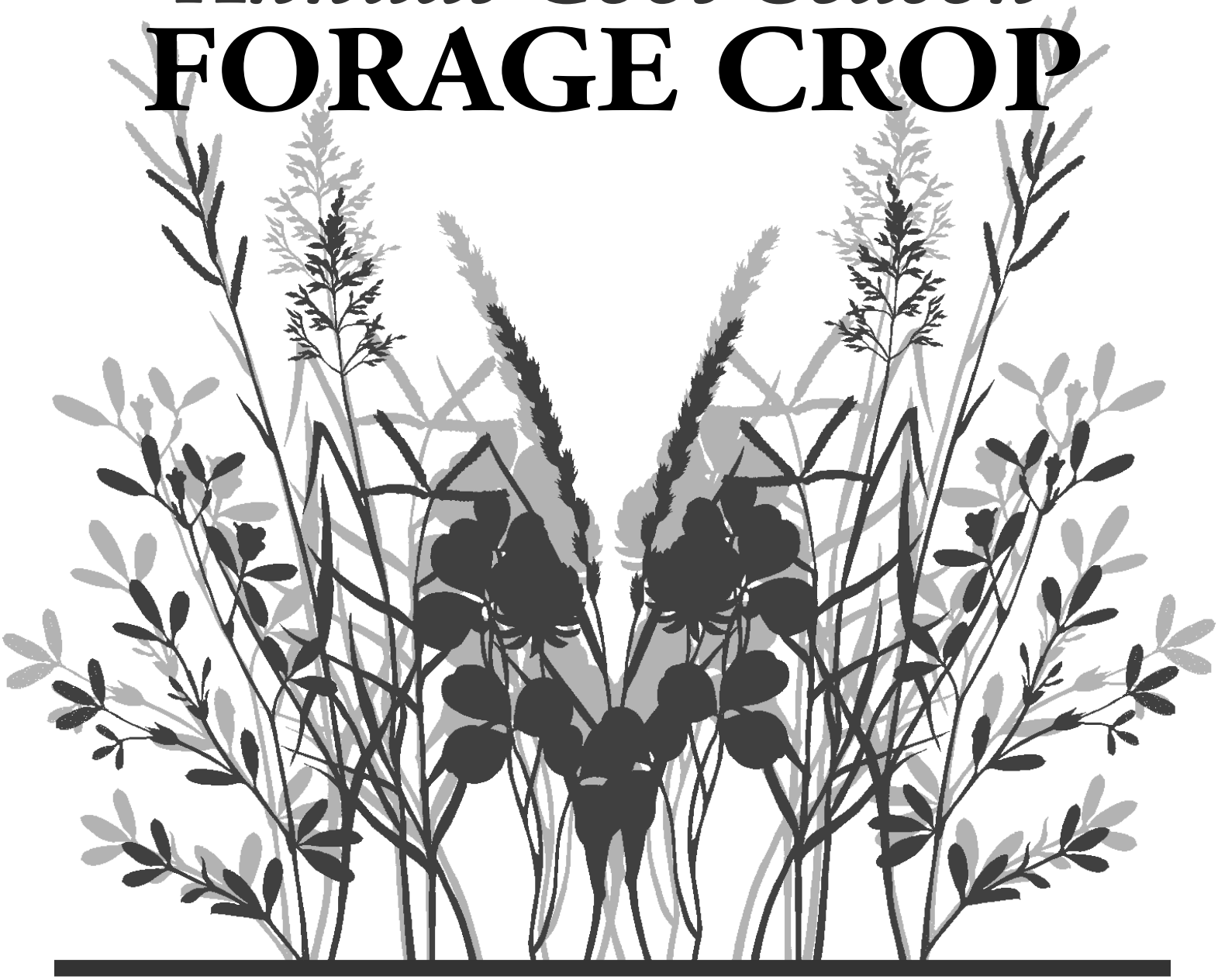
Information Bulletin 488 September 2014

Mississippi *Annual Cool-Season* FORAGE CROP



VARIETY TRIALS, 2013–14

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 14 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 14.

Mississippi Annual Cool-Season Forage Crop Variety Trials, 2013–14

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Mississippi Annual Cool-Season Forage Crop Variety Trials, 2013–14

Introduction

Several forage crop varieties are evaluated every year in the Mississippi Agricultural and Forestry Experiment Station's (MAFES) small-plot forage trials. Entries are provided by seed companies and state universities and tested at one or more locations across Mississippi. All entries from privately owned companies are tested on a fee basis. Standard varieties may be added by MAFES as a reference for comparison purposes. In addition, varieties of interest may also be added when applicable. Sources of seed are presented in Table 20. This report contains data from 7 small-grain varieties, 29 ryegrass varieties, and 12 annual clover varieties. Testing during 2013–2014 was done at these locations: North Mississippi Branch Experiment Station, Holly Springs; Leveck Animal Research Center Forage Unit, Mississippi State; Coastal Plain Branch Experiment Station, at Newton; and White Sands Research Unit, Poplarville. Table 1 shows the total monthly rainfall 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 4–20 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 (lb/A) that must be observed between any two varieties to determine if the difference was due to variety variation alone.

Table 1. Rainfall at each location from September 2013 to May 2014.

Location	2013				2014					
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
	in	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*
Holly Springs	5.19	5.77	1.88	5.61	2.19	6.34	3.35	5.58	4.13	9.57
Starkville	4.90	3.20	5.08	4.95	1.52	4.74	4.51	3.99	4.51	8.87
Newton	2.73	2.90	4.77	7.29	1.75	6.33	5.16	14.03	3.01	7.21
Poplarville	2.69	1.27	3.66	3.05	2.03	7.67	6.21	5.18	9.76	7.09

Table 2. Average high and low temperatures for each location from September 2013 to May 2014.

Month	Holly Springs		Starkville		Newton		Poplarville	
	H	L	H	L	H	L	H	L
	°F	°F	°F	°F	°F	°F	°F	°F
				2013				
Sept.	85	60	88	64	88	64	91	69
Oct.	72	49	74	51	77	55	79	59
Nov.	58	33	60	36	63	39	64	45
Dec.	52	31	53	33	59	37	63	42
				2014				
Jan.	46	18	47	20	52	22	56	31
Feb.	50	28	51	29	58	34	61	42
March	59	31	61	33	64	37	66	43
April	72	43	74	47	75	48	75	54
May	79	56	81	59	82	58	87	61
June	84	66	87	68	88	67	89	70

Protocol

Ryegrass, small grains, and annual clover trials across the state were established from late September until the first week of October in 2013. 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 ryegrass and small-grain trials were fertilized with 300 pounds of 15-5-10 at the time of planting and 50 pounds of N per acre after each harvest using urea ammonium sulfate (33-0-0S). Annual clover trials were fertilized with 50 pounds of 0-0-60 (potash) at planting and an additional 100 pounds of phosphorus (P_2O_5) and potassium (K_2O) early in the spring using 0-20-20. Plots were 6x10 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 z-turn mower equipped with a bagging system that collected a 4.3x10-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.

Genus/Species	Seed weight
	lb/A
Small Grains	
Rye	100.0
Oats	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 warm-season, perennial-grass pastures. 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, and its use should be split into two to four applications during the growing season. When 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 southern Mississippi and February to May in northern 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. Following are typical average daily gains for respective animal classes: 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. 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. Entries were further analyzed by ploidy level (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. Ryegrass in Holly Springs was harvested only once due to an unusually cold fall and a warm spring that caused the grass to transition from a vegetative to a reproductive stage relatively quickly without achieving ample growth.

Table 4. Annual ryegrass yields by harvest date and annual totals in Holly Springs.

Variety	Harvest date 5/8/14
	lb/A
Assist	1849
Attain	1587
Big Boss	2821
Bulldog Grazer	2915
Diamond T	2166
Earlyploid	2359
Ed	1201
Flying A	2919
Fria	3124
GA-101-M	2188
GA-102-A	2249
GA-103-F	2750
GO-LN2	2393
Heavy Grazer	1937
Jackson	3082
Jumbo	2061
Lonestar	2820
M2GVS	2521
Marshall	2372
Maximus	2213
ME4	2687
ME-94	3064
MSU-001	2700
Nelson	1828
Passerel Plus	2745
Prine	1594
TAMTBO	1870
Tetrastar	2514
Winterhawk	2490
Mean	2380
LSD (0.05)	1054
CV, %	37

Planted: 9/28/13
Fertilizer: 300 lb/A of 15-5-10 at planting
Soil type: Grenada Silt Loam

Table 5. Ryegrass yields by harvest and total yields, Starkville.

Variety	Harvest date				Total yield
	1/17/14	3/11/14	3/27/14	4/17/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Assist	851	735	785	3258	5629
Attain	684	585	612	2590	4472
Big Boss	494	723	652	2184	4053
Bulldog Grazer	414	495	754	2796	4459
Diamond T	737	678	792	2646	4854
Earlyploid	374	897	573	2334	4177
Ed	497	699	801	3274	5271
Flying A	909	653	709	3088	5359
Fria	666	850	786	3730	6031
GA-101-M	1007	812	756	3627	6202
GA-102-A	688	611	828	2786	4914
GA-103-F	831	670	655	2451	4607
GO-LN2	890	707	719	3389	5705
Heavy Grazer	615	755	705	2136	4211
Jackson	827	804	747	3022	5399
Jumbo	478	695	686	2328	4188
Lonestar	1127	642	645	2980	5394
M2GVS	882	694	944	4151	6671
Marshall	634	635	980	4052	6301
Maximus	561	573	758	2781	4673
ME4	741	811	928	3817	6297
ME-94	731	755	837	2483	4807
MSU-001	496	662	561	2887	4606
Nelson	609	731	654	3293	5286
Passerel Plus	1044	519	684	2104	4352
Prine	539	602	609	2605	4356
TAMTBO	740	606	810	2267	4423
Tetrastar	643	587	573	2231	4033
Winterhawk	898	772	949	3879	6498
Mean	711	688	741	2937	5077
LSD (0.05)	407	198	NS[1]	1046	1112
CV, %	41	20	25	25	16

[1]NS = Not significant
Planted: 9/23/13
Fertilizer: 300 lb/A of 15-5-10 at planting and 50 lb of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext (aminopyralid and 2,4-D) after first harvest
Soil type: Marietta Fine Sandy Loam

Table 6. Annual ryegrass yields by harvest date and annual totals in Newton.

Variety	Harvest Date			Total yield
	3/13/14	4/24/14	5/21/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*
Assist	757	2238	1275	4270
Attain	531	3058	1428	5017
Big Boss	776	2387	1227	4391
Bulldog Grazer	629	2707	1213	4549
Diamond T	832	2037	1229	4098
Earlyploid	861	2443	1510	4814
Ed	665	2682	1192	4538
Flying A	965	2717	1184	4866
Fria	1016	2837	1481	5334
GA-101-M	706	2461	1188	4355
GA-102-A	719	2160	1805	4684
GA-103-F	879	2533	1060	4473
GO-LN2	967	2510	1726	5203
Heavy Grazer	959	2758	1409	5126
Jackson	851	3349	1321	5521
Jumbo	668	2272	1359	4300
Lonestar	1147	2030	1346	4523
M2GVS	507	2683	1846	5037
Marshall	809	2849	1433	5091
Maximus	536	2089	1341	3966
ME4	572	3029	1551	5152
ME-94	717	2717	1131	4565
MSU-001	938	2262	1158	4357
Nelson	600	2201	1257	4058
Passerel Plus	1023	2671	1268	4962
Prine	553	3043	1330	4926
TAMTBO	787	2424	1448	4660
Tetrastar	1018	2214	1292	4525
Winterhawk	514	2638	1210	4362
Mean	776	2552	1352	4680
LSD (0.05)	298	688	NS1	844
CV, %	27	19	22	12

[1]NS = Not significant
Planted: 10/10/13
Fertilizer: 300 lb/A of 15-5-10 at planting and 50 lb of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext (aminopyralid and 2,4-D) after first harvest
Soil type: Prentiss Sandy Loam

Table 7. Annual ryegrass yields by harvest date and annual totals in Poplarville.

Variety	Harvest date				Total yield
	12/13/13	1/31/14	3/15/14	5/3/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Assist	382	663	1200	3327	5573
Attain	330	801	1242	3444	5816
Big Boss	423	652	1220	3362	5658
Bulldog Grazer	238	746	1266	2716	4966
Diamond T	351	771	981	2994	5097
Earlyploid	325	471	1348	2693	4837
Ed	544	646	1176	3143	5509
Flying A	441	660	1235	2439	4776
Fria	310	712	1402	2819	5243
GA-101-M	532	682	1040	2526	4781
GA-102-A	261	557	995	2716	4530
GA-103-F	552	767	1282	2402	5003
GO-LN2	626	711	1195	2028	4559
Heavy Grazer	760	792	1204	2827	5582
Jackson	398	540	1279	2168	4385
Jumbo	237	653	1279	2683	4852
Lonestar	485	703	1323	2635	5145
M2GVS	344	745	1381	2627	5098
Marshall	391	664	1146	2282	4484
Maximus	320	578	1158	2749	4805
ME4	462	685	1597	2310	5054
ME-94	604	769	1436	1937	4746
MSU-001	614	899	1096	2273	4882
Nelson	358	770	1031	2951	5110
Passerel Plus	455	700	1141	2302	4598
Prine	363	783	1179	2673	4999
TAMTBO	340	676	1206	3065	5287
Tetrastar	293	638	900	2560	4392
Winterhawk	502	656	1504	3289	5951
Mean	422	693	1222	2688	5025
LSD (0.05)	185	NS[1]	NS	844	NS
CV,%	31	32	22	22	15

[1]NS = Not significant
Planted: 10/9/2013
Fertilizer: 300 lb/A of 15-5-10 at planting and 50 lb of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext (aminopyralid and 2,4-D) after first harvest
Soil type: Basin Loam

Table 8. Annual ryegrass yield by ploidy level in Holly Springs.

Ploidy	Harvest Date 5/8/14
	lb/A
Diploid	2599
Tetraploid	2101
Mean	2350
LSD (0.05)	352
CV,%	30

Table 9. Annual ryegrass yield by ploidy level in Starkville.

Ploidy	Harvest date				Total yield
	12/13/13	1/31/14	3/15/14	5/3/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Diploid	785	697	811	3279	5572
Tetraploid	585	667	672	2525	4449
Mean	685	682	742	2902	5011
LSD (0.05)	129	NS[1]	78	355	403
CV, %	44	23	25	28	19

[1]NS = Not significant

Table 10. Annual ryegrass yield by ploidy level in Newton.

Ploidy	Harvest date			Total yield
	3/13/14	4/24/14	5/21/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*
Diploid	782	2703	1342	4827
Tetraploid	716	2417	1342	4475
Mean	749	2560	1342	4651
LSD (0.05)	NS[1]	234	NS	280
CV, %	34	21	22	14

[1]NS = Not significant

Table 11. Annual ryegrass yield by ploidy level in Poplarville.

Ploidy	Harvest date				Total yield
	12/13/13	1/31/14	3/15/14	5/3/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Diploid	427	683	1314	2615	5039
Tetraploid	334	679	1154	2917	5084
Mean	380	681	1234	2766	5061
LSD (0.05)	54	NS[1]	107	260	NS
CV, %	34	41	20	22	14

[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, and thus have potential to continue vegetative growth during the fall and winter in Mississippi. Mississippi only utilizes about 154,000 acres in small-grain forages, with the majority of those sown in oat or rye. Differences among varieties, regardless of species, are presented in Tables 12–14, whereas differences among species, regardless of variety, are presented in Tables 15–17.

Table 12. Small grain yields by harvest and total yield in Holly Springs.

Variety	Harvest date		Total yield
	4/12/14	5/8/14	
	lb/A	*lb/A*	
Oat			
Bob	—	2141	2141
NF95418 (Heavy Grazer)	—	3069	3069
Ram Oats	—	3120	3120
TAMO 606	—	2390	2390
Rye			
Bates RS4	1294	—	1294
Elbon	1523	—	1523
Wrens	1407	—	1407
Mean	1408	2680	2134
LSD (0.05)	NS[1]	760	572
CV,%	17	18	18

[1]NS = Not significant
Planted: 9/28/2013
Fertilizer: 300 lb/A of 15-5-10 at planting and 50 lb of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext (aminopyralid and 2,4-D) after first harvest
Soil type: Grenada Silt Loam

Table 13. Small grain yields by harvest and total yields in Starkville.

Variety	Harvest date				Total yield
	1/21/14	2/28/14	3/21/14	4/17/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Oat					
Bob	292	134	932	1834	3192
NF95418 (Heavy Grazer)	564	212	1188	1830	3793
Ram Oats	794	161	733	2002	3690
TAMO 606	398	210	1038	1917	3562
Rye					
Bates RS4	799	508	1212	1697	4215
Elbon	462	290	1432	1906	4089
Wrens	630	377	1234	1795	4036
Mean	563	270	1110	1854	3797
LSD (0.05)	298	79	234	NS[1]	NS
CV,%	35	19	14	18	11

[1]NS = Not significant
Planted: 9/23/13
Fertilizer: 300 lb/A of 15-5-10 at planting and 50 lb of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext (aminopyralid and 2,4-D) after first harvest
Soil type: Marietta Fine Sandy Loam

Table 14. Small grain yields by harvest and total yields in Poplarville.

Variety	Harvest date				Total yield
	12/13/13	1/31/14	3/14/14	5/3/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Oat					
Bob	408	580	1072	1802	3862
NF95418 (Heavy Grazer)	258	642	1238	2115	4253
Ram Oats	246	530	1003	2909	4689
TAMO 606	301	567	1038	2429	4336
Rye					
Bates RS4	538	801	1354	—	2692
Elbon	506	452	1344	—	2303
Wrens	460	578	1269	—	2307
Mean	388	593	1188	2314	3492
LSD (0.05)	NS[1]	NS	NS	471	603
CV,%	59	29	16	12	11

[1]NS = Not significant
Planted: 10/09/2013
Fertilizer: 300 lb/A of 15-5-10 at planting and 50 lb of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext (aminopyralid and 2,4-D) after first harvest
Soil type: Basin Loam

Table 15. Small grain yields by species in Holly Springs.

Species	Harvest date		Total yield
	4/12/14	5/8/14	
	lb/A	*lb/A*	*lb/A*
Oat	—	2680	2680
Rye	1408	—	1408
Mean	1408	2680	2044
LSD (0.05)	—	—	391
CV,%	17	23	23

Table 16. Small grain yields by species in Starkville.

Species	Harvest date				Total yield
	1/21/14	2/28/14	3/21/14	4/17/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Oat	511	179	972	1895	3557
Rye	630	391	1292	1799	4112
Mean	570	285	1132	1847	3834
LSD (0.05)	NS[1]	66	165	NS	349
CV,%	45	31	18	16	11

[1]NS = Not significant

Table 17. Small grain yields by species in Poplarville.

Species	Harvest date				Total yield
	12/13/13	1/31/14	3/14/14	5/3/14	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Oat	303	579	1087	2314	4285
Rye	501	610	1322	—	2434
Mean	402	594	1204	2314	3359
LSD (0.05)	167	NS[1]	152	NS	359
CV,%	54	31	16	23	13

[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 a highly productive clover with 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 clover that produces excellent forage, though it has relatively poor reseeding abilities and needs to be reseeded each fall. Crimson clover will produce more forage at lower temperatures than other clovers. Ball clover is very tolerant to poor drainage, is 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. Ball, balansa, and arrowleaf clovers in Starkville did not germinate well or germinated and died during the fall, so only berseem and crimson established well enough to be harvested.

Table 18. Annual clover yields and harvest yields in Holly Springs.

Variety	Harvest date		Total yield
	4/12/14	6/3/14	
	lb/A	*lb/A*	*lb/A*
Arrowleaf			
Apache	1116	1660	2776
Blackhawk	673	3241	3914
Yuchi	1023	—	1023
Balansa			
Fixation C	721	—	721
Fixation R	1106	—	1106
Ball			
Au Don	788	—	788
Grazers Select	595	—	595
Berseem			
Biggbe	358	3262	3620
Frosty	922	3352	4274
Crimson			
GO-INA	991	—	991
GO-URO	1285	—	1285
White Cloud	1353	—	1353
Mean	911	2879	1871
LSD(0.05)	495	NS[1]	737
CV,%	37	18	23

[1]NS = Not Significant
Planted: 9/28/2013
Fertilizer: 100 lb of 0-0-60
Herbicide: 5 oz/A of Pursuit (imazethapyr)
Soil type: Grenada Silt Loam

Table 19. Annual clover yields and harvest yields in Starkville.

Variety	Harvest date		Total yield
	4/10/14	5/19/14	
	lb/A	*lb/A*	*lb/A*
Berseem			
Biggbe	401	2615	3016
Frosty	954	2876	3830
Crimson			
GO-INA	1882	2851	4733
GO-URO	1404	2435	3839
White Cloud	1281	2899	4180
Mean	1184	2735	3920
LSD(0.05)	302	NS1	NS
CV,%	53	12	39

[1]NS = Not Significant
Planted: 9/23/2013
Fertilizer: 100 lb of 0-0-60
Herbicide: 5 oz/A of Pursuit (imazethapyr)
Soil type: Marietta Fine Sandy Loam

Table 20. Annual clover total yields and harvest yields in Poplarville.

Variety	Harvest date		Total yield
	3/20/14	5/3/14	
	lb/A	*lb/A*	*lb/A*
Arrowleaf			
Apache	—	1948	1948
Blackhawk	—	2631	2631
Yuchi	—	2377	2377
Balansa			
Fixation C	—	1357	1357
Fixation R	—	2050	2050
Ball			
AU Don	445	1848	2293
Grazers Select	411	2012	2423
Berseem			
Biggbe	1011	2200	3211
Frosty	1191	1997	3188
Crimson			
GO-INA	1112	2616	3728
GO-URO	1057	1335	2392
White Cloud	912	1773	2685
Mean	877	2012	2524
LSD(0.05)	520	NS1	986
CV,%	39	30	27

[1]NS = Not Significant
Planted: 10/9/2013
Fertilizer: 100 lb of 0-0-60
Herbicide: 5 oz/A of Pursuit (imazethapyr)
Soil type: Basin loam

Table 20. Sources of seed, 2013–14.

Variety	Seed company/source	Variety	Seed company/source
Ryegrass		**Small Grains**	
Assist	Saddle Butte Ag Inc.	Bates RS4	Athens Seed Co.
Attain	Smith Seed Services	Bob	Check
Big Boss	Smith Seed Services	NF95418 (Heavy Grazer)	East Texas Seed
Bulldog Grazer	Athens Seed Co.	Ram Oats	Ragan & Massey
Diamond T	Oregro Seeds, Inc.	TAMO 606	Specialty Seed
Earlyploid	Ragan & Massey/Lewis Seed Co	Wrens	Athens Seed Co.
Ed	Smith Seed Services		
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	**Annual Clovers**	
GO-LN2	Grassland Oregon	Apache	Check
Heavy Grazer	East Texas Seed	Yuchi	Check
Jackson	The Wax Company, LLC	AU Don	Fairlie Seed Company
Jumbo	Barenbrug USA	Grazers Select	Fairlie Seed Company
Lonestar	Grassland Oregon	G O-URO	Grassland Oregon
M2GVS	The Wax Company, LLC	GO-INA	Grassland Oregon
Marshall	The Wax Company, LLC	GO-URO	Grassland Oregon
Maximus	Barenbrug USA	Fixation R	Grassland Oregon
ME4	The Wax Company, LLC	Biggbe	Grassland Oregon
ME-94	The Wax Company, LLC	Frosty	Grassland Oregon
MSU-001	MSU	White Cloud	Oregro Seeds, Inc.
Nelson	The Wax Company, LLC	Blackhawk	Oregro Seeds, Inc.
Passerel Plus	Pennington Seed		
Prine	Ragan & Massey/Lewis Seed Co.		
TAMTBO	Oregro Seeds, Inc.		
Winterhawk	Grassland Oregon		

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