MISSISSIPPI COVER CROP
VARIETY TRIALS, 2019

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MISSISSIPPI'S OFFICIAL VARIETY TRIALS

MISSISSIPPI STATE UNIVERSITY™
MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION

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This report contains data generated as part of the Mississippi Agricultural and Forestry Experiment Station. Joint sponsorship by the organizations listed on Page 12 is gratefully acknowledged.

Trade names of commercial and public varieties tested in this report are included only for clarity and understanding. All available names (i.e., trade names, experiment code names or numbers, chemical names, etc.) and varieties, products or source seed in this research are listed on Page 12.

Mississippi Cover Crop Variety Trials, 2019

MAFES Official Variety Trial Contributors

Joshua White
Variety Testing Manager
Department of Plant and Soil Sciences
Mississippi State University

Brett Rushing
Assistant Extension/Research Professor
Coastal Plain Branch Experiment Station
Mississippi State University
Newton, Mississippi

Recognition is given to student worker Joey Hester for his assistance in cultivating, packing, planting, harvesting, and recording plot data.

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Mississippi Cover Crop Variety Trials, 2019

Introduction

Many seed companies and clientele that specialize in forage crops have expanded some of their products to act as cover crops in mixtures or in monoculture. Typically, cover crops are planted before a grain crop to stabilize residual nitrogen or to increase soil nitrogen content (via legumes) for the following crop. In theory, a cover crop can be any plant established for this reason and even include volunteer weeds. However, the most desirable characteristics of a cover crop can include rapid growth to increase incorporation tonnage, lack of competition with the targeted grain crop, low cost to establish, ability to increase N and organic matter in the soil, and effectiveness at providing ground cover during the winter. Some legumes can provide enough nitrogen through "fixation" to feed the following grain crop, while some grass crops can provide an allopathic effect, as well as increasing soil organic matter, which benefits the following crop performance.

Protocol

Varieties of several cover crop species were evaluated in 2019 as part of Mississippi Agricultural and Forestry Experiment Station (MAFES) small-plot trials. Entries were provided by seed companies as well as breeding programs at state universities. All entries from privately owned companies are tested on a fee basis. Selected varieties that are publically or commercially available may be added by the MAFES forage variety-testing program as a reference check for comparison purposes. In addition, varieties of interest may also be added when applicable. Testing during 2018–19 was conducted at the North Mississippi Branch Experiment Station in Holly Springs, Leveck Animal Research Center Forage Unit on the Mississippi State campus, and Coastal Plain Branch Experiment Station in Newton.

The cover crop trial was planted at all locations in the first week of October 2018. Plots were 6 feet by 10 feet and planted using a precision cone seeder on a prepared seedbed. Trial design was a strip plot replicated four

Table 1. Recommended seeding rates for cover crops.

Type/Species	lb/A
Small Grains	
Cereal Rye	100
Annual Ryegrass	30
Legumes	
Hairy Vetch	25
Arrowleaf	10
Berseem	20
Balansa	4
Ball	3
Crimson	30
Persian	8
Winter Peas	40
Red Clover	10
Brassica	
Radish	8

times with harvest date representing a single strip. Recommended seeding rates were used and are presented in Table 1. Individual strips were harvested March 15 and April 1 to best represent cover-crop incorporation before corn production in Mississippi.

At harvest, a weed suppression rating was performed using a 1–10 rating with 1 equal to no weed suppression and 10 equal to excellent weed suppression. In addition, 90-day ground cover was recorded using the Canopeo (Oklahoma State University) application on an iPad. All plots were harvested to a 3-inch stubble height. Plots were harvested using a Winterstieger equipped with a forage Cibus F plot harvester reel-type header that collected a 4.8-foot by 10-foot swath to calculate total yield. A subsample was collected and dried at 130°F until constant weight was achieved to calculate dry matter (DM) concentration.

Forage quality was estimated using NIR (Foss 2500, Foss North America, Eden Prairie, Minnesota) and the mixed hay equation of the NIRS Forage and Feed Testing Consortium (Madison, Wisconsin). Data was used to populate a Nitrogen Availability Calculator Model developed by the University of Georgia College of Agriculture and Environmental Sciences (Athens, Georgia) to report estimated N availability after 2 weeks, 4 weeks and 3 months after termination.

Economic data (Tables 11 and 12) was calculated using local (Mississippi) retail cost of seed from two sources per variety with that cost added to a fixed planting cost of $13 per acre. Nitrogen value was presented as a national average value, and data were analyzed using the General Linear Model (PROC GLM) of SAS and mean separation was conducted using LSD at $\alpha = 0.05$.

The plots at Holly Springs were not considered for data collection due to wildlife grazing pressure that led to limited growth by the scheduled harvest date. Data presented in Tables 3–10 can be used to evaluate the performance of each forage crop within its respective trial. Mean and harvest comparisons were evaluated statistically by using the least significant difference (LSD) test at the probability level of $\alpha = 0.05$. The LSD value represents the minimum amount of yield (pounds per acre) that must be observed between any two varieties to determine if the difference was due to variety variation alone. Sources of seed are presented in Table 13.

Table 2. Monthly rainfall totals for Poplarville, Starkville, Newton, Holly Springs, and Prairie in 2018 and 2019.

Location	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	in	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*
						2018						
Starkville	2.03	10.33	5.61	5.93	1.92	4.34	4.98	2.82	11.08	2.97	7.51	8.67
Holly Springs	3.37	12.98	3.74	7.49	4.44	7.5	3.05	5.02	6.92	1.93	7.7	6.73
Newton	3.34	9.14	4.92	7.11	3.40	1.97	4.65	6.90	7.71	1.76	7.30	9.83
						2019						
Starkville	7.86	8.77	4.24	14.05	7.57	8.33						
Holly Springs	5.41	15.61	2.69	8.82	5.44	5.51						
Newton	6.62	6.46	3.04	9.68	7.13	3.66						
MS 30-yr. avg.	4.96	4.76	5.04	4.96	4.37	4.13	4.8	4.25	3.03	3.94	4.76	5.16

Results

Total nitrogen (TN) production of the aboveground biomass increased 19% at Starkville and 27% at Newton when crop termination was delayed for 2 weeks. In general, legumes like crimson, berseem, balansa, hairy vetch, and winter pea varieties benefited the greatest with respect to TN when termination was delayed. The earliest maturing crop were the radish varieties, which were unaffected by the delay in harvest and were beginning to defoliate by the March 15 termination. In Starkville, ryegrass, rye berseem, and hairy vetch produced the greatest amount of TN by the March 15 termination date. At Newton, winter pea, berseem, and crimson clover produced the greatest TN yield for the earlier termination. Weed suppression was greatest for ryegrass and rye at both locations. Among legume crops, weed suppression was greatest for berseem and hairy vetch at both sites.

When considering variety performance in regards to nitrogen production, results were variable between locations. In Starkville the 'B-18.2014' berseem clover yielded more TN at both termination dates than the other berseem varieties and had greater weed suppression. 'Fixation' produced the greatest TN and weed suppression among balansa clovers by the second termination date. Though crimson clovers are typically the earliest maturing clovers, weed suppression was only fair among varieties. 'White Cloud' and 'Kentucky Pride' crimson outyielded the other varieties only when termination was delayed 2 weeks. In Starkville, 'Survivor' winter peas produced the greatest TN among winter pea varieties. Among cereal rye varieties 'Wintergrazer 70' and 'Elbon' were the greatest TN producers at both termination dates. At Newton, 'Fixation' and 'GO-FBG' were the greatest TN producers among balansa varieties. 'Frosty' and 'B-18.2014' outyielded 'Balady' berseem clover. 'Dixie' was the greatest TN yielder among crimson varieties by the March 15 termination but was similar to 'White Cloud' and 'Kentucky Pride' 2 weeks later. 'Winter King' hairy vetch was the earliest producer of N but was surpassed by 'Patagonia Inta' by April 1.

When considering the economic value of a cover crop, one can estimate the value of chemical N by the unit N applied and compare that dollar value to the cost of planting and incorporating a cover-crop species. Some added benefits of a cover crop may consider organic matter and N stabilization in the soil. The data presented in Tables 3 and 4 considers only the aboveground biomass and does not include root biomass.

Table 3. Predicted nitrogen availability of cover crop varieties at 2 weeks, 3 weeks, and 3 months after two termination dates in Starkville, Mississippi.

Variety	Species	March 15 termination				April 1 termination			
		2 wk.	4 wk.	3 mo.	Total N	2 wk.	4 wk.	3 mo.	Total N
		lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Flying A	Ryegrass	17	27	40	84	18	30	43	90
Double O Blend	Winter Peas	8	13	20	41	14	22	29	65
Digger	Radish	11	19	27	57	11	17	24	52
White Cloud	Crimson	13	22	32	67	26	39	52	118
Villiana	Hairy Vetch	15	25	36	76	17	26	34	77
Bates RS4	Cereal Rye	12	20	31	63	9	16	25	51
NF97325	Cereal Rye	11	20	31	62	7	14	25	46
NF95319B	Cereal Rye	11	19	30	60	11	18	27	56
NF99362	Cereal Rye	11	19	31	61	4	8	16	28
Dixie II	Crimson	9	15	21	45	9	14	19	41
Dixie	Crimson	14	22	32	68	17	26	34	76
Wintergrazer 70	Cereal Rye	19	31	47	97	14	23	33	70
AU Merit	Hairy Vetch	18	29	43	90	34	51	67	152
WinterKing	Hairy Vetch	14	23	33	70	23	34	45	102
Patagonia Inta	Hairy Vetch	14	24	34	72	28	42	55	125
WyoWinter	Winter Peas	9	14	21	44	10	15	20	46
B-18.2014	Berseem	16	27	39	82	30	45	59	135
Pro 158-7204	Winter Peas	11	18	26	55	10	15	21	45
Pro 168-6206	Winter Peas	8	12	19	39	10	16	21	47
Survivor	Winter Peas	14	23	34	71	18	28	37	83
Driller	Radish	13	22	33	68	12	18	25	55
Fixation	Balansa	16	27	39	82	42	62	82	186
GO-FBG	Balansa	7	11	16	33	12	18	23	53
GO-F2	Balansa	14	23	34	71	28	42	55	124
GO-PER12	Persian	11	18	26	54	16	23	31	70
Dynamite	Red Clover	9	14	20	43	13	20	27	60
Frosty	Berseem	14	23	33	69	18	27	36	80
Balady	Berseem	11	18	26	55	10	15	20	44
Kentucky Pride	Crimson	12	20	29	60	23	35	47	105
Elbon	Cereal Rye	16	27	40	82	19	30	41	91
Southern Belle	Red Clover	14	23	34	71	19	29	40	88
Mean		13	21	31	64	17	26	36	79
CV%		34	34	33	34	36	35	34	34
LSD (0.05)		NS[1]	NS	NS	35	10	15	20	45

[1]Not Significant
Planted: 10/11/18
Soil Type: Marietta Fine Sandy Loam

Table 4. Predicted nitrogen availability of cover crop varieties at 2 weeks, 3 weeks, and 3 months after two termination dates in Newton, Mississippi.

Variety	Species	March 15 termination				April 1 termination			
		2 wk.	4 wk.	3 mo.	Total N	2 wk.	4 wk.	3 mo.	Total N
		lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Flying A	Ryegrass	10	17	27	54	8	15	27	50
Double O Blend	Winter Peas	20	32	47	98	35	52	68	154
Digger	Radish	6	10	14	29	9	14	19	41
White Cloud	Crimson	17	27	39	83	30	45	60	135
Villiana	Hairy Vetch	14	24	35	73	16	24	32	72
Bates RS4	Cereal Rye	9	16	27	52	5	8	15	27
NF97325	Cereal Rye	16	26	39	80	1	3	8	12
NF95319B	Cereal Rye	5	10	15	29	4	7	13	23
NF99362	Cereal Rye	1	3	6	10	2	4	8	14
Dixie II	Crimson	15	24	35	74	19	29	38	86
Dixie	Crimson	29	47	68	144	40	59	78	177
Wintergrazer 70	Rye	10	16	24	50	2	4	9	15
AU Merit	Hairy Vetch	20	32	47	99	22	33	44	98
WinterKing	Hairy Vetch	23	37	53	113	39	58	77	173
Patagonia Inta	Hairy Vetch	12	21	34	66	45	68	89	201
WyoWinter	Winter Peas	12	21	33	66	37	55	73	165
B-18.2014	Berseem	18	28	41	87	37	56	74	166
Pro 158-7204	Winter Peas	17	27	39	83	21	32	44	96
Pro 168-6206	Winter Peas	21	34	49	103	30	45	60	135
Survivor	Winter Peas	26	42	61	129	34	51	67	151
Driller	Radish	7	12	19	37	7	11	16	33
Fixation	Balansa	24	39	57	120	30	44	58	132
GO-FBG	Balansa	22	35	50	106	34	51	67	151
GO-F2	Balansa	11	18	27	56	20	31	42	92
GO-PER12	Persian	14	22	32	67	24	36	47	106
Dynamite	Red Clover	9	13	19	41	20	29	39	87
Frosty	Berseem	21	34	50	104	48	72	95	215
Balady	Berseem	12	19	29	60	15	22	30	66
Kentucky Pride	Crimson	10	16	24	50	27	40	53	119
Elbon	Cereal Rye	10	18	29	56	3	6	12	21
Southern Belle	Red Clover	8	14	23	45	12	19	26	56
Mean		14	24	35	73	21	33	44	99
CV%		52	50	46	49	41	40	39	40
LSD (0.05)		NS[1]	NS	NS	72	18	27	36	81

[1]Not Significant
Planted: 10/12/18
Soil Type: Prentiss Sandy Loam

Table 5. Weed suppression and ground cover ratings of cover crop varieties at two termination dates in Starkville, Mississippi.

Variety	Species	March 15 termination		April 1 termination	
		Weed suppression	90-day ground cover	Weed suppression	90-day ground cover
		Rating[1]	*%*	*Rating*	*%*
Flying A	Ryegrass	10	95	10	93
Double O Blend	Winter Peas	2	72	2	88
Digger	Radish	9	94	7	97
White Cloud	Crimson	3	84	6	94
Villiana	Hairy Vetch	6	96	8	92
Bates RS4	Cereal Rye	9	92	9	87
NF97325	Cereal Rye	9	91	7	94
NF95319B	Cereal Rye	10	95	10	93
NF99362	Cereal Rye	10	96	9	92
Dixie II	Crimson	4	83	3	85
Dixie	Crimson	5	86	6	84
Wintergrazer 70	Rye	10	96	9	94
AU Merit	Hairy Vetch	8	91	8	90
WinterKing	Hairy Vetch	5	90	8	91
Patagonia Inta	Hairy Vetch	7	96	8	94
WyoWinter	Winter Peas	2	83	2	75
B-18.2014	Berseem	8	94	9	92
Pro 158-7204	Winter Peas	1	86	2	78
Pro 168-6206	Winter Peas	2	88	2	78
Survivor	Winter Peas	4	94	6	85
Driller	Radish	8	94	6	93
Fixation	Balansa	8	97	7	92
GO-FBG	Balansa	3	69	2	76
GO-F2	Balansa	8	94	6	90
GO-PER12	Persian	3	92	4	90
Dynamite	Red Clover	4	84	3	84
Frosty	Berseem	7	88	8	83
Balady	Berseem	1	91	1	93
Kentucky Pride	Crimson	4	96	7	95
Elbon	Cereal Rye	10	95	8	94
Southern Belle	Red Clover	4	93	4	84
Mean		6	90	6	89
CV%		36	8	44	13
LSD (0.05)		4	13	4.3	NS[2]

[1]Rating: 1 = no weed suppression, 10 = total weed suppression
[2]Not Significant
Planted: 10/11/18
Soil Type: Marietta Fine Sandy loam

Table 6. Weed suppression and ground cover ratings of cover crop varieties at two termination dates in Newton, Mississippi.

Variety	Species	March 15 termination		April 1 termination	
		Weed suppression	90-day ground cover	Weed suppression	90-day ground cover
		Rating[1]	*%*	*Rating*	*%*
Flying A	Ryegrass	7	79	9	79
Double O Blend	Winter Peas	5	66	7	73
Digger	Radish	6	56	2	62
White Cloud	Crimson	3	75	5	70
Villiana	Hairy Vetch	5	43	5	47
Bates RS4	Cereal Rye	9	60	10	57
NF97325	Cereal Rye	9	60	8	53
NF95319B	Cereal Rye	9	46	7	40
NF99362	Cereal Rye	9	37	7	32
Dixie II	Crimson	7	38	5	34
Dixie	Crimson	6	61	9	50
Wintergrazer 70	Rye	8	85	9	85
AU Merit	Hairy Vetch	7	47	7	42
WinterKing	Hairy Vetch	7	74	10	70
Patagonia Inta	Hairy Vetch	8	75	9	71
WyoWinter	Winter Peas	6	93	7	93
B-18.2014	Berseem	7	87	9	83
Pro 158-7204	Winter Peas	4	72	5	69
Pro 168-6206	Winter Peas	7	77	7	76
Survivor	Winter Peas	5	78	7	73
Driller	Radish	5	83	2	80
Fixation	Balansa	5	51	9	65
GO-FBG	Balansa	4	57	8	56
GO-F2	Balansa	3	60	6	61
GO-PER12	Persian	5	57	8	59
Dynamite	Red Clover	4	68	7	58
Frosty	Berseem	6	45	9	48
Balady	Berseem	3	72	5	84
Kentucky Pride	Crimson	4	63	8	70
Elbon	Cereal Rye	8	74	9	71
Southern Belle	Red Clover	3	61	1	52
Mean		6	64	7	61
CV%		22	15	30	15
LSD (0.05)		3	21	4.3	19.8

[1]Rating: 1 = no weed suppression, 10 = total weed suppression
Planted: 10/12/18
Soil Type: Prentiss Sandy loam

Table 7. Nitrogen availability of cover crop species at two termination dates in Starkville, Mississippi.

Variety	March 15 termination				April 1 termination			
	2 wk.	4 wk.	3 mo.	Total N	2 wk.	4 wk.	3 mo.	Total N
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Balansa	12	20	29	60	23	34	45	102
Berseem	15	25	36	76	24	36	48	107
Crimson	12	20	28	60	19	28	38	85
Hairy Vetch	16	25	37	77	25	38	50	114
Persian	11	18	26	54	16	23	31	70
Red Clover	11	19	27	57	16	25	34	74
Radish	12	20	30	63	12	18	24	54
Cereal Rye	13	23	35	71	11	18	28	57
Ryegrass	17	27	40	84	18	30	43	90
Winter Pea	10	16	24	50	12	19	26	57
Mean	13	21	31	65	17	27	37	81
CV%	35	35	34	35	50	49	47	48
LSD (0.05)	NS[1]	NS	11	24	9	14	19	42

[1]Not Significant
Planted: 10/11/18
Soil Type: Marietta Fine Sandy loam

Table 8. Nitrogen availability of cover crop species at two termination dates in Newton, Mississippi.

Variety	March 15 termination				April 1 termination			
	2 wk.	4 wk.	3 mo.	Total N	2 wk.	4 wk.	3 mo.	Total N
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Balansa	17	28	41	85	24	37	49	110
Berseem	19	31	45	95	42	64	84	190
Crimson	18	29	41	87	29	43	57	129
Hairy Vetch	17	28	42	88	30	46	60	136
Persian	14	22	32	67	24	36	47	106
Red Clover	8	14	21	43	16	24	32	71
Radish	6	11	16	33	8	12	17	37
Cereal Rye	8	15	23	46	3	5	11	18
Ryegrass	10	17	27	54	8	15	27	50
Winter Pea	19	31	45	95	31	47	62	140
Mean	14	22	33	69	21	33	45	99
CV%	53	51	48	50	45	44	42	44
LSD (0.05)	10	16	23	48	13	20	26	59

Planted: 10/12/18
Soil Type: Prentiss Sandy loam

Table 9. Weed suppression and ground cover ratings for cover crop species at two termination dates in Starkville, Mississippi.

Species	March 15 termination		April 1 termination	
	Weed suppression	90-day ground cover	Weed suppression	90-day ground cover
	Rating[1]	*%*	*Rating*	*%*
Balansa	5	88	4	88
Berseem	8	91	8	87
Crimson	4	87	6	89
Hairy Vetch	7	93	8	92
Persian	3	92	4	90
Red Clover	4	89	4	84
Radish	9	94	7	95
Cereal Rye	10	94	9	93
Ryegrass	10	95	10	93
Winter Pea	2	85	3	81
Mean	6	91	6	89
CV%	39	10	44	12
LSD (0.05)	3	NS[2]	2.9	NS

[1]Rating: 1 = no weed suppression, 10 = total weed suppression
[2]Not Significant
Planted: 10/11/18
Soil Type: Marietta Fine Sandy loam

Table 10. Weed suppression and ground cover ratings for cover crop species at two termination dates in Newton Mississippi.

Species	March 15 termination		April 1 termination	
	Weed suppression	90-day ground cover	Weed suppression	90-day ground cover
	Rating[1]	*%*	*Rating*	*%*
Balansa	4	59	7	61
Berseem	6	72	9	76
Crimson	5	74	7	69
Hairy Vetch	6	71	8	70
Persian	5	68	8	58
Red Clover	3	54	4	55
Radish	5	53	2	63
Cereal Rye	9	50	8	44
Ryegrass	7	79	9	79
Winter Pea	5	78	7	77
Mean	5	66	7	65
CV%	23	19	32	19
LSD (0.05)	2	17	2.9	17

[1]Rating: 1 = no weed suppression, 10 = total weed suppression
Planted: 10/12/18
Soil Type: Prentiss Sandy loam

Table 12. Economic value of cover crop nitrogen at Newton, Mississippi.

Variety	Species	March 15 termination			April 1 termination		
		Total N	Cost[1]	Market value[2]	Total N	Cost	Market value
		lb/A	*$/A*	*$/lb N*	*lb/A*	*$/A*	*$/lb N*
Flying A	Ryegrass	54.0	23.4	25.4	49.5	23.4	23.3
Double O Blend	Winter Peas	98.0	35.0	46.1	154.0	35.0	72.4
Digger	Radish	28.5	21.3	13.4	40.5	21.3	19.0
White Cloud	Crimson	82.5	21.0	38.8	135.0	21.0	63.5
Villiana	Hairy Vetch	73.0	33.0	34.3	72.0	33.0	33.8
Bates RS4	Cereal Rye	52.0	25.0	24.4	27.0	25.0	12.7
NF97325	Cereal Rye	80.0	25.0	37.6	11.5	25.0	5.4
NF95319B	Cereal Rye	29.0	25.0	13.6	23.0	25.0	10.8
NF99362	Cereal Rye	9.5	25.0	4.5	13.5	25.0	6.3
Dixie II	Crimson	73.5	21.0	34.5	85.5	21.0	40.2
Dixie	Crimson	144.0	21.0	67.7	176.5	21.0	83.0
Wintergrazer 70	Rye	49.5	25.0	23.3	15.0	25.0	7.1
AU Merit	Hairy Vetch	99.0	33.0	46.5	97.5	33.0	45.8
WinterKing	Hairy Vetch	112.5	33.0	52.9	173.0	33.0	81.3
Patagonia Inta	Hairy Vetch	66.0	33.0	31.0	200.5	33.0	94.2
WyoWinter	Winter Peas	65.5	35.0	30.8	164.5	35.0	77.3
B-18.2014	Berseem	86.5	38.3	40.7	165.5	38.3	77.8
Pro 158-7204	Winter Peas	82.5	35.0	38.8	95.5	35.0	44.9
Pro 168-6206	Winter Peas	102.5	35.0	48.2	135.0	35.0	63.5
Survivor	Winter Peas	128.5	35.0	60.4	151.0	35.0	71.0
Driller	Radish	37.0	21.3	17.4	33.0	21.3	15.5
Fixation	Balansa	120.0	23.9	56.4	131.5	23.9	61.8
GO-FBG	Balansa	106.0	23.9	49.8	150.5	23.9	70.7
GO-F2	Balansa	55.5	23.9	26.1	91.5	23.9	43.0
GO-PER12	Persian	67.0	18.6	31.5	106.0	18.6	49.8
Dynamite	Red Clover	40.5	19.5	19.0	87.0	19.5	40.9
Frosty	Berseem	104.0	38.3	48.9	214.5	38.3	100.8
Balady	Berseem	59.5	38.3	28.0	66.0	38.3	31.0
Kentucky Pride	Crimson	49.5	21.0	23.3	118.5	21.0	55.7
Elbon	Cereal Rye	56.0	25.0	26.3	20.5	25.0	9.6
Southern Belle	Red Clover	44.5	19.5	20.9	55.5	19.5	26.1

[1]Cost: average seed prices plus $13 per acre for planting cost
[2]Market value: assumes fertilizer cost at $0.47 per pound of N

Table 11. Economic value of cover crop nitrogen at Starkville, Mississippi.

Variety	Species	March 15 termination			April 1 termination		
		Total N	Cost[1]	Market value[2]	Total N	Cost	Market value
		lb/A	*$/A*	*$/lb N*	*lb/A*	*$/A*	*$/lb N*
Flying A	Ryegrass	84.0	23.4	39.5	90.0	23.4	42.3
Double O Blend	Winter Peas	41.3	35.0	19.4	65.0	35.0	30.6
Digger	Radish	57.3	21.3	26.9	52.3	21.3	24.6
White Cloud	Crimson	66.7	21.0	31.3	117.7	21.0	55.3
Villiana	Hairy Vetch	76.3	33.0	35.9	77.3	33.0	36.3
Bates RS4	Cereal Rye	62.7	25.0	29.5	50.7	25.0	23.8
NF97325	Cereal Rye	62.3	25.0	29.3	46.0	25.0	21.6
NF95319B	Cereal Rye	60.3	25.0	28.4	56.3	25.0	26.5
NF99362	Cereal Rye	61.3	25.0	28.8	27.7	25.0	13.0
Dixie II	Crimson	44.7	21.0	21.0	41.0	21.0	19.3
Dixie	Crimson	68.0	21.0	32.0	76.0	21.0	35.7
Wintergrazer 70	Rye	96.7	25.0	45.4	69.7	25.0	32.7
AU Merit	Hairy Vetch	90.3	33.0	42.5	151.7	33.0	71.3
WinterKing	Hairy Vetch	69.7	33.0	32.7	102.3	33.0	48.1
Patagonia Inta	Hairy Vetch	72.0	33.0	33.8	124.7	33.0	58.6
WyoWinter	Winter Peas	43.7	35.0	20.5	45.7	35.0	21.5
B-18.2014	Berseem	82.3	38.3	38.7	134.7	38.3	63.3
Pro 158-7204	Winter Peas	54.7	35.0	25.7	45.3	35.0	21.3
Pro 168-6206	Winter Peas	38.7	35.0	18.2	46.7	35.0	21.9
Survivor	Winter Peas	70.7	35.0	33.2	83.3	35.0	39.2
Driller	Radish	67.7	21.3	31.8	54.7	21.3	25.7
Fixation	Balansa	81.7	23.9	38.4	185.7	23.9	87.3
GO-FBG	Balansa	33.3	23.9	15.7	52.7	23.9	24.8
GO-F2	Balansa	70.7	23.9	33.2	124.3	23.9	58.4
GO-PER12	Persian	54.3	18.6	25.5	70.3	18.6	33.1
Dynamite	Red Clover	43.0	19.5	20.2	60.3	19.5	28.4
Frosty	Berseem	69.3	38.3	32.6	80.0	38.3	37.6
Balady	Berseem	55.3	38.3	26.0	44.3	38.3	20.8
Kentucky Pride	Crimson	60.3	21.0	28.4	104.7	21.0	49.2
Elbon	Cereal Rye	82.3	25.0	38.7	91.0	25.0	42.8
Southern Belle	Red Clover	71.0	19.5	33.4	88.3	19.5	41.5

[1]Cost: average seed prices plus $13 per acre for planting cost
[2]Market value: assumes fertilizer cost at $0.47 per pound of N

Table 13. Seed sources for the 2018–19 cover crop variety testing program.

Variety	Seed company/source
Flying A	Oregro Seeds
Double O Blend	Oregro Seeds
Digger	Oregro Seeds
White Cloud	Oregro Seeds
Villiana	Oregro Seeds
Bates RS4	The Noble Foundation
NF97325	The Noble Foundation
NF95319B	The Noble Foundation
NF99362	The Noble Foundation
NF95319B	The Noble Foundation
Dixie II	Lewis Seed Co
Dixie	Check Variety
Wintergrazer 70	Pennington
AU Merit	Smith Seed Services
WinterKing	Smith Seed Services
Patagonia Inta	Smith Seed Services
WyoWinter	Smith Seed Services
B-18.2014	Smith Seed Services
Pro 158-7204	Smith Seed Services
Pro 168-6206	Smith Seed Services
Survivor	Grassland Oregon
Driller	Grassland Oregon
Fixation	Grassland Oregon
GO-FBG	Grassland Oregon
GO-F2	Grassland Oregon
GO-PER12	Grassland Oregon
Dynamite	Grassland Oregon
Frosty	Grassland Oregon
Balady	Grassland Oregon
Kentucky Pride	Grassland Oregon
Elbon	The Noble Foundation
Southern Belle	Check Variety

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