MISSISSIPPI ANNUAL COOL-SEASON FORAGE CROP

VARIETY TRIALS, 2024

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MISSISSIPPI'S OFFICIAL VARIETY TRIALS

MISSISSIPPI STATE UNIVERSITY™
MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION

NOTE TO USER

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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 15 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 seed sources in this research are listed on Page 15.

Mississippi Annual Cool-Season Forage Crop Variety Trials, 2024

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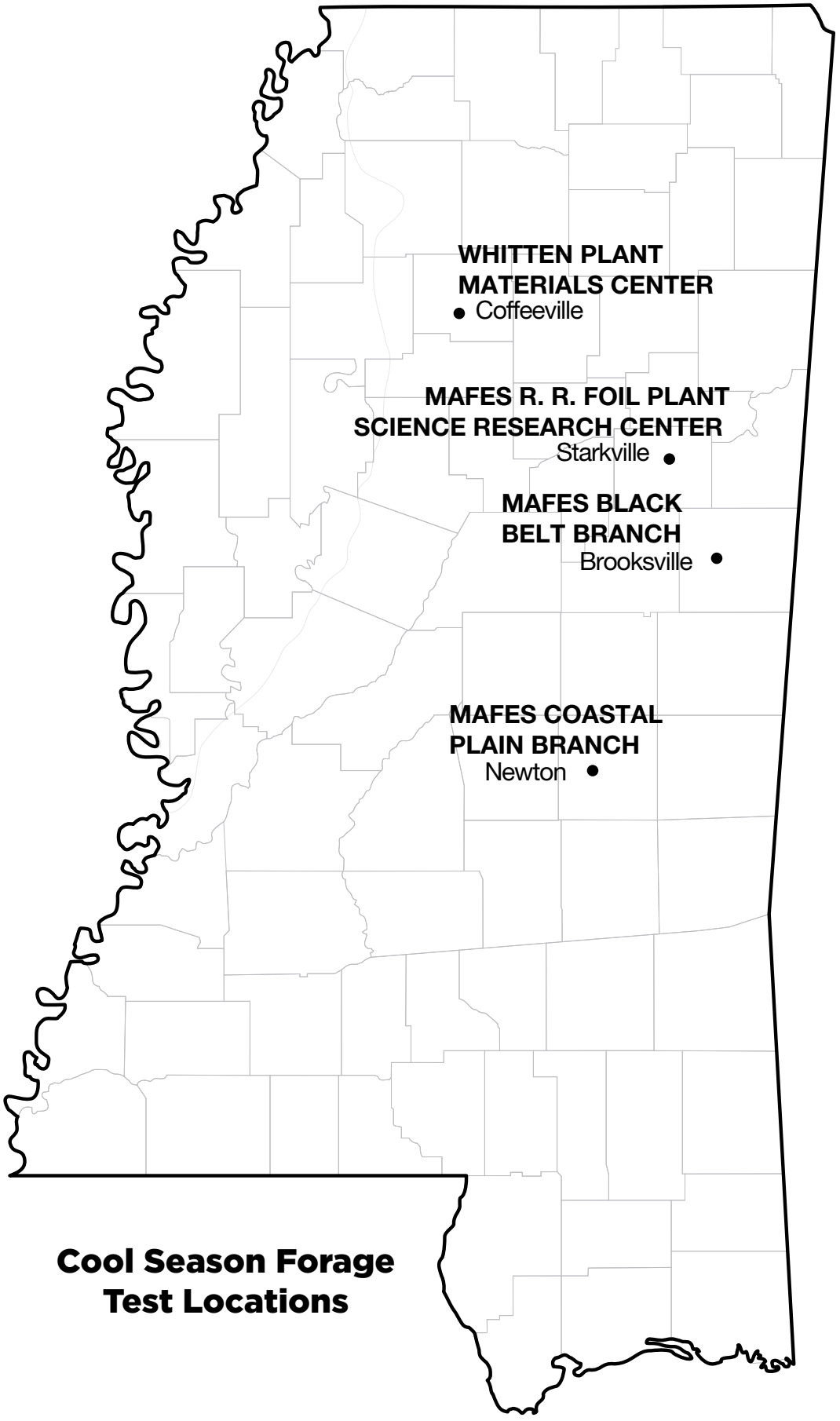
Find variety trial information online at ***mafes.msstate.edu/variety-trials***.



Cool Season Forage Test Locations

Mississippi Annual Cool-Season Forage Crop Variety Trials, 2024

INTRODUCTION

Varieties of several forage crop species are evaluated every year in the Mississippi Agricultural and Forestry Experiment Station's (MAFES) small-plot forage trials. Entries are provided by seed companies as well as forage and breeding programs at state universities. Experimental and commercially available varieties are tested at one or more locations across Mississippi.

All entries from privately-owned companies are tested on a fee basis. Some varieties may be added by the MAFES forage variety testing program as a reference for comparison purposes. In addition, varieties of interest may also be added when applicable. Testing was conducted at the following locations: MAFES H. H. Leveck Animal Research Center Forage Unit (Mississippi State campus), MAFES Black Belt Branch (Brooksville, MS), MAFES Coastal Plain Branch (Newton, MS) and the USDA Plant Materials Center (Coffeeville, MS).

Data presented in Tables 2-17 are used to evaluate the performance of each forage crop within its respective trial. Mean and harvest comparisons were statistically evaluated by using the least significant difference (LSD) test at the probability level of $\alpha = 0.05$. The LSD value represents the minimum amount of dry matter (DM) yield (lb/A) that must be observed between any two varieties to determine if the difference was due to the variety's performance alone. Sources of seed are presented in Table 18.

PROTOCOL

Annual ryegrass, small grains, and annual clover trials across the state were established between October and November of 2023. At all locations, soil samples were taken and analyzed by the Mississippi State University Soil Testing Laboratory. Trial areas were amended with lime and fertilized with phosphorus (P_2O_5) and potassium (K_2O) according to the soil test recommendations for individual species. Grass trials were additionally fertilized with 50 lb N/A at planting and after the 1st harvest using urea (46-0-0). Entries were planted in 6 x 10 ft plots using an ALMACO (Nevada, IA) precision cone seeder on a prepared seedbed.

The trial design was a randomized complete block replicated four times. The seeding rates used are presented in Table 1 using pure live seed (PLS). Individual trials were harvested when 75% of the plots achieved 15 inches of growth. All plots were harvested to a three-inch stubble height using a Winterstieger Cibus F (Winterstieger AG, Ried, Austria) equipped with a forage plot harvester reel type header that collected a 4.8 ft x 10 ft swath to calculate the total yield.

A subsample was collected and dried at 130°F until a constant weight was achieved to calculate DM concentration. Subsamples were then ground to pass through a 1-mm screen using a Wiley mill (Thomas Scientific, Swedesboro, NJ). Forage nutritive value was estimated using a Foss DS2500 NIR (FOSS, North

Table 1. Recommended seeding rates for cool-season forage crops.

Type	Species	lb/A PLS
Annual Grasses	Rye	100
	Oat	100
	Triticale	100
	Ryegrass	30
Annual Clovers	Arrowleaf	10
	Berseem	25
	Balansa	4
	Ball	3
	Crimson	30
	Persian	8

America, Eden Prairie, MS) and applying the legume or grass hay equation developed by the NIRS Forage and Feed Testing Consortium (Berea, KY). Forage nutritive value included Acid Detergent Fiber (ADF), Crude Protein (CP), lignin, Neutral Detergent Fiber (NDF), Insoluble Crude Protein (Insol CP), and Water-Soluble Content (WSC). Data were analyzed using the General Linear Model (PROC GLM) of SAS and mean separation was conducted using LSD at $\alpha = 0.05$.

ANNUAL RYEGRASS VARIETY TEST

INTRODUCTION

Annual ryegrass is the most relevant and versatile cool-season annual grass for livestock producers in Mississippi. In pasture and hay systems, annual ryegrass is a popular forage because of its ease of establishment, high nutritive value, high yielding potential, good reseeding ability, and adaptability to a wide range of soil types. Annual ryegrass can be established in pure stands or mixed with small grains and/or clovers for cool-season forage production. For these reasons, annual ryegrass is a staple for many cool-season grazing programs in Mississippi.

Recommended planting dates vary by location but usually fall between September to mid-October for prepared seedbed or late October if overseeded on a warm-season perennial grass pasture. Seeding rates are 30 lb/A for pure stands and 20 lb/A for mixtures with small grains and/or clovers. Annual ryegrass is responsive to nitrogen fertilizer and its use should be split into two applications for grazing systems. Reasonable productivity can be expected from November to May in the southern part of Mississippi and February to May in the northern part of Mississippi. Annual ryegrass should normally be allowed to reach an initial height of at least 10 inches before grazing begins.

RESULTS

Total forage yields averaged 7178, 6953, and 8411 lb/A at Coffeeville, Brooksville, and Newton, respectively (Tables 2, 3, and 4). Forage yields were greater in 2024 than previous years due to a delayed first harvest at most locations. Drought conditions in the fall gave ryegrass a slow start forgoing the usual winter harvest across the state. Forage nutritive value was only analyzed from the Brooksville and Coffeeville locations. In Brooksville, average CP in ryegrass was 26 and 13% of the DM for the first and second harvest (Table 5). Conversely, lignin and fiber fractions increased substantially with the second harvest. Fiber fractions (ADF, Lignin, and NDF) were affected by varietal differences unlike CP, which was relatively consistent among entries. A similar trend was observed in Coffeeville between the first and second harvest; however, forage NDF and ADF were affected by variety in the second harvest (Table 6).

Table 2. Annual ryegrass production by harvest date and total yield (lb/A) in Coffeeville, MS.			
Variety	**Harvest Date**		**Total Yield**
	4/5/24	**5/2/24**	
	(lb/A)	**(lb/A)**	
Centurion	4385	3339	6628
Ranahan	5056	3254	7046
Big Boss	5174	3581	7461
Ed	4812	3859	7468
Frost Proof	5368	3540	7566
SELWTGA	5524	3670	7814
Gulf	4390	3956	7249
SELWTJUCK	4436	3523	6851
Mantis	5232	4131	8055
SELWDMACK	4185	3504	6643
SELWTDWL1	3861	3508	6404
SELWD19-12	4215	3478	6639
SELWT19-9	3382	2957	5493
Trinova	4267	3500	6700
Verdure	5977	3986	8469
Earlyploid	4358	4062	7330
Prine	3218	3775	6189
Marshall	4334	3840	7090
Angusta	4846	3802	7437
Andes	4668	3012	6513
Credence	4355	3299	6565
Flying A	4234	3160	6336
Winterhawk	4984	3554	6046
Diamond T	4829	4187	7809
TAMTBO	5593	3351	7546
Triangle T	5626	3736	7956
Double Diamond	5109	4300	8132
Alisca	4537	4080	7483
Diplomat	4518	4800	8188
Jackson	5351	3486	7500
Nelson	4842	5156	8787
ME-94	5306	3585	7564
ME-4	4657	3396	6889
WMWL	3189	4097	6488
WMWL-2	3534	3540	6191
Lonestar	4229	3892	7063
More	5718	4080	8369
Tetrastar	5557	4000	8168
MSU ARGHT	4629	4395	7867
Bruiser	4632	3075	6549
Rival	3765	3663	6488
Cold Green	4666	3470	6970
Sweet T	5233	4052	6668
MEAN	**4669**	**3736**	**7178**
LSD 0.05	**NS**	**869**	**NS**
CV, %	**24**	**16**	**17**

Planted: 10/20/23; Fertilizer: 50 lb N/A (33-0-0S) after planting and after the 1st harvest; Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after the first harvest; Soil Type: Gernada Silt Loam.

Table 3. Annual ryegrass production by harvest date and total yield (lb/A) in Brooksville, MS.			
Variety	Harvest Date		Total Yield
	3/13/24	5/1/24	
	(lb/A)	(lb/A)	
Ranahan	2661	5214	7875
Big Boss	1991	5670	7662
Ed	2149	5151	7300
FrostProof	2538	4930	7468
SELWTGA	2111	5261	7372
Gulf	1540	4517	6057
SELWTJUCK	2068	4908	6976
Mantis	1487	5294	6781
SELWDMACK	1349	4770	6119
SELWTDWL1	1644	6301	7944
SELWD19-12	2612	4213	6824
SELWT19-9	1997	6215	8212
Trinova	2063	4992	7055
Verdure	2038	3476	5513
Earlyploid	2130	5032	7162
Prine	1953	4699	6652
Marshall	1726	4946	6672
Angusta	2271	5026	7296
Andes	2486	5846	8333
Credence	2270	5224	7494
Flying A	1853	4161	6014
Winterhawk	2443	3961	6403
Diamond T	1868	5185	7053
TAMTBO	1808	5274	7081
Triangle T	2131	5846	7977
Double Diamond	1630	5120	6750
Alisca	1292	6587	7879
Diplomat	966	4350	5316
Jackson	1141	4688	5829
Nelson	1946	4419	6365
ME-94	1695	5125	6820
ME-4	1412	4994	6406
WMWL	2089	5801	7889
WMWL-2	1857	4919	6776
Lonestar	2230	4850	7080
More	1417	4606	6023
Tetrastar	1737	4904	6641
MSU ARGHT	1784	4754	6538
Bruiser	1779	5199	6978
Rival	1379	5125	6504
Cold Green	1770	4949	6719
Sweet T	2332	6184	8516
MEAN	**1902**	**5051**	**6953**
LSD 0.05	**NS**	**1396**	**NS**
CV %	**40**	**19**	**24**

Planted: 10/25/23; Fertilizer: 50 lb N/A (33-0-0S) after planting and after the 1st harvest; Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after the first harvest; Soil Type: Silty Clay.

Table 4. Annual ryegrass production by harvest date and total yield (lb/A) in Newton, MS.			
Variety	**Harvest Date**		**Total Yield**
	4/5/24	**5/2/24**	
	(lb/A)	**(lb/A)**	
Centurion	4398	2961	7360
Ranahan	5244	3664	8908
Big Boss	4798	3187	7985
Ed	4856	4846	9703
FrostProof	4818	4448	9266
SELWTGA	5554	4253	9807
Gulf	5991	3728	9719
SELWTJUCK	4106	2913	7020
Mantis	5664	4178	9842
SELWDMACK	3568	3872	7440
SELWTDWL1	5668	3880	9548
SELWD19-12	5453	4681	10134
SELWT19-9	3042	4318	7359
Trinova	4935	2634	7568
Verdure	4459	3407	7866
Earlyploid	6201	3865	10066
Prine	4502	4601	9103
Marshall	5244	3666	8910
Angusta	4755	3581	8336
Andes	4159	4330	8489
Credence	5962	3698	9659
Flying A	5240	3350	8590
Winterhawk	4921	4698	9619
Diamond T	5068	3572	8640
TAMTBO	3168	4022	7190
Triangle T	3232	3264	6496
Double Diamond	4467	3015	7482
Alisca	3510	2620	6130
Diplomat	4597	4237	8834
Jackson	3743	3964	7707
Nelson	3815	3902	7717
ME-94	3876	4612	8488
ME-4	1628	3845	5473
WMWL	3134	4057	7191
WMWL-2	4950	4047	8997
Lonestar	4896	3838	8735
More	4121	3758	7879
Tetrastar	5900	3931	9831
MSU ARGHT	3834	4581	8415
Bruiser	4515	3544	8060
Rival	4685	3786	8471
Cold Green	3107	3733	6840
Sweet T	6334	4474	10808
MEAN	**4561**	**3850**	**8411**
LSD 0.05	**NS**	**NS**	**NS**
CV %	**35**	**28**	**26**

Planted: 10/27/23; Fertilizer: 50 lb N/A (33-0-0S) after planting and after the 1st harvest; Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after the first harvest; Soil Type: Prentiss Sandy Loam.

Table 5. Forage Nutritive value of ryegrass varieties harvested in Brooksville, MS.												
Variety	Harvest Date											
	3/13/24						5/1/24					
	ADF	Lignin	CP	NDF	WSC	Insol CP	ADF	Lignin	CP	NDF	WSC	Insol CP
	% DM											
Centurion	23	2	25	41	9	14	34	4	15	56	8	10
Ranahan	24	3	25	41	9	16	36	4	15	59	7	9
Big Boss	25	3	26	42	7	16	35	4	14	59	8	9
Ed	23	2	27	42	9	15	34	4	15	58	8	9
FrostProof	22	2	28	41	8	15	36	5	15	60	7	9
SELWTGA	20	1	29	38	10	15	35	5	15	58	7	9
Gulf	24	3	27	40	9	15	35	5	14	60	8	8
SELWTJUCK	23	2	27	39	9	15	35	4	14	58	9	9
Mantis	22	2	27	40	9	16	36	4	14	58	8	9
SELWDMACK	19	2	29	35	11	16	35	4	14	59	9	9
SELWTDWL1	21	2	26	37	12	14	35	4	11	58	10	7
SELWD19-12	22	2	27	40	9	16	36	5	14	60	7	8
SELWT19-9	23	3	27	40	8	15	36	4	11	58	11	7
Trinova	23	2	27	39	9	15	36	4	13	60	8	8
Verdure	22	2	27	40	9	15	37	4	12	62	7	8
Earlyploid	24	2	25	42	9	15	34	4	15	57	8	9
Prine	20	2	27	36	11	15	35	4	14	58	9	9
Marshall	19	1	28	37	11	14	33	4	15	56	9	9
Angusta	21	2	27	39	10	15	37	4	12	59	8	8
Andes	25	2	25	43	8	15	36	5	15	59	6	10
Credence	21	1	27	39	9	14	35	4	15	58	8	9
Flying A	23	3	26	39	9	15	35	5	14	60	7	8
Winterhawk	20	1	27	39	10	13	37	5	15	60	7	9
Diamond T	19	1	26	36	13	13	36	5	13	59	8	9
TAMTBO	20	1	27	37	12	12	34	4	15	57	9	9
Triangle T	21	1	25	39	11	15	35	5	14	57	8	9
Double Diamond	20	1	26	37	12	14	37	5	12	61	8	8
Alisca	18	1	28	36	12	15	35	4	14	56	9	10
Diplomat	24	2	26	42	9	13	36	5	14	59	8	9
Jackson	19	1	28	36	12	13	34	4	14	58	9	9
Nelson	23	2	26	43	9	14	38	5	13	60	7	9
ME-94	20	1	26	38	12	13	34	4	14	57	9	9
ME-4	18	1	27	35	14	14	33	4	14	57	10	9
WMWL	20	1	27	37	12	15	36	5	13	59	8	8
WMWL-2	18	1	27	36	13	14	36	4	13	60	8	8
Lonestar	22	2	26	41	10	14	37	5	13	61	8	8
More	20	1	26	37	12	14	36	4	12	57	9	8
Tetrastar	20	1	27	38	11	14	38	5	12	61	7	8
MSU ARGHT	19	1	27	38	11	13	37	5	12	61	9	7
Bruiser	21	1	26	40	11	13	36	5	14	59	8	9
Rival	18	1	28	34	13	15	39	5	11	62	7	7
Cold Green	22	1	26	41	10	14	35	4	15	56	8	10
Sweet T	22	1	26	40	10	14	34	5	16	56	7	10
MEAN	**21**	**2**	**27**	**39**	**10**	**14**	**36**	**4**	**14**	**59**	**8**	**9**
LSD 0.05	**4**	**1**	**NS**	**NS**	**4**	**NS**	**NS**	**NS**	**NS**	**NS**	**1**	**NS**
CV %	**11**	**32**	**6**	**9**	**19**	**8**	**6**	**14**	**17**	**6**	**11**	**18**

Table 6. Forage nutritive value of ryegrass varieties harvested in Coffeeville, MS.												
Variety	Harvest Date											
	3/13/24						5/1/24					
	ADF	Lignin	CP	NDF	WSC	Insol CP	ADF	Lignin	CP	NDF	WSC	Insol CP
	% DM											
Centurion	28	2	16	50	13	9	32	4	14	51	11	9
Ranahan	29	2	16	49	13	9	34	5	16	52	9	10
Big Boss	30	2	15	52	12	9	34	4	15	53	9	10
Ed	26	1	17	47	14	10	32	3	14	54	10	9
FrostProof	28	2	16	50	13	9	34	4	15	55	9	9
SELWTGA	28	2	15	48	14	9	31	3	16	50	11	9
Gulf	28	2	15	49	14	9	38	6	13	62	6	9
SELWTJUCK	27	2	17	47	13	9	34	5	15	53	9	10
Mantis	26	1	17	45	14	10	34	4	16	55	8	9
SELWDMACK	27	2	15	48	15	8	29	3	16	49	12	10
SELWTDWL1	27	2	17	47	13	10	35	5	16	54	8	11
SELWD19-12	24	1	21	44	11	13	34	5	16	53	8	10
SELWT19-9	27	2	16	46	14	9	33	4	17	52	8	11
Trinova	27	2	16	47	14	9	34	4	18	53	8	12
Verdure	27	2	17	47	13	10	32	4	17	53	9	11
Earlyploid	29	2	14	50	14	8	34	5	17	55	8	11
Prine	27	2	16	47	15	9	31	4	15	49	12	10
Marshall	25	1	15	44	16	8	30	3	14	50	13	9
Angusta	28	2	17	47	12	9	33	4	15	53	10	9
Andes	27	1	18	47	12	10	34	4	14	53	10	8
Credence	25	1	19	45	13	11	32	3	18	51	9	10
Flying A	30	2	15	51	12	8	34	5	16	54	8	10
Winterhawk	27	2	16	47	14	9	37	4	13	58	8	8
Diamond T	28	2	15	46	15	9	34	4	15	54	10	10
TAMTBO	28	2	15	50	13	9	35	6	15	55	8	10
Triangle T	29	2	14	49	13	8	35	4	14	53	9	9
Double Diamond	27	2	17	48	13	9	34	5	16	54	8	11
Alisca	27	2	16	45	13	9	34	4	15	54	9	10
Diplomat	27	2	15	47	15	9	34	4	15	55	9	9
Jackson	28	2	16	48	13	9	34	5	14	55	10	9
Nelson	29	2	16	50	12	9	33	3	14	53	11	8
ME-94	26	2	18	46	13	10	34	5	16	54	9	10
ME-4	25	1	18	44	14	10	33	4	16	52	9	10
WMWL	23	1	20	43	13	12	34	5	16	55	8	10
WMWL-2	27	2	16	47	14	9	32	4	16	53	10	10
Lonestar	25	2	18	45	14	10	35	5	15	55	8	10
More	28	3	16	49	12	9	34	4	14	53	10	10
Tetrastar	27	2	17	48	14	10	36	5	14	56	8	9
MSU ARGHT	27	2	17	48	12	10	31	3	14	52	13	9
Bruiser	30	2	16	51	11	10	34	4	15	53	9	9
Rival	25	1	19	44	12	11	35	4	15	54	8	10
Cold Green	28	2	15	49	14	9	35	6	18	53	6	12
Sweet T	30	3	15	51	11	9	32	4	16	53	10	11
MEAN	**27**	**2**	**16**	**48**	**13**	**9**	**34**	**4**	**15**	**53**	**9**	**10**
LSD 0.05	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**3**	**NS**	**NS**	**3**	**NS**	**NS**
CV %	**7**	**28**	**14**	**6**	**12**	**15**	**4**	**22**	**10**	**3**	**20**	**13**

SMALL GRAINS VARIETY TEST

INTRODUCTION

In Mississippi, small grains (oat, wheat, rye and triticale) are not used as extensively for forage production as annual ryegrass because of lower annual DM yields. However, some small grains tend to be more drought and cold tolerant than ryegrass and can provide highly digestible forage when other forages are not available.

They can also be used for early grazing during the transition period from summer perennial grasses to annual ryegrass grazing. Cereal rye and triticale have greater cold tolerance among small grains; therefore, they have the potential to continue vegetative growth during the fall and winter months in Mississippi.

RESULTS

Small grains averaged over 4173, 6829, and 3832 lb/A of DM from two harvests at Starkville, Coffeeville and Brooksville, respectively. In general, triticale entries produced more in forage DM than oats in Starkville and Coffeeville (Tables 7 and 8), respectively, but not in Brooksville (Table 9). Forage quality declined at all locations by the second harvest, but CP generally remained above 12 % and ADF below 25% (Tables 10-12) despite the majority of the total forage being produced after the first harvest.

Table 7. Small grain production by harvest date and total yield (lb/A) in Starkville, MS.

Species	Variety	Harvest Date		Total Yield
		2/26/24	4/24/24	
		lb/A	lb/A	
Oats	Cadillac	1836	1563	3399
	Ram	1480	1404	2884
Triticale	Kicker	1472	2701	4173
	Surge	1414	2283	3697
	Trical 1143	2427	3433	5860
	Trical 342	2622	2596	5218
	Trical HTF	1688	1953	3642
	Trical HTG	2126	2453	4579
	Trical HTS	2254	1855	4109
MEAN		1924	2249	4173
LSD (0.05)		625	NS	NS
CV, %		21	41	38

Planted: 10/17/23; Fertilizer: 50 lb N/A (33-0-0S) after planting and the 1st harvest; Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after the first harvest; Soil Type: Savannah Fine Sandy Loam.

Table 8. Small grain production by harvest date and total yield (lb/A) in Coffeeville, MS.				
Species	**Variety**	**Harvest Date**		**Total Yield**
		3/13/24	**5/2/24**	
		lb/A	**lb/A**	
Oats	Cadillac	3521	2712	6233
	Ram	4081	2364	6444
Triticale	Kicker	1601	2333	3934
	Surge	3637	1677	5314
	Trical 1143	4615	2369	6984
	Trical 342	5528	3065	8592
	Trical HTF	5739	2559	8298
	Trical HTG	4945	2455	7400
	Trical HTS	5503	2760	8263
MEAN		**4352**	**2477**	**6829**
LSD (0.05)		**2444**	**757**	**2288**
CV, %		**39**	**21**	**23**
Planted: 10/20/23; Fertilizer: 50 lb N/A (33-0-0S) after planting and the 1st harvest; Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after the first harvest; Soil Type: Gernada Silt Loam.				

Table 9. Small grain production by harvest date and total yield (lb/A) in Brooksville, MS.				
Species	**Variety**	**Harvest Date**		**Total Yield**
		3/13/24	**5/1/24**	
		lb/A	**lb/A**	
Oats	Cadillac	1128	2910	4038
	Ram	1501	3183	4684
Triticale	Kicker	1116	3322	4437
	Surge	1374	2559	3933
	Trical 1143	1609	1264	2873
	Trical 342	1085	1867	2951
	Trical HTF	1864	2312	4176
	Trical HTG	1451	2122	3574
	Trical HTS	1901	1918	3819
MEAN		**1448**	**2384**	**3832**
LSD (0.05)		**NS**	**751**	**NS**
CV, %		**40**	**21**	**31**
Planted: 10/25/23; Fertilizer: 50 lb N/A (33-0-0S) after planting and the 1st harvest; Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after the first harvest; Soil Type: Silty Clay.				

Table 10. Forage Quality Parameters of small grain varieties in Starkville, MS.											
Species	Variety	Harvest Date									
		2/26/24					4/24/24				
		Forage Quality Parameter									
		ADF	Lignin	CP	NDF	Insol CP	ADF	Lignin	CP	NDF	Insol CP
		% of DM									
Oats	Cadillac	19	2	23	38	9	30	4	12	56	7
	Ram	18	2	21	37	8	28	3	11	54	6
Triticale	Kicker	19	2	22	41	8	29	3	15	55	7
	Surge	19	2	23	40	9	30	3	13	59	7
	Trical 1143	24	2	21	49	8	28	3	15	56	7
	Trical 342	22	2	22	45	8	32	4	12	63	6
	Trical HTF	22	2	23	47	8	32	4	12	62	6
	Trical HTG	20	2	24	42	9	29	3	14	59	7
	Trical HTS	23	2	23	46	9	28	3	15	54	8
MEAN		**21**	**2**	**22**	**43**	**8**	**30**	**3**	**13**	**58**	**7**
LSD (0.05)		**4**	**NS**	**NS**	**8**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
CV, %		**8**	**10**	**7**	**8**	**14**	**10**	**18**	**22**	**9**	**15**

Table 11. Forage Quality Parameters of small grain varieties in Coffeeville, MS.											
Species	Variety	Harvest Date									
		3/13/24					5/2/24				
		Forage Quality Parameter									
		ADF	Lignin	CP	NDF	Insol CP	ADF	Lignin	CP	NDF	Insol CP
		% of DM									
Oats	Cadillac	20	2	19	36	10	31	4	16	55	10
	Ram	21	2	22	41	12	31	4	16	56	9
Triticale	Kicker	22	2	23	45	11	32	4	19	59	11
	Surge	24	2	21	48	11	30	4	19	56	11
	Trical 1143	26	2	18	53	9	32	5	16	60	9
	Trical 342	25	2	18	51	8	33	5	15	63	8
	Trical HTF	25	2	21	49	11	33	4	16	61	9
	Trical HTG	25	2	19	50	10	34	4	15	64	8
	Trical HTS	24	2	21	48	11	36	5	14	65	8
MEAN		**24**	**2**	**20**	**47**	**10**	**33**	**4**	**16**	**60**	**9**
LSD (0.05)		**3**	**1**	**NS**	**5**	**NS**	**NS**	**NS**	**3**	**4**	**1**
CV, %		**5**	**9**	**8**	**5**	**10**	**4.6**	**11**	**8**	**3**	**6**

Table 12. Forage Quality Parameters of small grain varieties in Brooksville, MS.											
Species	Variety	Harvest Date									
		3/13/24					5/1/24				
		Forage Quality Parameter									
		ADF	Lignin	CP	NDF	Insol CP	ADF	Lignin	CP	NDF	Insol CP
		% of DM									
Oats	Cadillac	18	1	24	34	13	33	4	15	62	9
	Ram	18	1	25	38	14	32	4	16	59	9
Triticale	Kicker	19	1	27	41	14	34	4	16	63	9
	Surge	20	1	25	43	13	35	5	15	65	9
	Trical 1143	21	2	20	44	10	32	5	17	58	10
	Trical 342	20	1	22	42	11	33	5	16	61	9
	Trical HTF	22	1	23	45	12	34	4	16	64	9
	Trical HTG	20	2	23	43	12	33	5	16	63	9
	Trical HTS	21	1	22	43	11	31	4	16	57	9
MEAN		**20**	**1**	**23**	**41**	**12**	**33**	**5**	**16**	**61**	**9**
LSD (0.05)		**NS**	**NS**	**3**	**6**	**2**	**NS**	**0.6**	**NS**	**4.9**	**NS**
CV, %		**8**	**17**	**6**	**7**	**9**	**3.4**	**6**	**6.3**	**3.5**	**6.6**

ANNUAL COOL-SEASON LEGUME VARIETY TEST

INTRODUCTION

The addition of annual clovers may reduce some nitrogen input needs and improve the nutritive value of pastures. For this reason, they can be beneficial in Mississippi when interseeded into annual cool-season grass pastures. Crimson clover is an early-maturing clover that produces excellent forage though it has relatively poor reseeding abilities, necessitating reseeding each fall. Crimson clover will produce more forage at lower temperatures than other clovers. Ball clover is very tolerant to poor drainage, more tolerant to acidity than crimson clover, and tolerates heavy grazing while maintaining good reseeding potential. Berseem clover is tolerant of alkaline and wet soils, though most varieties are not cold tolerant. Balansa, berseem, and arrowleaf are the most late-maturing clovers.

RESULTS

On average, the lowest clover yields were observed in Starkville (Table 13) and Coffeeville (Table 14) with the greatest yields observed in Newton (Table 15). In Newton, 'Frosty' berseem produced the greatest yield, but crimson varieties produced the greatest DM yield in the other two locations. Crude protein averaged 20% between Starkville (Table 16) and Coffeeville (Table 17) with little differences among entries on a variety or species level.

Table 13. Annual clover production by harvest date and total yield (lb/A) in Starkville, MS.

Species	Variety	Harvest Date
		4/24/24
		lb/A
Balansa	Fixation	3008
	Viper	810
Berseem	Frosty	3088
Crimson	Dixie	4665
	Kentucky Pride	3701
Hairy Vetch	Patogonia Inta	2904
Persian	eNhance	3703
	Nitro	2184
MEAN		**3008**
LSD (0.05)		**854**
CV, %		**18**

Planted: 11/14/23; Herbicide: 3 oz pursuit; Soil Type: Savannah Fine Sandy Loam.

Table 14. Annual clover production by harvest date and total yield (lb/A) in Coffeeville, MS.		
Species	**Variety**	**Harvest Date**
		5/2/24
		lb/A
Balansa	Fixation	4167
	Viper	3636
Berseem	Frosty	5538
Crimson	Dixie	5647
	Kentucky Pride	6044
Hairy Vetch	Patogonia Inta	4685
Persian	eNhance	4645
	Nitro	3891
MEAN		**4781**
LSD (0.05)		**1298**
CV, %		**18**
Planted: 10/20/23; Herbicide: 3 oz Persuit; Soil Type: Gernada Silt Loam.		

Table 15. Annual clover production by harvest date and total yield (lb/A) in Newton, MS.		
Species	**Variety**	**Harvest Date**
		5/2/24
		lb/A
Balansa	Fixation	4640
	Viper	5216
Berseem	Frosty	7388
Crimson	Dixie	5894
	Kentucky Pride	6000
Hairy Vetch	Patogonia Inta	5209
Persian	eNhance	6370
	Nitro	6324
MEAN		**5880**
LSD (0.05)		**NS**
CV, %		**30**
Planted: 10/24/23; Herbicide: 3 oz pursuit; Soil Type: Prentis Sandy Loam.		

Table 16. Forage quality parameters of small grain varieties in Starkville, MS.						
Species	Variety	Harvest Date				
		4/24/24				
		Forage Quality Parameter				
		ADF	Lignin	CP	NDF	Insol CP
		% of DM				
Balansa	Fixation	28	6	20	32	13
	Viper	26	5	20	31	12
Berseem	Frosty	34	6	18	40	11
Crimson	Dixie	27	5	24	32	13
	Kentucky Pride	24	4	22	27	13
Hairy Vetch	Patogonia	30	5	19	36	11
Persian	eNhance	29	5	22	33	13
	Nitro	30	6	20	35	12
MEAN		**29**	**5**	**21**	**33**	**12**
LSD (0.05)		**NS**	**NS**	**NS**	**NS**	**NS**
CV, %		**14**	**19**	**6**	**16**	**11**

Table 17. Forage quality parameters of small grain varieties in Coffeeville, MS.						
Species	Variety	Harvest Date				
		4/24/24				
		Forage Quality Parameter				
		ADF	Lignin	CP	NDF	Insol CP
		% of DM				
Balansa	Fixation	38	8	23	44	14
	Viper	36	8	20	40	14
Berseem	Frosty	41	8	18	46	11
Crimson	Dixie	41	9	20	47	11
	Kentucky Pride	45	8	15	53	8
Hairy Vetch	Patogonia	36	8	20	41	12
Persian	eNhance	35	7	19	40	12
	Nitro	33	6	22	39	13
MEAN		**38**	**8**	**20**	**44**	**12**
LSD (0.05)		**NS**	**NS**	**NS**	**NS**	**NS**
CV, %		**10**	**16**	**24**	**8.8**	**25**

Table 18. Seed sources for the 2023-2024 annual cool-season forage variety testing program.			
Variety	**Seed Company/Source**	**Variety**	**Seed Company/Source**
Alisca	Allied Seed, LLC	Ram	Ragan and Massey
Diplomat	Allied Seed, LLC	Trical HTF	Trical Superior Forage
Bruiser	Ampac seed company	Trical HTS	Trical Superior Forage
Rival	Ampac seed company	Trical HTG	Trical Superior Forage
Cold Green	Ampac seed company	Surge	Trical Superior Forage
Sweet T	Ampac seed company	Cadillac	Trical Superior Forage
Angusta	DLF	Trical 342	Trical Superior Forage
Andes	DLF	Trical 1143	Trical Superior Forage
CREDENCE	DLF	Kicker	Trical Superior Forage
Flying A	DLF	Annual Clover	
Winterhawk	DLF	Fixation	Grassland Oregon
Diamond T	DLF	Frosty	Grassland Oregon
TAMTBO	DLF	Kentucky Pride	Grassland Oregon
Triangle T	DLF	eNhance	Grassland Oregon
Double Diamond	DLF		
Centurion	Mountain View Seeds		
Ranahan	Mountain View Seeds		
Earlyploid	Ragan and Massey		
Prine	Ragan and Massey		
Big Boss	Smith Seed Services		
Ed	Smith Seed Services		
FrostProof	Smith Seed Services		
SELWTGA	Smith Seed Services		
Gulf	Smith Seed Services		
SELWTJUCK	Smith Seed Services		
Mantis	Smith Seed Services		
SELWDMACK	Smith Seed Services		
SELWTDWL1	Smith Seed Services		
SELWD19-12	Smith Seed Services		
SELWT19-9	Smith Seed Services		
Trinova	Smith Seed Services		
Verdure	Smith Seed Services		
Marshall	Wax Seed		
Jackson	Wax Seed		
Nelson	Wax Seed		
ME-94	Wax Seed		
ME-4	Wax Seed		
WMWL	Wax Seed		
WMWL-2	Wax Seed		

MISSISSIPPI STATE UNIVERSITY™

MS AGRICULTURAL AND FORESTRY EXPERIMENT STATION

The mission of the Mississippi Agricultural And Forestry Experiment Station and the College Of Agriculture And Life Sciences is to advance agriculture and natural resources through teaching and learning, research and discovery, service and engagement which will enhance economic prosperity and environmental stewardship, to build stronger communities and improve the health and well-being of families, and to serve people of the state, the region and the world.

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