cont.

Table 1. Characteristics of cover crop varieties evaluated during 2020-2021.

Group	Common Name	Variety/Hybrid	Company	Seeding Depth (in)	Early Planted Trial	Late Planted Trial
Legume	Winter Pea	Survivor	GrasslandOregon	1 - 2	1	
Mix	Cereal Rye + Crimson Clover	Bates RS4 (10%) + Dixie (90%)	Mix	0.25 - 0.5	1	1
Mix	Cereal Rye + Hairy Vetch	Bates RS4 (10%) + AU Merit (90%)	Mix	1 - 2	1	1
Mix	Cereal Rye + Crimson Clover	Bates RS4 (20%) + Dixie (80%)	Mix	0.25 - 0.5	1	1
Mix	Cereal Rye + Hairy Vetch	Bates RS4 (20%) + AU Merit (80%)	Mix	1 - 2	1	1
Mix	Cereal Rye + Crimson Clover	Yankee (20%) + Dixie (80%)	Mix	0.25 - 0.5	1	1
Mix	Cereal Rye + Hairy Vetch	Yankee (20%) + AU Merit (80%)	Mix	1 - 2	1	1
Mix	Wheat + Crimson Clover	TN1902 (20%) + Dixie (80%)	Mix	0.25 - 0.5	1	1
Mix	Wheat + Hairy Vetch	TN1902 (20%) + AU Merit (80%)	Mix	1 - 2	1	1

Table 2. Contact information for cover crop seed companies submitting varieties evaluated in tests in Tennessee during 2020 - 2021.

Company	Contact	Phone	Email	Web site
GO Seed	Jerry Hall	503-566-9900	jhall@goseed.com	www.goseed.com
Mountain View Seeds	Mark Thomas	903-949-7099	markt@mtviewseeds.com	www.mtviewseeds.com
Noble Research Institute	Xuefeng Ma	580-224-6827	xma@noble.org	https://www.noble.org
Smith Seed Services	Jonathan Rupert	888-550-2930	jrupert@smithseed.com	www.smithseed.com
TriCal Superior Forage	Racey Padilla	940-552-8881	rpadilla@tricalforage.com	www.tricalforage.com
University of Florida	Esteban Rios	352-301-2244	estebanrios@ufl.edu	
University of Tennessee	Dennis West	865-974-882	dwest3@utk.edu	

Table 3. Location information from University of Tennessee AgResearch and Education Centers where crop variety trials were conducted during 2020 - 2021.

Location	AgResearch and Education Center	Oct. Planting	Nov. Planting	Fall Eval.	Winter Eval.	Spring Eval. 1	Spring Eval. 2	Soil Type
Knoxville	East Tennessee	6-Oct-2020	2-Nov-2020	30-Nov-2020	2-Feb-2021	5-Apr-2021	6-May-2021	Shady Loam
Spring Hill	Middle Tennessee	2-Oct-2020	5-Nov-2020	2-Dec-2020	3-Feb-2021	7-Apr-2021	27-Apr-2021	Maury Silt Loam

Table 4. Across location mean biomass and weed suppression of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Biomass (DM ton/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Bates RS4	Cereal Rye	2.1 A	3.6 A	4293 A	7199 A	0 RS	0 U	3 MN	4 M-O
Elbon	Cereal Rye	1.4 D-F	3.1 A-C	2736 D-F	6196 A-C	0 Q-S	2 Q-U	3 MN	5 M-O
NF95319B	Cereal Rye	2.0 AB	3.1 AB	4071 AB	6264 AB	1 P-S	1 TU	3 MN	8 L-O
NF97325	Cereal Rye	1.8 BC	3.3 A	3583 BC	6575 A	1 P-S	3 P-U	3 MN	8 L-O
NF99362	Cereal Rye	1.6 CD	3.0 A-D	3204 CD	5911 A-D	0 Q-S	3 N-S	3 MN	5 M-O
TriCal Ray	Cereal Rye	1.9 A-C	3.4 A	3700 A-C	6849 A	0 S	1 S-U	2 N	8 L-O
Yankee	Cereal Rye	0.8 I-P	2.6 B-E	1672 I-P	5140 B-E	0 RS	2 S-U	6 J-N	8 L-O
TriCal EXP 20T06	Triticale	1.8 A-C	3.1 A-C	3638 A-C	6191 A-C	1 O-S	2 R-U	3 MN	5 M-O
TriCal EXP 21T01	Triticale	1.6 CD	2.5 B-F	3191 CD	5020 B-F	1 N-S	3 Q-U	4 L-N	6 L-O
TriCal Flex 719	Triticale	1.1 F-J	2.3 D-G	2166 F-J	4672 D-G	3 N-S	11 O-T	8 J-N	12 K-O
TriCal Surge	Triticale	1.2 F-I	2.1 E-H	2341 F-I	4254 E-H	13 I-N	7 N-S	5 K-N	9 K-O
TN1902	Wheat	0.9 H-N	2.0 E-I	1814 H-N	3975 E-I	5 L-S	6 O-T	8 J-N	10 K-O
Legumes									
FIXatioN	Clover, Balansa	0.5 O-S	0.6 O-S	1061 O-S	1239 O-S	69 AB	75 AB	63 AB	52 C-E
Paradana	Clover, Balansa	0.4 RS	0.4 Q-S	834 RS	875 Q-S	74 AB	84 A	73 AB	65 A-C
Taipan	Clover, Balansa	0.4 S	0.4 RS	787 S	708 RS	89 A	77 AB	82 A	57 B-E
Viper	Clover, Balansa	0.7 K-S	0.5 O-S	1364 K-S	1090 O-S	89 A	80 AB	65 AB	46 D-F
Frosty	Clover, Berseem	0.8 J-Q	1.4 I-N	1604 J-Q	2741 I-N	18 D-F	27 D-F	19 E-G	14 J-O
Lightning	Clover, Berseem	0.9 H-M	1.1 L-Q	1845 H-M	2198 L-Q	35 CD	37 C-E	26 D-F	21 H-L
*UF_CC_17	Clover, Crimson	0.6 L-S	1.0 L-R	1205 L-S	1957 L-R	23 D-H	26 D-G	28 EF	34 F-H
Dixie	Clover, Crimson	0.7 K-S	1.8 G-K	1333 K-S	3577 G-K	14 G-K	15 I-O	13 F-I	18 I-N
Kentucky Pride	Clover, Crimson	0.8 J-R	1.4 I-M	1526 J-R	2869 I-M	13 F-J	12 F-L	15 E-H	15 J-O
GO-PER-12	Clover, Persian	0.5 O-S	0.4 Q-S	1040 O-S	896 Q-S	60 A-C	58 A-C	68 AB	50 C-E
Dynamite	Clover, Red	0.5 O-S	0.8 M-S	1019 O-S	1594 M-S	38 B-D	35 D-F	45 A-C	29 G-J
Q (FL24D)	Clover, Red	0.5 Q-S	0.5 P-S	936 Q-S	983 P-S	28 CD	41 B-D	61 AB	43 E-G
*UF_WC_LateOcoee	Clover, White	0.4 S	0.1 S	766 S	287 S	94 A	93 A	72 AB	75 A
*UF_WC_ML17	Clover, White	0.4 S	0.2 S	726 S	478 S	85 A	90 A	77 AB	60 A-D
AU Merit	Vetch, Hairy	1.0 G-K	1.1 K-P	1989 G-K	2263 K-P	10 E-I	14 H-N	7 H-M	4 M-O
Patagonia	Vetch, Hairy	0.8 I-O	1.0 L-R	1693 I-O	1994 L-R	19 E-I	26 G-M	14 G-L	8 K-O
WinterKing	Vetch, Hairy	1.0 F-K	1.3 I-N	2036 F-K	2671 I-N	32 DE	40 D-F	5 J-N	3 NO
Survivor	Winter Pea	1.2 F-H	1.5 H-L	2456 F-H	3000 H-L	31 D-G	42 D-H	7 I-M	8 K-O
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	0.6 M-S	0.7 N-S	1192 M-S	1461 N-S	5 I-N	10 J-P	13 E-G	13 K-O
Aerifi	Radish	0.6 N-S	0.3 S	1129 N-S	559 S	8 H-L	15 F-K	48 A-C	62 A-C
CCS-779	Radish	0.5 P-S	0.6 O-S	980 P-S	1294 O-S	10 F-J	23 E-I	40 B-D	53 C-E
Driller	Radish	0.5 O-S	0.3 S	1027 O-S	593 S	8 I-P	28 D-F	58 AB	72 AB
FragiBlaster	Radish	0.7 K-S	0.7 O-S	1380 K-S	1304 O-S	8 H-M	12 H-N	21 C-E	31 F-I
Jackpot	Turnip	0.5 O-S	0.5 O-S	1092 O-S	1095 O-S	5 H-M	16 F-J	18 D-F	19 H-M
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.0 AB	3.5 A	3975 AB	6946 A	5 J-Q	5 L-R	18 G-J	7 L-O
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	1.8 A-C	3.1 A-C	3682 A-C	6115 A-C	2 N-S	3 O-T	2 N	3 O
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	1.3 D-G	3.1 A-C	2692 D-G	6196 A-C	2 K-R	7 J-Q	4 L-N	13 K-O
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	1.6 C-E	2.6 B-E	3170 C-E	5198 B-E	11 I-N	3 O-T	6 MN	7 L-O
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.8 J-Q	2.4 C-G	1604 J-Q	4853 C-G	2 M-S	7 K-Q	11 G-K	13 K-O
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	0.9 H-L	1.8 F-J	1900 H-L	3685 F-J	5 I-O	3 O-T	7 I-M	8 L-O
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	1.2 E-H	2.2 E-G	2482 E-H	4408 E-G	2 N-S	3 P-T	13 G-J	14 J-O
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	1.0 H-K	1.2 J-O	1976 H-K	2407 J-O	18 H-M	11 M-R	18 H-M	23 H-K

Table 4. cont.

Summary Statistics									
		Biomass (DM tons/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
Variety	Common Name	Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Average		1.5	2.8	3034	5687	2	3	4	7
Min		0.8	2.0	1672	3975	0	0	2	4
Max		2.1	3.6	4293	7199	13	11	8	12
Range		1.3	1.6	2621	3225	13	10	6	8
Legumes									
Average		0.7	0.9	1345	1746	46	49	41	33
Min		0.4	0.1	726	287	10	12	5	3
Max		1.2	1.8	2456	3577	94	93	82	75
Range		0.9	1.6	1730	3290	83	82	77	72
Brassicas									
Average		0.6	0.5	1133	1051	7	17	33	42
Min		0.5	0.3	980	559	5	10	13	13
Max		0.7	0.7	1380	1461	10	28	58	72
Range		0.2	0.5	400	902	5	18	44	58
Mixes									
Average		1.3	2.5	2685	4976	6	5	10	11
Min		0.8	1.2	1604	2407	2	3	2	3
Max		2.0	3.5	3975	6946	18	11	18	23
Range		1.2	2.3	2370	4539	17	8	17	21
Across Groups									
Average		1.0	1.7	2021	3313	21	24	24	23
Standard Error		0.5	1.1	1045	2205	28	28	25	22
Min		0.4	0.1	726	287	0	0	2	3
Max		2.1	3.6	4293	7199	94	93	82	75
Range		1.8	3.5	3567	6912	94	93	80	73
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	N.S.	<0.001	N.S.	<0.001	<0.001	<0.001	<0.001
- Variety x Location		<0.001	<0.001	<0.001	<0.001	0.025	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 5. Across location mean cover and height of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr[§]	May[‡‡]	Dec	Feb	Apr	May
Cereals									
Bates RS4	Cereal Rye	77 AB	54 D-I	97 A-D	100	11 AB	7 BC	43 AB	64 A-C
Elbon	Cereal Rye	72 A-E	45 I-K	94 A-F	100	9 D-F	5 E-H	30 DE	61 BC
NF95319B	Cereal Rye	74 A-D	54 D-I	98 A-C	100	11 A	7 BC	42 A-C	64 A-C
NF97325	Cereal Rye	72 A-E	53 E-I	98 AB	100	9 C-E	7 BC	42 BC	61 BC
NF99362	Cereal Rye	64 B-H	44 I-L	96 A-D	100	9 D-F	5 E-H	33 D	60 C
TriCal Ray	Cereal Rye	77 A-C	53 E-I	97 A-D	100	10 A-C	7 B	42 A-C	61 BC
Yankee	Cereal Rye	73 A-D	49 H-J	93 A-G	100	10 B-E	5 E-H	16 L-N	43 D
TriCal EXP 20T06	Triticale	80 A	60 C-H	94 A-F	100	11 A	9 A	26 FG	42 DE
TriCal EXP 21T01	Triticale	80 A	60 B-G	93 A-G	100	11 A	10 A	24 G-I	37 F
TriCal Flex 719	Triticale	73 A-E	49 H-J	83 G-J	93	9 E-G	5 F-I	18 J-M	32 GH
TriCal Surge	Triticale	63 D-I	48 IJ	90 C-H	100	10 A-D	7 B-D	20 I-L	35 FG
TN1902	Wheat	61 D-J	49 IJ	89 D-H	95	9 E-G	5 G-I	17 K-N	30 H-J
Legumes									
FIXatioN	Clover, Balansa	45 K-N	30 NO	69 J-L	89	3 P	3 J	8 R-T	20 P-T
Paradana	Clover, Balansa	40 M-O	29 NO	66 KL	77	3 P	3 J	9 Q-T	13 VW
Taipan	Clover, Balansa	30 O	29 NO	57 L	74	3 P	3 J	8 ST	14 U-W
Viper	Clover, Balansa	35 NO	34 MN	74 I-L	91	3 P	3 J	10 P-S	18 R-V
Frosty	Clover, Berseem	49 I-N	48 IJ	97 A-D	100	3 P	3 J	12 O-Q	23 M-R
Lightning	Clover, Berseem	47 J-N	42 J-M	96 A-D	100	3 P	3 J	12 O-R	23 M-Q
*UF_CC_17	Clover, Crimson	56 G-L	49 H-J	92 B-G	98	3 P	3 J	10 P-S	20 O-S
Dixie	Clover, Crimson	52 H-M	50 G-J	96 A-D	100	3 P	3 J	9 Q-T	24 K-P
Kentucky Pride	Clover, Crimson	58 F-L	53 F-I	95 A-E	100	3 P	3 J	9 Q-S	23 L-P
GO-PER-12	Clover, Persian	43 L-O	37 K-N	58 L	69	3 P	3 J	8 R-T	16 T-V
Dynamite	Clover, Red	46 K-N	35 K-N	78 H-K	93	3 P	3 J	8 R-T	18 Q-U
Q (FL24D)	Clover, Red	45 K-N	33 MN	58 L	83	3 P	3 J	7 ST	16 S-V
*UF_WC_LateOcoee	Clover, White	41 M-O	29 NO	53 L	68	3 P	3 J	5 T	8 X
*UF_WC_ML17	Clover, White	37 NO	30 NO	63 KL	75	3 P	3 J	5 T	10 WX
AU Merit	Vetch, Hairy	68 A-G	63 B-E	94 A-F	100	6 NO	5 HI	12 O-R	27 I-M
Patagonia	Vetch, Hairy	67 A-G	70 AB	97 A-D	100	5 O	5 F-I	14 N-P	25 K-O
WinterKing	Vetch, Hairy	70 A-G	62 B-F	99 AB	100	6 M-O	6 E-G	15 M-O	25 J-N
Survivor	Winter Pea	80 A	75 A	93 A-F	100	6 M-O	4 IJ	15 M-O	29 H-K
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	59 E-K	33 MN	85 E-I	93	6 L-O	5 HI	28 EF	37 EF
Aerifi	Radish	61 D-J	37 K-N	69 J-L	83	7 J-M	5 G-I	21 H-J	21 N-R
CCS-779	Radish	52 H-M	37 K-N	62 L	71	7 K-N	5 E-H	24 F-H	28 H-L
Driller	Radish	63 C-I	34 MN	60 L	63	8 H-K	5 G-I	21 H-K	24 L-P
FragiBlaster	Radish	64 B-H	34 L-N	83 F-I	95	7 K-M	4 HI	25 F-H	29 H-K
Jackpot	Turnip	41 M-O	21 O	83 E-I	95	6 M-O	4 HI	27 E-G	39 D-F
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	75 A-D	63 B-E	97 A-D	100	9 C-E	6 E-G	46 A	67 A
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	69 A-G	62 B-F	99 AB	100	10 A-D	6 C-E	43 AB	65 AB
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	66 A-H	60 B-G	99 AB	100	9 E-H	6 D-F	41 BC	64 A-C
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	71 A-F	66 A-C	99 AB	100	9 E-G	6 D-F	39 C	65 AB
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	68 A-G	45 I-K	98 AB	100	8 G-J	4 IJ	17 K-N	43 D
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	71 A-F	60 B-G	100 A	100	9 E-G	5 G-I	19 J-M	42 DE
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	67 A-H	63 B-F	98 AB	100	7 I-L	4 IJ	19 J-M	31 G-I
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	68 A-G	64 B-D	100 A	100	8 F-I	6 D-F	18 J-M	30 HI

Table 5. cont.

Summary Statistics									
		Canopy Cover (%)				Height (in)			
Variety	Common Name	Dec	Feb	Apr§	May‡‡	Dec	Feb	Apr	May
Cereals									
Average		72	52	93	99	10	7	29	49
Min		61	44	83	93	9	5	16	30
Max		80	60	98	100	11	10	43	64
Range		19	16	16	7	2	5	27	35
Legumes									
Average		50	44	80	90	4	3	10	19
Min		30	29	53	68	3	3	5	8
Max		80	75	99	100	6	6	15	29
Range		51	46	47	33	3	3	11	21
Brassicas									
Average		57	33	74	83	7	5	24	30
Min		41	21	60	63	6	4	21	21
Max		64	37	85	95	8	5	28	39
Range		23	16	25	33	2	1	7	18
Mixes									
Average		69	60	99	100	9	5	30	51
Min		66	45	97	100	7	4	17	30
Max		75	66	100	100	10	6	46	67
Range		9	21	3	0	3	2	29	37
Across Groups									
Average		61	48	86	93	7	5	21	35
Standard Error		14	13	15	11	3	2	12	18
Min		30	21	53	63	3	3	5	8
Max		80	75	100	100	11	10	46	67
Range		51	54	48	38	8	7	41	59
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	<0.001	-	0.003	0.003	<0.001	<0.001
- Variety x Location		N.S.	<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, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 6. Across location mean nitrogen content and estimated nitrogen release of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Bates RS4	Cereal Rye	1.3 S	0.9 OP	2 O-Q	5 N-P	11 L-O	-1 NO	-2 O	-1 MN
Elbon	Cereal Rye	1.5 RS	1.2 N-P	3 M-Q	6 M-P	11 L-O	3 K-O	5 K-O	10 J-N
NF95319B	Cereal Rye	1.3 S	0.9 P	1 PQ	3 P	7 O	-2 O	-3 O	-5 N
NF97325	Cereal Rye	1.4 S	0.9 P	1 PQ	4 OP	8 NO	-1 NO	-2 M-O	-2 MN
NF99362	Cereal Rye	1.5 Q-S	0.9 P	3 N-Q	6 M-P	11 L-O	-1 O	-2 NO	-3 N
TriCal Ray	Cereal Rye	1.3 S	0.9 P	1 Q	3 P	6 O	-1 NO	-2 NO	-2 MN
Yankee	Cereal Rye	2.1 L-O	1.3 M-O	6 J-P	10 J-P	16 J-O	2 K-O	5 K-O	11 J-N
TriCal EXP 20T06	Triticale	1.5 RS	1.2 N-P	3 M-Q	7 L-P	15 J-O	1 M-O	4 L-O	10 J-N
TriCal EXP 21T01	Triticale	1.5 Q-S	1.3 MN	4 L-Q	9 L-P	16 J-O	3 K-O	6 K-O	12 J-N
TriCal Flex 719	Triticale	1.8 O-Q	1.3 MN	6 J-P	11 J-P	17 I-O	3 K-O	7 J-O	12 J-N
TriCal Surge	Triticale	1.7 P-R	1.3 MN	5 L-Q	9 L-P	15 J-O	2 L-O	4 K-O	8 J-N
TN1902	Wheat	2.0 N-P	1.6 LM	7 I-O	11 I-O	18 I-O	6 J-O	11 I-N	18 H-L
Legumes									
FIXatioN	Clover, Balansa	2.7 F-J	2.9 E-G	7 I-O	11 I-O	17 I-O	13 F-J	20 G-J	26 G-J
Paradana	Clover, Balansa	2.7 F-I	2.6 GH	6 K-P	10 J-P	15 J-O	8 H-N	13 H-M	17 H-M
Taipan	Clover, Balansa	2.7 F-J	2.5 HI	5 L-Q	8 L-P	12 L-O	7 I-O	10 I-O	13 I-N
Viper	Clover, Balansa	2.8 F-H	2.7 GH	8 I-N	13 I-N	19 I-N	11 G-L	17 H-L	22 H-L
Frosty	Clover, Berseem	3.3 CD	3.1 C-E	14 C-G	23 C-G	34 C-H	27 A-C	42 B-D	54 B-D
Lightning	Clover, Berseem	3.2 C-E	3.0 D-F	15 C-G	25 C-F	36 C-G	21 C-F	32 D-G	42 D-G
*UF_CC_17	Clover, Crimson	2.8 F-H	2.6 GH	9 H-L	15 G-L	22 H-L	16 E-I	24 F-I	32 F-I
Dixie	Clover, Crimson	2.9 E-G	2.6 GH	11 F-J	18 F-J	26 F-J	28 A-C	43 A-D	56 A-D
Kentucky Pride	Clover, Crimson	3.0 D-F	2.7 F-H	13 D-H	22 D-H	32 D-H	24 C-E	37 D-F	48 D-F
GO-PER-12	Clover, Persian	2.5 H-L	3.4 BC	6 K-Q	9 K-P	14 K-O	10 H-M	16 H-L	21 H-L
Dynamite	Clover, Red	3.2 C-E	3.3 B-D	7 I-O	12 I-N	18 I-O	18 D-H	27 E-H	35 E-H
Q (FL24D)	Clover, Red	2.9 E-G	3.4 BC	6 I-O	10 J-P	15 J-O	11 G-K	17 H-K	23 H-K
*UF_WC_LateOcoee	Clover, White	2.5 H-M	3.4 BC	3 M-Q	6 M-P	9 M-O	2 L-O	3 L-O	4 L-N
*UF_WC_ML17	Clover, White	2.4 I-M	3.4 BC	4 M-Q	6 M-P	9 M-O	6 J-O	10 J-O	13 J-N
AU Merit	Vetch, Hairy	3.6 AB	3.9 A	21 AB	35 AB	50 AB	29 A-C	43 A-D	57 A-D
Patagonia	Vetch, Hairy	3.7 AB	4.0 A	18 A-D	29 A-D	42 A-D	26 B-D	40 C-E	52 C-E
WinterKing	Vetch, Hairy	3.8 A	4.0 A	17 B-D	27 B-E	40 B-E	36 A	55 AB	71 AB
Survivor	Winter Pea	3.3 CD	3.4 B	22 A	36 A	53 A	34 AB	51 A-C	67 A-C
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	2.3 K-N	1.8 KL	6 K-Q	10 J-P	15 J-O	5 J-O	8 J-O	10 J-N
Aerifi	Radish	2.5 H-L	2.1 JK	6 J-P	11 J-P	15 J-O	3 K-O	5 K-O	7 K-N
CCS-779	Radish	2.4 I-M	2.0 JK	5 L-Q	8 L-P	12 L-O	6 J-O	8 J-O	11 J-N
Driller	Radish	2.7 F-J	2.2 IJ	6 I-Q	10 J-P	15 J-O	2 L-O	3 L-O	4 L-N
FragiBlaster	Radish	2.5 H-K	1.8 KL	8 I-M	14 H-M	20 I-M	5 J-O	8 J-O	11 J-N
Jackpot	Turnip	2.3 J-N	1.8 KL	6 K-Q	10 J-P	16 J-O	4 K-O	6 K-O	8 J-N
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.1 M-O	2.0 JK	14 C-G	24 C-F	37 C-G	23 C-E	38 C-F	53 C-E
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	2.5 H-K	2.6 H	16 B-E	27 B-E	41 A-D	35 AB	54 AB	73 A
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	2.3 K-N	1.9 JK	11 E-I	19 E-I	29 E-I	20 C-G	33 D-G	47 D-F
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	2.7 F-I	2.8 E-H	18 A-C	30 A-C	45 A-C	36 A	55 A	74 A
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.7 F-J	2.1 J	11 G-K	17 F-K	25 G-K	21 C-F	33 D-G	45 D-F
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	3.2 C-E	2.7 F-H	15 C-G	24 C-F	36 C-G	25 C-E	37 D-F	49 C-F
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	2.6 G-J	2.1 JK	16 C-F	25 C-F	38 C-F	21 C-F	32 D-G	44 D-F
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	3.4 BC	3.3 B-D	17 A-D	28 A-D	42 A-D	23 C-E	35 D-F	46 D-F

Table 6. cont.

Summary Statistics									
		Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
Variety	Common Name	Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Average		1.6	1.1	4	7	12	1	3	6
Min		1.3	0.9	1	3	6	-2	-3	-5
Max		2.1	1.6	7	11	18	6	11	18
Range		0.9	0.7	6	9	11	8	14	23
Legumes									
Average		3.0	3.2	11	17	26	18	28	36
Min		2.4	2.5	3	6	9	2	3	4
Max		3.8	4.0	22	36	53	36	55	71
Range		1.4	1.5	19	30	44	34	52	67
Brassicas									
Average		2.4	1.9	6	10	15	4	6	9
Min		2.3	1.8	5	8	12	2	3	4
Max		2.7	2.2	8	14	20	6	8	11
Range		0.4	0.4	3	6	8	4	5	7
Mixes									
Average		2.7	2.4	15	24	36	26	40	54
Min		2.1	1.9	11	17	25	20	32	44
Max		3.4	3.3	18	30	45	36	55	74
Range		1.2	1.4	8	13	20	16	23	30
Across Groups									
Average		2.5	2.3	9	15	23	13	20	27
Standard Error		0.7	0.9	6	9	13	12	18	23
Min		1.3	0.9	1	3	6	-2	-3	-5
Max		3.8	4.0	22	36	53	36	55	74
Range		2.5	3.1	21	34	46	38	58	79
ANOVA p-values									
- 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		**0.017**	**0.008**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, *P* <0.05). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 7-a. Across location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	CP¶		ADF¶		NDF¶	
		Apr	May	Apr	May	Apr	May
Cereals							
Bates RS4	Cereal Rye	8.4 S	5.9 OP	35.4 A-C	40.8 AB	65.0 A	72.4 AB
Elbon	Cereal Rye	9.2 RS	7.3 N-P	32.8 C-E	38.5 A-D	63.7 A	69.3 B-E
NF95319B	Cereal Rye	8.0 S	5.4 P	35.7 AB	41.8 A	64.5 A	72.7 AB
NF97325	Cereal Rye	8.6 S	5.9 P	35.5 A-C	40.3 A-C	65.8 A	71.5 A-C
NF99362	Cereal Rye	9.4 Q-S	5.5 P	33.8 B-D	41.7 A	64.5 A	74.0 A
TriCal Ray	Cereal Rye	8.2 S	5.8 P	36.6 A	41.2 A	67.6 A	71.4 A-D
Yankee	Cereal Rye	13.4 L-O	8.0 M-O	24.0 O-T	36.9 C-G	49.6 D-F	66.9 D-F
TriCal EXP 20T06	Triticale	9.1 RS	7.4 N-P	30.2 E-H	35.0 E-H	57.7 B	64.0 F
TriCal EXP 21T01	Triticale	9.6 Q-S	8.1 MN	28.5 G-L	33.6 G-J	55.0 BC	62.8 F
TriCal Flex 719	Triticale	11.5 O-Q	8.4 MN	26.6 J-O	34.3 F-J	53.4 CD	65.9 EF
TriCal Surge	Triticale	10.8 P-R	8.4 MN	26.8 I-N	35.6 D-H	53.5 CD	67.1 C-F
TN1902	Wheat	12.8 N-P	9.7 LM	23.0 R-U	28.6 L-N	45.6 G	55.6 G
Legumes							
FIXatioN	Clover, Balansa	16.7 F-J	18.2 E-G	23.4 Q-T	23.0 S-U	32.7 K-N	27.9 T-V
Paradana	Clover, Balansa	17.0 F-I	16.2 GH	24.6 N-S	27.9 L-O	33.5 J-M	33.2 P-S
Taipan	Clover, Balansa	16.7 F-J	15.5 HI	23.8 O-T	27.8 M-P	33.7 J-M	33.1 P-S
Viper	Clover, Balansa	17.5 F-H	16.7 GH	23.7 P-T	25.7 N-T	32.4 K-N	31.1 R-T
Frosty	Clover, Berseem	20.5 CD	19.4 C-E	22.3 S-U	26.3 N-S	29.3 N-P	32.9 Q-S
Lightning	Clover, Berseem	19.9 C-E	18.9 D-F	22.7 R-U	26.7 N-R	30.3 M-P	32.7 RS
*UF_CC_17	Clover, Crimson	17.6 F-H	16.5 GH	23.8 P-T	31.5 I-L	32.4 K-N	37.7 OP
Dixie	Clover, Crimson	18.1 E-G	16.3 GH	21.3 TU	31.0 J-M	29.8 M-P	37.5 O-Q
Kentucky Pride	Clover, Crimson	18.8 D-F	17.2 F-H	22.5 S-U	29.3 K-N	29.2 N-P	35.4 O-R
GO-PER-12	Clover, Persian	15.5 H-L	21.0 BC	26.2 K-P	20.4 UV	36.0 H-K	23.8 VW
Dynamite	Clover, Red	20.1 C-E	20.7 B-D	22.7 R-U	23.3 R-U	31.9 L-O	29.1 S-U
Q (FL24D)	Clover, Red	18.2 E-G	21.2 BC	25.4 M-R	24.3 P-T	34.6 I-L	29.1 S-U
*UF_WC_LateOcoee	Clover, White	15.4 H-M	21.3 BC	25.8 L-Q	22.4 TU	36.3 H-K	25.4 U-W
*UF_WC_ML17	Clover, White	15.1 I-M	21.4 BC	25.8 L-Q	19.0 V	36.3 H-K	21.7 W
AU Merit	Vetch, Hairy	22.8 AB	24.5 A	23.1 Q-U	27.1 N-Q	28.3 OP	31.6 R-T
Patagonia	Vetch, Hairy	23.2 AB	24.7 A	22.7 R-U	26.4 N-S	29.5 N-P	30.3 ST
WinterKing	Vetch, Hairy	23.6 A	24.9 A	22.1 S-U	25.0 O-T	27.3 P	29.2 S-U
Survivor	Winter Pea	20.6 CD	21.6 B	20.5 U	23.7 Q-U	28.9 N-P	30.7 ST
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	14.1 K-N	11.1 KL	27.5 H-M	36.8 D-G	37.8 HI	47.2 J-M
Aerifi	Radish	15.5 H-L	12.8 JK	28.3 G-L	35.3 D-H	38.7 H	44.9 J-M
CCS-779	Radish	15.1 I-M	12.7 JK	29.4 F-I	34.8 E-I	39.3 H	44.0 L-N
Driller	Radish	16.6 F-J	13.5 IJ	29.2 F-J	33.7 G-J	38.3 HI	43.6 MN
FragiBlaster	Radish	15.7 H-K	11.1 KL	28.5 G-L	35.1 D-H	37.8 HI	44.5 K-M
Jackpot	Turnip	14.7 J-N	11.0 KL	28.7 G-K	37.5 B-F	39.3 H	48.0 I-M
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	13.3 M-O	12.2 JK	31.5 D-F	36.7 D-G	50.7 DE	53.8 GH
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	15.6 H-K	16.0 H	31.5 D-F	35.2 D-H	49.6 D-G	52.5 G-I
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	14.1 K-N	12.1 JK	29.7 F-H	37.7 B-E	47.7 E-G	54.2 G
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	17.1 F-I	17.6 E-H	30.3 E-G	33.7 G-J	46.3 FG	48.8 I-K
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	16.7 F-J	13.3 J	22.6 S-U	35.1 D-H	37.9 HI	52.3 G-I
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	20.1 C-E	17.1 F-H	24.1 O-S	32.4 H-K	38.2 HI	48.3 I-L
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	16.5 G-J	13.0 JK	23.1 Q-U	34.2 F-J	37.0 H-J	49.3 H-J
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	21.1 BC	20.6 B-D	24.5 N-S	28.4 L-O	36.1 H-K	39.6 NO

Table 7-a. cont.

Summary Statistics							
		CP¶		ADF¶		NDF¶	
Variety	Common Name	Apr	May	Apr	May	Apr	May
Cereals							
Average		9.9	7.1	30.7	37.4	58.8	67.8
Min		8.0	5.4	23.0	28.6	45.6	55.6
Max		13.4	9.7	36.6	41.8	67.6	74.0
Range		5.4	4.4	13.7	13.1	22.0	18.4
Legumes							
Average		18.7	19.8	23.5	25.6	31.8	30.7
Min		15.1	15.5	20.5	19.0	27.3	21.7
Max		23.6	24.9	26.2	31.5	36.3	37.7
Range		8.5	9.4	5.7	12.5	9.1	16.0
Brassicas							
Average		15.3	12.0	28.6	35.5	38.5	45.4
Min		14.1	11.0	27.5	33.7	37.8	43.6
Max		16.6	13.5	29.4	37.5	39.3	48.0
Range		2.5	2.5	1.9	3.8	1.5	4.4
Mixes							
Average		16.8	15.2	27.1	34.2	42.9	49.8
Min		13.3	12.1	22.6	28.4	36.1	39.6
Max		21.1	20.6	31.5	37.7	50.7	54.2
Range		7.8	8.5	8.9	9.3	14.5	14.6
Across Groups							
Average		15.5	14.5	26.8	31.7	42.1	46.3
Standard Error		4.3	5.8	4.4	6.2	12.1	15.9
Min		8.0	5.4	20.5	19.0	27.3	21.7
Max		23.6	24.9	36.6	41.8	67.6	74.0
Range		15.6	19.5	16.2	22.8	40.3	52.3
ANOVA p-values							
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**N.S.**	**0.014**	**<0.001**	**<0.001**
- Variety x Location		**0.017**	**0.084**	**0.026**	**<0.001**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 7-b. Across location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Bates RS4	Cereal Rye	2.6 OP	0.3 U	2.1 PQ	1.6 P-R	4.8 E-J	6.5 E-I
Elbon	Cereal Rye	2.1 P	1.6 ST	2.3 M-Q	1.9 K-O	4.1 K-Q	5.7 I-N
NF95319B	Cereal Rye	3.3 NO	0.6 TU	2.1 Q	1.5 R	4.9 E-J	6.5 E-H
NF97325	Cereal Rye	2.8 OP	1.1 S-U	2.2 O-Q	1.6 P-R	4.9 E-J	6.6 E-H
NF99362	Cereal Rye	2.6 OP	0.4 U	2.4 I-Q	1.5 QR	4.4 G-O	6.4 F-I
TriCal Ray	Cereal Rye	2.6 OP	1.1 S-U	2.1 Q	1.5 QR	5.1 C-G	6.7 D-G
Yankee	Cereal Rye	3.6 NO	2.7 R	3.2 AB	2.3 E-H	2.5 T	5.2 L-R
TriCal EXP 20T06	Triticale	3.5 NO	1.8 RS	2.2 N-Q	1.8 L-P	3.0 R-T	4.6 P-U
TriCal EXP 21T01	Triticale	4.0 N	1.8 RS	2.3 L-Q	1.8 L-P	3.0 ST	4.7 P-U
TriCal Flex 719	Triticale	3.6 NO	1.6 S	2.7 D-H	2.1 H-K	2.7 ST	4.5 Q-V
TriCal Surge	Triticale	3.5 NO	1.2 S-U	2.5 E-N	2.0 I-L	2.3 T	4.8 O-T
TN1902	Wheat	3.5 NO	1.7 S	2.9 B-D	2.3 C-H	2.4 T	4.0 T-V
Legumes							
FIXatioN	Clover, Balansa	9.4 A	9.9 BC	2.9 B-D	2.2 G-J	4.2 I-O	4.6 Q-U
Paradana	Clover, Balansa	9.4 A	9.4 CD	3.2 A-C	2.3 B-H	4.6 F-M	5.8 G-M
Taipan	Clover, Balansa	9.0 AB	8.9 C-F	2.8 C-E	2.2 H-K	4.5 G-O	6.0 G-M
Viper	Clover, Balansa	9.4 A	9.0 C-F	2.7 D-J	2.3 D-I	4.1 J-O	5.3 L-Q
Frosty	Clover, Berseem	8.5 A-D	9.0 C-F	2.7 D-J	2.5 A-F	4.1 K-P	5.0 N-S
Lightning	Clover, Berseem	8.8 A-D	9.1 C-F	2.7 D-I	2.4 B-H	3.9 M-Q	5.1 M-R
*UF_CC_17	Clover, Crimson	7.6 D-H	7.0 IJ	2.5 G-O	2.0 I-L	4.6 F-M	6.9 C-F
Dixie	Clover, Crimson	8.0 B-G	7.2 HI	2.7 D-K	2.0 J-N	4.0 L-Q	6.6 E-H
Kentucky Pride	Clover, Crimson	8.3 A-D	7.4 G-I	2.5 F-O	2.0 I-L	4.2 I-O	6.2 F-K
GO-PER-12	Clover, Persian	8.5 A-D	10.9 AB	2.9 B-D	2.5 A-G	5.0 C-H	3.7 V
Dynamite	Clover, Red	8.4 A-D	8.9 D-F	2.8 C-G	2.5 A-E	3.8 O-R	4.2 S-V
Q (FL24D)	Clover, Red	8.9 A-C	9.2 C-E	2.9 B-D	2.5 A-G	4.5 G-O	4.5 Q-V
*UF_WC_LateOcoee	Clover, White	7.9 B-G	11.4 A	2.8 C-F	2.6 AB	4.9 E-I	4.4 R-V
*UF_WC_ML17	Clover, White	8.4 A-D	10.8 AB	3.4 A	2.6 A-E	4.9 D-I	3.9 UV
AU Merit	Vetch, Hairy	8.1 B-E	8.2 E-G	2.7 D-L	2.7 A	4.9 E-I	5.8 H-M
Patagonia	Vetch, Hairy	7.8 C-G	8.1 F-H	2.7 D-H	2.6 A-C	4.6 F-N	5.5 J-O
WinterKing	Vetch, Hairy	8.0 B-F	8.4 D-F	2.7 D-H	2.7 A	4.7 F-L	5.1 M-R
Survivor	Winter Pea	8.5 A-D	9.1 C-F	2.8 D-H	2.6 AB	3.4 P-S	4.1 T-V
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	6.2 I-M	4.3 PQ	2.6 E-M	2.2 H-K	5.3 B-F	8.2 AB
Aerifi	Radish	6.9 F-J	6.5 I-K	2.5 H-P	1.7 O-R	5.7 A-C	8.0 AB
CCS-779	Radish	6.8 G-K	6.4 I-L	2.5 H-P	1.7 N-R	6.2 A	7.5 B-D
Driller	Radish	6.9 E-L	6.1 J-M	2.3 L-Q	1.8 L-P	6.1 AB	7.2 C-E
FragiBlaster	Radish	6.5 H-M	5.7 K-O	2.3 K-Q	1.7 N-R	5.7 A-D	7.7 BC
Jackpot	Turnip	6.0 I-M	5.2 M-P	2.6 D-M	2.2 G-J	5.5 B-E	8.5 A
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	5.7 J-M	4.1 Q	2.4 J-Q	1.9 K-O	4.6 F-N	6.3 F-J
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	5.7 K-M	4.7 O-Q	2.4 H-P	2.2 F-I	4.8 E-K	6.2 F-K
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	5.6 M	4.8 N-Q	2.5 H-O	1.7 M-Q	4.6 G-N	6.5 E-H
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	6.2 I-M	5.8 K-N	2.4 H-P	2.3 B-H	4.8 E-K	5.8 H-N
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	5.6 M	5.5 L-O	2.9 B-D	2.2 F-I	3.3 Q-S	5.7 I-N
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	6.3 I-M	6.7 I-K	2.9 B-D	2.6 A-D	3.8 N-Q	5.4 K-P
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	5.6 LM	4.8 N-Q	2.7 D-H	2.0 I-M	3.7 O-R	6.0 G-L
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	6.9 E-I	7.4 G-I	2.7 D-I	2.7 A	4.4 H-O	5.4 K-P

Table 7-b. cont.

Summary Statistics							
		Ash¶		Fat¶		Lignin¶	
Variety	Common Name	Apr	May	Apr	May	Apr†	May
Cereals							
Average		3.1	1.3	2.4	1.8	3.7	5.5
Min		2.1	0.3	2.1	1.5	2.3	4.0
Max		4.0	2.7	3.2	2.3	5.1	6.7
Range		1.9	2.4	1.1	0.9	2.8	2.7
Legumes							
Average		8.5	9.0	2.8	2.4	4.4	5.1
Min		7.6	7.0	2.5	2.0	3.4	3.7
Max		9.4	11.4	3.4	2.7	5.0	6.9
Range		1.8	4.4	0.9	0.7	1.7	3.2
Brassicas							
Average		6.5	5.7	2.5	1.9	5.7	7.9
Min		6.0	4.3	2.3	1.7	5.3	7.2
Max		6.9	6.5	2.6	2.2	6.2	8.5
Range		0.9	2.3	0.3	0.5	0.9	1.3
Mixes							
Average		5.9	5.5	2.6	2.2	4.2	5.9
Min		5.6	4.1	2.4	1.7	3.3	5.4
Max		6.9	7.4	2.9	2.7	4.8	6.5
Range		1.4	3.2	0.6	0.9	1.5	1.1
Across Groups							
Average		6.3	5.8	2.6	2.1	4.3	5.8
Standard Error		2.3	3.3	0.3	0.4	0.9	1.2
Min		2.1	0.3	2.1	1.5	2.3	3.7
Max		9.4	11.4	3.4	2.7	6.2	8.5
Range		7.4	11.1	1.3	1.2	3.9	4.8
ANOVA p-values							
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**N.S.**	**N.S.**	**<0.001**	**<0.001**
- Variety x Location		**0.018**	**0.048**	**N.S.**	**N.S.**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 8. By location mean biomass and weed suppression of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Biomass (DM ton/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Bates RS4	Cereal Rye	2.9 A	4.6 A	5723 A	9141 A	0 PQ	1 O	7 K-M	8 IJ
Elbon	Cereal Rye	1.8 DE	3.5 B-E	3528 DE	7029 B-E	1 N-Q	5 K-N	5 LM	10 IJ
NF95319B	Cereal Rye	2.9 A	3.9 A-C	5723 A	7819 A-C	1 O-Q	1 O	5 LM	15 H-J
NF97325	Cereal Rye	2.3 BC	4.0 AB	4651 BC	8007 AB	0 Q	4 L-O	7 K-M	15 H-J
NF99362	Cereal Rye	2.3 BC	3.9 A-C	4599 BC	7740 A-C	0 O-Q	5 K-N	5 LM	10 IJ
TriCal Ray	Cereal Rye	2.5 A-C	3.6 B-D	4939 A-C	7123 B-D	0 Q	2 NO	3 M	15 H-J
Yankee	Cereal Rye	1.2 G-N	3.0 B-F	2326 G-N	6094 B-F	1 O-Q	4 M-O	12 H-L	15 H-J
TriCal EXP 20T06	Triticale	2.4 A-C	3.7 A-D	4782 A-C	7380 A-D	2 M-Q	4 L-O	7 K-M	10 IJ
TriCal EXP 21T01	Triticale	2.1 CD	2.7 D-H	4155 CD	5482 D-H	0 O-Q	5 K-N	8 I-M	12 IJ
TriCal Flex 719	Triticale	1.4 E-K	2.5 F-H	2874 E-K	5012 F-H	6 K-Q	22 I-M	15 F-L	23 F-J
TriCal Surge	Triticale	1.5 E-H	2.3 F-I	3057 E-H	4505 F-I	25 E-K	13 G-L	10 I-M	18 G-J
TN1902	Wheat	1.3 E-L	2.6 E-H	2535 E-L	5179 E-H	10 J-Q	11 J-N	15 F-L	20 G-J
Legumes									
FIXatioN	Clover, Balansa	0.8 L-O	0.6 M-Q	1620 L-O	1165 M-Q	75 AB	96 AB	83 A	77 A
Paradana	Clover, Balansa	0.6 O	0.2 PQ	1202 O	392 PQ	68 A-C	97 AB	80 AB	88 A
Taipan	Clover, Balansa	0.6 O	0.1 Q	1280 O	282 Q	90 A	95 AB	70 A-C	80 A
Viper	Clover, Balansa	1.1 H-O	0.3 O-Q	2143 H-O	638 O-Q	93 A	100 A	85 A	86 A
Frosty	Clover, Berseem	1.0 I-O	1.4 I-N	2038 I-O	2759 I-N	20 C-H	43 A-F	33 A-H	27 E-J
Lightning	Clover, Berseem	1.2 F-M	1.0 K-Q	2456 F-M	2075 K-Q	33 A-F	65 A-D	37 A-G	40 D-G
*UF_CC_17	Clover, Crimson	0.6 O	0.4 O-Q	1176 O	716 O-Q	20 C-I	31 C-G	47 A-E	67 A-C
Dixie	Clover, Crimson	0.7 NO	1.2 J-O	1333 NO	2435 J-O	27 C-H	29 C-H	23 C-J	37 D-H
Kentucky Pride	Clover, Crimson	0.8 M-O	1.1 K-Q	1516 M-O	2148 K-Q	23 B-G	18 E-K	27 B-H	30 E-I
GO-PER-12	Clover, Persian	1.0 K-O	0.6 M-Q	1908 K-O	1244 M-Q	45 A-E	48 A-F	40 A-E	47 C-E
Dynamite	Clover, Red	0.8 L-O	0.7 M-Q	1542 L-O	1375 M-Q	41 A-E	63 A-E	47 A-E	43 D-F
Q (FL24D)	Clover, Red	0.8 L-O	0.6 M-Q	1672 L-O	1113 M-Q	27 B-F	42 A-F	40 A-E	53 B-D
*UF_WC_LateOcoee	Clover, White	0.7 NO	0.2 PQ	1411 NO	350 PQ	88 A	97 AB	47 A-E	67 A-C
*UF_WC_ML17	Clover, White	0.7 NO	0.2 PQ	1333 NO	392 PQ	80 AB	97 AB	63 A-D	67 A-C
AU Merit	Vetch, Hairy	1.0 K-O	0.9 L-Q	1934 K-O	1772 L-Q	16 D-I	25 D-I	10 H-L	8 IJ
Patagonia	Vetch, Hairy	0.9 K-O	0.9 L-Q	1881 K-O	1772 L-Q	33 C-I	51 A-E	27 D-J	17 H-J
WinterKing	Vetch, Hairy	1.2 F-M	1.1 J-P	2456 F-M	2242 J-P	56 A-D	73 A-C	8 J-M	7 J
Survivor	Winter Pea	1.5 E-J	1.5 I-M	2953 E-J	3031 I-M	53 A-D	51 A-F	12 G-L	15 H-J
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	0.8 L-O	1.0 K-Q	1699 L-O	1986 K-Q	5 H-N	18 E-K	20 E-K	10 IJ
Aerifi	Radish	0.9 L-O	0.3 O-Q	1803 L-O	523 O-Q	14 E-J	23 D-I	53 A-E	83 A
CCS-779	Radish	0.8 L-O	1.0 K-Q	1672 L-O	1991 K-Q	10 F-L	32 B-G	40 A-G	67 A-C
Driller	Radish	0.9 L-O	0.5 N-Q	1829 L-O	909 N-Q	12 G-N	17 F-K	37 A-F	70 AB
FragiBlaster	Radish	1.1 G-O	0.8 M-Q	2169 G-O	1615 M-Q	9 F-L	22 D-J	18 E-K	40 D-G
Jackpot	Turnip	0.7 NO	0.6 M-Q	1437 NO	1213 M-Q	7 F-M	22 D-I	20 E-K	22 F-J
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.7 AB	3.7 A-C	5373 AB	7474 A-C	7 I-O	8 I-N	12 H-L	12 IJ
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	2.4 A-C	2.7 D-H	4845 A-C	5493 D-H	3 K-Q	5 K-N	3 M	5 J
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	1.6 E-G	3.0 C-G	3157 E-G	5942 C-G	4 J-P	11 G-L	8 I-M	27 E-J
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	1.7 D-F	2.0 G-J	3361 D-F	4092 G-J	21 F-L	6 J-N	12 LM	13 IJ
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.8 L-O	2.2 F-I	1584 L-O	4448 F-I	2 N-Q	10 H-M	18 E-K	25 E-J
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	1.0 J-O	1.8 H-L	1965 J-O	3622 H-L	4 L-Q	3 L-O	12 G-L	15 H-J
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	1.5 E-I	1.9 H-K	2995 E-I	3773 H-K	4 N-Q	7 I-N	23 C-J	27 E-J
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	0.9 L-O	0.9 L-Q	1787 L-O	1787 L-Q	33 F-M	22 E-K	37 C-I	47 C-E

Table 8. cont.

Summary Statistics									
		Biomass (DM tons/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
Variety	Common Name	Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Average		2.0	3.4	4074	6709	4	6	8	14
Min		1.2	2.3	2326	4505	0	1	3	8
Max		2.9	4.6	5723	9141	25	22	15	23
Range		1.7	2.3	3397	4636	25	21	12	15
Legumes									
Average		0.9	0.7	1770	1439	49	62	43	47
Min		0.6	0.1	1176	282	16	18	8	7
Max		1.5	1.5	2953	3031	93	100	85	88
Range		0.9	1.4	1777	2749	77	82	77	82
Brassicas									
Average		0.9	0.7	1768	1373	10	22	31	49
Min		0.7	0.3	1437	523	5	17	18	10
Max		1.1	1.0	2169	1991	14	32	53	83
Range		0.4	0.7	732	1469	9	16	35	73
Mixes									
Average		1.6	2.3	3133	4579	10	9	16	21
Min		0.8	0.9	1584	1787	2	3	3	5
Max		2.7	3.7	5373	7474	33	22	37	47
Range		1.9	2.8	3789	5686	31	19	33	42
Across Groups									
Average		1.3	1.7	2646	3438	24	32	27	34
Standard Error		0.7	1.3	1350	2617	28	32	23	26
Min		0.6	0.1	1176	282	0	1	3	5
Max		2.9	4.6	5723	9141	93	100	85	88
Range		2.3	4.4	4547	8859	93	99	82	83
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	N.S.	<0.001	N.S.	<0.001	<0.001	<0.001	<0.001
- Variety x Location		<0.001	<0.001	<0.001	<0.001	0.025	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 9. By location mean cover and height of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr[§]	May[‡‡]	Dec	Feb	Apr	May
Cereals									
Bates RS4	Cereal Rye	86 A-D	72 A-F	100 A	100	11 BC	8 BC	50 AB	66 A
Elbon	Cereal Rye	78 A-H	57 G-S	100 A	100	9 D-F	5 D-F	34 FG	66 A
NF95319B	Cereal Rye	89 AB	74 A-D	100 A	100	12 A	8 B	52 AB	67 A
NF97325	Cereal Rye	85 A-E	74 A-C	100 A	100	10 B-E	7 BC	50 AB	65 A
NF99362	Cereal Rye	80 A-G	62 B-P	100 A	100	10 B-E	6 DE	38 EF	65 A
TriCal Ray	Cereal Rye	87 A-C	70 A-I	100 A	100	11 BC	8 B	50 AB	64 A
Yankee	Cereal Rye	89 AB	66 A-K	100 A	100	10 C-E	6 DE	18 K-M	51 B
TriCal EXP 20T06	Triticale	92 A	76 AB	100 A	100	11 AB	10 A	29 G-I	45 B-D
TriCal EXP 21T01	Triticale	83 A-F	70 A-H	100 A	100	11 BC	11 A	25 IJ	39 D-F
TriCal Flex 719	Triticale	80 A-G	60 C-Q	100 A	100	9 E-G	4 E-H	19 JK	33 F-I
TriCal Surge	Triticale	72 A-K	62 B-O	100 A	100	11 BC	7 B-D	21 JK	41 C-E
TN1902	Wheat	74 A-I	68 A-J	100 A	100	10 B-E	5 E-G	18 KL	34 F-H
Legumes									
FIXatioN	Clover, Balansa	62 G-M	47 Q-S	100 A	100	3 M	3 H	7 R-V	21 M-Q
Paradana	Clover, Balansa	53 K-M	45 R-T	100 A	100	3 M	3 H	6 T-V	14 Q-S
Taipan	Clover, Balansa	43 M	47 Q-S	100 A	100	3 M	3 H	7 R-V	15 P-S
Viper	Clover, Balansa	47 LM	54 J-S	100 A	100	3 M	3 H	8 Q-V	15 P-S
Frosty	Clover, Berseem	58 H-M	58 F-R	100 A	100	3 M	3 GH	12 N-S	24 K-N
Lightning	Clover, Berseem	59 H-M	51 M-S	100 A	100	3 M	3 GH	12 O-T	23 K-N
*UF_CC_17	Clover, Crimson	59 H-M	48 O-S	100 A	100	3 M	3 H	7 R-V	17 N-Q
Dixie	Clover, Crimson	65 E-L	55 I-S	100 A	100	3 M	3 H	7 S-V	22 L-O
Kentucky Pride	Clover, Crimson	63 F-M	59 E-R	100 A	100	3 M	3 H	7 R-V	21 M-Q
GO-PER-12	Clover, Persian	57 I-M	59 D-R	100 A	100	3 M	3 H	10 P-U	18 N-Q
Dynamite	Clover, Red	58 I-M	52 K-S	100 A	100	3 M	3 H	8 R-V	18 N-Q
Q (FL24D)	Clover, Red	53 J-M	52 L-S	100 A	100	3 M	3 GH	7 S-V	16 O-R
*UF_WC_LateOcoee	Clover, White	58 I-M	47 P-S	100 A	100	3 M	3 H	5 UV	9 S
*UF_WC_ML17	Clover, White	44 M	43 ST	100 A	100	3 M	3 H	5 V	10 RS
AU Merit	Vetch, Hairy	73 A-J	66 A-L	100 A	100	5 KL	3 GH	12 O-T	27 H-M
Patagonia	Vetch, Hairy	65 E-L	65 B-M	100 A	100	4 LM	4 F-H	12 M-R	26 I-M
WinterKing	Vetch, Hairy	78 A-H	67 A-J	100 A	100	6 I-K	5 D-F	16 K-P	25 J-M
Survivor	Winter Pea	84 A-E	71 A-H	100 A	100	6 J-L	3 GH	14 L-Q	30 G-K
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	70 B-K	46 RS	100 A	100	6 I-K	5 E-G	32 GH	41 C-E
Aerifi	Radish	74 A-I	60 C-Q	100 A	100	8 F-H	6 CD	28 HI	22 L-P
CCS-779	Radish	66 D-L	62 B-N	100 A	100	7 G-I	8 BC	33 F-H	35 E-G
Driller	Radish	81 A-G	60 C-R	100 A	100	9 D-F	6 CD	28 HI	28 G-L
FragiBlaster	Radish	77 A-I	50 N-S	100 A	100	7 G-I	6 DE	32 GH	31 G-J
Jackpot	Turnip	50 LM	31 T	100 A	100	6 I-K	5 D-F	29 G-I	42 CD
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	89 AB	80 A	100 A	100	10 B-D	7 B-D	53 A	67 A
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	82 A-F	75 AB	100 A	100	11 A-C	6 CD	47 BC	66 A
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	73 A-K	68 A-I	100 A	100	9 E-G	6 DE	44 CD	64 A
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	82 A-F	72 A-G	100 A	100	7 G-I	5 D-F	41 DE	67 A
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	76 A-I	56 H-S	100 A	100	8 F-H	3 H	16 K-O	44 CD
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	83 A-F	70 A-H	100 A	100	9 E-G	4 GH	16 K-P	47 BC
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	71 B-K	73 A-E	100 A	100	7 H-J	3 H	18 KL	30 G-K
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	67 C-L	60 C-Q	100 A	100	7 G-I	6 DE	17 K-N	29 G-K

Table 9. cont.

Summary Statistics									
		Canopy Cover (%)				Height (in)			
Variety	Common Name	Dec	Feb	Apr§	May‡‡	Dec	Feb	Apr	May
Cereals									
Average		83	68	100	100	10	7	34	53
Min		72	57	100	100	9	4	18	33
Max		92	76	100	100	12	11	52	67
Range		20	19	0	0	4	6	34	35
Legumes									
Average		60	55	100	100	4	3	9	20
Min		43	43	100	100	3	3	5	9
Max		84	71	100	100	6	5	16	30
Range		41	27	0	0	3	2	11	21
Brassicas									
Average		70	52	100	100	7	6	30	33
Min		50	31	100	100	6	5	28	22
Max		81	62	100	100	9	8	33	42
Range		31	31	0	0	3	3	5	20
Mixes									
Average		78	69	100	100	9	5	31	52
Min		67	56	100	100	7	3	16	29
Max		89	80	100	100	11	7	53	67
Range		23	24	0	0	4	4	37	38
Across Groups									
Average		71	60	100	100	7	5	23	36
Standard Error		13	11	0	0	3	2	15	19
Min		43	31	100	100	3	3	5	9
Max		92	80	100	100	12	11	53	67
Range		49	49	0	0	9	8	48	58
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	<0.001	-	0.003	0.003	<0.001	<0.001
- Variety x Location		N.S.	<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, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 10. By location mean nitrogen content and estimated nitrogen release of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Bates RS4	Cereal Rye	1.3 OP	0.9 O-R	3 L-N	7 J-M	15 G-K	-2 PQ	-3 P	-3 L-N
Elbon	Cereal Rye	1.5 M-P	0.9 O-R	4 K-N	7 J-M	14 H-K	-1 O-Q	-1 OP	0 L-N
NF95319B	Cereal Rye	1.1 P	0.7 R	0 N	1 M	5 K	-3 Q	-6 P	-12 N
NF97325	Cereal Rye	1.4 N-P	0.8 P-R	1 MN	4 K-M	9 I-K	-2 O-Q	-3 OP	-6 MN
NF99362	Cereal Rye	1.5 M-P	0.8 QR	3 L-N	7 J-M	14 G-K	-3 Q	-4 P	-8 MN
TriCal Ray	Cereal Rye	1.3 OP	0.8 O-R	1 MN	2 LM	8 JK	-2 PQ	-3 P	-3 MN
Yankee	Cereal Rye	2.1 H-L	1.2 M-Q	9 H-L	14 G-K	23 E-J	1 N-Q	2 M-P	6 J-N
TriCal EXP 20T06	Triticale	1.4 M-P	1.2 M-Q	4 K-N	9 I-M	19 F-K	2 N-Q	4 L-P	11 I-N
TriCal EXP 21T01	Triticale	1.5 M-P	1.3 L-O	5 J-N	11 H-M	20 F-K	3 L-Q	7 I-P	14 I-M
TriCal Flex 719	Triticale	1.9 J-M	1.3 L-P	8 H-M	14 G-L	22 E-K	3 M-Q	5 K-P	9 I-N
TriCal Surge	Triticale	1.7 L-O	1.1 N-R	6 J-N	11 H-M	19 G-K	0 O-Q	1 N-P	4 K-N
TN1902	Wheat	1.8 K-N	1.3 L-O	9 H-L	14 G-K	23 E-J	4 K-Q	9 I-P	17 H-M
Legumes									
FIXatioN	Clover, Balansa	2.4 F-I	2.8 E-H	9 H-L	14 G-K	22 F-K	12 G-O	18 F-O	22 F-L
Paradana	Clover, Balansa	2.6 D-G	2.7 F-H	7 I-N	12 H-M	18 G-K	6 H-Q	10 G-P	12 H-N
Taipan	Clover, Balansa	2.4 E-I	2.4 HI	7 I-N	12 H-M	18 G-K	4 J-Q	6 I-P	7 I-N
Viper	Clover, Balansa	2.2 G-K	2.6 F-H	9 F-L	16 F-J	24 D-J	9 H-Q	13 G-P	17 G-M
Frosty	Clover, Berseem	3.1 A-C	3.1 C-F	16 B-G	27 B-F	39 B-E	28 A-C	43 A-C	55 A-C
Lightning	Clover, Berseem	2.9 B-E	3.1 D-G	18 A-C	30 A-C	44 A-C	20 C-H	31 C-G	40 C-H
*UF_CC_17	Clover, Crimson	2.4 F-J	2.4 HI	6 I-N	11 H-M	16 G-K	5 J-Q	7 I-P	9 I-N
Dixie	Clover, Crimson	2.4 F-I	2.5 HI	8 H-M	13 G-L	19 F-K	16 C-L	24 C-K	30 C-J
Kentucky Pride	Clover, Crimson	2.5 E-H	2.6 GH	10 E-L	16 E-J	24 D-J	17 C-K	25 C-J	32 C-I
GO-PER-12	Clover, Persian	2.4 F-I	3.3 B-D	10 E-L	17 D-J	25 D-J	15 D-M	23 D-L	29 D-K
Dynamite	Clover, Red	2.8 C-F	3.4 B-D	9 F-L	15 F-J	23 E-J	15 D-M	23 D-L	29 D-J
Q (FL24D)	Clover, Red	2.5 E-H	3.4 B-D	11 D-K	17 D-J	26 D-I	13 E-N	20 E-M	26 E-K
*UF_WC_LateOcoee	Clover, White	2.3 G-K	3.8 AB	6 I-N	10 H-M	15 G-K	3 M-Q	4 L-P	5 J-N
*UF_WC_ML17	Clover, White	2.2 G-K	3.6 B-D	6 I-N	10 I-M	15 G-K	6 J-Q	9 I-P	11 I-N
AU Merit	Vetch, Hairy	3.4 A	4.2 A	18 A-D	29 A-C	43 A-C	26 A-D	40 A-D	51 A-D
Patagonia	Vetch, Hairy	3.3 AB	4.1 A	17 A-E	28 B-D	41 B-D	25 B-F	38 A-E	48 A-E
WinterKing	Vetch, Hairy	3.4 A	4.2 A	13 B-I	21 B-H	31 C-G	35 AB	52 AB	66 AB
Survivor	Winter Pea	3.0 A-D	3.6 BC	24 A	40 A	58 A	38 A	57 A	72 A
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	2.2 G-K	1.6 J-M	7 I-N	13 H-L	19 F-K	5 J-Q	8 I-P	11 I-N
Aerifi	Radish	2.4 F-I	2.1 IJ	9 F-L	16 F-J	23 E-J	3 L-Q	5 K-P	6 J-N
CCS-779	Radish	2.3 F-K	1.8 J-L	8 H-M	13 H-L	19 F-K	7 I-Q	11 H-P	15 H-M
Driller	Radish	2.3 F-K	2.0 I-K	9 G-L	15 G-K	22 E-K	2 M-Q	4 L-P	5 J-N
FragiBlaster	Radish	2.2 G-K	1.5 K-N	12 B-J	20 C-I	30 C-H	4 K-Q	7 J-P	9 I-N
Jackpot	Turnip	2.3 F-K	1.6 K-N	7 I-N	12 H-M	18 G-K	3 M-Q	5 K-P	7 J-N
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.0 I-L	1.7 J-L	16 B-F	29 A-C	45 A-C	17 C-K	29 C-H	42 B-G
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	2.2 G-K	2.4 HI	17 A-D	32 AB	49 AB	26 A-E	40 A-D	53 A-D
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	2.1 H-L	1.7 J-L	12 C-J	20 C-I	31 C-H	11 H-P	19 E-N	29 D-K
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	2.5 E-H	2.6 H	19 AB	29 A-C	43 A-C	28 A-D	42 A-D	54 A-C
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.4 F-I	2.1 IJ	9 H-L	14 G-K	21 F-K	19 C-I	29 C-H	39 C-H
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	2.8 C-F	2.8 F-H	12 B-J	20 C-I	30 C-H	24 B-G	35 B-F	46 B-F
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	2.4 F-I	1.8 JK	17 B-E	27 B-E	41 B-D	13 F-N	20 E-M	28 D-K
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	3.2 A-C	3.3 C-E	15 B-H	24 B-G	36 B-F	17 C-J	26 C-I	34 C-I

Table 10. cont.

Summary Statistics									
		Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
Variety	Common Name	Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Average		1.5	1.0	4	9	16	0	1	2
Min		1.1	0.7	0	1	5	-3	-6	-12
Max		2.1	1.3	9	14	23	4	9	17
Range		1.0	0.7	8	13	18	7	15	29
Legumes									
Average		2.7	3.2	11	19	28	16	24	31
Min		2.2	2.4	6	10	15	3	4	5
Max		3.4	4.2	24	40	58	38	57	72
Range		1.3	1.8	18	30	44	35	52	67
Brassicas									
Average		2.3	1.8	9	15	22	4	7	9
Min		2.2	1.5	7	12	18	2	4	5
Max		2.4	2.1	12	20	30	7	11	15
Range		0.2	0.5	5	8	12	5	7	9
Mixes									
Average		2.4	2.3	15	25	37	19	30	41
Min		2.0	1.7	9	14	21	11	19	28
Max		3.2	3.3	19	32	49	28	42	54
Range		1.2	1.6	10	18	28	17	23	26
Across Groups									
Average		2.3	2.3	10	16	25	11	17	22
Standard Error		0.6	1.0	5	9	12	11	16	21
Min		1.1	0.7	0	1	5	-3	-6	-12
Max		3.4	4.2	24	40	58	38	57	72
Range		2.4	3.6	24	39	53	41	62	85
ANOVA p-values									
- 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		**0.017**	**0.008**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 11-a. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	CP[¶]		ADF[¶]		NDF[¶]	
		Apr	May	Apr	May	Apr	May
Cereals							
Bates RS4	Cereal Rye	8.3 OP	5.8 O-R	34.8 A-C	39.8 A-D	64.1 AB	71.1 A
Elbon	Cereal Rye	9.3 M-P	5.4 O-R	31.1 C-G	40.6 A-C	60.3 BC	71.5 A
NF95319B	Cereal Rye	6.6 P	4.1 R	37.3 A	42.0 A	66.3 A	70.9 A
NF97325	Cereal Rye	8.5 N-P	5.2 P-R	35.4 AB	39.6 A-D	65.3 AB	70.3 A
NF99362	Cereal Rye	9.1 M-P	4.7 QR	34.3 A-D	41.4 AB	64.6 AB	72.3 A
TriCal Ray	Cereal Rye	7.9 OP	5.3 O-R	35.4 AB	40.6 A-C	65.8 AB	69.6 A
Yankee	Cereal Rye	12.9 H-L	7.2 M-Q	23.7 N-T	41.0 AB	48.4 E-H	73.0 A
TriCal EXP 20T06	Triticale	9.0 M-P	7.2 M-Q	29.2 E-K	34.5 E-I	56.3 CD	62.3 B
TriCal EXP 21T01	Triticale	9.2 M-P	8.2 L-O	27.3 G-N	33.6 G-J	52.3 D-F	62.6 B
TriCal Flex 719	Triticale	11.7 J-M	8.1 L-P	25.1 L-S	36.9 B-H	50.5 EF	70.7 A
TriCal Surge	Triticale	10.4 L-O	6.9 N-R	26.2 I-Q	37.5 A-H	52.1 D-F	69.4 A
TN1902	Wheat	11.5 K-N	8.2 L-O	23.1 P-T	29.6 J-M	44.5 G-J	57.0 B-D
Legumes							
FIXatioN	Clover, Balansa	15.1 F-I	17.7 E-H	24.7 L-S	24.3 NO	40.3 J-O	30.1 KL
Paradana	Clover, Balansa	16.1 D-G	17.0 F-H	24.2 M-T	25.9 L-O	38.0 K-O	31.7 J-L
Taipan	Clover, Balansa	15.3 E-I	15.1 HI	24.7 L-S	26.9 L-O	40.1 J-O	33.0 JK
Viper	Clover, Balansa	13.8 G-K	16.5 F-H	27.1 H-O	25.9 L-O	42.8 H-L	32.2 JK
Frosty	Clover, Berseem	19.2 A-C	19.6 C-F	21.9 ST	26.3 M-O	31.6 Q-S	34.2 JK
Lightning	Clover, Berseem	18.2 B-E	19.4 D-G	23.7 N-T	27.1 L-O	34.9 O-S	33.7 JK
*UF_CC_17	Clover, Crimson	14.7 F-J	15.2 HI	25.9 J-R	33.9 F-J	38.5 K-O	40.9 I
Dixie	Clover, Crimson	14.9 F-I	15.4 HI	23.1 P-T	33.9 F-J	35.4 N-R	41.3 HI
Kentucky Pride	Clover, Crimson	15.7 E-H	16.5 GH	26.3 I-P	31.3 I-L	35.5 N-R	37.8 IJ
GO-PER-12	Clover, Persian	14.9 F-I	20.7 B-D	24.8 L-S	19.2 PQ	39.0 J-O	24.6 LM
Dynamite	Clover, Red	17.3 C-F	21.0 B-D	24.0 M-T	22.7 OP	37.4 L-P	29.8 KL
Q (FL24D)	Clover, Red	15.7 E-H	21.1 B-D	25.4 K-S	22.4 OP	38.3 K-O	28.1 KL
*UF_WC_LateOcoee	Clover, White	14.2 G-K	23.6 AB	26.2 I-P	16.1 Q	42.1 I-L	18.3 M
*UF_WC_ML17	Clover, White	13.5 G-K	22.2 B-D	27.2 G-N	17.5 Q	43.2 H-K	20.8 M
AU Merit	Vetch, Hairy	21.3 A	26.1 A	22.3 Q-T	24.2 NO	29.7 S	28.8 KL
Patagonia	Vetch, Hairy	20.9 AB	25.7 A	22.1 R-T	25.0 M-O	32.0 P-S	30.0 KL
WinterKing	Vetch, Hairy	21.4 A	26.5 A	22.5 P-T	22.9 OP	30.2 RS	27.8 KL
Survivor	Winter Pea	18.9 A-D	22.5 BC	20.5 T	23.1 N-P	30.7 Q-S	29.9 KL
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	13.5 G-K	10.0 J-M	27.9 F-M	39.8 A-D	39.3 J-O	51.2 D-G
Aerifi	Radish	14.8 F-I	12.9 IJ	28.2 F-L	39.3 A-D	41.5 J-M	50.4 E-G
CCS-779	Radish	14.5 F-K	11.0 J-L	30.4 D-H	39.0 A-E	43.2 H-K	48.5 FG
Driller	Radish	14.4 F-K	12.4 I-K	29.9 E-I	35.9 C-I	42.0 I-L	47.4 GH
FragiBlaster	Radish	13.9 G-K	9.6 K-N	29.9 E-I	38.7 A-F	41.5 J-M	49.1 E-G
Jackpot	Turnip	14.4 F-K	9.8 K-N	27.8 F-M	40.0 A-D	39.7 J-O	51.6 C-G
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	12.3 I-L	10.7 J-L	33.0 B-E	37.7 A-G	53.4 DE	57.5 B-D
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	14.0 G-K	14.8 HI	31.6 B-F	35.5 D-I	50.8 D-F	55.2 C-E
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	13.0 H-L	10.6 J-L	29.7 E-J	39.5 A-D	49.3 E-G	57.8 BC
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	15.4 E-H	16.4 H	29.5 E-J	33.5 G-J	47.4 F-I	49.7 E-G
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	14.9 F-I	13.0 IJ	22.9 P-T	35.4 D-I	41.3 J-M	54.1 C-F
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	17.4 C-F	17.4 F-H	22.6 P-T	32.6 H-K	40.7 J-N	49.3 E-G
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	14.9 F-I	11.2 JK	22.7 P-T	35.6 D-I	38.8 J-O	53.3 C-G
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	19.8 A-C	20.5 C-E	23.3 O-T	27.9 K-N	36.0 M-Q	39.0 IJ

Table 11-a. cont.

Summary Statistics							
		CP¶		ADF¶		NDF¶	
Variety	Common Name	Apr	May	Apr	May	Apr	May
Cereals							
Average		9.5	6.4	30.2	38.1	57.5	68.4
Min		6.6	4.1	23.1	29.6	44.5	57.0
Max		12.9	8.2	37.3	42.0	66.3	73.0
Range		6.3	4.1	14.2	12.4	21.8	16.0
Legumes							
Average		16.7	20.1	24.3	24.9	36.6	30.7
Min		13.5	15.1	20.5	16.1	29.7	18.3
Max		21.4	26.5	27.2	33.9	43.2	41.3
Range		7.9	11.5	6.7	17.8	13.5	23.0
Brassicas							
Average		14.3	11.0	29.0	38.8	41.2	49.7
Min		13.5	9.6	27.8	35.9	39.3	47.4
Max		14.8	12.9	30.4	40.0	43.2	51.6
Range		1.3	3.3	2.6	4.2	3.9	4.2
Mixes							
Average		15.2	14.3	26.9	34.7	44.7	52.0
Min		12.3	10.6	22.6	27.9	36.0	39.0
Max		19.8	20.5	33.0	39.5	53.4	57.8
Range		7.5	9.9	10.3	11.7	17.4	18.9
Across Groups							
Average		14.1	14.1	27.0	32.2	44.4	47.4
Standard Error		3.7	6.5	4.3	7.4	10.2	16.5
Min		6.6	4.1	20.5	16.1	29.7	18.3
Max		21.4	26.5	37.3	42.0	66.3	73.0
Range		14.8	22.4	16.7	25.9	36.6	54.6
ANOVA p-values							
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**N.S.**	**0.014**	**<0.001**	**<0.001**
- Variety x Location		**0.017**	**0.084**	**0.026**	**<0.001**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 11-b. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Bates RS4	Cereal Rye	1.9 N	0.1 T	2.1 N-P	1.6 R-U	4.7 A-H	6.6 D-M
Elbon	Cereal Rye	2.5 N	0.4 ST	2.3 H-O	1.7 Q-T	3.7 G-M	6.6 D-M
NF95319B	Cereal Rye	2.1 N	0.2 ST	1.8 P	1.2 U	5.4 A	7.0 D-I
NF97325	Cereal Rye	2.4 N	1.1 R-T	2.1 OP	1.6 R-U	4.9 A-E	6.8 D-J
NF99362	Cereal Rye	2.2 N	0.0 T	2.3 K-P	1.4 TU	4.6 A-H	6.7 D-L
TriCal Ray	Cereal Rye	2.1 N	0.7 R-T	2.1 N-P	1.5 S-U	5.0 A-C	7.2 C-G
Yankee	Cereal Rye	3.2 MN	1.9 R	3.2 A	2.2 G-N	2.5 O	6.4 E-N
TriCal EXP 20T06	Triticale	2.6 N	1.6 RS	2.2 L-P	1.8 M-S	3.1 J-O	5.2 O-R
TriCal EXP 21T01	Triticale	3.5 L-N	0.8 R-T	2.4 F-O	1.8 N-T	2.9 K-O	5.2 O-S
TriCal Flex 719	Triticale	2.8 N	0.7 R-T	2.7 A-K	2.0 K-R	2.6 NO	5.6 L-Q
TriCal Surge	Triticale	2.3 N	0.6 R-T	2.6 C-O	1.8 O-T	2.4 O	5.5 M-Q
TN1902	Wheat	3.1 MN	1.1 R-T	2.8 A-J	2.2 F-M	2.6 M-O	4.8 P-T
Legumes							
FIXatioN	Clover, Balansa	7.6 A-C	9.0 DE	3.0 A-C	2.1 H-P	3.6 H-N	5.0 P-T
Paradana	Clover, Balansa	8.2 AB	9.6 B-D	3.0 A-D	2.5 A-I	3.7 F-L	5.5 K-Q
Taipan	Clover, Balansa	7.5 A-D	8.9 DE	3.0 A-D	2.2 E-O	3.7 G-L	5.9 G-Q
Viper	Clover, Balansa	6.9 A-H	9.0 C-E	2.8 A-J	2.2 D-M	4.3 B-I	5.5 J-Q
Frosty	Clover, Berseem	7.7 A-C	9.1 C-E	2.8 A-J	2.6 A-E	4.0 C-K	5.0 P-T
Lightning	Clover, Berseem	8.2 AB	8.9 DE	2.8 A-J	2.4 C-J	3.8 E-K	5.2 O-R
*UF_CC_17	Clover, Crimson	7.1 A-E	6.7 H-K	2.6 B-N	2.1 J-P	4.7 A-G	7.5 B-E
Dixie	Clover, Crimson	6.9 A-G	7.0 G-J	2.7 A-L	1.9 L-R	3.9 D-K	7.3 C-F
Kentucky Pride	Clover, Crimson	7.9 A-C	7.0 G-J	2.4 E-O	2.0 J-Q	4.6 A-H	6.8 D-K
GO-PER-12	Clover, Persian	7.8 A-C	10.5 A-C	2.7 A-L	2.5 A-H	3.8 F-L	3.2 U
Dynamite	Clover, Red	7.4 A-D	8.5 D-F	2.9 A-G	2.6 A-D	3.7 F-L	4.0 S-U
Q (FL24D)	Clover, Red	7.5 A-D	8.7 DE	2.7 A-L	2.6 A-F	4.0 C-K	4.1 R-U
*UF_WC_LateOcoee	Clover, White	7.0 A-F	11.4 A	2.9 A-E	2.7 A-C	3.9 C-K	3.1 U
*UF_WC_ML17	Clover, White	6.8 A-H	11.0 AB	2.7 A-L	2.6 A-F	4.2 C-J	3.4 U
AU Merit	Vetch, Hairy	7.3 A-E	8.4 D-G	2.7 A-L	2.8 A	4.5 A-H	5.3 N-Q
Patagonia	Vetch, Hairy	7.2 A-E	8.1 D-H	2.8 A-I	2.6 A-F	3.9 D-K	5.3 N-Q
WinterKing	Vetch, Hairy	8.2 AB	9.0 DE	2.8 A-K	2.8 A	4.5 A-H	4.8 Q-T
Survivor	Winter Pea	8.3 A	9.1 C-E	2.8 A-H	2.5 A-G	3.2 J-O	4.0 TU
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	6.2 C-K	4.3 O-Q	2.4 G-O	2.3 C-K	4.9 A-D	9.1 A
Aerifi	Radish	6.6 B-I	6.5 I-L	2.4 G-O	1.6 R-U	4.9 A-E	9.1 A
CCS-779	Radish	6.4 C-K	6.4 I-M	2.2 M-P	1.7 P-T	5.4 A	8.6 AB
Driller	Radish	6.2 C-K	5.9 J-N	2.3 J-O	1.8 M-S	5.3 AB	7.6 B-D
FragiBlaster	Radish	6.4 C-J	5.0 M-P	2.3 K-P	1.6 R-U	5.3 AB	8.2 A-C
Jackpot	Turnip	5.7 E-K	5.2 L-P	2.7 B-M	2.4 B-J	4.8 A-F	9.3 A
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	5.3 F-K	3.9 PQ	2.3 I-O	1.9 M-S	4.6 A-H	6.6 D-M
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	5.2 H-L	3.5 Q	2.4 H-O	2.1 I-P	4.5 A-H	6.7 D-L
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	5.1 I-L	4.6 N-Q	2.5 D-O	1.6 R-U	4.5 A-H	7.0 D-H
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	5.9 D-K	5.7 J-O	2.5 D-O	2.2 F-M	4.5 A-H	5.9 H-P
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	4.7 J-M	5.8 J-N	3.0 A-C	2.3 D-L	2.9 K-O	5.8 I-Q
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	5.2 G-K	7.1 F-J	3.1 AB	2.6 A-F	2.7 L-O	5.3 N-Q
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	4.7 K-M	5.5 K-O	2.9 A-F	2.0 K-R	3.4 I-O	6.3 F-O
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	6.9 A-H	7.8 E-I	2.8 A-J	2.8 AB	3.9 D-K	5.4 N-Q

Table 11-b. cont.

Summary Statistics							
		Ash¶		Fat¶		Lignin¶	
Variety	Common Name	Apr	May	Apr	May	Apr†	May
Cereals							
Average		2.6	0.8	2.4	1.7	3.7	6.1
Min		1.9	0.0	1.8	1.2	2.4	4.8
Max		3.5	1.9	3.2	2.2	5.4	7.2
Range		1.6	1.9	1.3	1.0	3.1	2.4
Legumes							
Average		7.5	8.9	2.8	2.4	4.0	5.1
Min		6.8	6.7	2.4	1.9	3.2	3.1
Max		8.3	11.4	3.0	2.8	4.7	7.5
Range		1.6	4.7	0.6	0.9	1.5	4.4
Brassicas							
Average		6.2	5.5	2.4	1.9	5.1	8.7
Min		5.7	4.3	2.2	1.6	4.8	7.6
Max		6.6	6.5	2.7	2.4	5.4	9.3
Range		0.9	2.2	0.5	0.8	0.6	1.7
Mixes							
Average		5.4	5.5	2.7	2.2	3.9	6.1
Min		4.7	3.5	2.3	1.6	2.7	5.3
Max		6.9	7.8	3.1	2.8	4.6	7.0
Range		2.2	4.2	0.7	1.2	1.9	1.7
Across Groups							
Average		5.6	5.6	2.6	2.1	4.0	6.0
Standard Error		2.1	3.5	0.3	0.4	0.8	1.5
Min		1.9	0.0	1.8	1.2	2.4	3.1
Max		8.3	11.4	3.2	2.8	5.4	9.3
Range		6.4	11.4	1.3	1.6	3.1	6.2
ANOVA p-values							
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**N.S.**	**N.S.**	**<0.001**	**<0.001**
- Variety x Location		**0.018**	**0.048**	**N.S.**	**N.S.**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 12. By location mean biomass and weed suppression of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Biomass (DM ton/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Bates RS4	Cereal Rye	1.4 AB	2.6 A-D	2864 AB	5258 A-D	0 LM	0 I	0 I	0 H
Elbon	Cereal Rye	1.0 B-J	2.7 A-D	1944 B-J	5362 A-D	0 M	0 I	0 I	0 H
NF95319B	Cereal Rye	1.2 A-F	2.4 B-G	2420 A-F	4709 B-G	1 K-M	1 I	0 I	0 H
NF97325	Cereal Rye	1.3 A-D	2.6 A-D	2514 A-D	5143 A-D	2 H-M	2 HI	0 I	0 H
NF99362	Cereal Rye	0.9 C-J	2.0 D-J	1808 C-J	4082 D-J	0 K-M	2 HI	0 I	0 H
TriCal Ray	Cereal Rye	1.2 A-E	3.3 AB	2462 A-E	6575 AB	0 M	0 I	0 I	0 H
Yankee	Cereal Rye	0.5 J-Q	2.1 D-I	1019 J-Q	4186 D-I	0 LM	0 I	0 I	0 H
TriCal EXP 20T06	Triticale	1.2 A-E	2.5 A-F	2493 A-E	5002 A-F	0 LM	0 I	0 I	0 H
TriCal EXP 21T01	Triticale	1.1 A-G	2.3 C-H	2226 A-G	4557 C-H	2 H-M	0 I	0 I	0 H
TriCal Flex 719	Triticale	0.7 F-M	2.2 D-H	1458 F-M	4333 D-H	0 LM	0 I	0 I	0 H
TriCal Surge	Triticale	0.8 C-K	2.0 D-J	1625 C-K	4003 D-J	1 J-M	0 I	0 I	0 H
TN1902	Wheat	0.5 I-Q	1.4 H-N	1092 I-Q	2770 H-N	0 K-M	1 I	0 I	0 H
Legumes									
FIXatioN	Clover, Balansa	0.3 M-Q	0.7 L-P	502 M-Q	1312 L-P	63 A-C	55 A-D	43 C-E	27 D-G
Paradana	Clover, Balansa	0.2 M-Q	0.7 L-P	465 M-Q	1359 L-P	81 AB	72 A-C	67 A-D	42 CD
Taipan	Clover, Balansa	0.1 O-Q	0.6 M-P	293 O-Q	1134 M-P	88 A	59 A-C	93 AB	33 C-F
Viper	Clover, Balansa	0.3 L-Q	0.8 L-P	585 L-Q	1542 L-P	85 A	61 A-C	45 A-E	5 GH
Frosty	Clover, Berseem	0.6 H-P	1.4 H-N	1171 H-P	2723 H-N	15 D-G	12 EF	5 GH	2 H
Lightning	Clover, Berseem	0.6 G-O	1.2 I-O	1233 G-O	2320 I-O	37 C-E	10 EF	15 FG	2 H
*UF_CC_17	Clover, Crimson	0.6 G-O	1.6 E-L	1233 G-O	3198 E-L	25 D-H	22 D-F	8 GH	2 H
Dixie	Clover, Crimson	0.7 G-N	2.4 B-G	1333 G-N	4719 B-G	2 I-M	1 I	3 GH	0 H
Kentucky Pride	Clover, Crimson	0.8 D-L	1.8 D-K	1537 D-L	3590 D-K	2 I-M	5 F-H	4 GH	0 H
GO-PER-12	Clover, Persian	0.1 Q	0.3 OP	172 Q	549 OP	75 A-C	67 A-C	95 A	53 BC
Dynamite	Clover, Red	0.2 M-Q	0.9 K-P	496 M-Q	1814 K-P	35 C-F	8 FG	43 A-E	15 F-H
Q (FL24D)	Clover, Red	0.1 PQ	0.4 N-P	199 PQ	852 N-P	30 B-D	40 B-E	82 A-C	32 C-F
*UF_WC_LateOcoee	Clover, White	0.1 Q	0.1 P	120 Q	225 P	99 A	90 A	97 A	83 A
*UF_WC_ML17	Clover, White	0.1 Q	0.3 OP	120 Q	564 OP	90 A	83 AB	90 A-C	53 BC
AU Merit	Vetch, Hairy	1.0 A-I	1.4 H-N	2043 A-I	2754 H-N	5 F-K	3 G-I	3 HI	0 H
Patagonia	Vetch, Hairy	0.8 E-L	1.1 J-O	1505 E-L	2216 J-O	5 G-L	1 I	2 HI	0 H
WinterKing	Vetch, Hairy	0.8 C-K	1.5 F-L	1615 C-K	3099 F-L	8 D-I	6 F-H	2 HI	0 H
Survivor	Winter Pea	1.0 B-J	1.5 G-M	1960 B-J	2969 G-M	8 G-L	33 F-H	2 HI	2 H
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	0.3 K-Q	0.5 N-P	685 K-Q	936 N-P	4 H-M	2 HI	7 FG	17 E-H
Aerifi	Radish	0.2 N-Q	0.3 OP	455 N-Q	596 OP	2 H-M	7 F-H	42 C-E	40 CD
CCS-779	Radish	0.1 O-Q	0.3 OP	287 O-Q	596 OP	9 E-K	13 FG	40 B-E	38 C-E
Driller	Radish	0.1 PQ	0.1 P	225 PQ	277 P	4 I-M	38 C-E	78 A-C	73 AB
FragiBlaster	Radish	0.3 L-Q	0.5 N-P	591 L-Q	993 N-P	7 H-M	3 G-I	23 DE	22 D-H
Jackpot	Turnip	0.4 K-Q	0.5 N-P	747 K-Q	977 N-P	3 H-M	9 F-H	15 EF	17 E-H
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	1.3 A-C	3.2 A-C	2577 A-C	6418 A-C	2 I-M	2 G-I	23 GH	2 H
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	1.3 A-D	3.4 A	2519 A-D	6737 A	0 M	1 I	0 I	0 H
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	1.1 A-G	3.2 A-C	2226 A-G	6449 A-C	1 J-M	3 G-I	0 I	0 H
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	1.5 A	3.2 A-C	2979 A	6303 A-C	2 I-M	1 I	0 I	0 H
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.8 C-K	2.6 A-D	1625 C-K	5258 A-D	2 H-M	4 G-I	3 HI	0 H
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	0.9 C-J	1.9 D-J	1834 C-J	3747 D-J	6 D-J	2 G-I	2 HI	0 H
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	1.0 B-J	2.5 A-E	1970 B-J	5043 A-E	1 K-M	0 I	2 HI	2 H
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	1.1 A-H	1.5 G-M	2164 A-H	3026 G-M	4 H-M	0 I	0 I	0 H

Table 12. cont.

Summary Statistics									
		Biomass (DM tons/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
Variety	Common Name	Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Average		1.0	2.3	1994	4665	1	0	0	0
Min		0.5	1.4	1019	2770	0	0	0	0
Max		1.4	3.3	2864	6575	2	2	0	0
Range		0.9	1.9	1845	3805	3	2	0	0
Legumes									
Average		0.5	1.0	921	2052	42	35	39	19
Min		0.1	0.1	120	225	2	1	2	0
Max		1.0	2.4	2043	4719	99	90	97	83
Range		1.0	2.2	1923	4495	98	89	95	83
Brassicas									
Average		0.2	0.4	498	729	5	12	34	34
Min		0.1	0.1	225	277	2	2	7	17
Max		0.4	0.5	747	993	9	38	78	73
Range		0.3	0.4	523	716	7	37	72	57
Mixes									
Average		1.1	2.7	2237	5373	2	2	4	0
Min		0.8	1.5	1625	3026	0	0	0	0
Max		1.5	3.4	2979	6737	6	4	23	2
Range		0.7	1.9	1354	3711	6	4	23	2
Across Groups									
Average		0.7	1.6	1395	3188	18	16	21	13
Standard Error		0.4	1.0	860	2002	30	26	32	21
Min		0.1	0.1	120	225	0	0	0	0
Max		1.5	3.4	2979	6737	99	90	97	83
Range		1.4	3.3	2859	6512	99	90	97	83
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	N.S.	<0.001	N.S.	<0.001	<0.001	<0.001	<0.001
- Variety x Location		<0.001	<0.001	<0.001	<0.001	0.025	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 13. By location mean cover and height of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr[§]	May[‡‡]	Dec	Feb	Apr	May
Cereals									
Bates RS4	Cereal Rye	68 A-D	35 I-M	93 A-E	100	10 AB	7 BC	37 AB	63 A-D
Elbon	Cereal Rye	66 A-F	32 K-O	88 B-G	100	9 B-D	5 C-F	26 DE	56 DE
NF95319B	Cereal Rye	59 A-H	35 I-M	95 A-D	100	9 B-D	6 B-D	32 BC	60 B-E
NF97325	Cereal Rye	59 A-H	32 K-O	97 A-C	100	9 C-F	7 BC	33 A-C	57 C-E
NF99362	Cereal Rye	48 E-N	27 M-Q	92 A-F	100	8 D-F	5 D-F	28 CD	54 E
TriCal Ray	Cereal Rye	68 A-E	37 H-M	93 A-E	100	10 A-C	7 BC	34 AB	58 B-E
Yankee	Cereal Rye	58 A-I	32 K-O	85 D-I	100	9 B-D	5 E-G	15 J-N	34 G-J
TriCal EXP 20T06	Triticale	67 A-F	43 E-L	88 B-G	100	10 AB	7 B	23 D-G	39 FG
TriCal EXP 21T01	Triticale	78 A	51 D-H	87 C-H	100	11 A	9 A	22 E-H	35 F-I
TriCal Flex 719	Triticale	65 A-F	38 F-M	65 K-M	87	9 C-F	6 B-F	17 I-M	31 H-K
TriCal Surge	Triticale	53 B-K	34 I-N	80 F-K	100	10 A-D	7 B	18 F-K	30 I-L
TN1902	Wheat	49 D-M	30 L-P	78 G-K	90	7 F-H	5 E-G	15 J-N	25 K-O
Legumes									
FIXatioN	Clover, Balansa	28 N-P	13 QR	38 N-P	78	3 J	3 H	9 O-U	19 O-R
Paradana	Clover, Balansa	28 N-P	13 QR	32 OP	53	3 J	3 H	12 L-T	12 R-T
Taipan	Clover, Balansa	16 P	11 R	13 P	48	3 J	3 H	8 Q-U	13 R-T
Viper	Clover, Balansa	22 OP	14 QR	48 M-O	82	3 J	3 H	12 M-S	20 N-Q
Frosty	Clover, Berseem	40 H-O	38 G-M	93 A-E	100	3 J	3 H	13 L-Q	21 M-Q
Lightning	Clover, Berseem	36 J-P	34 J-N	92 A-E	100	3 J	3 H	12 M-S	22 M-P
*UF_CC_17	Clover, Crimson	53 B-K	51 D-H	83 E-J	97	3 J	3 H	14 K-Q	24 L-P
Dixie	Clover, Crimson	40 H-O	46 E-K	92 A-E	100	3 J	3 H	11 N-U	26 K-N
Kentucky Pride	Clover, Crimson	52 B-L	47 D-J	90 A-G	100	3 J	3 H	12 M-S	25 K-O
GO-PER-12	Clover, Persian	30 M-P	15 QR	17 P	38	3 J	3 H	6 S-U	13 RS
Dynamite	Clover, Red	33 K-P	18 O-R	57 L-N	85	3 J	3 H	9 P-U	18 P-R
Q (FL24D)	Clover, Red	37 J-O	14 QR	15 P	65	3 J	3 H	7 R-U	15 Q-S
*UF_WC_LateOcoee	Clover, White	24 OP	11 R	5 P	35	3 J	3 H	4 U	6 T
*UF_WC_ML17	Clover, White	30 M-P	16 P-R	27 OP	50	3 J	3 H	6 TU	10 ST
AU Merit	Vetch, Hairy	62 A-G	61 B-D	88 B-G	100	6 HI	6 B-F	12 L-R	26 K-N
Patagonia	Vetch, Hairy	69 A-C	75 AB	93 A-E	100	6 HI	6 B-F	15 J-O	23 L-P
WinterKing	Vetch, Hairy	62 A-G	56 C-E	98 AB	100	6 HI	6 B-E	14 J-P	25 K-O
Survivor	Winter Pea	77 A	79 A	87 B-G	100	6 G-I	5 E-G	17 H-M	28 J-M
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	47 F-N	20 N-R	70 H-L	87	6 HI	4 F-H	23 D-F	33 G-J
Aerifi	Radish	49 C-M	13 QR	37 N-P	67	6 I	3 H	14 J-O	21 N-Q
CCS-779	Radish	39 I-O	13 QR	23 P	42	6 I	3 H	15 J-N	21 N-Q
Driller	Radish	45 G-N	8 R	20 P	25	6 HI	3 H	14 J-Q	19 O-R
FragiBlaster	Radish	51 B-L	18 O-R	67 J-L	90	6 HI	3 H	17 G-L	26 K-N
Jackpot	Turnip	32 L-P	12 R	67 I-L	90	6 I	3 GH	24 D-F	37 F-H
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	60 A-G	46 E-K	93 A-E	100	8 D-F	5 E-G	39 A	67 A
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	56 B-J	49 D-I	98 AB	100	9 B-E	6 B-E	39 A	65 AB
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	60 A-H	51 D-G	98 AB	100	8 D-F	6 B-E	38 A	65 AB
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	60 A-G	61 B-D	98 AB	100	10 A-C	6 B-D	37 AB	63 A-C
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	59 A-H	34 I-N	97 A-C	100	8 E-G	5 D-F	17 G-L	41 F
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	59 A-I	51 D-H	100 A	100	9 B-E	6 B-F	21 E-I	37 F-H
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	62 A-G	53 D-F	97 A-C	100	8 E-G	5 D-F	19 F-J	32 H-K
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	69 AB	67 A-C	100 A	100	9 B-E	6 B-E	19 F-K	31 H-K

Table 13. cont.

Summary Statistics									
		Canopy Cover (%)				Height (in)			
Variety	Common Name	Dec	Feb	Apr§	May‡‡	Dec	Feb	Apr	May
Cereals									
Average		61	36	87	98	9	6	25	45
Min		48	27	65	87	7	5	15	25
Max		78	51	97	100	11	9	37	63
Range		30	24	32	13	4	4	22	37
Legumes									
Average		41	34	59	80	4	4	11	19
Min		16	11	5	35	3	3	4	6
Max		77	79	98	100	6	6	17	28
Range		61	68	93	65	3	3	13	21
Brassicas									
Average		44	14	47	67	6	3	18	26
Min		32	8	20	25	6	3	14	19
Max		51	20	70	90	6	4	24	37
Range		19	12	50	65	0	1	10	18
Mixes									
Average		61	52	98	100	9	6	29	50
Min		56	34	93	100	8	5	17	31
Max		69	67	100	100	10	6	39	67
Range		14	33	7	0	2	2	21	36
Across Groups									
Average		51	35	72	87	6	5	19	33
Standard Error		16	19	30	22	3	2	10	17
Min		16	8	5	25	3	3	4	6
Max		78	79	100	100	11	9	39	67
Range		62	72	95	75	8	6	34	61
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	<0.001	-	0.003	0.003	<0.001	<0.001
- Variety x Location		N.S.	<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, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 14. By location mean nitrogen content and estimated nitrogen release of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Bates RS4	Cereal Rye	1.4 T	1.0 S	2 K	4 L	7 K	-1 L	-1 K	0 K
Elbon	Cereal Rye	1.5 T	1.5 P-R	3 K	5 L	9 K	6 J-L	11 I-K	19 H-K
NF95319B	Cereal Rye	1.5 T	1.1 RS	3 K	5 L	9 K	0 L	1 K	2 K
NF97325	Cereal Rye	1.4 T	1.1 RS	2 K	3 L	6 K	0 L	0 K	3 JK
NF99362	Cereal Rye	1.6 T	1.0 RS	3 K	5 L	8 K	0 L	1 K	3 JK
TriCal Ray	Cereal Rye	1.3 T	1.0 RS	1 K	3 L	5 K	0 L	0 K	0 K
Yankee	Cereal Rye	2.2 Q-S	1.4 P-S	4 JK	6 L	10 JK	4 J-L	9 I-K	15 I-K
TriCal EXP 20T06	Triticale	1.5 T	1.2 Q-S	2 K	5 L	10 JK	1 KL	3 I-K	8 I-K
TriCal EXP 21T01	Triticale	1.6 T	1.3 Q-S	4 K	7 KL	11 H-K	2 J-L	5 I-K	10 I-K
TriCal Flex 719	Triticale	1.8 R-T	1.4 P-S	4 I-K	7 J-L	11 H-K	4 J-L	9 I-K	15 I-K
TriCal Surge	Triticale	1.8 ST	1.6 O-Q	4 JK	7 KL	10 I-K	4 J-L	8 I-K	13 I-K
TN1902	Wheat	2.2 Q-S	1.8 N-P	5 H-K	8 I-L	12 F-K	8 I-L	14 H-K	20 G-K
Legumes									
FIXatioN	Clover, Balansa	2.9 G-L	3.0 C-F	5 H-K	8 I-L	12 G-K	15 F-J	22 E-I	29 E-I
Paradana	Clover, Balansa	2.9 I-N	2.5 G-L	5 H-K	8 I-L	11 H-K	10 H-L	16 G-K	21 G-K
Taipan	Clover, Balansa	2.9 H-M	2.6 F-K	2 K	4 L	6 K	9 H-L	14 H-K	19 H-K
Viper	Clover, Balansa	3.4 D-H	2.7 E-I	6 F-K	10 G-L	15 E-K	14 G-K	21 F-J	28 F-J
Frosty	Clover, Berseem	3.5 C-F	3.1 C-E	11 D-I	19 E-I	28 C-H	27 D-F	41 C-E	54 C-E
Lightning	Clover, Berseem	3.5 C-F	2.9 C-F	12 D-G	20 D-H	29 C-F	22 E-H	34 D-G	45 D-G
*UF_CC_17	Clover, Crimson	3.3 D-J	2.8 D-H	11 D-I	19 E-J	27 C-I	27 D-F	42 CD	55 CD
Dixie	Clover, Crimson	3.4 C-G	2.8 E-I	14 B-E	22 B-F	33 B-D	41 A-C	62 AB	82 AB
Kentucky Pride	Clover, Crimson	3.5 C-E	2.9 D-G	17 B-E	28 B-F	40 A-D	32 B-E	48 B-D	65 B-D
GO-PER-12	Clover, Persian	2.6 K-Q	3.4 A-C	1 K	2 L	3 K	6 J-L	10 I-K	12 I-K
Dynamite	Clover, Red	3.7 A-D	3.3 B-D	5 G-K	9 H-L	13 E-K	20 E-I	31 D-H	41 D-H
Q (FL24D)	Clover, Red	3.3 D-I	3.4 A-C	2 K	3 L	5 K	10 H-L	15 G-K	20 G-K
*UF_WC_LateOcoee	Clover, White	2.7 K-Q	3.1 C-E	1 K	2 L	2 K	2 KL	2 JK	3 JK
*UF_WC_ML17	Clover, White	2.7 K-Q	3.3 B-D	1 K	2 L	3 K	7 J-L	11 I-K	14 I-K
AU Merit	Vetch, Hairy	3.9 A-C	3.7 AB	24 A	40 A	57 A	31 C-E	47 B-D	62 B-D
Patagonia	Vetch, Hairy	4.1 AB	3.8 A	18 A-D	30 A-E	44 A-C	27 D-F	42 CD	55 CD
WinterKing	Vetch, Hairy	4.1 A	3.7 AB	20 AB	33 AB	48 AB	38 A-D	58 A-C	76 A-C
Survivor	Winter Pea	3.6 CD	3.3 B-D	20 A-C	32 A-C	47 AB	30 C-E	46 B-D	61 B-D
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	2.3 O-Q	2.0 M-O	4 I-K	7 KL	10 I-K	5 J-L	7 I-K	9 I-K
Aerifi	Radish	2.6 K-Q	2.0 L-O	3 K	5 L	7 K	3 J-L	5 I-K	7 I-K
CCS-779	Radish	2.5 L-Q	2.3 I-M	2 K	3 L	4 K	4 J-L	6 I-K	8 I-K
Driller	Radish	3.0 E-L	2.3 I-M	3 JK	5 KL	8 JK	2 KL	3 JK	3 JK
FragiBlaster	Radish	2.8 J-O	2.0 L-O	4 I-K	7 KL	10 JK	6 J-L	9 I-K	12 I-K
Jackpot	Turnip	2.4 N-Q	1.9 M-O	4 I-K	7 J-L	14 E-K	5 J-L	8 I-K	10 I-K
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.3 P-R	2.2 J-N	12 D-H	19 E-I	29 C-G	29 C-E	47 B-D	64 B-D
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	2.7 K-P	2.8 E-I	13 C-F	22 C-G	32 B-D	44 AB	69 A	93 A
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	2.4 M-Q	2.2 K-N	11 E-J	18 F-K	26 D-J	29 C-E	47 B-D	65 B-D
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	3.0 F-K	3.0 C-F	20 A-C	32 A-D	47 AB	45 A	69 A	93 A
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	3.0 G-L	2.2 K-N	12 D-G	20 E-H	30 C-E	23 E-G	37 D-F	51 D-F
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	3.7 A-D	2.7 E-J	17 A-E	28 B-F	41 A-D	26 D-G	39 C-F	53 C-F
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	2.9 H-M	2.4 H-M	14 B-E	23 B-F	34 B-D	29 C-E	45 B-D	60 B-D
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	3.6 B-D	3.3 A-C	20 A-C	32 A-C	47 AB	28 C-E	43 B-D	58 B-D

Table 14. cont.

Summary Statistics									
		Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
Variety	Common Name	Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Average		1.6	1.3	3	5	9	2	5	9
Min		1.3	1.0	1	3	5	-1	-1	0
Max		2.2	1.8	5	8	12	8	14	20
Range		0.9	0.8	4	5	7	9	15	20
Legumes									
Average		3.3	3.1	10	16	24	20	31	41
Min		2.6	2.5	1	2	2	2	2	3
Max		4.1	3.8	24	40	57	41	62	82
Range		1.6	1.3	23	38	55	39	60	79
Brassicas									
Average		2.6	2.1	4	6	9	4	6	8
Min		2.3	1.9	2	3	4	2	3	3
Max		3.0	2.3	4	7	14	6	9	12
Range		0.6	0.4	2	4	9	4	6	9
Mixes									
Average		3.0	2.6	15	24	36	32	49	67
Min		2.3	2.2	11	18	26	23	37	51
Max		3.7	3.3	20	32	47	45	69	93
Range		1.4	1.2	9	14	21	22	32	42
Across Groups									
Average		2.7	2.4	8	13	20	15	24	33
Standard Error		0.8	0.8	7	11	16	14	21	28
Min		1.3	1.0	1	2	2	-1	-1	0
Max		4.1	3.8	24	40	57	45	69	93
Range		2.8	2.8	23	38	55	46	70	93
ANOVA p-values									
- 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		**0.017**	**0.008**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 15-a. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	CP¶		ADF¶		NDF¶	
		Apr	May	Apr	May	Apr	May
Cereals							
Bates RS4	Cereal Rye	8.5 T	6.0 S	36.0 AB	41.7 A	65.8 AB	73.6 A
Elbon	Cereal Rye	9.2 T	9.1 P-R	34.4 A-C	36.4 BC	67.2 AB	67.1 BC
NF95319B	Cereal Rye	9.4 T	6.6 RS	34.2 A-C	41.6 A	62.7 B-D	74.4 A
NF97325	Cereal Rye	8.7 T	6.6 RS	35.6 AB	41.1 AB	66.3 AB	72.6 AB
NF99362	Cereal Rye	9.8 T	6.3 RS	33.4 B-D	41.9 A	64.4 A-C	75.7 A
TriCal Ray	Cereal Rye	8.4 T	6.2 RS	37.9 A	41.8 A	69.4 A	73.2 AB
Yankee	Cereal Rye	13.8 Q-S	8.8 P-S	24.2 I-O	32.8 C-J	50.9 FG	60.8 CD
TriCal EXP 20T06	Triticale	9.2 T	7.5 Q-S	31.2 C-F	35.5 CD	59.1 C-E	65.7 C
TriCal EXP 21T01	Triticale	10.0 T	8.0 Q-S	29.7 D-G	33.6 C-I	57.7 DE	63.0 C
TriCal Flex 719	Triticale	11.3 R-T	8.7 P-S	28.0 E-I	31.7 C-L	56.2 EF	61.1 C
TriCal Surge	Triticale	11.2 ST	9.9 O-Q	27.5 F-J	33.8 C-H	54.9 EF	64.9 C
TN1902	Wheat	14.0 Q-S	11.2 N-P	22.8 L-P	27.7 K-P	46.6 G	54.3 DE
Legumes							
FIXatioN	Clover, Balansa	18.4 G-L	18.7 C-F	22.0 L-Q	21.7 QR	25.1 N-P	25.6 NO
Paradana	Clover, Balansa	17.9 I-N	15.3 G-L	24.9 H-N	29.9 G-N	29.1 K-O	34.8 I-M
Taipan	Clover, Balansa	18.1 H-M	16.0 F-K	23.0 L-P	28.7 J-P	27.3 L-P	33.2 K-M
Viper	Clover, Balansa	21.1 D-H	16.9 E-I	20.4 O-Q	25.5 N-Q	22.1 P	30.1 MN
Frosty	Clover, Berseem	21.8 C-F	19.2 C-E	22.8 L-P	26.2 M-Q	27.0 M-P	31.7 MN
Lightning	Clover, Berseem	21.6 C-F	18.4 C-F	21.7 L-Q	26.3 M-Q	25.8 M-P	31.7 MN
*UF_CC_17	Clover, Crimson	20.4 D-J	17.7 D-H	21.7 M-Q	29.0 G-O	26.4 M-P	34.6 I-M
Dixie	Clover, Crimson	21.3 C-G	17.2 E-I	19.4 PQ	28.0 J-P	24.2 OP	33.7 J-M
Kentucky Pride	Clover, Crimson	21.9 C-E	17.8 D-G	18.7 Q	27.3 L-P	22.9 P	32.9 LM
GO-PER-12	Clover, Persian	16.1 K-Q	21.4 A-C	27.5 F-J	21.6 QR	33.0 I-L	23.1 O
Dynamite	Clover, Red	22.9 A-D	20.4 B-D	21.4 N-Q	23.8 P-R	26.5 M-P	28.4 M-O
Q (FL24D)	Clover, Red	20.8 D-I	21.3 A-C	25.3 H-M	26.1 M-Q	30.9 I-M	30.2 MN
*UF_WC_LateOcoee	Clover, White	16.7 K-Q	19.1 C-E	25.4 H-M	28.8 I-O	30.6 J-N	32.4 M
*UF_WC_ML17	Clover, White	16.7 K-Q	20.5 B-D	24.4 I-N	20.4 R	29.4 K-O	22.6 O
AU Merit	Vetch, Hairy	24.2 A-C	23.0 AB	23.9 J-O	30.0 F-N	26.9 M-P	34.3 I-M
Patagonia	Vetch, Hairy	25.4 AB	23.7 A	23.3 K-P	27.7 K-P	27.0 M-P	30.7 MN
WinterKing	Vetch, Hairy	25.8 A	23.3 AB	21.6 M-Q	27.2 L-P	24.3 OP	30.6 MN
Survivor	Winter Pea	22.3 CD	20.6 B-D	20.4 O-Q	24.3 O-R	27.2 M-P	31.4 MN
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	14.7 O-Q	12.3 M-O	27.1 G-K	33.9 C-G	36.2 H-J	43.3 GH
Aerifi	Radish	16.2 K-Q	12.8 L-O	28.4 E-H	31.4 D-L	36.0 H-J	39.4 H-L
CCS-779	Radish	15.6 L-Q	14.4 I-M	28.4 E-H	30.6 E-M	35.3 H-J	39.4 H-L
Driller	Radish	18.7 E-L	14.6 I-M	28.5 E-I	31.5 C-L	34.5 H-K	39.7 H-K
FragiBlaster	Radish	17.5 J-O	12.6 L-O	27.1 G-K	31.4 D-L	34.1 H-K	39.9 H-J
Jackpot	Turnip	14.9 N-Q	12.1 M-O	29.6 D-G	35.0 C-E	38.8 H	44.4 F-H
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	14.4 P-R	13.7 J-N	30.1 D-G	35.8 CD	47.9 G	50.0 EF
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	17.1 K-P	17.3 E-I	31.4 C-E	34.8 C-F	48.4 G	49.9 EF
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	15.3 M-Q	13.7 K-N	29.6 D-G	36.0 CD	46.1 G	50.6 EF
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	18.8 F-K	18.8 C-F	31.1 C-F	33.8 C-H	45.3 G	47.9 E-G
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	18.5 G-L	13.6 K-N	22.3 L-Q	34.8 C-F	34.6 H-K	50.4 EF
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	22.9 A-D	16.7 E-J	25.5 H-M	32.2 C-K	35.6 H-J	47.2 FG
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	18.1 H-M	14.7 H-M	23.5 K-O	32.7 C-J	35.2 H-J	45.2 F-H
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	22.4 B-D	20.8 A-C	25.6 H-L	29.0 H-O	36.3 HI	40.3 HI

Table 15-a. cont.

Summary Statistics							
		CP¶		ADF¶		NDF¶	
Variety	Common Name	Apr	May	Apr	May	Apr	May
Cereals							
Average		10.3	7.9	31.2	36.6	60.1	67.2
Min		8.4	6.0	22.8	27.7	46.6	54.3
Max		14.0	11.2	37.9	41.9	69.4	75.7
Range		5.6	5.2	15.0	14.3	22.8	21.5
Legumes							
Average		20.8	19.5	22.7	26.3	27.0	30.7
Min		16.1	15.3	18.7	20.4	22.1	22.6
Max		25.8	23.7	27.5	30.0	33.0	34.8
Range		9.7	8.4	8.8	9.6	10.8	12.1
Brassicas							
Average		16.3	13.1	28.2	32.3	35.8	41.0
Min		14.7	12.1	27.1	30.6	34.1	39.4
Max		18.7	14.6	29.6	35.0	38.8	44.4
Range		4.1	2.5	2.6	4.3	4.8	5.0
Mixes							
Average		18.5	16.2	27.4	33.6	41.2	47.7
Min		14.4	13.6	22.3	29.0	34.6	40.3
Max		22.9	20.8	31.4	36.0	48.4	50.6
Range		8.5	7.2	9.2	7.0	13.8	10.3
Across Groups							
Average		16.9	14.8	26.6	31.3	39.8	45.1
Standard Error		5.0	5.2	4.8	5.5	14.5	15.7
Min		8.4	6.0	18.7	20.4	22.1	22.6
Max		25.8	23.7	37.9	41.9	69.4	75.7
Range		17.4	17.7	19.1	21.5	47.3	53.1
ANOVA p-values							
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	N.S.	0.014	<0.001	<0.001
- Variety x Location		0.017	0.084	0.026	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 15-b. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Oct. 2020, in small plot replicated trials, at at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Bates RS4	Cereal Rye	3.3 O-Q	0.6 U	2.1 LM	1.6 LM	5.0 F-L	6.3 B-F
Elbon	Cereal Rye	1.6 Q	2.8 P-R	2.2 J-M	2.2 C-I	4.5 H-Q	4.7 I-K
NF95319B	Cereal Rye	4.5 M-P	1.0 TU	2.3 I-M	1.7 J-M	4.3 I-Q	6.1 C-G
NF97325	Cereal Rye	3.1 O-Q	1.2 S-U	2.3 I-M	1.6 K-M	4.9 G-N	6.3 B-F
NF99362	Cereal Rye	3.0 PQ	0.8 U	2.5 G-M	1.6 K-M	4.2 J-Q	6.0 C-H
TriCal Ray	Cereal Rye	3.1 O-Q	1.6 R-U	2.0 M	1.6 M	5.3 D-J	6.2 B-F
Yankee	Cereal Rye	4.0 OP	3.5 O-Q	3.2 BC	2.4 A-D	2.6 TU	3.9 KL
TriCal EXP 20T06	Triticale	4.3 OP	2.1 R-U	2.2 K-M	1.8 I-M	3.0 R-U	4.0 KL
TriCal EXP 21T01	Triticale	4.5 M-P	2.9 O-R	2.3 I-M	1.9 G-M	3.0 R-U	4.2 KL
TriCal Flex 719	Triticale	4.4 N-P	2.5 Q-S	2.7 D-I	2.3 B-F	2.8 S-U	3.4 L
TriCal Surge	Triticale	4.6 L-O	1.8 R-U	2.5 G-L	2.3 A-F	2.2 U	4.1 KL
TN1902	Wheat	4.0 OP	2.3 Q-T	3.0 B-F	2.4 A-D	2.3 U	3.2 L
Legumes							
FIXatioN	Clover, Balansa	11.1 AB	10.9 AB	2.9 B-G	2.4 A-E	4.8 G-O	4.1 KL
Paradana	Clover, Balansa	10.7 A-C	9.1 D-F	3.3 B	2.2 B-H	5.5 C-H	6.2 B-F
Taipan	Clover, Balansa	10.5 A-D	9.0 D-G	2.7 D-I	2.2 C-I	5.2 E-K	6.0 C-H
Viper	Clover, Balansa	11.9 A	9.0 D-G	2.6 F-L	2.3 A-F	3.9 M-R	5.0 G-K
Frosty	Clover, Berseem	9.2 C-F	8.9 D-G	2.6 E-K	2.4 A-D	4.2 K-Q	4.9 G-K
Lightning	Clover, Berseem	9.4 C-F	9.3 C-E	2.6 E-K	2.4 A-E	4.0 L-R	5.0 G-K
*UF_CC_17	Clover, Crimson	8.2 F-I	7.2 H-L	2.4 H-M	2.0 E-K	4.6 H-Q	6.4 B-F
Dixie	Clover, Crimson	9.1 C-F	7.3 H-K	2.7 E-J	2.0 E-K	4.1 L-Q	5.8 E-I
Kentucky Pride	Clover, Crimson	8.6 E-H	7.7 G-J	2.6 F-L	2.0 E-K	3.8 O-S	5.6 F-I
GO-PER-12	Clover, Persian	9.3 C-F	11.3 A	3.1 B-E	2.5 A-C	6.3 A-D	4.2 KL
Dynamite	Clover, Red	9.3 C-F	9.3 C-E	2.8 C-H	2.4 A-D	3.8 N-S	4.3 J-L
Q (FL24D)	Clover, Red	10.3 A-E	9.6 B-D	3.2 B-D	2.4 A-D	5.0 F-M	4.9 H-K
*UF_WC_LateOcoee	Clover, White	8.9 D-G	11.4 A	2.8 C-H	2.5 A-C	5.9 B-G	5.6 F-I
*UF_WC_ML17	Clover, White	10.0 B-E	10.6 A-C	4.0 A	2.5 A-C	5.7 B-G	4.3 J-L
AU Merit	Vetch, Hairy	8.9 D-G	8.0 E-H	2.6 E-K	2.5 A-C	5.3 D-I	6.2 B-F
Patagonia	Vetch, Hairy	8.3 F-H	8.2 E-H	2.7 E-J	2.6 AB	5.2 E-K	5.7 E-I
WinterKing	Vetch, Hairy	7.9 F-J	7.8 F-I	2.7 D-I	2.5 A-C	4.9 G-M	5.5 F-J
Survivor	Winter Pea	8.7 E-H	9.1 D-G	2.7 D-I	2.7 A	3.5 Q-T	4.2 KL
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	6.2 K-M	4.2 NO	2.7 D-I	2.0 E-K	5.7 B-G	7.3 AB
Aerifi	Radish	7.1 H-K	6.5 I-M	2.6 F-L	1.8 J-M	6.6 A-C	7.0 A-D
CCS-779	Radish	7.2 G-K	6.4 I-M	2.7 D-I	1.7 J-M	7.0 A	6.3 B-F
Driller	Radish	7.5 F-K	6.3 J-M	2.3 H-M	1.8 H-M	6.8 AB	6.8 A-E
FragiBlaster	Radish	6.5 I-K	6.4 J-M	2.4 G-M	1.8 I-M	6.0 A-F	7.1 A-C
Jackpot	Turnip	6.3 J-L	5.3 MN	2.6 F-L	2.1 D-J	6.1 A-E	7.7 A
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	6.1 K-M	4.3 NO	2.4 G-M	2.0 F-L	4.5 H-Q	5.9 D-H
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	6.1 K-M	5.8 LM	2.5 G-M	2.4 A-D	5.0 F-L	5.6 F-I
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	6.0 K-N	5.1 MN	2.4 G-M	1.9 G-M	4.6 H-P	6.1 C-G
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	6.5 I-K	5.9 K-M	2.3 H-M	2.5 A-C	5.1 F-L	5.6 F-I
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	6.4 JK	5.1 MN	2.8 C-H	2.2 B-G	3.7 P-S	5.5 F-J
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	7.3 G-K	6.2 K-M	2.8 C-H	2.6 AB	4.9 G-M	5.5 F-J
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	6.5 I-K	4.1 N-P	2.6 F-L	2.1 D-J	4.1 L-Q	5.7 F-I
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	7.0 H-K	7.0 H-L	2.6 E-K	2.6 AB	4.8 G-O	5.4 F-J

Table 15-b. cont.

Summary Statistics							
		Ash¶		Fat¶		Lignin¶	
Variety	Common Name	Apr	May	Apr	May	Apr†	May
Cereals							
Average		3.7	1.9	2.4	1.9	3.7	4.9
Min		1.6	0.6	2.0	1.6	2.2	3.2
Max		4.6	3.5	3.2	2.4	5.3	6.3
Range		3.0	2.9	1.2	0.9	3.0	3.1
Legumes							
Average		9.5	9.1	2.8	2.4	4.8	5.2
Min		7.9	7.2	2.4	2.0	3.5	4.1
Max		11.9	11.4	4.0	2.7	6.3	6.4
Range		4.0	4.2	1.7	0.7	2.8	2.2
Brassicas							
Average		6.8	5.9	2.5	1.9	6.4	7.1
Min		6.2	4.2	2.3	1.7	5.7	6.3
Max		7.5	6.5	2.7	2.1	7.0	7.7
Range		1.4	2.3	0.4	0.3	1.3	1.4
Mixes							
Average		6.5	5.5	2.6	2.3	4.6	5.7
Min		6.0	4.1	2.3	1.9	3.7	5.4
Max		7.3	7.0	2.8	2.6	5.1	6.1
Range		1.2	2.8	0.5	0.7	1.4	0.6
Across Groups							
Average		7.0	6.0	2.6	2.2	4.7	5.5
Standard Error		2.5	3.1	0.4	0.3	1.2	1.1
Min		1.6	0.6	2.0	1.6	2.2	3.2
Max		11.9	11.4	4.0	2.7	7.0	7.7
Range		10.3	10.8	2.0	1.1	4.8	4.5
ANOVA p-values							
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	N.S.	N.S.	<0.001	<0.001
- Variety x Location		0.018	0.048	N.S.	N.S.	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 16. Across location mean biomass and weed suppression of 18 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Biomass (DM ton/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Bates RS4	Cereal Rye	1.0 A	2.0 A	1956 A	3935 A	51 JK	10 I	5 F-H	3 C-E
Elbon	Cereal Rye	0.7 C	2.1 A	1367 C	4236 A	53 JK	13 HI	3 GH	2 D-F
NF95319B	Cereal Rye	0.9 AB	2.0 A	1832 AB	4069 A	45 K	11 I	3 GH	3 C-E
NF97325	Cereal Rye	0.7 C	1.8 A-E	1401 C	3536 A-E	61 IJ	14 HI	6 E-H	4 CD
NF99362	Cereal Rye	0.8 BC	1.9 AB	1599 BC	3800 AB	47 K	11 I	3 GH	3 CD
Yankee	Cereal Rye	0.3 F-H	1.2 F-H	635 F-H	2464 F-H	48 K	18 G-I	12 DE	5 CD
TN1902	Wheat	0.4 EF	1.4 D-G	891 EF	2877 D-G	68 HI	19 G-I	4 F-H	5 CD
Legumes									
Paradana	Clover, Balansa	0.1 I	0.3 J	227 I	651 J	100 A	99 A	57 A	54 A
Taipan	Clover, Balansa	0.1 I	0.4 J	259 I	729 J	100 A	100 A	57 A	57 A
Viper	Clover, Balansa	0.1 I	0.5 IJ	191 I	1001 IJ	100 A	100 A	54 AB	56 A
Lightning	Clover, Berseem	0.1 I	0.4 J	214 I	740 J	100 A	99 A	48 B	33 A
Dixie	Clover, Crimson	0.2 I	0.9 HI	316 I	1730 HI	77 E-H	89 AB	15 CD	12 B
AU Merit	Vetch, Hairy	0.4 EF	1.1 F-H	734 EF	2289 F-H	85 C-F	76 BC	9 D-G	2 D-F
Patagonia	Vetch, Hairy	0.5 DE	1.2 F-H	998 DE	2472 F-H	87 B-E	59 DE	3 GH	0 F
WinterKing	Vetch, Hairy	0.4 E-G	1.3 FG	708 E-G	2558 FG	96 AB	95 A	7 E-H	1 EF
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	0.2 HI	0.3 J	334 HI	698 J	74 F-H	56 DE	53 AB	51 A
Aerifi	Radish	0.2 G-I	0.3 J	410 G-I	630 J	72 GH	55 DE	54 AB	53 A
Jackpot	Turnip	0.2 I	0.4 J	311 I	716 J	77 F-H	65 CD	56 A	50 A
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.6 CD	1.5 C-G	1299 CD	2980 C-G	75 F-H	17 HI	8 E-H	4 C
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	0.8 C	1.5 B-F	1508 C	3076 B-F	82 D-G	25 G-I	3 H	0 F
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	0.6 CD	1.8 A-C	1299 CD	3685 A-C	74 F-H	29 F-H	8 E-H	4 C-E
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	0.7 C	1.8 A-D	1310 C	3653 A-D	88 B-D	33 FG	4 F-H	0 F
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.4 E-G	1.4 E-G	715 E-G	2843 E-G	77 F-H	24 G-I	12 DE	4 C
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	0.4 EF	1.5 B-F	742 EF	3029 B-F	82 D-G	33 FG	5 F-H	0 F
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	0.4 EF	1.1 GH	759 EF	2198 GH	91 A-D	53 DE	21 C	6 BC
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	0.4 EF	1.4 E-G	814 EF	2804 E-G	95 A-C	45 EF	10 D-F	0 F

Table 16. cont.

Summary Statistics									
		Biomass (DM tons/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
Variety	Common Name	Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Average		0.7	1.8	1383	3559	53	14	5	3
Min		0.3	1.2	635	2464	45	10	3	2
Max		1.0	2.1	1956	4236	68	19	12	5
Range		0.7	0.9	1321	1772	23	9	8	3
Legumes									
Average		0.2	0.8	456	1521	93	90	31	27
Min		0.1	0.3	191	651	77	59	3	0
Max		0.5	1.3	998	2558	100	100	57	57
Range		0.4	1.0	807	1908	23	41	53	57
Brassicas									
Average		0.2	0.3	352	681	74	59	54	51
Min		0.2	0.3	311	630	72	55	53	50
Max		0.2	0.4	410	716	77	65	56	53
Range		0.0	0.0	99	86	5	10	3	3
Mixes									
Average		0.5	1.5	1056	3033	83	32	9	2
Min		0.4	1.1	715	2198	74	17	3	0
Max		0.8	1.8	1508	3685	95	53	21	6
Range		0.4	0.7	793	1487	21	37	18	6
Across Groups									
Average		0.4	1.2	878	2438	77	48	20	16
Standard Error		0.3	0.6	533	1211	17	33	22	22
Min		0.1	0.3	191	630	45	10	3	0
Max		1.0	2.1	1956	4236	100	100	57	57
Range		0.9	1.8	1765	3606	54	90	54	57
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	N.S.	<0.001	N.S.	<0.001	<0.001	<0.001	<0.001
- Variety x Location		<0.001	<0.001	<0.001	<0.001	0.025	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 17. Across location mean cover and height of 18 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr[§]	May[‡‡]	Dec	Feb	Apr	May
Cereals									
Bates RS4	Cereal Rye	43 AB	41 A	88 A-D	96 A-C	5 B-D	5 BC	28 A	59 B-D
Elbon	Cereal Rye	46 A	35 A-C	84 B-F	94 A-C	6 AB	4 D-F	21 CD	56 D
NF95319B	Cereal Rye	42 A-C	35 BC	85 B-F	97 A-C	6 A	5 AB	27 AB	57 CD
NF97325	Cereal Rye	42 A-C	39 AB	88 B-D	93 A-C	6 A-C	5 A	27 AB	57 CD
NF99362	Cereal Rye	36 CD	30 CD	87 B-E	93 A-C	6 A	5 BC	24 BC	57 CD
Yankee	Cereal Rye	43 AB	30 CD	78 F	88 CD	6 A	4 DE	10 H-J	29 E-G
TN1902	Wheat	36 CD	30 CD	82 C-F	82 D	5 D-F	4 D-F	13 G-I	25 GH
Legumes									
Paradana	Clover, Balansa	23 GH	15 L	9 J	48 FG	3 H	3 F	3 K	7 J
Taipan	Clover, Balansa	23 H	15 KL	11 IJ	57 F	3 H	3 F	3 K	8 J
Viper	Clover, Balansa	23 GH	14 L	17 HI	55 FG	3 H	3 F	3 K	10 J
Lightning	Clover, Berseem	29 E-G	18 I-L	23 H	67 E	3 H	3 F	5 K	10 J
Dixie	Clover, Crimson	31 D-F	18 J-L	43 G	83 D	3 H	3 F	5 K	17 I
AU Merit	Vetch, Hairy	33 D-F	21 G-K	86 B-E	100 A	3 GH	3 F	9 J	23 H
Patagonia	Vetch, Hairy	32 D-F	22 F-J	89 A-C	100 A	4 GH	3 F	10 IJ	25 H
WinterKing	Vetch, Hairy	29 E-G	17 J-L	90 AB	99 AB	4 G	3 F	10 IJ	24 H
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	26 F-H	19 H-L	41 G	46 G	3 H	3 F	17 EF	31 E
Aerifi	Radish	27 F-H	19 H-L	42 G	50 FG	3 H	4 D-F	13 G-I	23 H
Jackpot	Turnip	31 D-F	18 J-L	39 G	52 FG	3 H	3 F	20 DE	33 E
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	32 D-F	28 D-F	87 B-E	90 B-D	6 A-C	4 DE	27 AB	61 A-C
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	35 DE	30 C-E	96 A	100 A	6 AB	5 AB	25 AB	59 B-D
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	28 E-H	28 D-F	82 C-F	90 B-D	6 A-C	4 CD	27 AB	63 AB
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	32 D-F	25 D-G	92 AB	100 A	6 AB	4 DE	26 AB	64 A
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	32 D-F	26 D-G	81 D-F	90 B-D	6 AB	3 F	12 G-J	33 E
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	37 B-D	27 D-G	91 AB	100 A	5 C-E	3 EF	13 F-H	33 E
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	35 DE	24 E-I	79 EF	89 CD	4 F	3 F	13 G-I	26 F-H
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	37 CD	25 D-H	89 A-C	100 A	5 EF	3 F	14 FG	30 EF

Table 17. cont.

Summary Statistics									
		Canopy Cover (%)				Height (in)			
Variety	Common Name	Dec	Feb	Apr§	May‡‡	Dec	Feb	Apr	May
Cereals									
Average		41	35	84	92	6	4	21	49
Min		36	30	78	82	5	4	10	25
Max		46	41	88	97	6	5	28	59
Range		10	11	11	15	1	2	18	34
Legumes									
Average		28	17	46	76	3	3	6	15
Min		23	14	9	48	3	3	3	7
Max		33	22	90	100	4	3	10	25
Range		10	8	81	52	1	0	7	18
Brassicas									
Average		28	18	41	49	3	3	17	29
Min		26	18	39	46	3	3	13	23
Max		31	19	42	52	3	4	20	33
Range		5	1	3	6	0	1	7	11
Mixes									
Average		33	27	87	95	5	4	20	46
Min		28	24	79	89	4	3	12	26
Max		37	30	96	100	6	5	27	64
Range		9	6	17	11	2	2	15	38
Across Groups									
Average		33	25	68	83	4	4	16	35
Standard Error		7	8	29	19	1	1	9	19
Min		23	14	9	46	3	3	3	7
Max		46	41	96	100	6	5	28	64
Range		24	28	87	54	3	2	25	57
ANOVA p-values									
- Variety		**<0.001**	**<0.001**	**<0.001**	**-**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**<0.001**	**-**	**0.003**	**0.003**	**<0.001**	**<0.001**
- Variety x Location		**N.S.**	**<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, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 18. Across location mean nitrogen content and estimated nitrogen release of 18 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Bates RS4	Cereal Rye	1.5 L	1.1 N	2 K-M	4 J-M	7 I-L	0 I	0 I	2 L
Elbon	Cereal Rye	1.7 KL	1.1 N	3 I-L	5 I-L	8 H-L	1 I	1 I	3 KL
NF95319B	Cereal Rye	1.5 L	1.1 N	2 K-M	4 J-M	7 I-M	0 I	0 I	2 L
NF97325	Cereal Rye	1.7 KL	1.1 N	3 J-M	5 I-L	8 I-L	0 I	0 I	2 L
NF99362	Cereal Rye	1.5 L	1.2 MN	2 LM	4 K-M	6 J-N	1 I	2 I	4 J-L
Yankee	Cereal Rye	2.2 H-J	1.5 LM	3 J-M	4 J-M	7 J-N	3 HI	5 HI	8 I-L
TN1902	Wheat	2.1 IJ	1.5 KL	4 H-K	6 H-K	9 G-K	5 HI	8 HI	13 H-L
Legumes									
Paradana	Clover, Balansa	2.5 E-H	2.5 GH	1 M	2 M	2 N	5 HI	7 HI	10 I-L
Taipan	Clover, Balansa	2.2 H-J	2.5 GH	1 M	2 LM	3 MN	6 G-I	8 HI	11 I-L
Viper	Clover, Balansa	2.6 D-G	2.7 FG	1 M	2 M	3 MN	8 GH	12 GH	15 G-K
Lightning	Clover, Berseem	3.0 CD	3.3 C-E	1 M	2 M	3 MN	8 F-H	13 GH	16 G-J
Dixie	Clover, Crimson	2.8 C-E	3.0 EF	3 J-M	4 J-M	6 J-N	15 EF	22 EF	29 EF
AU Merit	Vetch, Hairy	3.6 A	4.4 AB	8 B-D	13 B-D	18 BC	36 B	55 B	70 B
Patagonia	Vetch, Hairy	3.5 AB	4.1 B	10 A	17 A	24 A	35 BC	53 BC	69 BC
WinterKing	Vetch, Hairy	3.8 A	4.6 A	8 AB	14 AB	20 AB	43 A	65 A	83 A
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	2.5 E-H	2.1 IJ	2 K-M	4 K-M	5 L-N	4 HI	6 HI	7 I-L
Aerifi	Radish	2.4 F-I	2.0 IJ	2 K-M	4 K-M	5 K-N	3 HI	5 HI	6 I-L
Jackpot	Turnip	2.4 F-J	2.1 I	2 LM	3 LM	4 L-N	4 HI	5 HI	7 I-L
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.0 JK	1.8 JK	5 F-I	8 E-H	12 D-H	8 F-H	13 F-H	19 F-I
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	2.7 D-F	3.0 EF	8 A-C	14 A-C	20 AB	25 D	38 D	50 D
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	2.2 G-J	2.2 I	5 E-H	9 E-H	13 D-G	15 E	24 E	33 E
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	2.5 E-H	3.2 DE	7 C-E	11 D-F	16 CD	32 BC	49 BC	63 BC
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.5 E-H	2.3 HI	4 G-J	7 G-J	10 F-J	12 E-G	19 E-G	26 E-G
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	3.2 BC	3.5 CD	6 E-G	10 D-G	14 C-F	32 BC	48 BC	63 BC
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	2.5 E-H	2.3 HI	5 F-I	8 F-I	11 E-I	12 E-G	18 E-G	25 E-H
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	3.2 C	3.5 C	6 D-F	11 C-E	15 C-E	29 CD	43 CD	56 CD

Table 18. cont.

Summary Statistics									
		Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
Variety	Common Name	Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Average		1.8	1.2	3	5	8	1	2	5
Min		1.5	1.1	2	4	6	0	0	2
Max		2.2	1.5	4	6	9	5	8	13
Range		0.7	0.5	2	3	3	5	8	12
Legumes									
Average		3.0	3.4	4	7	10	19	29	38
Min		2.2	2.5	1	2	2	5	7	10
Max		3.8	4.6	10	17	24	43	65	83
Range		1.6	2.1	9	15	21	38	57	73
Brassicas									
Average		2.4	2.1	2	3	5	3	5	7
Min		2.4	2.0	2	3	4	3	5	6
Max		2.5	2.1	2	4	5	4	6	7
Range		0.1	0.1	0	1	1	1	1	1
Mixes									
Average		2.6	2.7	6	10	14	21	31	42
Min		2.0	1.8	4	7	10	8	13	19
Max		3.2	3.5	8	14	20	32	49	63
Range		1.2	1.7	4	7	10	24	35	45
Across Groups									
Average		2.5	2.5	4	7	10	13	20	27
Standard Error		0.6	1.0	3	4	6	13	20	26
Min		1.5	1.1	1	2	2	0	0	2
Max		3.8	4.6	10	17	24	43	65	83
Range		2.3	3.6	9	15	21	43	64	82
ANOVA p-values									
- 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		**0.017**	**0.008**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 19-a. Across location mean forage quality of 18 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	CP¶		ADF¶		NDF¶	
		Apr	May	Apr	May	Apr	May
Cereals							
Bates RS4	Cereal Rye	9.5 L	6.7 N	31.1 AB	39.8 A	59.8 A	70.5 A
Elbon	Cereal Rye	10.8 KL	6.9 N	28.2 CD	39.4 AB	54.7 B	71.0 A
NF95319B	Cereal Rye	9.5 L	6.6 N	31.2 AB	40.0 A	58.9 A	71.8 A
NF97325	Cereal Rye	10.8 KL	6.6 N	29.9 BC	39.8 A	57.8 AB	70.1 A
NF99362	Cereal Rye	9.6 L	7.3 MN	30.9 B	39.7 A	59.5 A	70.9 A
Yankee	Cereal Rye	13.6 H-J	9.1 LM	23.5 FG	33.2 D-G	45.4 CD	63.0 B
TN1902	Wheat	13.1 IJ	9.7 KL	24.0 F	28.7 J-L	45.0 CD	53.1 D
Legumes							
Paradana	Clover, Balansa	14.8 G-J	15.8 GH	33.6 A	29.9 H-K	39.0 EF	33.8 J-L
Taipan	Clover, Balansa	15.1 G-I	15.5 GH	30.4 BC	30.1 H-J	38.8 E-G	35.7 I-K
Viper	Clover, Balansa	16.3 E-G	16.9 FG	30.9 A-C	30.6 G-J	36.8 F-I	35.0 JK
Lightning	Clover, Berseem	18.7 C-E	20.8 C-E	26.7 DE	25.1 MN	34.6 HI	30.5 L-N
Dixie	Clover, Crimson	17.6 D-F	19.0 EF	23.5 F-H	28.7 J-L	29.3 JK	32.5 K-M
AU Merit	Vetch, Hairy	22.7 A	27.2 AB	21.3 GH	24.9 MN	24.9 L	26.8 NO
Patagonia	Vetch, Hairy	22.0 AB	25.7 B	23.2 F-H	26.4 LM	27.2 KL	29.0 M-O
WinterKing	Vetch, Hairy	23.8 A	28.8 A	20.9 H	23.5 N	23.8 L	25.4 O
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	15.5 F-H	13.1 IJ	24.7 EF	34.7 C-E	32.8 IJ	43.8 GH
Aerifi	Radish	15.0 G-I	12.7 IJ	27.2 D	34.3 C-F	35.1 G-I	42.7 GH
Jackpot	Turnip	14.7 G-J	13.4 I	26.6 DE	35.7 CD	35.6 F-I	45.2 FG
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	12.7 JK	11.3 JK	28.8 B-D	38.9 AB	47.6 C	58.6 C
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	16.6 E-G	19.0 EF	27.3 D	32.5 E-H	42.7 DE	45.1 FG
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	13.9 H-J	13.5 I	27.4 D	36.9 BC	44.4 CD	52.2 DE
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	15.5 F-H	20.0 DE	27.4 D	31.6 F-I	43.6 D	43.9 GH
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	15.6 F-H	14.4 HI	21.2 GH	32.0 F-I	37.4 F-H	48.7 EF
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	19.9 BC	21.6 CD	22.6 F-H	28.9 J-L	34.3 HI	39.8 HI
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	15.6 F-H	14.7 HI	23.1 F-H	29.7 I-K	35.7 F-I	43.5 GH
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	19.7 CD	22.0 C	22.9 F-H	27.5 K-M	34.2 HI	37.3 IJ

Table 19-a. cont.

Summary Statistics							
		CP¶		ADF¶		NDF¶	
Variety	Common Name	Apr	May	Apr	May	Apr	May
Cereals							
Average		11.0	7.6	28.4	37.2	54.4	67.2
Min		9.5	6.6	23.5	28.7	45.0	53.1
Max		13.6	9.7	31.2	40.0	59.8	71.8
Range		4.1	3.1	7.6	11.3	14.7	18.7
Legumes							
Average		18.9	21.2	26.3	27.4	31.8	31.1
Min		14.8	15.5	20.9	23.5	23.8	25.4
Max		23.8	28.8	33.6	30.6	39.0	35.7
Range		9.0	13.2	12.6	7.1	15.1	10.3
Brassicas							
Average		15.1	13.1	26.2	34.9	34.5	43.9
Min		14.7	12.7	24.7	34.3	32.8	42.7
Max		15.5	13.4	27.2	35.7	35.6	45.2
Range		0.7	0.7	2.5	1.4	2.8	2.5
Mixes							
Average		16.2	17.1	25.1	32.2	40.0	46.2
Min		12.7	11.3	21.2	27.5	34.2	37.3
Max		19.9	22.0	28.8	38.9	47.6	58.6
Range		7.2	10.7	7.7	11.5	13.4	21.2
Across Groups							
Average		15.5	15.3	26.5	32.4	40.7	46.9
Standard Error		4.0	6.5	3.7	5.2	10.6	15.0
Min		9.5	6.6	20.9	23.5	23.8	25.4
Max		23.8	28.8	33.6	40.0	59.8	71.8
Range		14.4	22.2	12.6	16.5	35.9	46.4
ANOVA p-values							
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	N.S.	0.014	<0.001	<0.001
- Variety x Location		0.017	0.084	0.026	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 19-b. Across location mean forage quality of 18 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at two University of Tennessee AgResearch and Education Center locations, in Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Bates RS4	Cereal Rye	2.5 K	1.9 L	2.4 HI	2.0 J	3.6 GH	6.0 BC
Elbon	Cereal Rye	3.6 K	1.7 L	2.7 F-H	2.1 J	3.5 GH	5.9 C
NF95319B	Cereal Rye	3.1 K	1.1 L	2.3 I	2.0 J	3.6 GH	6.0 BC
NF97325	Cereal Rye	3.4 K	1.9 L	2.7 F-H	1.9 J	3.7 F-H	6.2 BC
NF99362	Cereal Rye	3.4 K	1.6 L	2.5 G-I	2.0 J	3.7 F-H	6.3 BC
Yankee	Cereal Rye	5.5 IJ	3.0 K	3.5 A	2.7 B-E	3.3 HI	4.2 GH
TN1902	Wheat	5.4 J	3.5 K	3.1 BC	2.6 E-G	2.6 I	3.6 H
Legumes							
Paradana	Clover, Balansa	11.5 A	9.0 B-D	3.1 BC	2.3 G-I	7.2 A	6.4 BC
Taipan	Clover, Balansa	9.9 BC	9.3 A-C	3.0 CD	2.5 E-H	6.1 BC	6.5 B
Viper	Clover, Balansa	10.8 AB	9.7 AB	2.7 F-I	2.4 F-H	6.2 BC	6.3 BC
Lightning	Clover, Berseem	9.1 CD	10.2 A	3.0 CD	2.8 B-D	4.9 DE	4.5 E-G
Dixie	Clover, Crimson	8.6 CD	8.5 C-E	2.7 D-G	2.3 G-I	4.6 DE	6.1 BC
AU Merit	Vetch, Hairy	8.1 DE	8.5 C-E	2.9 C-F	2.9 AB	4.7 DE	4.9 D-F
Patagonia	Vetch, Hairy	8.5 D	8.9 B-E	2.9 C-F	2.8 A-C	4.9 D	5.1 DE
WinterKing	Vetch, Hairy	9.2 CD	9.1 BC	3.0 C-E	3.0 A	4.6 DE	4.4 FG
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	7.1 EF	6.1 HI	2.8 D-G	2.5 E-G	5.8 C	8.3 A
Aerifi	Radish	7.1 E-G	6.3 G-I	2.7 D-G	2.1 IJ	6.6 AB	7.8 A
Jackpot	Turnip	6.9 E-H	5.2 IJ	2.9 C-F	2.5 E-H	6.0 BC	8.2 A
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	5.5 J	4.7 J	2.7 D-G	2.0 J	4.3 D-G	6.0 BC
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	6.5 F-J	7.1 F-H	2.8 C-F	2.5 E-H	4.6 DE	5.2 D
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	5.4 J	5.2 IJ	2.7 D-G	2.0 J	4.1 E-G	6.1 BC
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	5.8 H-J	7.2 FG	2.7 E-G	2.6 C-F	4.4 D-F	5.2 D
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	5.9 G-J	5.6 IJ	3.4 AB	2.6 D-G	3.0 HI	4.7 D-G
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	7.0 E-H	8.0 D-F	3.2 BC	2.9 AB	4.1 E-G	4.9 D-F
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	6.5 F-J	5.5 IJ	3.1 C	2.3 HI	4.1 E-G	5.1 D
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	6.7 F-I	7.8 EF	3.1 BC	2.8 A-C	4.1 E-G	4.7 D-G

Table 19-b. cont.

Summary Statistics							
		Ash¶		Fat¶		Lignin¶	
Variety	Common Name	Apr	May	Apr	May	Apr†	May
Cereals							
Average		3.9	2.1	2.7	2.2	3.4	5.5
Min		2.5	1.1	2.3	1.9	2.6	3.6
Max		5.5	3.5	3.5	2.7	3.7	6.3
Range		3.0	2.4	1.2	0.8	1.1	2.6
Legumes							
Average		9.5	9.2	2.9	2.6	5.4	5.5
Min		8.1	8.5	2.7	2.3	4.6	4.4
Max		11.5	10.2	3.1	3.0	7.2	6.5
Range		3.5	1.6	0.5	0.7	2.6	2.2
Brassicas							
Average		7.0	5.9	2.8	2.4	6.1	8.1
Min		6.9	5.2	2.7	2.1	5.8	7.8
Max		7.1	6.3	2.9	2.5	6.6	8.3
Range		0.2	1.0	0.1	0.4	0.8	0.6
Mixes							
Average		6.2	6.4	3.0	2.5	4.1	5.2
Min		5.4	4.7	2.7	2.0	3.0	4.7
Max		7.0	8.0	3.4	2.9	4.6	6.1
Range		1.6	3.3	0.7	0.9	1.5	1.4
Across Groups							
Average		6.7	6.0	2.9	2.4	4.5	5.7
Standard Error		2.4	2.9	0.3	0.3	1.2	1.2
Min		2.5	1.1	2.3	1.9	2.6	3.6
Max		11.5	10.2	3.5	3.0	7.2	8.3
Range		9.0	9.0	1.2	1.1	4.6	4.7
ANOVA p-values							
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	N.S.	N.S.	<0.001	<0.001
- Variety x Location		0.018	0.048	N.S.	N.S.	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 20. By location mean biomass and weed suppression of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Biomass (DM ton/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Bates RS4	Cereal Rye	1.2 A	2.3 A-C	2497 A	4589 A-C	40 KL	9 EF	3 D-F	2 DE
Elbon	Cereal Rye	0.7 DE	2.5 A	1437 DE	4955 A	40 KL	9 EF	0 F	2 DE
NF95319B	Cereal Rye	1.1 AB	2.2 A-D	2300 AB	4500 A-D	34 L	8 EF	0 F	2 DE
NF97325	Cereal Rye	0.9 CD	1.8 B-G	1751 CD	3685 B-G	51 H-K	13 D-F	3 D-F	5 CD
NF99362	Cereal Rye	1.0 BC	2.3 A-D	1986 BC	4547 A-D	41 J-L	7 F	0 F	3 D
Yankee	Cereal Rye	0.3 H-L	1.6 E-H	549 H-L	3104 E-H	43 J-L	19 D-F	7 C-F	2 DE
TN1902	Wheat	0.5 EF	2.1 A-E	1071 EF	4197 A-E	48 I-L	13 D-F	0 F	2 DE
Legumes									
Paradana	Clover, Balansa	0.1 K-M	0.5 J	240 K-M	1098 J	99 AB	98 A	18 A	35 AB
Taipan	Clover, Balansa	0.1 K-M	0.5 J	251 K-M	977 J	99 A	100 A	17 AB	43 A
Viper	Clover, Balansa	0.1 K-M	0.7 J	167 K-M	1369 J	99 AB	100 A	15 A-C	25 AB
Lightning	Clover, Berseem	0.1 LM	0.4 J	141 LM	826 J	99 AB	98 A	12 A-D	27 AB
Dixie	Clover, Crimson	0.0 M	0.8 IJ	94 M	1662 IJ	55 G-J	82 AB	13 A-C	12 BC
AU Merit	Vetch, Hairy	0.4 F-H	1.4 GH	836 F-H	2796 GH	73 C-E	63 BC	2 EF	2 DE
Patagonia	Vetch, Hairy	0.5 E-G	1.3 HI	1019 E-G	2524 HI	78 CD	65 BC	0 F	0 E
WinterKing	Vetch, Hairy	0.3 G-K	1.6 E-H	601 G-K	3151 E-H	97 AB	95 A	3 D-F	0 E
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	0.2 I-M	0.5 J	392 I-M	1077 J	55 G-J	18 D-F	8 B-F	20 AB
Aerifi	Radish	0.3 G-K	0.6 J	601 G-K	1155 J	47 I-L	11 D-F	10 A-E	12 BC
Jackpot	Turnip	0.1 J-M	0.5 J	277 J-M	1071 J	53 H-K	31 DE	17 AB	12 BC
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.9 CD	1.7 D-H	1730 CD	3420 D-H	64 D-H	13 D-F	3 D-F	3 D
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	1.0 BC	1.8 B-H	1996 BC	3581 B-H	68 D-G	8 EF	0 F	0 E
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	0.8 CD	2.3 AB	1568 CD	4698 AB	58 F-I	33 D	3 D-F	7 CD
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	0.9 CD	2.3 A-D	1712 CD	4568 A-D	86 A-C	21 D-F	0 F	0 E
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.4 F-J	1.8 C-H	713 F-J	3528 C-H	60 E-I	12 D-F	3 D-F	3 D
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	0.4 F-H	2.0 A-F	883 F-H	3941 A-F	73 C-F	18 D-F	0 F	0 E
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	0.4 F-I	1.5 F-H	776 F-I	3052 F-H	84 BC	57 C	7 C-F	3 D
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	0.5 F-H	1.9 B-G	949 F-H	3779 B-G	95 AB	30 D-F	2 EF	0 E

Table 20. cont.

Summary Statistics									
Variety	Common Name	Biomass (DM tons/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Average		0.8	2.1	1656	4225	43	11	2	2
Min		0.3	1.6	549	3104	34	7	0	2
Max		1.2	2.5	2497	4955	51	19	7	5
Range		1.0	0.9	1948	1850	17	12	7	3
Legumes									
Average		0.2	0.9	419	1800	87	88	10	18
Min		0.0	0.4	94	826	55	63	0	0
Max		0.5	1.6	1019	3151	99	100	18	43
Range		0.5	1.2	925	2326	44	38	18	43
Brassicas									
Average		0.2	0.6	423	1101	52	20	12	14
Min		0.1	0.5	277	1071	47	11	8	12
Max		0.3	0.6	601	1155	55	31	17	20
Range		0.2	0.0	324	84	8	20	8	8
Mixes									
Average		0.6	1.9	1291	3821	74	24	2	2
Min		0.4	1.5	713	3052	58	8	0	0
Max		1.0	2.3	1996	4698	95	57	7	7
Range		0.6	0.8	1283	1646	37	48	7	7
Across Groups									
Average		0.5	1.5	1021	2994	67	40	6	8
Standard Error		0.4	0.7	721	1393	22	35	6	12
Min		0.0	0.4	94	826	34	7	0	0
Max		1.2	2.5	2497	4955	99	100	18	43
Range		1.2	2.1	2403	4129	65	93	18	43
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	N.S.	<0.001	N.S.	<0.001	<0.001	<0.001	<0.001
- Variety x Location		<0.001	<0.001	<0.001	<0.001	0.025	<0.001	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 21. By location mean cover and height of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr[§]	May[‡‡]	Dec	Feb	Apr	May
Cereals									
Bates RS4	Cereal Rye	39 A-D	45 A	92 A-E	97 AB	5 BC	4 B	30 A	64 B
Elbon	Cereal Rye	44 A	43 AB	87 B-F	95 A-C	6 AB	3 C	22 B	63 B
NF95319B	Cereal Rye	42 A-C	42 AB	92 A-E	97 AB	6 AB	5 A	31 A	64 B
NF97325	Cereal Rye	40 A-D	42 AB	90 A-E	95 A-C	5 AB	5 A	30 A	62 B
NF99362	Cereal Rye	36 A-E	39 A-D	95 A-C	97 AB	6 AB	5 A	29 A	66 AB
Yankee	Cereal Rye	43 AB	38 A-D	83 D-G	90 A-D	6 A	3 BC	10 C-E	32 E-G
TN1902	Wheat	35 A-E	38 A-D	87 B-F	87 A-E	4 CD	3 BC	13 CD	26 G-I
Legumes									
Paradana	Clover, Balansa	24 H-J	19 H	12 L	57 H	3 E	3 C	4 GH	8 K
Taipan	Clover, Balansa	19 J	20 GH	15 KL	58 H	3 E	3 C	3 H	8 K
Viper	Clover, Balansa	19 J	19 H	23 JK	82 C-F	3 E	3 C	4 GH	11 JK
Lightning	Clover, Berseem	21 IJ	22 GH	30 J	75 E-G	3 E	3 C	5 E-H	9 JK
Dixie	Clover, Crimson	24 G-J	22 GH	42 I	78 D-F	3 E	3 C	4 F-H	15 J
AU Merit	Vetch, Hairy	27 E-J	27 E-H	93 A-D	100 A	4 DE	3 C	9 C-F	23 I
Patagonia	Vetch, Hairy	30 E-I	27 E-H	93 A-D	100 A	4 D	3 C	9 C-F	25 HI
WinterKing	Vetch, Hairy	25 G-J	20 GH	90 A-E	98 AB	4 D	3 C	8 D-G	24 I
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	25 F-J	27 E-H	75 GH	63 GH	3 E	3 C	22 B	37 C-E
Aerifi	Radish	24 H-J	26 F-H	78 F-H	70 F-H	3 E	4 B	21 B	31 F-H
Jackpot	Turnip	28 E-I	22 GH	70 H	75 E-G	3 E	3 C	23 B	40 C
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	27 E-J	34 B-E	90 A-E	85 B-E	5 AB	3 BC	30 A	64 AB
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	34 B-F	41 A-C	98 A	100 A	6 AB	5 A	29 A	68 AB
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	27 E-J	33 C-F	87 B-F	88 A-E	5 AB	4 BC	29 A	66 AB
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	30 D-H	32 D-F	98 A	100 A	6 A	4 BC	31 A	70 A
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	28 E-J	28 E-G	85 C-G	90 A-D	6 A	3 C	11 CD	32 E-G
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	35 A-E	31 D-F	97 AB	100 A	6 AB	3 C	14 C	39 CD
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	28 E-I	25 F-H	82 E-G	88 A-E	4 CD	3 C	13 CD	27 G-I
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	33 C-G	32 D-F	97 AB	100 A	4 CD	3 C	14 C	34 D-F

Table 21. cont.

Summary Statistics									
Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr§	May‡‡	Dec	Feb	Apr	May
Cereals									
Average		40	41	89	94	5	4	24	54
Min		35	38	83	87	4	3	10	26
Max		44	45	95	97	6	5	31	66
Range		9	7	12	10	2	2	21	40
Legumes									
Average		23	22	50	81	3	3	6	15
Min		19	19	12	57	3	3	3	8
Max		30	27	93	100	4	3	9	25
Range		11	8	82	43	1	0	6	18
Brassicas									
Average		26	25	74	69	3	3	22	36
Min		24	22	70	63	3	3	21	31
Max		28	27	78	75	3	4	23	40
Range		4	5	8	12	0	1	2	10
Mixes									
Average		30	32	92	94	5	4	21	50
Min		27	25	82	85	4	3	11	27
Max		35	41	98	100	6	5	31	70
Range		8	16	17	15	2	2	20	44
Across Groups									
Average		30	31	76	87	4	3	17	39
Standard Error		7	8	27	14	1	1	10	22
Min		19	19	12	57	3	3	3	8
Max		44	45	98	100	6	5	31	70
Range		25	26	87	43	3	2	28	63
ANOVA p-values									
- Variety		**<0.001**	**<0.001**	**<0.001**	**-**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**<0.001**	**-**	**0.003**	**0.003**	**<0.001**	**<0.001**
- Variety x Location		**N.S.**	**<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, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 22. By location mean nitrogen content and estimated nitrogen release of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Bates RS4	Cereal Rye	1.7 LM	1.3 M	2 H-K	4 G-J	8 G-J	-2 J	-3 J	-3 KL
Elbon	Cereal Rye	1.8 K-M	1.4 LM	3 G-K	5 G-J	8 G-J	-2 J	-3 J	-4 L
NF95319B	Cereal Rye	1.6 M	1.2 M	2 G-K	4 G-J	9 E-J	-1 IJ	-1 IJ	0 J-L
NF97325	Cereal Rye	2.0 J-M	1.2 M	2 H-K	4 G-J	7 G-K	-1 IJ	-2 IJ	-1 J-L
NF99362	Cereal Rye	1.7 LM	1.4 LM	2 I-K	3 G-J	6 G-K	-1 IJ	-1 IJ	0 I-L
Yankee	Cereal Rye	2.4 G-J	1.6 LM	2 H-K	4 G-J	5 G-K	2 H-J	4 H-J	6 H-L
TN1902	Wheat	2.2 I-L	1.8 KL	5 C-G	7 C-G	11 C-G	4 G-J	9 F-J	15 E-J
Legumes									
Paradana	Clover, Balansa	2.1 I-L	2.5 F-J	1 K	1 J	2 JK	9 E-H	13 E-H	17 E-J
Taipan	Clover, Balansa	2.2 I-L	2.4 H-J	1 K	2 IJ	3 I-K	8 E-I	11 E-I	14 F-K
Viper	Clover, Balansa	2.5 E-J	2.7 E-H	1 JK	2 H-J	3 H-K	12 E-G	18 E-H	23 E-H
Lightning	Clover, Berseem	2.9 D-F	3.4 CD	1 K	1 J	1 K	9 E-H	14 E-H	18 E-I
Dixie	Clover, Crimson	2.9 DE	2.9 E-G	1 K	1 J	1 K	13 E-G	19 E-G	24 E-H
AU Merit	Vetch, Hairy	3.9 AB	4.0 B	8 AB	13 AB	19 AB	48 AB	71 AB	90 AB
Patagonia	Vetch, Hairy	3.8 AB	3.5 CD	9 A	16 A	23 A	43 BC	65 BC	83 BC
WinterKing	Vetch, Hairy	4.3 A	4.5 A	6 B-F	10 B-F	14 B-F	53 A	80 A	101 A
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	2.6 E-I	2.1 JK	2 G-K	4 G-J	6 G-K	6 F-J	9 F-J	11 G-L
Aerifi	Radish	2.4 G-J	2.1 I-K	4 F-J	6 F-I	9 F-I	6 F-J	9 F-J	11 G-L
Jackpot	Turnip	2.3 H-K	2.3 H-J	2 H-K	3 H-J	4 H-K	5 F-J	7 G-J	10 G-L
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.1 I-L	2.0 JK	6 B-F	10 B-E	16 B-D	6 F-J	10 E-J	15 F-K
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	3.0 C-E	2.9 E-G	9 A	16 A	23 A	31 D	46 D	60 D
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	2.4 F-J	2.4 H-J	6 B-F	10 B-F	15 B-E	15 E	24 E	33 E
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	2.8 E-G	3.0 D-F	7 A-C	12 AB	17 A-C	41 BC	61 BC	80 BC
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.7 E-H	2.6 G-I	4 E-I	6 E-H	9 E-H	11 E-G	19 E-G	26 E-G
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	3.4 B-D	3.1 DE	6 B-E	11 B-D	16 B-D	46 A-C	69 A-C	89 A-C
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	2.7 E-H	2.7 E-H	4 D-H	7 D-G	10 D-G	14 EF	22 EF	29 EF
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	3.5 BC	3.6 C	7 B-D	11 BC	16 B-D	37 CD	56 CD	72 CD

Table 22. cont.

Summary Statistics										
Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Average		1.9	1.4	2	5	8	0	0	2
Min		1.6	1.2	2	3	5	-2	-3	-4
Max		2.4	1.8	5	7	11	4	9	15
Range		0.8	0.6	3	4	6	6	12	19
Legumes									
Average		3.1	3.3	3	6	8	24	36	46
Min		2.1	2.4	1	1	1	8	11	14
Max		4.3	4.5	9	16	23	53	80	101
Range		2.2	2.2	9	15	22	46	68	87
Brassicas									
Average		2.4	2.2	3	4	6	5	8	11
Min		2.3	2.1	2	3	4	5	7	10
Max		2.6	2.3	4	6	9	6	9	11
Range		0.3	0.2	2	3	5	1	1	2
Mixes									
Average		2.8	2.8	6	10	15	25	38	50
Min		2.1	2.0	4	6	9	6	10	15
Max		3.5	3.6	9	16	23	46	69	89
Range		1.3	1.5	5	9	14	40	59	74
Across Groups									
Average		2.6	2.5	4	7	10	16	24	32
Standard Error		0.7	0.9	3	4	6	18	26	33
Min		1.6	1.2	1	1	1	-2	-3	-4
Max		4.3	4.5	9	16	23	53	80	101
Range		2.7	3.4	9	15	22	55	83	105
ANOVA p-values									
- 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		0.017	0.008	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 23-a. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	CP¶		ADF¶		NDF¶	
		Apr	May	Apr	May	Apr	May
Cereals							
Bates RS4	Cereal Rye	10.7 LM	8.2 M	32.4 A	38.6 AB	62.4 A	69.7 A
Elbon	Cereal Rye	11.5 J-M	8.8 LM	28.9 B-E	36.8 A-C	56.5 B	68.2 A
NF95319B	Cereal Rye	10.0 M	7.5 M	32.4 A	39.7 A	60.9 AB	72.1 A
NF97325	Cereal Rye	12.6 I-M	7.7 M	30.5 A-C	39.8 A	58.9 AB	70.4 A
NF99362	Cereal Rye	10.9 K-M	8.7 LM	31.4 AB	39.0 A	61.5 AB	70.8 A
Yankee	Cereal Rye	14.9 F-I	9.9 LM	24.9 F-K	29.5 GH	48.8 C	58.7 B
TN1902	Wheat	13.8 H-K	11.0 KL	26.4 E-I	27.2 HI	48.7 C	52.5 CD
Legumes							
Paradana	Clover, Balansa	13.2 I-L	15.9 F-J	31.3 AB	29.9 E-H	37.5 E-G	33.1 HI
Taipan	Clover, Balansa	13.7 H-L	15.0 H-J	30.5 A-C	30.2 F-H	41.4 DE	35.4 HI
Viper	Clover, Balansa	15.4 E-I	17.0 E-H	30.5 A-D	30.8 D-H	37.4 E-H	34.8 G-I
Lightning	Clover, Berseem	18.2 E	21.3 CD	30.0 A-D	25.1 IJ	39.0 E-G	30.4 IJ
Dixie	Clover, Crimson	18.4 DE	18.4 E-G	23.1 I-L	27.0 HI	28.6 IJ	30.6 IJ
AU Merit	Vetch, Hairy	24.6 AB	25.1 B	21.5 KL	24.1 IJ	24.7 JK	26.3 JK
Patagonia	Vetch, Hairy	23.9 AB	21.8 CD	24.2 G-L	27.0 HI	27.6 IJ	30.5 IJ
WinterKing	Vetch, Hairy	26.7 A	28.4 A	21.0 L	21.8 J	22.1 K	23.0 K
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	16.3 E-H	13.1 JK	24.9 F-K	33.8 C-F	32.2 HI	43.3 EF
Aerifi	Radish	14.8 F-I	13.2 I-K	27.3 C-G	34.5 B-D	34.7 GH	42.2 EF
Jackpot	Turnip	14.5 G-J	14.4 H-J	28.8 B-E	33.9 C-E	37.2 E-H	42.9 EF
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	13.4 H-L	12.8 JK	29.3 A-E	36.7 A-C	48.0 C	55.3 BC
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	18.8 C-E	18.2 E-G	26.2 E-J	31.4 D-G	39.9 EF	44.5 EF
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	15.1 F-I	15.3 H-J	28.2 B-F	33.5 C-F	45.6 CD	47.2 DE
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	17.8 EF	18.9 D-F	26.9 D-H	30.6 D-H	41.5 DE	43.7 EF
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	17.0 E-G	16.0 G-I	22.8 J-L	29.1 GH	38.4 E-G	44.3 EF
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	21.3 B-D	19.2 DE	24.4 G-L	28.8 GH	35.2 F-H	41.3 E-G
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	17.0 E-G	16.7 E-H	25.1 F-K	27.5 HI	36.0 F-H	39.4 F-H
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	21.8 BC	22.2 C	23.7 H-L	24.6 IJ	34.4 GH	34.0 HI

Table 23-a. cont.

Summary Statistics							
Variety	Common Name	CP¶		ADF¶		NDF¶	
		Apr	May	Apr	May	Apr	May
Cereals							
Average		12.1	8.8	29.6	35.8	56.8	66.1
Min		10.0	7.5	24.9	27.2	48.7	52.5
Max		14.9	11.0	32.4	39.8	62.4	72.1
Range		4.9	3.5	7.5	12.6	13.7	19.6
Legumes							
Average		19.3	20.4	26.5	27.0	32.3	30.5
Min		13.2	15.0	21.0	21.8	22.1	23.0
Max		26.7	28.4	31.3	30.8	41.4	35.4
Range		13.5	13.5	10.3	9.1	19.3	12.3
Brassicas							
Average		15.2	13.6	27.0	34.1	34.7	42.8
Min		14.5	13.1	24.9	33.8	32.2	42.2
Max		16.3	14.4	28.8	34.5	37.2	43.3
Range		1.8	1.3	3.9	0.8	5.0	1.1
Mixes							
Average		17.8	17.4	25.8	30.3	39.9	43.7
Min		13.4	12.8	22.8	24.6	34.4	34.0
Max		21.8	22.2	29.3	36.7	48.0	55.3
Range		8.4	9.4	6.5	12.1	13.6	21.3
Across Groups							
Average		16.4	15.6	27.2	31.2	41.5	45.6
Standard Error		4.4	5.5	3.4	5.1	11.4	14.9
Min		10.0	7.5	21.0	21.8	22.1	23.0
Max		26.7	28.4	32.4	39.8	62.4	72.1
Range		16.7	20.9	11.4	18.1	40.4	49.1
ANOVA p-values							
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**N.S.**	**0.014**	**<0.001**	**<0.001**
- Variety x Location		**0.017**	**0.084**	**0.026**	**<0.001**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 23-b. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at at the East Tennessee AgResearch and Education Center, in Knoxville, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Bates RS4	Cereal Rye	3.5 J	2.4 HI	2.5 GH	2.1 HI	4.0 F-K	5.8 D-G
Elbon	Cereal Rye	4.4 H-J	1.8 I	2.7 E-H	2.4 F-I	3.7 J-L	5.6 D-H
NF95319B	Cereal Rye	4.5 H-J	1.7 I	2.4 H	2.1 HI	4.0 F-K	5.8 C-F
NF97325	Cereal Rye	4.3 IJ	2.8 HI	2.8 D-H	2.1 I	3.9 H-L	6.0 C-E
NF99362	Cereal Rye	3.9 J	2.1 HI	2.6 F-H	2.2 HI	4.0 G-K	6.2 CD
Yankee	Cereal Rye	5.8 G-I	2.8 HI	3.5 AB	2.7 B-D	3.6 KL	3.5 JK
TN1902	Wheat	6.8 E-G	3.5 H	3.0 C-E	2.6 B-F	2.9 L	2.9 K
Legumes							
Paradana	Clover, Balansa	8.6 A-D	9.1 A-C	3.3 A-C	2.3 F-I	7.3 AB	6.5 B-D
Taipan	Clover, Balansa	7.7 B-F	9.5 AB	3.1 B-E	2.4 D-I	6.1 CD	6.7 BC
Viper	Clover, Balansa	9.2 A-C	10.6 A	3.0 B-F	2.3 E-I	6.7 A-C	6.2 C-E
Lightning	Clover, Berseem	9.2 AB	9.7 AB	3.0 C-F	2.6 B-F	5.3 DE	4.7 HI
Dixie	Clover, Crimson	8.2 B-E	8.7 B-D	2.5 GH	2.1 HI	4.9 E-H	5.6 D-G
AU Merit	Vetch, Hairy	9.2 AB	8.3 B-E	2.9 C-H	2.9 A-C	4.5 E-K	4.9 G-I
Patagonia	Vetch, Hairy	9.4 AB	8.8 B-D	2.9 C-G	2.9 A-C	5.1 D-F	5.5 D-H
WinterKing	Vetch, Hairy	10.2 A	8.7 B-D	3.0 B-E	3.1 A	4.5 E-K	4.2 IJ
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	8.4 B-E	6.9 EF	2.9 D-H	2.4 E-I	6.7 BC	8.4 A
Aerifi	Radish	8.1 B-E	7.6 C-F	3.0 B-E	2.2 HI	7.9 A	8.7 A
Jackpot	Turnip	8.0 B-E	5.1 G	3.1 A-E	2.3 G-I	7.6 AB	7.4 B
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	6.0 F-H	5.2 G	2.7 E-H	2.2 HI	4.5 E-K	5.6 D-G
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	7.3 C-G	6.4 FG	2.9 C-G	2.6 C-G	4.8 E-J	5.2 E-H
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	6.2 FG	5.5 G	2.8 D-H	2.2 HI	4.3 E-K	5.7 D-G
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	6.9 E-G	6.3 FG	2.9 D-H	2.7 B-F	4.8 E-I	5.1 F-I
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	7.1 D-G	5.1 G	3.5 A	2.7 B-E	3.7 I-L	4.3 IJ
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	8.6 A-D	7.0 EF	3.0 C-E	2.8 A-C	5.1 D-F	5.0 F-I
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	8.3 B-E	6.2 FG	3.1 A-E	2.4 D-H	5.1 D-G	4.7 HI
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	8.0 B-E	7.4 D-F	3.2 A-D	2.9 AB	4.6 E-K	4.3 IJ

Table 23-b. cont.

Summary Statistics							
Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Average		4.7	2.4	2.8	2.3	3.7	5.1
Min		3.5	1.7	2.4	2.1	2.9	2.9
Max		6.8	3.5	3.5	2.7	4.0	6.2
Range		3.4	1.8	1.0	0.6	1.2	3.2
Legumes							
Average		9.0	9.2	3.0	2.6	5.5	5.5
Min		7.7	8.3	2.5	2.1	4.5	4.2
Max		10.2	10.6	3.3	3.1	7.3	6.7
Range		2.5	2.3	0.8	0.9	2.7	2.4
Brassicas							
Average		8.2	6.5	3.0	2.3	7.4	8.1
Min		8.0	5.1	2.9	2.2	6.7	7.4
Max		8.4	7.6	3.1	2.4	7.9	8.7
Range		0.4	2.5	0.2	0.2	1.2	1.3
Mixes							
Average		7.3	6.1	3.0	2.6	4.6	5.0
Min		6.0	5.1	2.7	2.2	3.7	4.3
Max		8.6	7.4	3.5	2.9	5.1	5.7
Range		2.6	2.3	0.8	0.7	1.4	1.4
Across Groups							
Average		7.2	6.1	2.9	2.5	5.0	5.6
Standard Error		1.9	2.7	0.3	0.3	1.3	1.3
Min		3.5	1.7	2.4	2.1	2.9	2.9
Max		10.2	10.6	3.5	3.1	7.9	8.7
Range		6.8	8.9	1.1	1.0	5.0	5.7
ANOVA p-values							
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**N.S.**	**N.S.**	**<0.001**	**<0.001**
- Variety x Location		**0.018**	**0.048**	**N.S.**	**N.S.**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 24. By location mean biomass and weed suppression of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Biomass (DM ton/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Bates RS4	Cereal Rye	0.7 A	1.6 A-C	1415 A	3282 A-C	63 BC	11 H	7 G	3 DE
Elbon	Cereal Rye	0.6 AB	1.8 AB	1296 AB	3517 AB	66 BC	18 GH	7 G	2 EF
NF95319B	Cereal Rye	0.7 A	1.8 A	1364 A	3638 A	57 BC	14 GH	7 G	3 DE
NF97325	Cereal Rye	0.5 A-D	1.7 AB	1051 A-D	3387 AB	71 B	15 GH	8 FG	3 DE
NF99362	Cereal Rye	0.6 A-C	1.5 A-D	1213 A-C	3052 A-D	53 C	15 GH	7 G	3 DE
Yankee	Cereal Rye	0.4 D-G	0.9 E-G	721 D-G	1824 E-G	52 C	18 GH	17 D-F	8 CD
TN1902	Wheat	0.4 D-H	0.8 F-I	711 D-H	1557 F-I	88 A	25 E-H	8 FG	8 CD
Legumes									
Paradana	Clover, Balansa	0.1 J	0.1 K	214 J	204 K	100 A	100 A	95 A	73 A
Taipan	Clover, Balansa	0.1 IJ	0.2 I-K	267 IJ	481 I-K	100 A	100 A	97 A	70 A
Viper	Clover, Balansa	0.1 J	0.3 I-K	214 J	632 I-K	100 A	100 A	93 AB	87 A
Lightning	Clover, Berseem	0.1 G-J	0.3 H-K	287 G-J	653 H-K	100 A	100 A	85 B	38 AB
Dixie	Clover, Crimson	0.3 E-J	0.9 E-G	538 E-J	1798 E-G	99 A	96 A	17 D-F	12 BC
AU Merit	Vetch, Hairy	0.3 D-J	0.9 E-H	632 D-J	1782 E-H	96 A	90 A	17 D-F	2 EF
Patagonia	Vetch, Hairy	0.5 A-E	1.2 B-G	977 A-E	2420 B-G	96 A	53 BC	7 G	0 F
WinterKing	Vetch, Hairy	0.4 C-E	1.0 D-G	815 C-E	1965 D-G	95 A	95 A	10 E-G	2 EF
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	0.1 H-J	0.2 JK	277 H-J	319 JK	93 A	95 A	97 A	82 A
Aerifi	Radish	0.1 J	0.1 K	220 J	105 K	98 A	98 A	98 A	95 A
Jackpot	Turnip	0.2 F-J	0.2 JK	345 F-J	361 JK	100 A	99 A	95 A	88 A
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.4 B-E	1.3 A-F	868 B-E	2540 A-F	86 A	21 F-H	12 D-G	5 CD
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	0.5 A-D	1.3 A-F	1019 A-D	2571 A-F	95 A	41 B-F	5 G	0 F
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	0.5 A-D	1.3 A-F	1030 A-D	2671 A-F	90 A	26 D-H	13 D-G	2 EF
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	0.5 B-E	1.4 A-E	909 B-E	2739 A-E	90 A	46 B-E	8 FG	0 F
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	0.4 D-H	1.1 C-G	716 D-H	2158 C-G	93 A	37 C-G	20 D	5 CD
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	0.3 D-J	1.1 D-G	601 D-J	2117 D-G	92 A	48 B-D	10 E-G	0 F
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	0.4 D-F	0.7 G-J	742 D-F	1343 G-J	98 A	50 BC	35 C	8 CD
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	0.3 D-I	0.9 E-G	679 D-I	1829 E-G	95 A	60 B	18 DE	0 F

Table 24. cont.

Summary Statistics									
Variety	Common Name	Biomass (DM tons/ac)		Biomass (DM lb/ac)		Weed Proportion (%)			
		Apr	May	Apr	May	Dec‡	Feb‡	Apr‡	May
Cereals									
Average		0.6	1.4	1110	2894	64	16	9	5
Min		0.4	0.8	711	1557	52	11	7	2
Max		0.7	1.8	1415	3638	88	25	17	8
Range		0.4	1.0	704	2080	36	14	10	7
Legumes									
Average		0.2	0.6	493	1242	98	92	53	35
Min		0.1	0.1	214	204	95	53	7	0
Max		0.5	1.2	977	2420	100	100	97	87
Range		0.4	1.1	763	2216	5	47	90	87
Brassicas									
Average		0.1	0.1	280	261	97	98	97	88
Min		0.1	0.1	220	105	93	95	95	82
Max		0.2	0.2	345	361	100	99	98	95
Range		0.1	0.1	125	256	7	4	3	13
Mixes									
Average		0.4	1.1	821	2246	92	41	15	3
Min		0.3	0.7	601	1343	86	21	5	0
Max		0.5	1.4	1030	2739	98	60	35	8
Range		0.2	0.7	429	1395	13	39	30	8
Across Groups									
Average		0.4	0.9	735	1882	87	57	34	23
Standard Error		0.2	0.5	371	1100	16	35	38	34
Min		0.1	0.1	214	105	52	11	5	0
Max		0.7	1.8	1415	3638	100	100	98	95
Range		0.6	1.8	1201	3533	48	89	93	95
ANOVA p-values									
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**N.S.**	**<0.001**	**N.S.**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Variety x Location		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**0.025**	**<0.001**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 25. By location mean cover and height of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr[§]	May[‡‡]	Dec	Feb	Apr	May
Cereals									
Bates RS4	Cereal Rye	47 AB	37 A	85 A-C	95 AB	6 A-C	5 AB	26 A	54 A-C
Elbon	Cereal Rye	49 A	28 BC	82 B-D	93 AB	6 AB	4 C-E	20 BC	49 C
NF95319B	Cereal Rye	43 A-E	28 BC	78 CD	97 AB	6 A	5 A-C	22 A-C	51 C
NF97325	Cereal Rye	45 A-C	36 AB	85 A-C	92 AB	6 A-C	5 A	23 AB	53 BC
NF99362	Cereal Rye	37 C-G	22 C-H	78 CD	90 A-C	6 A	4 C-E	19 B-D	48 C
Yankee	Cereal Rye	44 A-D	23 C-G	72 D	85 BC	6 AB	4 C-E	10 F-I	26 E
TN1902	Wheat	37 C-G	23 C-F	77 CD	77 C	5 BC	4 D-F	13 E-G	24 EF
Legumes									
Paradana	Clover, Balansa	23 I	11 J-L	6 F	40 E	3 E	3 F	3 K	6 I
Taipan	Clover, Balansa	26 HI	11 J-L	7 F	55 D	3 E	3 F	3 K	9 HI
Viper	Clover, Balansa	27 HI	8 L	10 F	28 E	3 E	3 F	3 K	8 I
Lightning	Clover, Berseem	37 C-G	14 F-L	15 F	58 D	3 E	3 F	5 JK	10 HI
Dixie	Clover, Crimson	38 B-G	14 G-L	45 E	87 A-C	3 E	3 F	6 H-K	18 FG
AU Merit	Vetch, Hairy	38 C-G	16 E-L	78 CD	100 A	3 E	3 F	9 G-J	22 EF
Patagonia	Vetch, Hairy	34 E-H	16 D-L	85 A-C	100 A	3 E	3 F	10 F-I	24 EF
WinterKing	Vetch, Hairy	34 F-H	13 H-L	90 AB	100 A	3 E	3 F	11 F-H	25 E
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	27 HI	10 KL	7 F	28 E	3 E	3 F	12 FG	26 E
Aerifi	Radish	30 G-I	12 J-L	5 F	30 E	3 E	3 F	6 I-K	14 GH
Jackpot	Turnip	35 D-H	13 I-L	8 F	28 E	3 E	3 F	18 C-E	26 E
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	37 C-G	21 C-I	83 A-C	95 AB	6 A-C	4 C-E	24 AB	58 AB
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	35 D-H	19 D-J	93 A	100 A	6 AB	4 C-E	21 A-C	51 C
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	30 G-I	23 C-G	77 CD	92 AB	6 A-C	4 B-D	25 A	60 A
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	33 F-H	18 D-K	85 A-C	100 A	6 A-C	4 D-F	21 A-C	57 AB
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	37 C-G	24 CD	77 CD	90 A-C	6 A-C	3 F	14 D-F	34 D
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	40 A-F	22 C-G	85 A-C	100 A	4 D	3 EF	13 E-G	27 E
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	41 A-F	23 C-E	77 CD	90 A-C	4 D	3 F	14 E-G	25 E
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	40 A-F	17 D-L	82 B-D	100 A	5 CD	3 F	14 E-G	27 E

Table 25. cont.

Summary Statistics									
Variety	Common Name	Canopy Cover (%)				Height (in)			
		Dec	Feb	Apr§	May‡‡	Dec	Feb	Apr	May
Cereals									
Average		43	28	80	90	6	4	19	43
Min		37	22	72	77	5	4	10	24
Max		49	37	85	97	6	5	26	54
Range		12	16	13	20	1	2	16	30
Legumes									
Average		32	13	42	71	3	3	6	15
Min		23	8	6	28	3	3	3	6
Max		38	16	90	100	3	3	11	25
Range		15	8	84	72	0	0	8	19
Brassicas									
Average		31	12	7	29	3	3	12	22
Min		27	10	5	28	3	3	6	14
Max		35	13	8	30	3	3	18	26
Range		7	3	3	2	0	0	12	12
Mixes									
Average		37	21	82	96	5	4	18	42
Min		30	17	77	90	4	3	13	25
Max		41	24	93	100	6	4	25	60
Range		11	7	17	10	2	1	12	34
Across Groups									
Average		36	19	60	79	5	4	14	32
Standard Error		6	7	33	26	1	1	7	17
Min		23	8	5	28	3	3	3	6
Max		49	37	93	100	6	5	26	60
Range		25	29	88	72	3	2	23	54
ANOVA p-values									
- Variety		<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	<0.001	-	0.003	0.003	<0.001	<0.001
- Variety x Location		N.S.	<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, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 26. By location mean nitrogen content and estimated nitrogen release of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Bates RS4	Cereal Rye	1.3 L	0.8 K	2 G-J	4 G-I	7 F-K	2 H-J	3 H-J	6 I-K
Elbon	Cereal Rye	1.6 I-L	0.8 K	3 F-J	5 F-I	8 E-K	3 H-J	6 G-J	10 H-K
NF95319B	Cereal Rye	1.4 J-L	0.9 JK	2 H-J	4 G-I	6 G-K	1 IJ	2 IJ	5 I-K
NF97325	Cereal Rye	1.4 KL	0.9 K	3 F-I	6 E-I	8 E-K	1 IJ	3 H-J	5 I-K
NF99362	Cereal Rye	1.3 L	0.9 JK	2 H-J	4 G-I	6 G-K	2 H-J	4 H-J	7 I-K
Yankee	Cereal Rye	2.0 G-J	1.3 IJ	3 F-J	5 F-I	8 F-K	4 G-J	6 H-J	9 H-K
TN1902	Wheat	2.0 G-J	1.3 IJ	3 F-J	5 F-I	7 F-K	5 G-J	7 G-J	11 H-K
Legumes									
Paradana	Clover, Balansa	2.9 A-E	2.5 EF	1 IJ	2 I	3 JK	2 H-J	2 IJ	3 JK
Taipan	Clover, Balansa	2.2 F-H	2.6 E	1 IJ	2 I	3 JK	3 H-J	5 H-J	7 I-K
Viper	Clover, Balansa	2.7 C-F	2.7 DE	1 IJ	2 I	3 JK	4 G-J	5 H-J	7 I-K
Lightning	Clover, Berseem	3.1 A-C	3.3 C	2 IJ	3 HI	5 H-K	7 F-J	11 F-J	15 G-K
Dixie	Clover, Crimson	2.7 C-F	3.2 CD	4 E-H	7 D-H	11 D-I	17 B-E	26 B-E	34 C-F
AU Merit	Vetch, Hairy	3.3 AB	4.7 A	8 BC	12 B	18 BC	25 AB	38 AB	50 A-C
Patagonia	Vetch, Hairy	3.2 A-C	4.7 A	10 AB	17 A	25 A	27 AB	41 AB	54 AB
WinterKing	Vetch, Hairy	3.3 A	4.7 A	11 A	18 A	26 A	33 A	49 A	65 A
Brassicas									
Vivant	Hybrid (turnip x rapeseed)	2.3 D-H	2.1 FG	2 H-J	3 I	4 JK	2 H-J	3 H-J	4 JK
Aerifi	Radish	2.4 D-G	2.0 GH	1 J	2 I	2 K	0 J	1 J	1 K
Jackpot	Turnip	2.4 D-H	2.0 GH	2 IJ	3 I	5 I-K	2 H-J	4 H-J	5 I-K
Mixes									
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	1.9 H-K	1.6 HI	3 F-I	6 E-I	9 D-J	11 D-H	16 D-H	22 E-I
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	2.3 E-H	3.2 C	7 CD	12 BC	17 B	19 B-D	29 B-D	39 B-E
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	2.0 G-I	1.9 GH	5 D-G	8 C-G	12 B-G	15 C-F	24 C-F	32 D-G
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	2.1 G-I	3.4 C	6 C-E	10 B-E	14 B-E	23 BC	36 A-C	47 B-D
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	2.3 F-H	2.0 G	4 E-H	8 C-G	11 C-H	13 D-G	20 D-G	26 E-H
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	3.0 A-C	3.9 B	5 C-F	9 B-F	12 B-F	18 B-E	28 B-E	36 B-F
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	2.3 F-H	2.0 G	5 C-F	9 B-F	12 B-F	10 E-I	15 E-I	20 F-J
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	2.8 B-D	3.5 BC	6 C-E	10 B-D	15 B-D	20 B-D	30 B-D	40 B-E

Table 26. cont.

Summary Statistics									
Variety	Common Name	Total Nitrogen¶ (%)		Estimated N Released†† Apr. Term. (lbs/ac)			Estimated N Released†† MayTerm. (lbs/ac)		
		Apr	May	2 wks	4 wks	12 wks	2 wks	4 wks	12 wks
Cereals									
Average		1.6	1.0	3	5	7	3	4	7
Min		1.3	0.8	2	4	6	1	2	5
Max		2.0	1.3	3	6	8	5	7	11
Range		0.7	0.5	1	2	3	4	5	6
Legumes									
Average		2.9	3.5	5	8	12	15	22	29
Min		2.2	2.5	1	2	3	2	2	3
Max		3.3	4.7	11	18	26	33	49	65
Range		1.2	2.2	10	17	24	31	47	62
Brassicas									
Average		2.4	2.0	1	3	4	1	2	3
Min		2.3	2.0	1	2	2	0	1	1
Max		2.4	2.1	2	3	5	2	4	5
Range		0.1	0.1	1	1	2	2	3	3
Mixes									
Average		2.3	2.7	5	9	13	16	25	33
Min		1.9	1.6	3	6	9	10	15	20
Max		3.0	3.9	7	12	17	23	36	47
Range		1.0	2.3	4	6	9	13	21	27
Across Groups									
Average		2.3	2.4	4	7	10	10	16	22
Standard Error		0.6	1.2	3	4	6	10	14	19
Min		1.3	0.8	1	2	2	0	1	1
Max		3.3	4.7	11	18	26	33	49	65
Range		2.0	3.9	10	17	24	32	49	64
ANOVA p-values									
- 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		**0.017**	**0.008**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 27-a. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	CP¶		ADF¶		NDF¶	
		Apr	May	Apr	May	Apr	May
Cereals							
Bates RS4	Cereal Rye	8.2 L	5.3 K	29.8 B-D	41.0 AB	57.1 A	71.4 AB
Elbon	Cereal Rye	10.1 I-L	5.0 K	27.5 B-F	41.9 A	52.9 A	73.7 A
NF95319B	Cereal Rye	9.0 J-L	5.6 JK	29.9 B-D	40.3 A-C	56.9 A	71.5 AB
NF97325	Cereal Rye	9.0 KL	5.5 K	29.3 B-D	39.8 A-C	56.8 A	69.7 AB
NF99362	Cereal Rye	8.3 L	5.9 JK	30.3 BC	40.4 A-C	57.5 A	71.1 AB
Yankee	Cereal Rye	12.2 G-J	8.4 IJ	22.1 H-K	36.9 C-E	41.9 CD	67.2 BC
TN1902	Wheat	12.4 G-J	8.3 IJ	21.6 H-K	30.2 IJ	41.4 C-E	53.7 E
Legumes							
Paradana	Clover, Balansa	16.4 C-F	15.7 EF	35.8 A	29.9 IJ	40.5 C-F	34.6 KL
Taipan	Clover, Balansa	16.4 C-F	16.1 E	30.2 B-D	30.1 IJ	36.3 D-H	36.0 J-L
Viper	Clover, Balansa	17.1 B-E	16.9 DE	31.3 B	30.4 IJ	36.1 E-H	35.2 J-L
Lightning	Clover, Berseem	19.2 A-C	20.3 C	23.4 G-K	25.1 L	30.2 HI	30.7 L-N
Dixie	Clover, Crimson	16.8 C-E	19.7 CD	23.9 F-J	30.3 H-J	30.1 HI	34.3 J-M
AU Merit	Vetch, Hairy	20.7 A	29.3 A	21.1 H-K	25.7 KL	25.0 I	27.2 N
Patagonia	Vetch, Hairy	20.2 AB	29.5 A	22.2 H-K	25.7 KL	26.8 I	27.4 N
WinterKing	Vetch, Hairy	20.9 A	29.1 A	20.9 I-K	25.2 L	25.6 I	27.7 MN
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	14.7 D-H	13.1 FG	24.6 E-H	35.6 D-F	33.5 GH	44.2 G-I
Aerifi	Radish	15.1 D-G	12.3 GH	27.1 C-G	34.1 D-H	35.5 F-H	43.2 G-I
Jackpot	Turnip	15.0 D-H	12.4 GH	24.3 F-I	37.5 B-D	34.0 GH	47.4 FG
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	12.0 H-K	9.8 HI	28.3 B-D	41.1 AB	47.2 B	61.8 CD
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	14.4 E-H	19.9 C	28.3 B-D	33.6 E-I	45.5 BC	45.7 GH
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	12.6 G-I	11.8 GH	26.6 D-G	40.3 A-C	43.1 BC	57.1 DE
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	13.2 F-H	21.1 C	27.8 B-E	32.7 F-J	45.6 BC	44.2 G-I
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	14.3 E-H	12.7 G	19.6 K	34.9 D-G	36.3 E-G	53.2 EF
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	18.5 A-C	24.1 B	20.7 JK	29.0 JK	33.5 GH	38.4 I-K
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	14.2 E-H	12.7 G	21.0 I-K	31.9 G-J	35.4 F-H	47.7 FG
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	17.7 B-D	21.7 BC	22.1 H-K	30.3 IJ	34.0 GH	40.7 H-J

Table 27-a. cont.

Summary Statistics							
Variety	Common Name	CP¶		ADF¶		NDF¶	
		Apr	May	Apr	May	Apr	May
Cereals							
Average		9.9	6.3	27.2	38.6	52.1	68.3
Min		8.2	5.0	21.6	30.2	41.4	53.7
Max		12.4	8.4	30.3	41.9	57.5	73.7
Range		4.1	3.3	8.8	11.7	16.1	20.0
Legumes							
Average		18.5	22.1	26.1	27.8	31.3	31.6
Min		16.4	15.7	20.9	25.1	25.0	27.2
Max		20.9	29.5	35.8	30.4	40.5	36.0
Range		4.5	13.8	14.9	5.3	15.4	8.9
Brassicas							
Average		14.9	12.6	25.3	35.7	34.4	44.9
Min		14.7	12.3	24.3	34.1	33.5	43.2
Max		15.1	13.1	27.1	37.5	35.5	47.4
Range		0.5	0.9	2.9	3.4	2.0	4.3
Mixes							
Average		14.6	16.7	24.3	34.2	40.1	48.6
Min		12.0	9.8	19.6	29.0	33.5	38.4
Max		18.5	24.1	28.3	41.1	47.2	61.8
Range		6.6	14.3	8.8	12.1	13.7	23.5
Across Groups							
Average		14.6	15.1	25.8	33.6	40.0	48.3
Standard Error		3.8	7.7	4.2	5.5	10.0	15.4
Min		8.2	5.0	19.6	25.1	25.0	27.2
Max		20.9	29.5	35.8	41.9	57.5	73.7
Range		12.7	24.5	16.2	16.8	32.5	46.6
ANOVA p-values							
- Variety		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
- Location		**<0.001**	**<0.001**	**N.S.**	**0.014**	**<0.001**	**<0.001**
- Variety x Location		**0.017**	**0.084**	**0.026**	**<0.001**	**<0.001**	**<0.001**

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
§ For analysis, values transformed using (value)^2 due to non-normal distribution. Untransformed means and summary statistics are reported.
‡ For analysis, values transformed using log (value+1) due to non-normal distribution. Untransformed means and summary statistics are reported.
‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

Table 27-b. By location mean forage quality of 36 cover crop varieties and 8 mixes planted in early Nov. 2020, in small plot replicated trials, at at the Middle Tennessee AgResearch and Education Center, in Spring Hill, Tennessee, and evaluated from Fall 2020 to Spring 2021.

Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Bates RS4	Cereal Rye	1.6 K	1.4 G	2.3 IJ	1.8 IJ	3.1 I-L	6.3 BC
Elbon	Cereal Rye	2.8 I-K	1.5 G	2.6 D-J	1.8 J	3.4 G-L	6.2 BC
NF95319B	Cereal Rye	1.7 K	0.6 G	2.2 J	1.8 IJ	3.1 H-L	6.2 B-D
NF97325	Cereal Rye	2.6 JK	1.1 G	2.5 F-J	1.7 J	3.4 G-L	6.4 BC
NF99362	Cereal Rye	2.9 I-K	1.0 G	2.4 G-J	1.8 IJ	3.4 G-K	6.3 BC
Yankee	Cereal Rye	5.3 F-H	3.3 F	3.5 A	2.6 C-F	3.0 J-L	4.9 E-G
TN1902	Wheat	4.0 H-J	3.5 F	3.3 A-C	2.5 D-G	2.4 L	4.3 G
Legumes							
Paradana	Clover, Balansa	14.5 A	8.9 BC	2.9 B-F	2.4 F-H	7.2 A	6.3 BC
Taipan	Clover, Balansa	12.1 B	9.2 A-C	3.0 A-E	2.6 B-F	6.0 AB	6.4 BC
Viper	Clover, Balansa	12.4 AB	8.8 BC	2.3 H-J	2.5 D-G	5.7 BC	6.3 BC
Lightning	Clover, Berseem	9.1 C	10.6 A	3.1 A-D	3.0 AB	4.4 C-G	4.3 G
Dixie	Clover, Crimson	9.0 C	8.4 BC	2.9 B-F	2.5 C-G	4.4 D-H	6.6 B
AU Merit	Vetch, Hairy	6.9 D-F	8.7 BC	2.9 C-F	2.9 A-C	4.9 B-E	4.8 E-G
Patagonia	Vetch, Hairy	7.6 C-E	8.9 BC	2.8 D-G	2.8 A-D	4.7 C-F	4.6 FG
WinterKing	Vetch, Hairy	8.2 CD	9.5 AB	3.0 B-E	3.0 A	4.7 C-F	4.5 FG
Brassicas							
Vivant	Hybrid (turnip x rapeseed)	5.8 FG	5.3 DE	2.7 D-I	2.7 A-F	4.8 B-E	8.2 A
Aerifi	Radish	6.1 E-G	5.0 DE	2.4 G-J	2.1 HI	5.3 B-D	6.8 B
Jackpot	Turnip	5.8 FG	5.4 DE	2.6 E-J	2.7 A-E	4.4 D-G	9.0 A
Mixes							
Bates RS4 (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	4.9 GH	4.2 EF	2.7 D-H	1.8 IJ	4.1 E-I	6.4 BC
Bates RS4 (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	5.7 F-H	7.9 C	2.8 D-H	2.4 E-G	4.4 D-G	5.2 EF
Bates RS4 (10%) + Dixie (90%)	Cereal Rye + Crimson Clover	4.5 G-I	5.0 DE	2.7 D-J	1.8 IJ	3.8 E-J	6.5 B
Bates RS4 (10%) + AU Merit (90%)	Cereal Rye + Hairy Vetch	4.8 GH	8.2 BC	2.6 E-J	2.6 C-F	4.0 E-J	5.3 D-F
Yankee (20%) + Dixie (80%)	Cereal Rye + Crimson Clover	4.6 GH	6.1 D	3.3 AB	2.4 E-G	2.4 KL	5.1 E-G
Yankee (20%) + AU Merit (80%)	Cereal Rye + Hairy Vetch	5.3 F-H	9.1 BC	3.3 A-C	3.0 A	3.2 H-L	4.8 E-G
TN1902 (20%) + Dixie (80%)	Wheat + Crimson Clover	4.7 GH	4.9 DE	3.1 B-D	2.2 GH	3.0 I-L	5.5 C-E
TN1902 (20%) + AU Merit (80%)	Wheat + Hairy Vetch	5.4 F-H	8.2 BC	3.1 B-D	2.7 A-E	3.7 F-J	5.1 E-G

Table 27-b. cont.

Summary Statistics							
Variety	Common Name	Ash¶		Fat¶		Lignin¶	
		Apr	May	Apr	May	Apr†	May
Cereals							
Average		3.0	1.8	2.7	2.0	3.1	5.8
Min		1.6	0.6	2.2	1.7	2.4	4.3
Max		5.3	3.5	3.5	2.6	3.4	6.4
Range		3.7	2.9	1.3	0.9	1.1	2.1
Legumes							
Average		10.0	9.1	2.9	2.7	5.3	5.5
Min		6.9	8.4	2.3	2.4	4.4	4.3
Max		14.5	10.6	3.1	3.0	7.2	6.6
Range		7.5	2.2	0.8	0.6	2.8	2.3
Brassicas							
Average		5.9	5.2	2.6	2.5	4.9	8.0
Min		5.8	5.0	2.4	2.1	4.4	6.8
Max		6.1	5.4	2.7	2.7	5.3	9.0
Range		0.3	0.5	0.3	0.7	0.8	2.2
Mixes							
Average		5.0	6.7	2.9	2.4	3.6	5.5
Min		4.5	4.2	2.6	1.8	2.4	4.8
Max		5.7	9.1	3.3	3.0	4.4	6.5
Range		1.2	4.9	0.8	1.2	2.0	1.7
Across Groups							
Average		6.1	5.9	2.8	2.4	4.1	5.9
Standard Error		3.2	3.1	0.3	0.4	1.1	1.1
Min		1.6	0.6	2.2	1.7	2.4	4.3
Max		14.5	10.6	3.5	3.0	7.2	9.0
Range		12.8	10.0	1.3	1.3	4.8	4.7
ANOVA p-values							
- Variety		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
- Location		<0.001	<0.001	N.S.	N.S.	<0.001	<0.001
- Variety x Location		0.018	0.048	N.S.	N.S.	<0.001	<0.001

† Varieties that have any MS letter in common are not significantly different (Fisher's Protected LSD, $P<0.05$). Mean separation letters are highlighted in dark orange for values that are not statistically different from the highest value across all entries within a given trait. Mean values between the 50th and 75th percentile are highlighted in light orange, mean values above the 75th percentile are highlighted in dark orange.
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‡‡ Non-normal distribution, means reported
¶ Analyzed using near infrared spectroscopy (NIRS) with the appropraite calibration for each species. Reported on a 100% DM basis.
†† Estimated using quality constituents from NIRS inputted into the UGA cover crop nitrogen calculator.

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