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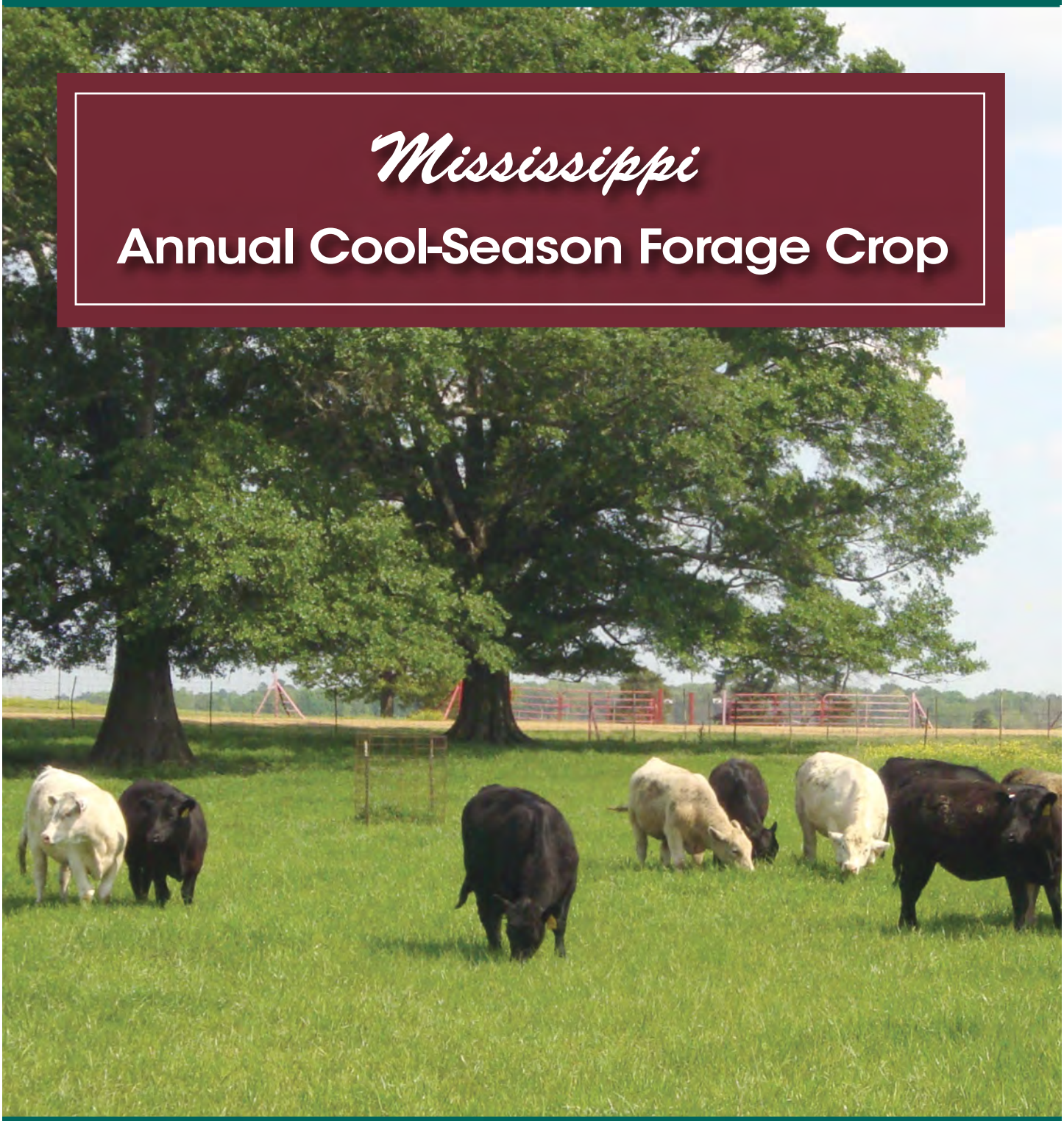
Mississippi Annual Cool-Season Forage Crop



VARIETY TRIALS, 2015

Mississippi's Official Variety Trials

MAFES

Mississippi Agricultural & Forestry Experiment Station • George M. Hopper, Director

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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 10 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 10.

Mississippi Annual Cool-Season Forage Crop Variety Trials, 2014–15

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Recognition is given to research technicians Melvin Gibson and Roy Gibson and research associate Patton Slusher at the South Mississippi Branch Experiment Station for ground preparations. In addition, recognition is given to student workers Mike Hammack, Mike Kennedy, and Timothy Newman for their assistance in cultivating, packing, planting, harvesting, and recording plot data. This document was published by the Office of Agricultural Communications, a unit of the Division of Agriculture, Forestry, and Veterinary Medicine at Mississippi State University. **You can visit our website at *http://www.mafes.msstate.edu/crops/variety-trials*.**

Mississippi Annual Cool-Season Forage Crop Variety Trials, 2014–15

Introduction

Several varieties of forage crops are evaluated every year in the Mississippi Agricultural and Forestry Experiment Station (MAFES) small-plot forage trials. Entries are provided by seed companies and 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. The MAFES forage-variety-testing program may add standard varieties as references for comparison purposes. In addition, varieties of interest may also be added when applicable. Sources of seed are presented in Table 19.

This report contains data from seven small grain, 30 annual ryegrass, and 11 annual clover varieties. Testing during 2015–15 was conducted at four locations: North Mississippi Branch Experiment Station, Holly Springs; Leveck Animal Research Center Forage Unit, Mississippi State University; Coastal Plain Branch Experiment Station, Newton; and White Sands Research Unit, Poplarville.

Table 1 shows the total monthly rainfall distribution during the growing season at each location. Average high and low temperatures can be used from Table 2 as a reference to evaluate relative cold tolerance among varieties.

Data presented in Tables 4 to 20 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 amount of yield (pounds per acre) that must be observed between any two varieties to determine if the differences were due to variety variation alone.

Table 1. Rainfall at each location from September 2014 to June 2015.

Location	2014				2015					
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
	in	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*
Holly Springs	0.40	4.63	3.22	1.39	0.16	1.74	4.79	6.54	0.98	3.27
Starkville	0.34	2.44	4.20	5.27	5.71	4.98	5.47	5.06	5.45	3.18
Newton	1.69	2.29	3.18	8.68	6.71	—	4.91	5.15	—	4.97
Poplarville	1.12	0.96	3.67	6.19	3.13	2.30	3.79	5.33	11.40	4.01

Table 2. Average high and low temperatures for each location from September 2014 to June 2015.

Month	Holly Springs		Starkville		Newton		Poplarville	
	H	L	H	L	H	L	H	L
	°F	°F	°F	°F	°F	°F	°F	°F
				2014				
Sept.	81	60	81	66	82	69	84	70
Oct.	75	45	75	52	78	56	83	58
Nov.	64	27	63	23	65	34	68	40
Dec.	58	30	59	37	64	31	72	46
				2015				
Jan.	54	16	58	22	65	23	71	29
Feb.	54	19	56	24	—	—	67	40
March	65	24	66	30	70	36	76	42
April	75	49	76	50	76	54	79	59
May	75	55	76	58	—	—	79	66
June	83	63	83	68	87	72	85	76

Protocol

Ryegrass, small grains, and annual clover trials across the state were established from late September until the first week of October in 2015. At all locations, soil samples were taken and analyzed by the Mississippi State University Soil Testing Laboratory. Trial areas were fertilized with lime, phosphorus (P_2O_5), and potassium (K_2O) according to the soil test recommendations.

The annual ryegrass and small-grain trials were fertilized with 300 pounds of 15-5-10 at the time of planting and with 50 pounds of N per acre after each harvest using urea ammonium sulfate (33-0-0S). Annual clover trials were fertilized with 50 pounds per acre of 0-0-60 (K_2O) at planting and an additional 100 pounds per acre of phosphorus (P_2O_5) and potassium (K_2O) early in the spring using 0-20-20.

Plots were 6 feet x 10 feet and planted using a precision cone seeder on a prepared seedbed. Trial design was a randomized complete block replicated four times. Recommended seeding rates were used and are presented in Table 3.

All trials were harvested when 75% of the plots achieved 15 inches of growth. All plots were harvested to a stubble height of 3 inches. Plots were harvested using a Ferris zero-turn mower equipped with a bagging system that collected a 4.3-foot-x-10-foot swath to calculate total yield. A subsample was collected and dried at 131°F until constant weight was achieved to calculate dry matter (DM) concentration.

Data were analyzed using the General Linear Model (PROC GLM) of SAS and mean separation was conducted using LSD at $\alpha = 0.05$.

Table 3. Seeding rates.

Type/Species	Seed weight
	lb/A
Small Grains	
Rye	100.0
Oat	100.0
Annual Ryegrass	30.0
Annual Clovers	
Arrowleaf	10.0
Berseem	25.0
Balansa	4.5
Ball	3.0
Crimson	30.0

Annual Ryegrass

Annual ryegrass is the most important 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 yields, 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.

Planting date varies with location. Overall, the best planting time is September for prepared seedbeds or October if overseeded on a warm-season perennial grass pasture. Seeding rates are 30 pounds per acre for pure stands and 20 pounds per acre for mixtures with small grains and/or clovers.

Annual ryegrass grows best at a soil pH of 6.0 to 7.0. Phosphorus and potassium levels should be above the medium range for optimum yields. Annual ryegrass is very responsive to nitrogen fertilizer, which should be split into two to four applications during the growing season. When ryegrass is established with clovers, a single nitrogen application in early winter is often recommended to limit annual ryegrass competition with the clover.

Reasonable productivity can be expected from November to May in the southern part of Mississippi and from February to May in the northern part of Mississippi. Annual ryegrass should normally be allowed to reach a height of 8 inches before grazing begins. Typical stocking rates are 700 pounds of live weight per acre in winter and 1,400–2,000 pounds per acre in spring.

Typical average daily gains for each respective animal class are suckling calves, 2.75 pounds; stocker calves, 2.3 pounds; yearling horses, 1.75 pounds; and lambs, 0.3 pound. However, all of these factors are greatly influenced by environmental conditions and management factors.

Data in Tables 4–7 present the yield performance of ryegrass varieties at four locations within the state, ranging from Holly Springs in the north to Poplarville in the south. In Poplarville, the second harvest was delayed due to excessive rain, allowing for greater-than-usual forage biomass to accumulate.

Entries were further analyzed by ploidy level, which is presented in Tables 8–11. Ploidy level refers to the number of chromosome sets in a biological cell and is often used in characterizing ryegrass varieties as either diploid (2x) or tetraploid (4x). Whether ploidy level is advantageous to a specific variety in regards to performance is more dependent on location.

Table 4. Ryegrass yields by harvest date and total yield, Holly Springs.[1]

Variety	Harvest date		Total yield
	4/21/15	6/5/15	
	lb/A	*lb/A*	*lb/A*
07-WW	1991	3570	5561
Attain	2726	3390	6116
B-14.0047	1991	3322	5313
Big Boss	1392	3163	4555
Bill	1572	2928	4500
Diamond T	1387	3025	4412
Flying A	2639	2977	5615
Fria	1894	3608	5502
GA-101-M	1710	3548	5258
GA-102-A	1066	2829	3895
GA-103-F	2244	3299	5542
GALM1401	2701	3252	5953
GALM1402	1508	3182	4691
GALM1403	1838	3067	4905
GO-A12	1282	3409	4690
GO-TT213	1787	3371	5158
Jackson	1588	3480	5068
Jumbo	1292	3200	4492
Lonestar	2006	3331	5338
M2GVS	1592	3660	5252

Continued.

Table 4 (cont.). Ryegrass yields by harvest date and total yield, Holly Springs.[1]

Variety	Harvest date		Total yield
	4/21/15	6/5/15	
	lb/A	*lb/A*	*lb/A*
Marshall	1899	3567	5466
Maximus	1535	2468	4003
ME4	1433	3584	5017
ME-94	1841	3794	5635
Meroa	1433	2840	4273
Nelson	1088	2625	3713
Passerel Plus	2679	3574	6253
TAMTBO	1356	3296	4651
Tetrastar	1135	3012	4147
Winterhawk	2701	3252	5953
Mean	1741	3268	5009
LSD (0.05)	648	485	939
CV, %	26	10	13

[1]Planted: 10/10/2014
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Soil type: Grenada Silt Loam

Table 5. Ryegrass yields by harvest date and total yield, Starkville.[1]

Variety	Harvest date				Total yield
	1/21/15	3/7/15	4/9/15	5/7/15	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
07-WW	957	1259	1611	1909	5735
Attain	923	1778	1703	1970	6374
B-14.0047	1064	1190	1344	1673	5270
Big Boss	527	1350	1507	1761	5145
Bill	761	1009	1604	1982	5357
Diamond T	867	1323	1474	1749	5413
Flying A	1206	1647	1519	1662	6034
Fria	910	1773	1590	1938	6212
GA-101-M	848	1536	1772	2051	6207
GA-102-A	1066	1514	1306	1581	5467
GA-103-F	1095	859	1462	1981	5397
GALM1401	1060	1690	1581	1941	6272
GALM1402	1006	1368	1530	1953	5857
GALM1403	854	1478	1457	1642	5431
GO-A12	944	1504	1752	2052	6252
GO-TT213	923	1364	1352	1655	5293
Jackson	1200	1657	1503	2001	6360
Jumbo	746	1281	1370	1590	4988
Lonestar	1345	1765	1729	1952	6792
M2GVS	824	1337	1780	2026	5967
Marshall	1125	1766	1940	2225	7055
Maximus	585	1482	1741	2078	5886
ME4	1230	1775	1432	1426	5863
ME-94	887	1575	1758	2111	6331
Meroa	497	1438	1807	2147	5890
Nelson	610	1439	1346	1568	4963
Passerel Plus	1038	1584	1727	2311	6660
TAMTBO	641	1432	1778	2142	5993
Tetrastar	820	1254	1552	1828	5454
Winterhawk	1042	1945	1572	2154	6713
Mean	920	1479	1587	1902	5888
LSD (0.05)	379	585	654	494	868
CV, %	29	28	29	18	11

[1]Planted: 10/16/2014
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest
Soil type: Marietta Fine Sandy Loam

Table 6. Ryegrass yields by harvest date and total yield, Newton.[1]

Variety	Harvest date		Total yield
	3/31/15	5/1/15	
	lb/A	*lb/A*	*lb/A*
07-WW	1783	2652	4436
Attain	2029	3196	5225
B-14.0047	2532	2539	5070
Big Boss	1850	2533	4383
Bill	1559	1846	3405
Diamond T	1623	2498	4121
Flying A	2396	3447	5842
Fria	2059	3016	5075
GA-101-M	2221	2777	4998
GA-102-A	1642	2616	4257
GA-103-F	2219	2308	4527
GALM1401	2097	2932	5029
GALM1402	1840	2338	4178
GALM1403	2190	3103	5293
GO-A12	1844	2737	4580
GO-TT213	1851	2359	4210
Jackson	2070	2455	4525
Jumbo	1651	2707	4358
Lonestar	2270	2817	5086
M2GVS	1894	2544	4438
Marshall	2057	3070	5127
Maximus	1803	2773	4576
ME4	1812	2893	4705
ME-94	1502	2467	3969
Meroa	1729	2686	4415
Nelson	2002	2616	4618
Passerel Plus	2316	3756	6072
TAMTBO	1598	2399	3997
Tetrastar	1895	2908	4803
Winterhawk	1977	2923	4900
Mean	1944	2730	4674
LSD (0.05)	NS	NS	1201
CV, %	22	24	18

[1]NS = Not significant
Planted: 10/1/14
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest
Soil type: Prentiss Sandy Loam

Table 7. Ryegrass yields by harvest date and total yield, Poplarville.[1]

Variety	Harvest date			Total yield
	1/8/15	3/27/15	4/22/15	
	lb/A	*lb/A*	*lb/A*	*lb/A*
07-WW	1214	5381	712	7306
Attain	1299	5526	1111	7936
B-14.0047	1710	4875	748	7333
Big Boss	1132	2660	1127	4919
Bill	1164	4594	1027	6785
Diamond T	1143	4375	605	6123
Flying A	1483	5079	751	7313
Fria	1713	5119	764	7596
GA-101-M	1488	6056	701	8245
GA-102-A	1503	5166	777	7445
GA-103-F	1507	4890	666	7062

Continued.

Table 7 (cont.). Ryegrass yields by harvest date and total yield, Poplarville.[1]

Variety	Harvest date			Total yield
	1/8/15	3/27/15	4/22/15	
	lb/A	*lb/A*	*lb/A*	*lb/A*
GALM1401	1262	4608	1000	6870
GALM1402	1535	3525	1017	6077
GALM1403	1475	4417	634	6527
GO-A12	1172	3640	1066	5878
GO-TT213	1384	3429	1036	5849
Jackson	1144	4265	742	6151
Jumbo	1052	3919	756	5726
Lonestar	1607	5244	890	7742
M2GVS	1093	5656	841	7590
Marshall	1639	4829	895	7363
Maximus	1684	4962	859	7505
ME4	1202	5314	1099	7616
ME-94	1528	3988	974	6490
Meroa	1227	3917	1340	6483
Nelson	1807	4775	964	7547
Passerel Plus	1477	4249	534	6259
TAMTBO	1169	4566	1025	6759
Tetrastar	1361	3917	907	6185
Winterhawk	1887	4937	635	7459
Mean	1402	4596	873	6871
LSD (0.05)	NS	1599	300	NS
CV, %	36	25	34	21

[1]NS = Not significant
Planted: 10/1/2014
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest
Soil type: Basin Loam

Table 8. Ryegrass yield by ploidy level, Holly Springs.

Ploidy	Harvest date		Total yield
	4/21/15	6/5/15	
	lb/A	*lb/A*	*lb/A*
Diploid	1925	3506	5431
Tetraploid	1497	3095	4592
Mean	1711	3301	5012
LSD(0.05)	251	185	336
CV, %	33	12	15

Table 9. Ryegrass yield by ploidy level, Starkville.[1]

Ploidy	Harvest date				Total yield
	1/21/15	3/7/15	4/09/15	5/7/15	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Diploid	1079	1637	1626	1952	6294
Tetraploid	758	1420	1557	1839	5574
Mean	919	1529	1592	1896	5934
LSD(0.05)	119	159	NS	NS	306
CV, %	29	23	30	21	12

[1]NS = Not significant

Table 10. Ryegrass yield by ploidy level, Newton.[1]

Ploidy	Harvest date		Total yield
	3/31/15	5/1/15	
	lb/A	*lb/A*	*lb/A*
Diploid	2080	2902	4982
Tetraploid	1814	2672	4486
Mean	1947	2787	4734
LSD(0.05)	189	NS	408
CV, %	22	25	19

[1]NS = Not significant

Table 11. Ryegrass yield by ploidy level, Poplarville.[1]

Ploidy	Harvest date			Total yield
	1/8/15	3/27/15	4/22/15	
	lb/A	*lb/A*	*lb/A*	
Diploid	1334	4637	847	6818
Tetraploid	1443	4475	908	6826
Mean	1389	4556	878	6822
LSD(0.05)	NS	NS	NS	NS
CV, %	35	27	28	22

[1]NS = Not significant

Small Grains

In Mississippi, small grains (oat, wheat, rye, and triticale) are not utilized as extensively for forage as annual ryegrass because of lower annual yields. However, some small grains tend to be more drought 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. Rye and triticale are the most cold tolerant of forage crops, thus have potential to continue vegetative growth during the fall and winter months in Mississippi. Mississippi only utilizes about 154,000 acres in small-grain forages, with the majority of those sown in oat or rye.

Table 12. Small grain yields by harvest date and total yield, Holly Springs.[1]

Variety	Harvest date		Total yield
	4/7/15	4/21/15	
	lb/A	*lb/A*	*lb/A*
		Oat	
Bob	—	1395	1395
Harrison	—	1464	1464
TAMO 411	—	2110	2110
TAMO 606	—	2028	2028
		Rye	
Bates RS4	1516	—	1516
Elbon	1792	—	1792
Wrens	1494	—	1494
Mean	1601	1749	1686
LSD(0.05)	NS	NS	NS
CV, %	31	26	29

[1]NS = Not significant
Planted: 10/10/2014 Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest Soil type: Grenada Silt Loam

Table 13. Small grain yields by harvest date and total yield, Starkville.[1]

Variety	Harvest date			Total yield
	2/12/15	3/18/15	4/9/15	
	lb/A	*lb/A*	*lb/A*	*lb/A*
		Oat		
Bob	759	365	1109	2233
Harrison	1071	370	1222	2664
TAMO 411	432	376	1181	1990
TAMO 606	1217	467	1056	2739
		Rye		
Bates RS4	2294	496	698	3489
Elbon	1627	1218	1009	3855
Wrens	1549	896	827	3273
Mean	1279	598	1015	2892
LSD(0.05)	767	149	294	743
CV, %	40	16	19	17

[1]Planted: 10/16/2014
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest
Soil type: Marietta Fine Sandy Loam

Table 14. Small grain yields by harvest date and total yield, Poplarville.[1]

Variety	Harvest date		Total yield
	1/8/15	3/27/15	
	lb/A	*lb/A*	*lb/A*
	Oat		
Bob	1681	3939	5620
Harrison	1903	4016	5919
TAMO 411	1839	4258	6097
TAMO 606	1955	5185	7140
	Rye		
Bates RS4	2006	5837	7843
Elbon	2261	6690	8951
Wrens	1494	5551	7045
Mean	1877	5068	6945
LSD(0.05)	NS	1605	1831
CV, %	21	21	17

[1]NS = Not significant
Planted: 10/1/2014
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest
Soil type: Basin Loam

Table 15. Small grain yields by species, Starkville.

Species	Harvest date			Total yield
	2/12/15	3/18/15	4/19/15	
	lb/A	*lb/A*	*lb/A*	*lb/A*
Oat	869	394	1142	2405
Rye	1823	870	845	3538
Mean	1346	632	994	2972
LSD(0.05)	454	184	162	427
CV, %	44	39	20	18

Table 16. Small grain yields by species, Poplarville.[1]			
Species	**Harvest date**		**Total yield**
	12/13/13	**3/27/15**	
	lb/A	*lb/A*	*lb/A*
Oat	1847	4349	6196
Rye	1920	6025	7945
Mean	1884	5187	7071
LSD(0.05)	NS	868	1041
CV, %	23	21	19

[1]NS = Not significant

Annual Clover

Annual clovers may reduce nitrogen input and improve forage quality in pastures. For this reason, they can be beneficial in Mississippi when interseeded into annual, cool-season grass pastures.

Arrowleaf clover has been highly productive and has excellent reseeding potential. It matures later than most annual legumes and can grow 2 to 4 feet tall. Arrowleaf clover remains more productive if grazed to a height of 2 to 4 inches in early spring. However if it is cut too late in maturity, regrowth will be limited.

Crimson clover is an early-maturing crop that produces excellent forage. However, it has relatively poor reseeding abilities, which necessitate 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 tolerant to heavy grazing while maintaining good reseeding potential. Berseem clover is tolerant of alkaline and wet soils, but most varieties are not cold tolerant.

Feral hogs destroyed the annual-clover trial in Holly Springs after germination, so the study was abandoned.

Table 17. Annual clover yields, Starkville.[1]		
Species	**Variety**	**4/8/15**
		lb/A
Arrowleaf	Apache	844
	Blackhawk	727
	Yuchi	439
Balansa	Fixation	690
Ball	Au Don	423
	Grazers Select	525
Berseem	Bigbee	967
	Frosty	576
Crimson	Common	532
	GO-KYP	513
	White Cloud	541
Mean		616
LSD(0.05)		NS
CV, %		45

[1]NS = Not significant
Planted: 10/6/2014
Fertilizer: 100 lb/A of 0-0-60
Herbicide: 5 oz/A of Pursuit® (imazethapyr)
Soil type: Marietta Fine Sandy Loam

Table 18. Annual clover yields, Poplarville.[1]

Species	Variety	3/27/15
		lb/A
Arrowleaf	Apache	1391
	Blackhawk	185
	Yuchi	717
Balansa	Fixation	1122
Ball	Au Don	948
	Grazers Select	2319
Berseem	Bigbee	4350
	Frosty	3317
Crimson	Common	2934
	GO-KYP	2466
	White Cloud	3312
Mean		2096
LSD(0.05)		1758
CV,%		40

[1]Planted: 10/1/2014
Fertilizer: 100 lb/A of 0-0-60
Herbicide: 5 oz/A of Pursuit® (imazethapyr)
Soil type: Basin loam

Table 20. Sources of seed, 2014–15.

Species/Variety	Seed company/source	Species/Variety	Seed company/source
Annual Ryegrass		**Small Grains**	
07-WW	Oregro Seeds, Inc.	Bates RS4	Athens Seed Company
Attain	Smith Seed Services	TAMO 411	Specialty Seed
B-14.0047	Blue Moon Farms	TAMO 606	Specialty Seed
Big Boss	Smith Seed Services		
Bill	Smith Seed Services		
Diamond T	Oregro Seeds, Inc.		
Flying A	Oregro Seeds, Inc.		
Fria	Allied Seed, LLC		
GA-101-M	University of Georgia		
GA-102-A	University of Georgia		
GA-103-F	University of Georgia		
GALM1401	University of Georgia	**Annual Clovers**	
GALM1402	University of Georgia	AU Don	Fairlie Seed Company
GALM1403	University of Georgia	Blackhawk	Oregro Seeds, Inc.
GO-A12	Grassland Oregon	Fixation	Grassland Oregon
GO-TT213	Grassland Oregon	Frosty	Grassland Oregon
Jackson	The Wax Company, LLC	GO-KYP	Grassland Oregon
Jumbo	Barenbrug USA	Grazers Select	Fairlie Seed Company
Lonestar	Grassland Oregon	White Cloud	Oregro Seeds, Inc.
M2GVS	The Wax Company, LLC		
Marshall	The Wax Company, LLC		
Maximus	Barenbrug USA		
ME4	The Wax Company, LLC		
ME-94	The Wax Company, LLC		
Meroa	Smith Seed Services		
Nelson	The Wax Company, LLC		
Passerel Plus	Pennington Seed		
TAMTBO	Oregro Seeds, Inc.		
Winterhawk	Grassland Oregon		

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