THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

Alfalfa Variety Trials 2008-2010

Greg Durham, Forage Research Technician, UGA-Athens
Dr. Dennis Hancock, Forage Extension Specialist, UGA-Athens

Table of Contents

Introduction to Alfalfa

Adaptation:	Entire state. Very drought tolerant. Requires well drained soil and does not tolerate low soil fertility or acidity.
Establishment:	Seed 18 to 25 lb/A drilled with a cultipacker seeder, 22-25lb/A broadcast on a prepared seedbed in September.
Recommended Varieties:	**NORTH GA** – **BaraWet 501,** Bara-503, **Bulldog 505, CW 500,** Evermore, HybriForce 600, HybriForce 700, **Phoenix.** **SOUTH GA** – Attention II, **BaraWet 501**, Bulldog 505, Bulldog 805, **HybriForce 600**, HybriForce 700, **PGI 801**, TS 8031. * Bolded entries indicate superior yielding and stand ratings after 3 years.

Alfalfa is often referred to as the "Queen of Forages" because it produces high yields that are highly digestible and high in protein. Alfalfa can be effectively utilized in managed grazing, hay, or silage systems. It is often used in rations when nutritional needs are very high.

Alfalfa (*Medicago sativa*)

Alfalfa requires a combination of proper soil characteristics (well-drained, fertile, low acidity, etc.) with outstanding management (appropriate variety selection, timely harvests, pest control, etc.) to maintain long-lived, productive stands. Alfalfa requires deep, well-drained soils. It develops a deep root system if root growth is not restricted by hardpans, high water tables, or acid subsoil.

Alfalfa can be grown throughout the state where suitable soils occur. In general, well-drained bottomlands in the Limestone Valley/Mountains and Piedmont regions will provide the best results. Within the Coastal Plain region, the sandy loam soils provide good sites, especially if irrigation is available. Most sites in the Atlantic Coast Flatwoods and Tidewater areas will not be sufficiently well-drained to successfully produce alfalfa.

Alfalfa requires a relatively neutral soil pH (6.5-6.8) and non-limiting levels of essential nutrients. Alfalfa is especially sensitive to potassium (K), phosphorus (P), boron (B), and molybdenum (Mo) deficiencies. Close adherence to soil test recommendations during and after establishment are critical.

Alfalfa stands eventually thin to a point where the land must be rotated out of alfalfa. However, the lack of sufficient soil fertility is the most common contributor to accelerated stand declines. Disease pressure, insect damage, poor weed control, overgrazing, and improper cutting management also contribute to poor persistence. Stands in the Coastal Plain region generally have a shorter life (two – five years) than stands on the heavier soils in north Georgia. It is not uncommon for stands to persist for four – seven years (or longer) in the Piedmont and Limestone Valley/Mountains regions.

Description of the Variety Trials

Alfalfa variety entries were solicited from the companies who sell them. These companies were charged an entry fee for each variety they entered and for each location in which the variety was tested. This entry fee helped to cover some of the costs of the variety trial.

The tests were planted at Georgia Agriculture Experiment Station (GAES) facilities near Athens and Midville and on the USDA-ARS's Bellflower Research Farm near Tifton. Plots were established and maintained using standard, UGA-recommended practices. The trial was conducted by experienced research technicians and other GAES staff under the supervision of the State Forage Extension Specialist. The alfalfa trials were established by drilling the alfalfa seed into a well-prepared seedbed at the rate of 25 lbs of pure live seed (PLS) per acre. Specific planting dates for individual locations are described in the Yield by Harvest Date sections. Soil fertility was maintained in accordance with soil fertility recommendations.

Yield-type variety trials simulate forage productivity under a hay production regimen or a well-managed rotational grazing regimen. Alfalfa variety trials are generally continued until the stands of the majority of the entries deteriorate below 60% basal area coverage (60% stand). Tables that indicate a summary of data from 2008 through 2009 are preliminary datasets and will likely be continued in 2010 (and perhaps beyond).

Alfalfa trials are also assessed annually (typically just before the plants go fully dormant for the winter). This stand assessment is made using a quantitative measure of the plot area that is covered by living alfalfa plants after harvest (basal area coverage).

Statistical analyses were performed on all data to determine if the numerical differences were truly the result of varietal differences or just random differences. To determine if two varieties are truly different, compare the difference between them and the LSD (Least Significant Difference) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at the given locations. The comparison is aided by the fact that the values in bold font are not significantly different from the best variety at that time and location. In addition, values sharing the same letter are not different. NS indicates no significant differences were observed. The Coefficient of Variation (CV) is a measure of the variability of the data and is included for each column of means when differences exist. Low variability is desirable (generally, a CV less than 15%).

Alfalfa Yield Trial Summary

Table 1. Forage yield of some alfalfa varieties averaged over the 2008-2010 growing seasons in Athens, Midville, and Tifton, GA.[†]

	2 yr average (2008-2009)	3 yr average (2008-2010)	
Variety	**Midville**	**Athens**	**Tifton**
		---------- dry lbs/acre ----------	
Attention II	6430 bc	9468 bcde	8612 bc
Bara - 503[§]	**7243** a	9757 bcd	7950 cd
BaraWet 501[§]	**7108** ab	**10592** a	**8946** ab
Bulldog 505	**7233** a	**9861** abc	**9361** a
Bulldog 805	**6561** abc	9213 cde	8202 cd
CW 35160[§]	-	8074 f	-
CW 36106[§]	6223 c	-	-
CW 500	-	**10114** ab	-
Evermore	-	9788 bc	-
Hybri Force 600	**7117** ab	8950 e	**8909** ab
Hybri Force 700	6462 bc	9036 de	8508 bc
PGI 801	**6760** abc	-	8537 bc
PGI 909	-	-	7635 d
Phoenix	-	**9940** abc	-
TS 4010[§]	-	9531 bcde	-
TS 8031[§]	-	-	8590 bc
CV%	10	9	10
LSD	710	735	674

[†] Planted on October 10, 2007 in Athens; November 1, 2007 in Midville, and February 21, 2008 in Tifton.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Values that are in **bold** font are not significantly different from the best variety at that time.

[§] Experimental variety (not available).

Stand Assessments (Yield Trial)

Table 2. Percent basal cover of alfalfa varieties in the yield trials located at Athens, Midville, and Tifton, GA. 2008-2010.[†]

	Percent basal cover within row					
		Athens		Midville	Tifton	
Variety	Dec. 1, 2008	Dec. 14, 2009	Dec. 15, 2010	Jun. 18. 2008	Nov. 4, 2009	Jan. 15, 2011
BaraWet 501[§]	91	88	81.3 ab	85	**84** a[‡]	86.3 a
Bulldog 805	89	78	67.5 bcd	88	**83** a	81.7 ab
Hybri Force 700	96	92	80.6 abc	91	**77** a	77.0 b
Hybri Force 600	86	80	71.9 abcd	81	**80** a	75.0 b
PGI 801	-	-	-	89	**74** a	73.8 b
Bara – 503[§]	91	88	65.0 cde	88	**78** a	65.0 c
TS 8031[§]	-	-	-	84	**77** a	63.8 c
Attention II	86	84	83.8 a	78	58 b	63.3 c
Bulldog 505	88	81	76.3 abc	86	**74** a	60.0 c
PGI 909	-	-	-	86	**82** a	60.0 c
CW 35106[§]	93	86	49.5 e	-	-	-
CW 500	92	86	72.5 abcd	-	-	-
Evermore	85	84	66.3 bcd			-
Phoenix	87	76	73.1 abcd	-	-	-
TS 4010[§]	91	83	58.1 de	-	-	-
CV %	-	-	17	-	13	8
$LSD_{\alpha=0.05}$	NS	NS	15.85	NS	13.5	8.12

[†] Planted on October 10, 2007 in Athens; November 1, 2007 in Midville, and February 21, 2008 in Tifton. Stand deterioration at the Midville location led to the termination of the trial at that location in the fall of 2009.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Values that are in **bold** font are not significantly different from the best variety at that time.

[§] Experimental variety (not available).

Yield by Harvest Date – Athens

Table 3. Forage yield of alfalfa varieties at Athens, GA. 2008-2010.[†]

		Dry Matter Yield					
		---------- dry lbs/acre----------					
Year	**Variety**	**Harvest Date**					
2008		**May 6**	**June 20**	**Aug.28**	**Dec.5**		**Total**
	TS 4010§	4031	931	195	1527		**6684** a‡
	BaraWet 501§	3320	1125	240	1573		**6258** a
	Bulldog 505	3365	1026	207	1493		**6091** a
	Bulldog805	3654	711	205	1393		**5963** ab
	Phoenix	3299	931	176	1374		**5780** ab
	Evermore	3067	1076	233	1316		**5692** ab
	Attention II	3211	928	246	1110		**5495** abc
	Bara- 503§	3139	992	225	1443		**5799** ab
	CW 500	2961	1164	196	1416		**5737** ab
	Hybri Force 600	3022	901	167	1261		**5351** abc
	Hybri Force 700	2443	821	185	1213		4662 bc
	CW 35106§	2245	591	136	1222		4194 c
	CV %						16
	$LSD_{\alpha=0.05}$	NS (.10)	NS	NS	NS		1337
2009		**May 6**	**June 26**	**Aug.6**	**Sept. 8**	**Oct. 22**	**Total**
	BaraWet 501§	2739	**2898** a*	2599	2117	2161	**12514** a
	Bulldog 505	2624	**2460** abc	2037	1909	2221	**11251** ab
	CW 500	2636	**2494** abc	2012	2166	1864	**11172** ab
	Evermore	2536	**2292** abc	2242	1990	1967	**11027** ab
	Phoenix	2529	**2445** abc	1873	1958	1974	10779 b
	Bara- 503§	2407	**2656** ab	2000	1795	1735	10593 b
	Attention II	2578	**2554** abc	1723	1596	2089	10540 bc
	Bulldog805	2565	2024 bcd	1959	1746	2109	10403 bc
	Hybri Force 700	2578	1987 cd	1718	2104	2104	10222 bc
	TS 4010§	2278	**2258** abc	1841	1675	1795	9847 bc
	Hybri Force 600	2636	2056 bcd	1822	1649	1607	9770 bc
	CW 35106§	2371	1517 d	1625	1718	1748	8979 c
	CV %		19				10
	$LSD_{\alpha=0.05}$	NS	645	NS(.08)	NS(.06)	NS	1578
2010		**Apr. 23**	**June 16**	**July 13**	**Aug. 20**	**Nov. 1**	**Total**
	BaraWet 501	1427 ab	2702 bc	2150	5216 a	1508	13002 abc
	CW 500	1566 a	3077 a	2294	5161 ab	1335	13432 a
	Phoenix	1268 ab	3051 ab	2812	4959 abc	1170	13260 ab
	Bulldog 505	1216 b	3080 a	2403	4395 bcde	1175	12269 abcde
	Evermore	1391 ab	3088 a	2225	4676 abc	1265	12645 abc
	Bara - 503	1202 b	2820 abc	2342	5268 a	1247	12879 abc
	TS 4010	1221 b	2785 abc	1964	4935 abc	1156	12061 bcde
	Attention II	1346 ab	3100 a	2424	4336 cd	1162	12369 abcd
	Bulldog 805	825 c	2848 ab	2531	3767 e	1303	11274 de
	Hybri Force 700	1298 ab	2867 abc	2242	4599 abcd	1197	12203 abcde
	Hybri Force 600	1215 b	2555 c	2085	4608 abcd	1266	11730 cde
	CW 35160	1119 bc	2576 c	2237	3838 de	1279	11050 c
	CV %	17	9		12		9
	$LSD_{\alpha=0.05}$	317	357	NS	783	NS	1274

[†] Planted on October 10, 2007.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Values that are in **bold** font are not significantly different from the best variety at that time.

[§] Experimental variety (not available).

Yield by Harvest Date – Midville

Table 4. Forage yield of alfalfa varieties at Midville, GA. 2008-2009.[†]

		Dry Matter Yield					
		---------- dry lbs/acre----------					
Year	**Variety**	**Harvest Date**					
2008		**May 6**	**June 9**	**July 23**	**Sept.5**	**Nov.20**	**Total**
	PGI 801	2625	2392	2277	2344	761	10399
	Bara 503§	2674	1906	2704	2069	761	10114
	BaraWet 501§	2101	2276	2525	2196	570	9668
	Hybri Force 600	2371	2202	2728	1910	454	9665
	Bulldog 505	2179	2358	2493	2019	615	9664
	Bulldog 805	2262	1926	2312	2073	842	9415
	CW 36106§	2309	2424	2142	1745	604	9224
	Attention II	2425	2305	2075	1948	445	9198
	Hybri Force 700	2112	2101	2379	1908	571	9071
	CV %						
	$LSD_{\alpha=0.05}$	NS	NS	NS (.11)	NS	NS	NS
2009		**April 15**	**May 15**	**June 25**	**Aug. 14**		**Total**
	Bulldog 505	**1596** a‡	**1376** ab	705	**1124** ab		**4801 a**
	Hybri Force 600	**1544** a	1432 cd	473	**1120** ab		**4570 a**
	BaraWet 501§	**1617** a	**1414** ab	490	**1028** ab		**4549 a**
	Bara 503§	**1411** ab	**1284** abcd	450	**1225** a		**4371 ab**
	Hybri Force 700	1163 bc	**1400** ab	420	871 bc		3854 bc
	Bulldog 805	1251 bc	1183 bcd	406	868 bc		3708 bcd
	Attention II	1202 bc	**1301** abc	354	806 bc		3663 cd
	CW 36106§	1116 c	1053 d	388	665 c		3223 cd
	PGI 801	1057 c	1126 cd	274	663 c		3119 d
	CV %	14	12		23		12
	$LSD_{\alpha=0.05}$	266	232	NS (.09)	318		693

[†] Planted on November 1, 2007. Stand deterioration led to the termination of this trial location in the fall of 2009.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Values that are in **bold** font are not significantly different from the best variety at that time.

[§] Experimental variety (not available).

Yield by Harvest Date – Tifton

Table 5. Forage yield of alfalfa varieties at Tifton, GA. 2008-2010.[†]

Year	Variety	Dry Matter Yield (dry lbs/acre) Harvest Date						
2008		**Jun. 18**	**Jul. 30**	**Sept.10**	**Nov.11**			**Total**
	Hybri Force 600	1791	1399	**2464** ab[‡]	1010			6664
	Bulldog 505	1250	1644	**2623** a	883			6400
	TS 8031[§]	1219	1577	**2592** a	716			6104
	Hybri Force 700	1391	1304	**2414** ab	974			6083
	PGI 801	1289	1218	**2054** abc	1092			5653
	Bulldog 805	1156	1276	**2314** ab	787			5533
	Attention II	1240	1499	1943 bc	834			5516
	BaraWet 501[§]	1296	1168	**2105** abc	844			5413
	Bara – 503[§]	927	1279	**2166** abc	668			5040
	PGI 909	1332	826	1723 c	963			4844
	CV %			17				
	$LSD_{\alpha=0.05}$	NS(.09)	NS	574	NS			NS
2009		**Apr. 7**	**May 7**	**Jun. 17**	**Jul. 30**	**Sept. 18**	**Nov. 4**	**Dec. 17**	**Total**
	BaraWet 501[§]	2047	1678	2598	2534	1921	942	127 cd	11847
	PGI 801	1973	1967	2589	2406	1638	930	**311** a	11671
	Attention II	2117	1755	2577	2758	1474	835	101 de	11399
	Bulldog 505	2235	1551	2824	2635	1613	907	80 de	11356
	Hybri Force 700	1935	1547	2538	2507	1759	813	156 cd	11256
	TS 8031[§]	2168	1532	2521	2484	1547	815	170 cd	11087
	Bulldog 805	2018	1610	2299	2514	1464	881	214 bc	10812
	Hybri Force 600	1849	1573	2618	2330	1636	838	28 e	10460
	PGI 909	1592	1614	2245	2208	1498	802	**278** ab	9866
	Bara – 503[§]	1627	1147	2305	2448	1467	762	34 e	9791
	CV %							43	
	$LSD_{\alpha=0.05}$	NS	NS	NS	NS	NS	NS	92	NS
2010		**May 6**	**June 20**	**July 30**	**Sept. 13**	**Oct. 12**	**Nov. 17**		**Total**
	Bulldog 805	2559 de	2550	1279	1368 bc	195 bcd	121 b		**9841** a
	PGI 801	2347 ef	2610	1326	**1426** abc	**257** a	**178** a		8144 cd
	Attention II	2667 cd	2912	1283	**1561** ab	192 cd	88 c		8784 bcd
	TS 8031	2577 de	2678	1359	**1549** ab	188 cd	79 cd		8429 cd
	Hybri Force 600	2943 cd	3093	1350	**1572** ab	175 cd	60 cd		**9192** abc
	Hybri Force 700	2531 de	2462	1438	1354 bc	**259** a	138 b		8183 cd
	BaraWet 501	2847 bc	3212	1663	**1580** ab	**219** abc	56 cd		**9577** ab
	Bulldog 505	**3168** a	3178	1609	**1678** a	158 d	50 d		8075 cd
	PGI 909	2162 f	2649	1342	1255 c	**243** ab	**174** a		7825 d
	Bara - 503	**2987** ab	2754	1474	**1584** ab	164 d	55 d		**9019** abc
	CV %	6			12	16	22		9
	$LSD_{\alpha=0.05}$	249	NS	NS	271	49	33		1127

[†] Planted on February 21, 2008.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Values that are in **bold** font are not significantly different from the best variety at that time.

[§] Experimental variety (not available).

Weather Data during Trials:

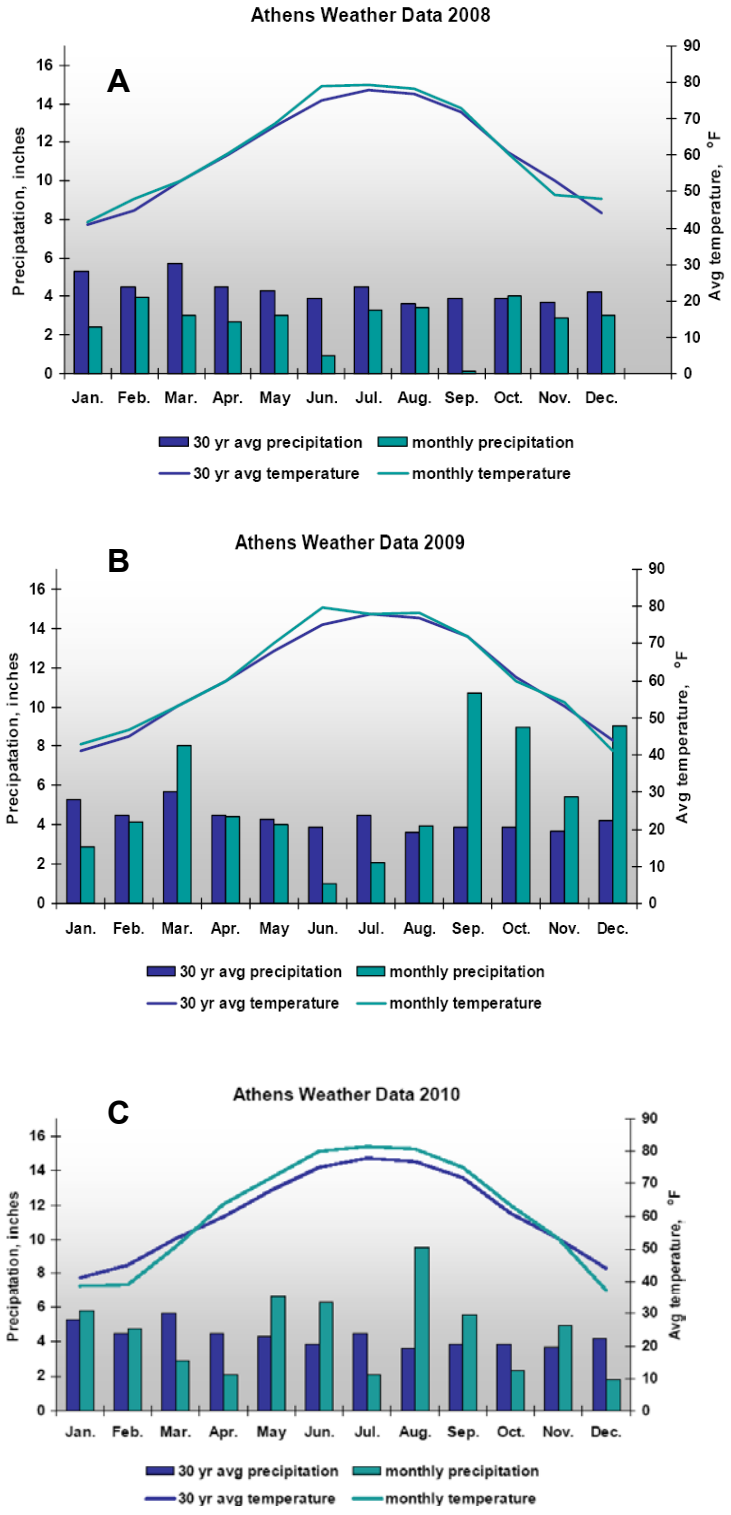


Figure 1. Weather data during the 2008 (A), 2009 (B), and 2010 (C) growing seasons in Athens.

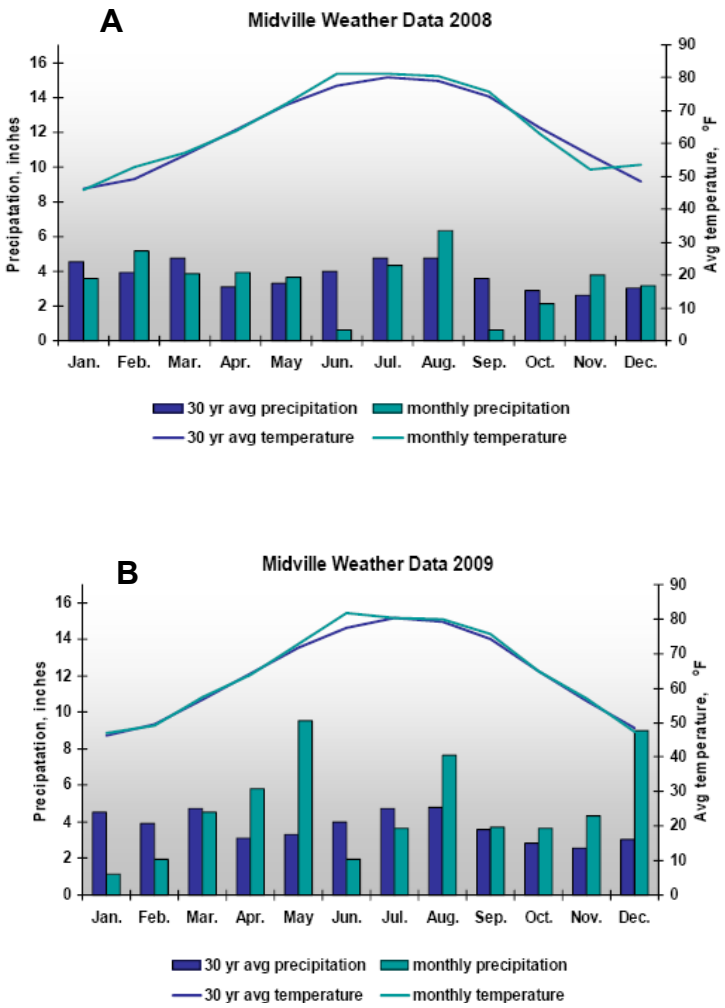
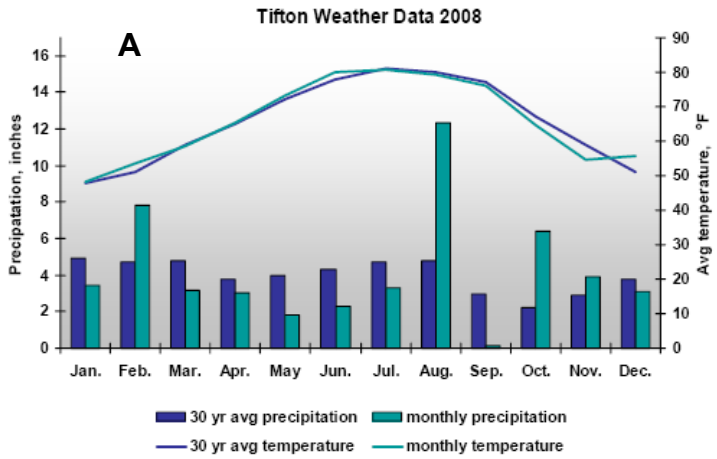
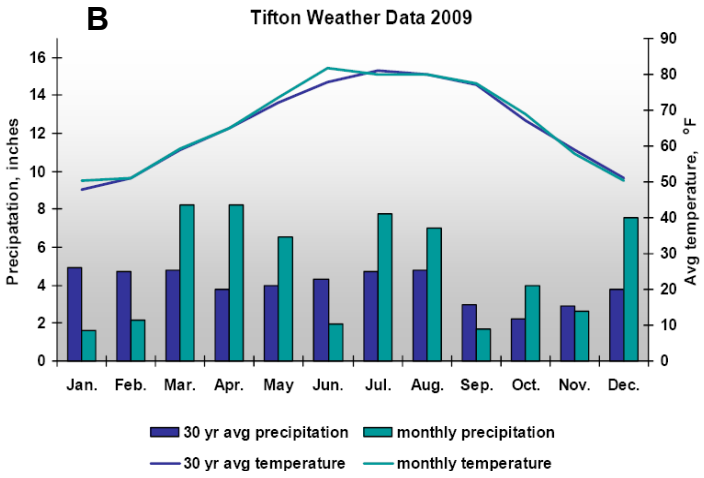


Figure 2. Weather data during the 2008 (A), and 2009 (B) growing seasons in Midville.





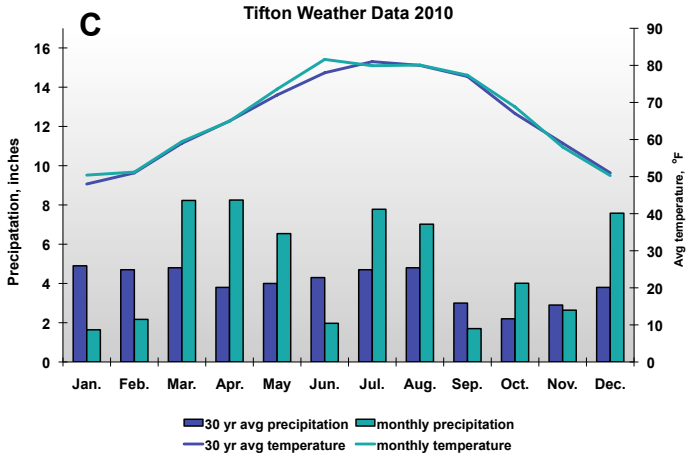


Figure 3. Weather data during the 2008 (A), 2009 (B), and 2010 (C) growing seasons in Tifton.

CSS-F048 **August 2011**

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, The University of Georgia College of Agricultural and Environmental Sciences and the U.S. Department of Agriculture cooperating.

J. Scott Angle, Dean and Director.