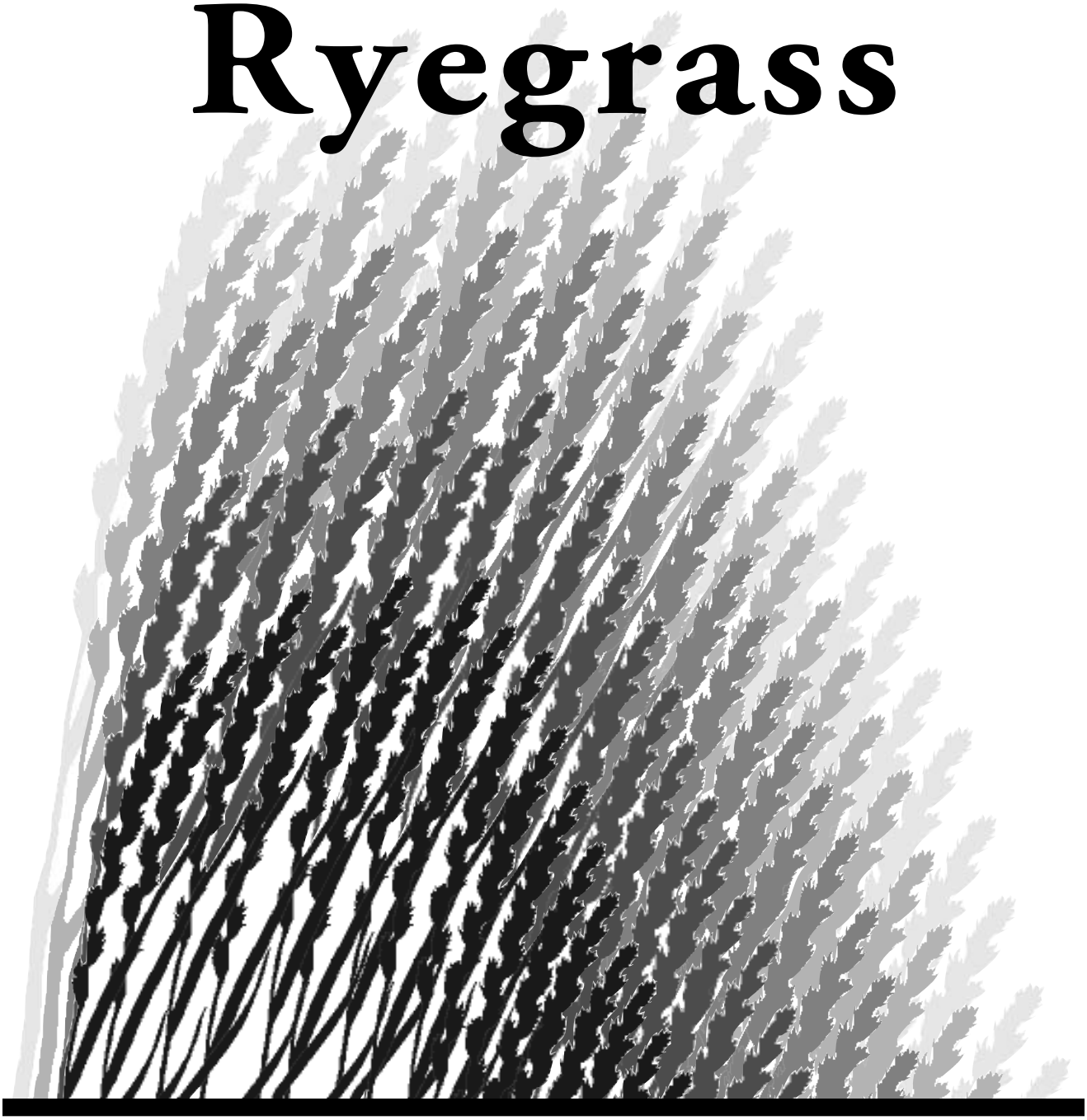
Information Bulletin 430 November 2006

Mississippi Ryegrass



VARIETY TRIALS, 2004-2006

Experiment Station
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Mississippi Agricultural & 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 13 is gratefully acknowledged.

Commercial and public varieties tested in this research project (trade names, experiment code names or numbers, etc.) and source of seed are listed on page 13.

Mississippi Ryegrass Variety Trials, 2004-2006

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Information Bulletin 430 was published by the Office of Agricultural Communications, a unit of the Division of Agriculture, Forestry, and Veterinary Medicine at Mississippi State University.

CONTENTS

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Introduction

New, improved, and standard varieties of forage crops are evaluated in MAFES small-plot trials each year. Seed for the trials are obtained from commercial seed companies and state universities and tested at a number of locations in Mississippi. All entries from privately owned companies are tested on a fee basis. The Forage Crop Evaluation Committee may enter varieties of interest or proven varieties to be used as standards. This report contains data collected in 2004-06 on the performance of annual ryegrass over two growing seasons. Trials were arranged in a randomized complete block design consisting of three to four replications of 6-by-12-foot plots. Plot yield was based on 95% dry matter. Visual notes on botanical composition were used to adjust total herbage yield to yield based upon the variety being evaluated. Maturity was estimated as the portion of plants with an emerged seedhead (early anthesis to early dough). These data were analyzed within locations and within harvest dates. Due to different planting dates and growing conditions, the timing and number of harvests during the season varied by location.

The winter of 2004-2005 was generally moist and relatively mild (Table 1, Figures 1-4). The summers of 2004 and 2005 were moist with adequate rainfall throughout the state. Hurricanes Katrina and Rita in August and September 2005 created difficult planting conditions that were followed by dry, cold weather in October and November (Table 1, Figures 5-8). Data presented in Tables 2-7 can be used to evaluate the relative performance of each forage variety at each location. Comparisons can be statistically evaluated by using the LSD (Least Significant Difference). The LSD value represents the smallest difference in yield between two varieties that can be declared to be the result of varietal differences other than chance variation. The coefficient of variation (CV) is a measure of the relative precision in measuring differences between varieties and represents some of the random or unexplained variation such as differences in soil fertility levels, insects, diseases, moisture stress, and other factors. The lower the CV the more precise a given trial is. The coefficient of determination (R^2) is an estimate of the variation that can be explained and accounted for in given trial. The R^2 is another measure of precision within a trial. Values close to 100 indicate that precision is very high with most of the variation being accounted for.

Table 1. Rainfall at Newton and Starkville, Mississippi, 2004-2006.

Month	Newton			Starkville		
	2004	2005	2006	2004	2005	2006
	in	*in*	*in*	*in*	*in*	*in*
January	4.09	3.60	4.87	3.60	2.10	5.90
February	10.77	6.05	5.99	8.15	4.96	9.83
March	1.96	5.76	6.49	4.23	2.41	4.19
April	3.33	9.38	2.87	2.49	6.72	3.40
May	3.27	2.60	6.58	4.70	3.23	2.55
June	10.16	3.54	2.78	11.50	6.40	2.17
July	11.11	7.43		3.30	9.22	
August	5.70	7.29		2.91	8.46	
September	2.88	3.84		4.59	4.33	
October	2.91	0.03		4.22	0.09	
November	5.63	2.06		8.14	2.33	
December	3.11	5.02		4.20	3.81	
Total	64.92	56.60		62.03	54.06	

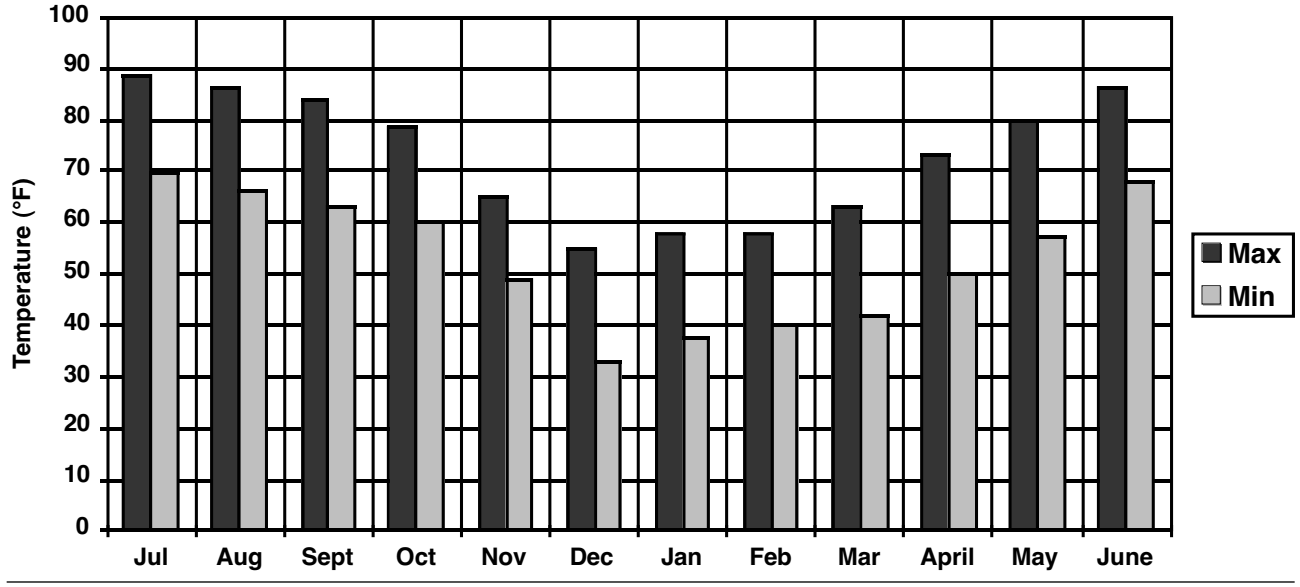

Figure 1. Monthly average maximum and minimum temperature at Starkville, Mississippi, July 2004 to June 2005.

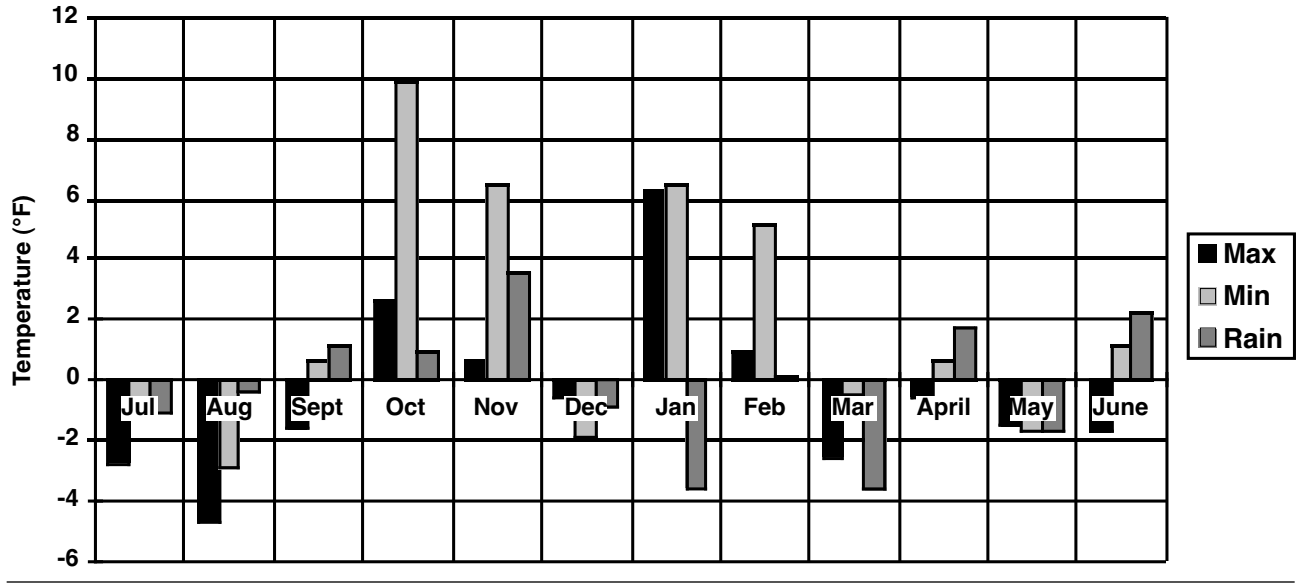

Figure 2. Departure from 30-Year Normal at Starkville, Mississippi, July 2004 to June 2005.

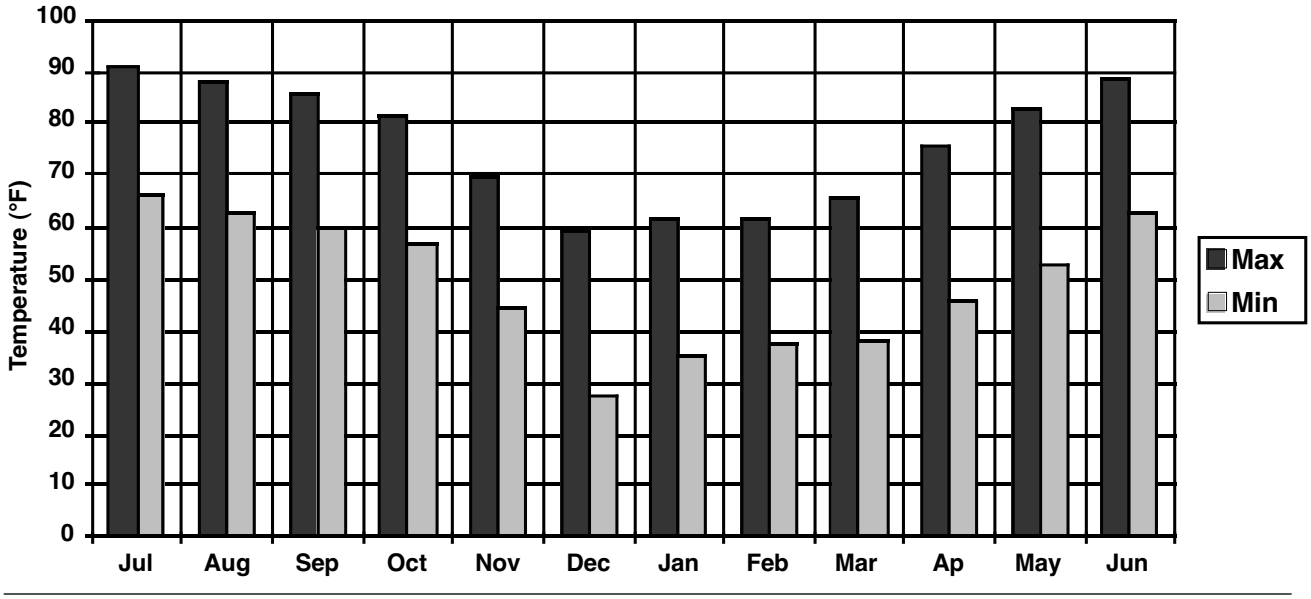

Figure 3. Monthly Average Maximum and Minimum Temperature at Newton, Mississippi, July 2004 to June 2005.

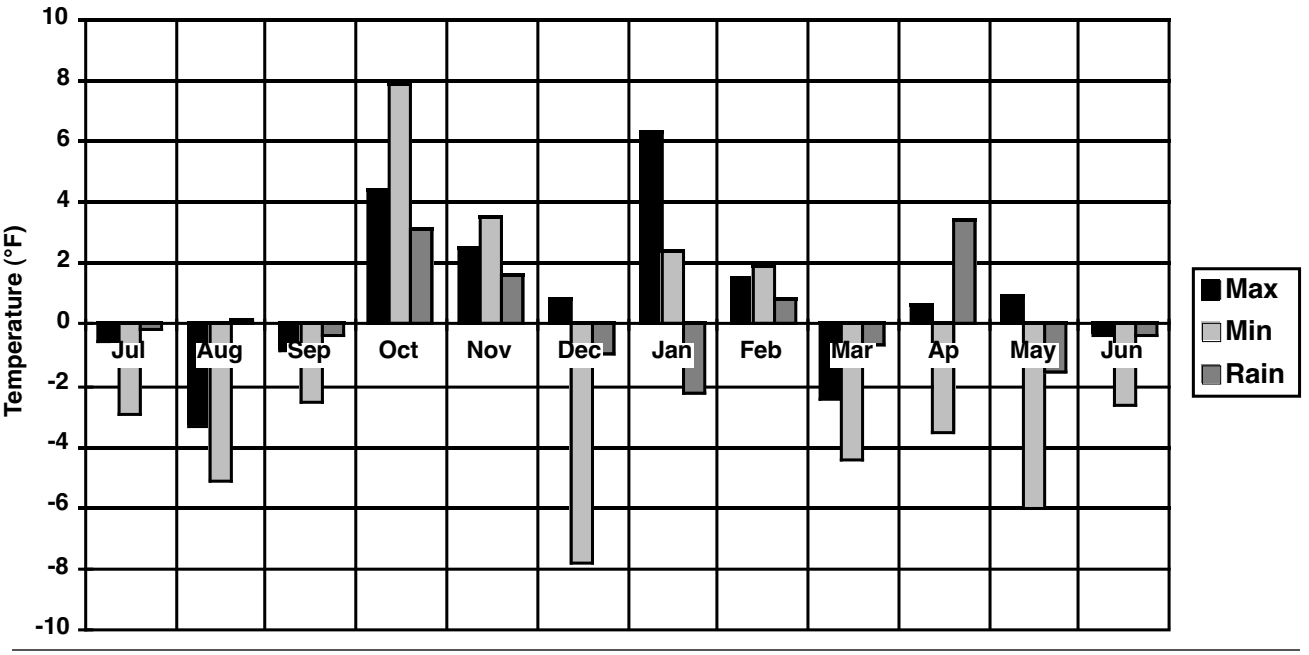

Figure 4. Departure from 30-Year Normal at Newton, Mississippi, July 2004 to June 2005.

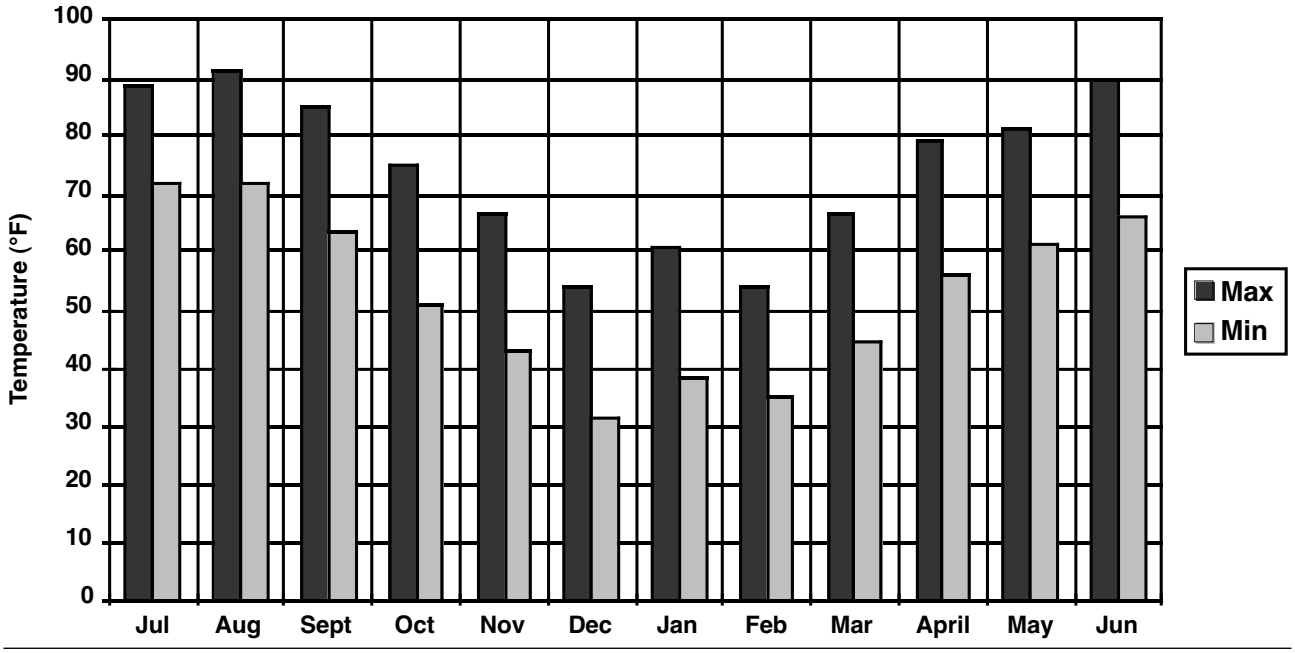

Figure 5. Monthly Average Maximum and Minimum Temperature at Starkville, Mississippi, July 2005 to June 2006.

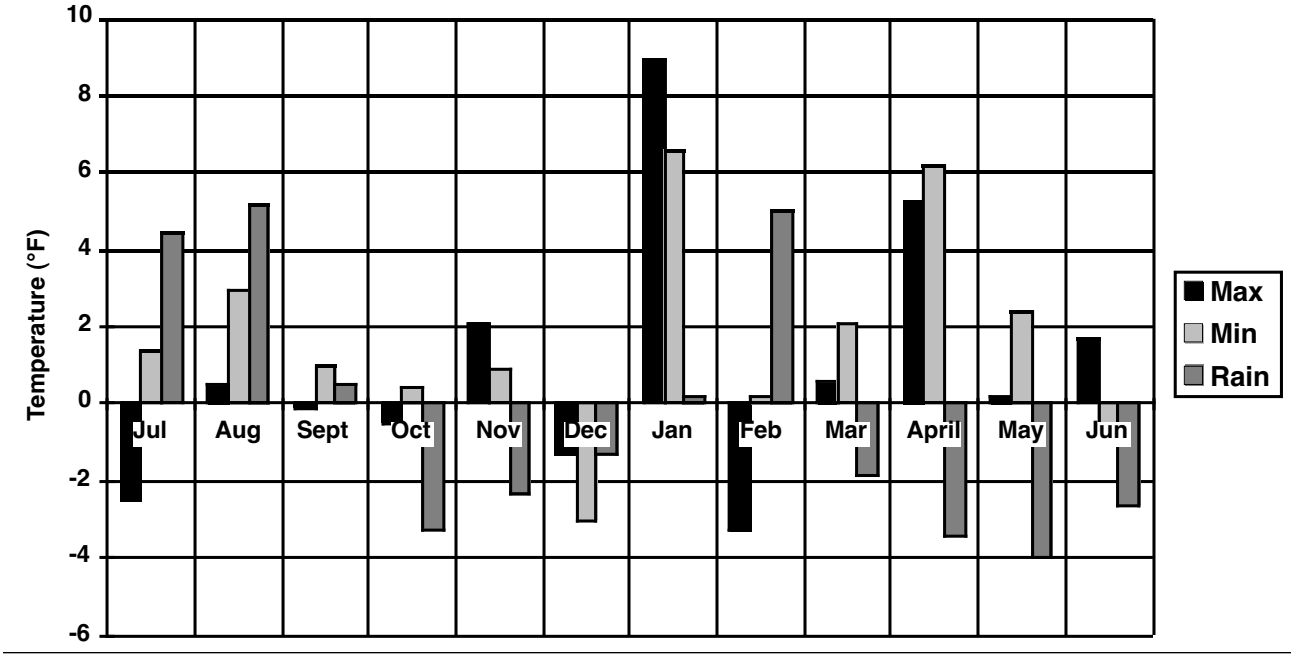

Figure 6. Departure from 30-Year Normal at Starkville, Mississippi, July 2005 to June 2006.

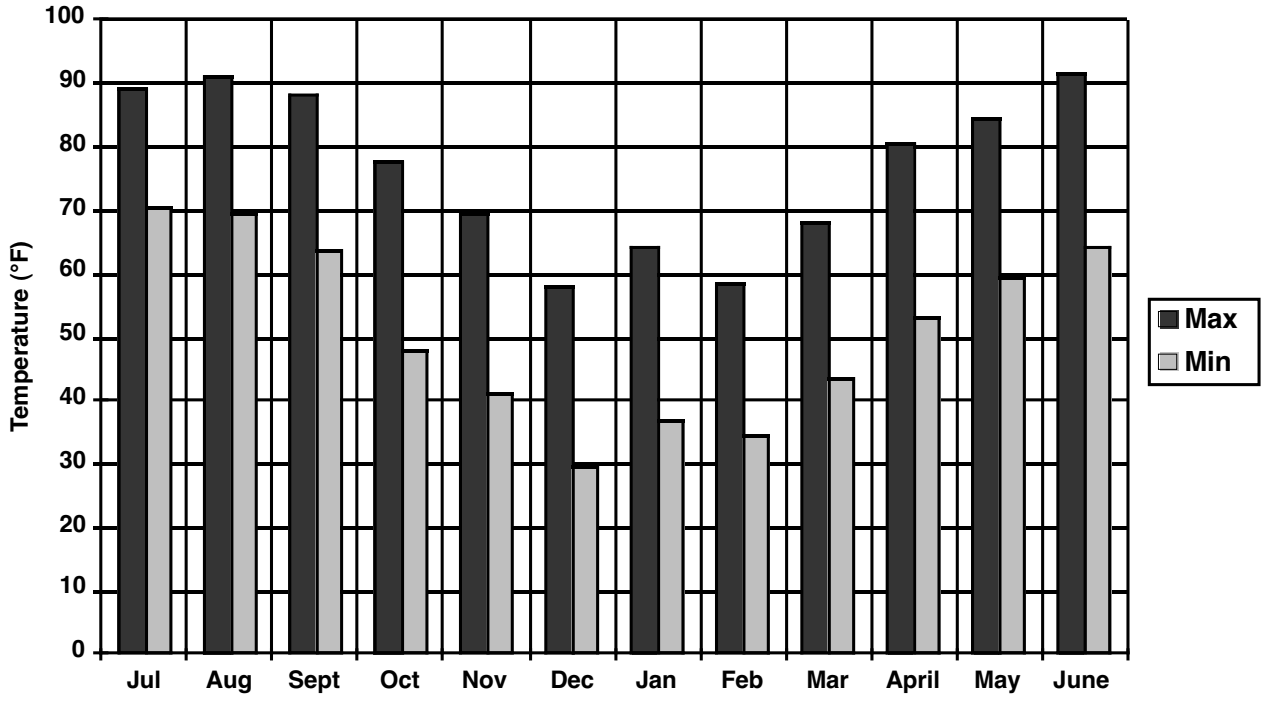

Figure 7. Monthly Average Maximum and Minimum Temperature at Newton, Mississippi, July 2005 to June 2006.

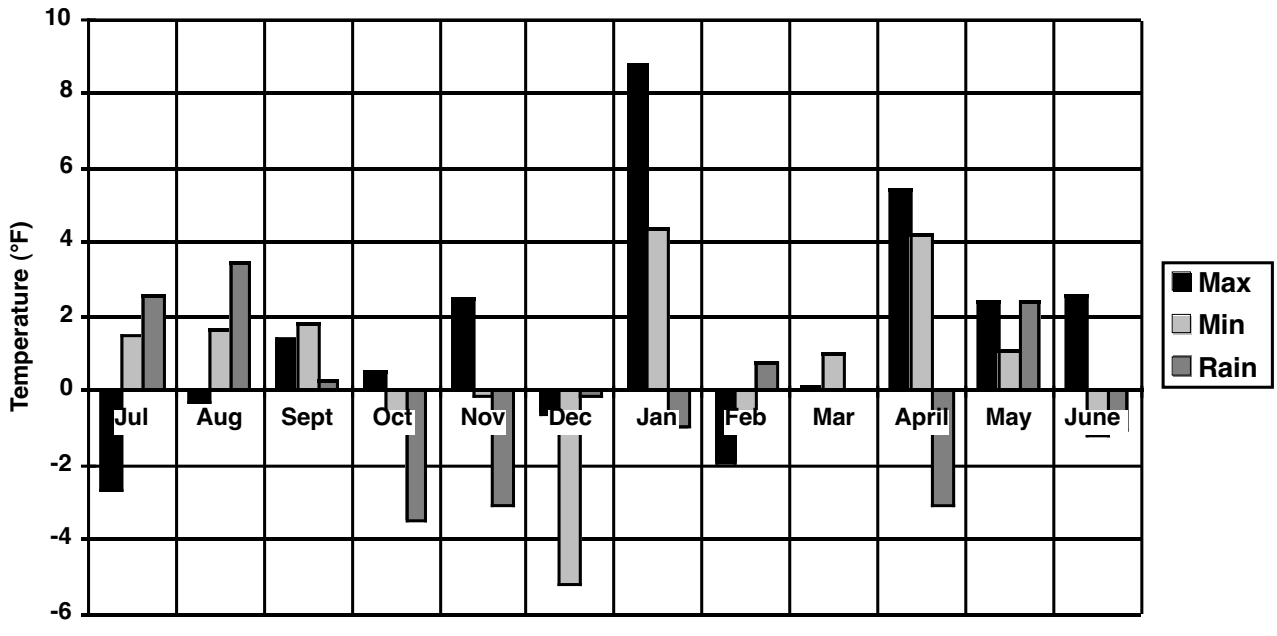

Figure 8. Departure from 30-Year Normal at Newton, Mississippi, July 2005 to June 2006.

Table 2. Yield of Annual Ryegrass and Cereal Rye at Two Locations in Mississippi, 2005-2006.

Variety	Newton	Starkville	Two-Location Average
	lb/A	*lb/A*	*lb/A*
3LWD8181-2	6104	7489	6797
Angus I	5456	6669	6063
Attain	5966	8618	7292
Beef Builder III	6006	8194	7100
Big Boss	5522	8133	6828
Brigadier	5540	5936	5738
Bulldog Grazer	5668	7023	6346
DH-3	6170	8280	7225
Diamond T	5830	8512	7171
Dyna-Gain Oregro	6007	7525	6766
Dyna-Gain UAP	5905	8416	7161
ED	6079	8649	7364
FLx2002(LA3)LRCT	6010	8508	7259
FL/NEx2005(Misc2x)LRCT	5932	8271	7102
FLx2002(new3)LRCT	5660	8460	7060
FLx2004(G)4xER	4597	8104	6351
Flying A	5650	8556	7103
Graze N Grow	5526	8641	7084
Jackson	5961	7887	6924
Jumbo	6219	8235	7227
King	6485	8196	7341
M/FLx2005(4x)ER	5533	7881	6707
M/FLx2005(4x)LRCT	6120	8768	7444
ME-4	6123	8342	7233
ME-94	6533	7896	7215
Marshall	5993	7929	6961
Maton (Rye)	6249	5412	5831
Maximus	6754	9053	7904
NF65 (Rye)	6193	4871	5532
P5	5809	7937	6873
Passerel Plus	6806	8313	7560
Prine Tetraploid	6430	8889	7660
Rio	6073	8495	7284
Stockaid	6717	7018	6868
Striker	5746	8306	7026
Surrey II	5916	8929	7423
TRX2004-Bar	5926	7908	6917
Verdue	5642	9249	7446
WD-40	6100	8441	7271
WMN97	6346	8552	7449
Mean	5991	8012	7002
LSD (0.05)	674	1373	—
CV%	6.7	11.9	—
R^2 (%)	59.9	58.1	—

Table 3. Yield of Annual Ryegrass and Cereal Rye Varieties at Starkville, Mississippi, 2005-2006.[1]

Variety	Harvest Dates				Total	Maturity
	3/01/06	3/29/06	4/24/06	5/22/06		4/24/06[2]
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*%*
3LWD8181-2	276	2886	1308	3019	7489	33
Angus I	192	2906	1288	2281	6669	66
Attain	226	3636	1713	3016	8618	25
Beef Builder III [3]	512	2971	1940	2770	8194	75
Big Boss	349	3180	1782	2822	8133	50
Brigadier2	154	2047	1725	2010	5936	97
Bulldog Grazer	315	3438	1573	1696	7023	79
DH-3	416	2979	1973	2911	8280	40
Diamond T	187	3388	1874	3062	8512	32
Dyna-Gain Oregro	272	3317	1296	2641	7525	49
Dyna-Gain UAP	279	3383	1849	2906	8416	41
ED	485	3823	1576	2765	8649	31
FLx2002(LA3)LRCT	228	3528	1680	3072	8508	32
FL/NEx2005(Misc2x)LRCT	387	2990	1683	3211	8271	32
FLx2002(new3)LRCT	311	3332	1749	3067	8460	44
FLx2004(G)4xER	204	3458	1774	2668	8104	74
Flying A	506	3526	1753	2772	8556	39
Graze N Grow	287	3472	1934	2948	8641	56
Jackson	340	3487	1305	2755	7887	21
Jumbo	322	3024	1686	3203	8235	29
King	455	3522	1393	2825	8196	31
M/FLx2005(4x)ER	422	3425	1538	2496	7881	69
M/FLx2005(4x)LRCT	246	3415	1807	3300	8768	22
ME-4	190	3327	1680	3144	8342	22
ME-94	121	3778	1425	2573	7896	39
Marshall	327	3099	1710	2793	7929	22
Maton (Rye) [3]	279	3023	962	1148	5412	92
Maximus	308	3690	1802	3253	9053	42
NF65 (Rye) [3]	757	2727	806	580	4871	100
P5	392	3230	1748	2568	7937	75
Passerel Plus	338	3374	1447	3153	8313	26
Prine Tetraploid	326	3333	2024	3206	8889	35
Rio	487	3767	1531	2710	8495	55
Stockaid	280	3109	1236	2392	7018	36
Striker	314	3526	1728	2738	8306	18
Surrey II	343	3657	1739	3190	8929	29
TRX2004-Bar	318	3258	1325	3007	7908	26
Verdue	316	3538	2287	3108	9249	62
WD-40	371	3866	1558	2646	8441	55
WMN97	212	3634	1772	2935	8552	30
Mean	326	3327	1624	2734	8012	46
LSD (0.05)	271	708	701	622	1373	24
CV (%)	60.1	15.4	26.6	16.3	11.9	37.4
R^2 (%)	33.0	38.9	49.3	67.6	58.1	69.9

[1]Soil: Marietta loam. Planted: 10/06/05. Irrigated: 1.2" on 11/10/05.
Fertilizer: 500 lb/A 15-5-10 on 10/07/05 and 4/24/06, and 150 lb/A 40-0-0 on 1/15/06 and 3/02/06.
Herbicide: Weedmaster at 1 qt/A on 1/20/06.
[2]Percent seedheads.
[3]Stand of all varieties was more than 90%, except Brigadier (38%), Beef Builder III (74%), Maton Rye (60%), and NF65 Rye (82%).

Table 4. Yield of Annual Ryegrass and Cereal Rye at Newton, Mississippi, 2005-2006.[1]

Variety	Harvest Date			Total
	1/19/06	2/28/06	3/29/06[2]	
	lb/A	*lb/A*	*lb/A*	*lb/A*
3LWD8181-2	2317	1915	1871	6104
Angus I	1672	1937	1846	5456
Attain	2220	1971	1775	5966
Beef Builder III	2100	1950	1956	6006
Big Boss	1526	1980	2016	5522
Brigadier	1963	1681	1896	5540
Bulldog Grazer	1968	1986	1714	5668
DH-3	2362	1944	1864	6170
Diamond T	2095	1907	1828	5830
Dyna-Gain	2006	2013	1988	6007
Dyna-Gain UAP	1942	1916	2047	5905
ED	2175	2008	1896	6079
FLx2002(LA3)LRCT	2027	2010	1973	6010
FL/NEx2005(Misc2x)LRCT	1618	2109	2205	5932
FLx2002(new3)LRCT	1454	2013	2194	5660
FLx2004(G)4xER	721	1978	1898	4597
Flying A	1887	1833	1929	5650
Graze N Grow	1859	1899	1768	5526
Jackson	2046	2107	1808	5961
Jumbo	2314	2051	1854	6219
King	2218	2427	1840	6485
M/FLx2005(4x)ER	1644	2030	1859	5533
M/FLx2005(4x)LRCT	2165	2130	1825	6120
ME-4	1929	2179	2016	6123
ME-94	2046	2483	2004	6533
Marshall	1812	2083	2097	5993
Maton (Rye)	2584	2333	1332	6249
Maximus	2334	2483	1937	6754
NF65 (Rye)	2656	2011	1527	6193
P5	2270	1764	1776	5809
Passerel Plus	2289	2190	2327	6806
Prine Tetraploid	2416	2180	1834	6430
Rio	2601	1884	1588	6073
Stockaid	2134	2598	1985	6717
Striker	1962	1921	1863	5746
Surrey II	2128	1931	1857	5916
TRX2004-Bar	2087	1952	1886	5926
Verdue	1711	1949	1982	5642
WD-40	2279	1851	1969	6100
WMN97	2009	2280	2056	6346
Mean	2041	2053	1897	5991
LSD (0.05)	522	477	283	674
CV %	15.4	13.9	8.9	6.7
R^2 (%)	66.8	41.8	65.4	59.9

[1]Planted: 10/21/2005. Soil: Prentiss sandy loam.
Fertilizer: 500 lb/A 13-13-13 on 10/21/05; 200 lb/A 34-0-0 on 3/02/06 and 3/29/06.
Herbicide: None.
[2]Regrowth was very sparse due to onset of hot and dry weather conditions; not harvested.

Table 5. Total Yield of Ryegrass at Newton and Starkville, 2004-2005.

Variety	Newton	Starkville	Two-Location Average
	lb/A	*lb/A*	*lb/A*
3LWD81822	5611	8623	7117
4XTetraploid	5957	8830	7394
BAR9TAM	5754	8833	7294
Brigadier	6078	7816	6947
DiamondT	6169	8431	7300
DynaGain	5817	8708	7283
Ed	6451	9128	7790
FL/NEx2004(misc2x)LRCT	5959	7980	6970
FLX2001(New1)4xLRlate	6771	8626	7699
FLX2002(new3)LCRT03LM1	6648	8052	7350
FLX2002(new3)LRCTSelect03LM1	7404	8698	8051
FLX2003(BD)4xLRCT	6331	8919	7625
FlyingA	6181	8608	7395
GrazeNGro	6285	8073	7179
Jackson	6433	9306	7870
Jumbo	6717	8079	7398
King	6085	8424	7255
Lonestar	5702	8570	7136
M/FLX2004(4x)LRCT	6177	8231	7104
M/FLx2004(new4)LRCT	6684	9497	8091
Marshall	6885	9046	7966
Maximus	6109	8128	7119
ME3	8305	8900	8603
ME94	6747	8190	7469
MSR103	8520	8131	8326
Passerel Plus	6504	8849	7677
Prine Tetraploid	6019	9341	7680
Ribeye	6104	7795	6950
Rio	7005	8782	7894
Shiwasuaboa	4543	8913	6728
Striker	6598	9242	7920
TAM90	5872	8565	7219
TXR2004-BAR	6176	8676	7426
TXR2004BAR03LM4	6095	9018	7557
TXR-2005-T2EM	5468	8358	6913
TXR-2005-TBO	5693	8841	7267
WD-40	5637	9134	7386
WMN97	5828	8529	7179
WVPB-SS-93-AR-K4n	5858	8703	7281
Mean	6287	8630	7459
LSD (0.05)	996	1376	—
CV (%)	9.7	11.4	—
R^2 (%)	67.2	33.5	—

Table 6. Dry Matter Yield of Ryegrass at Starkville, Mississippi, 2004-2005.[1]

Variety	Harvest Date						Total	Maturity
	11/19/04	1/25/05	3/10/05	4/05/05	5/03/05	6/03/05	Yield	5/02/05[2]
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*%*
3LWD81822	706	1644	1684	1432	2094	1064	8623	21
4Xtetraploid	884	1483	1660	1339	2421	1044	8830	48
BAR9TAM	711	1536	1893	1406	2182	1105	8833	25
Brigadier	411	1653	2082	1303	1803	561	7816	19
DiamondT	974	1202	1883	1376	2089	908	8431	11
DynaGain	909	1797	1659	1397	1870	1076	8708	20
Ed	973	1927	1765	1400	2011	1052	9128	20
FL/Nex2004(misc2)	863	1375	1787	1371	1819	765	7980	20
FLX2001(New1)4xL	934	1497	1798	1324	1975	1098	8626	5
FLX2002(new3)LCR	832	1435	1661	1507	1785	832	8052	9
FLX2002(new3)LRC	918	1673	1651	1389	2051	1017	8698	14
FLX2003(BD)4xLRC	965	1298	1957	1461	2167	1071	8919	15
FlyingA	898	1550	1644	1330	2079	1108	8608	16
GrazeNGro	923	1825	1694	1186	1764	681	8073	19
Jackson	887	1680	1752	1492	2417	1078	9306	23
Jumbo	837	1681	1587	1167	1916	892	8079	5
King	936	1434	1765	1238	2114	936	8424	30
Lonestar	912	1646	1523	1629	1920	940	8570	28
M/FLX2004(4x)LRC	940	1268	1708	1458	2041	816	8231	16
M/FLx2004(new4)L	884	1965	2158	1269	2179	1041	9497	13
Marshall	809	2059	1518	1396	2391	873	9046	10
Maximus	951	1312	1579	1377	1849	1059	8128	20
ME3	544	1675	1613	1496	2451	1121	8900	4
ME94	968	1706	1383	1505	1836	792	8190	8
MSR103	332	1795	1491	1419	2192	900	8131	4
Passerel Plus	915	1814	1387	1281	2089	1365	8849	4
Prine Tetraploid	1029	1804	2009	1503	1873	1123	9341	14
Ribeye	767	1340	1586	1294	1980	827	7795	35
Rio	950	1668	1676	1509	2080	900	8782	36
Shiwasuaboa	926	1794	1969	1301	1992	931	8913	63
Striker	891	1762	1832	1394	2023	1340	9242	11
TAM90	823	1482	1661	1505	1897	1198	8565	20
TXR-2005-T2EM	654	1558	1788	1405	2228	1043	8676	15
TXR-2005-TBO	853	1671	2197	1468	1834	995	9018	10
TXR-2004-BAR	689	1487	1524	1325	2278	1055	8358	28
TXR2004BAR03LM4	745	1661	1756	1395	2198	1085	8841	24
WD-40	862	1669	2156	1504	2077	866	9134	63
WMN97	784	1560	1636	1175	2440	935	8529	20
WVPB-SS-93-AR-K4	835	1542	2102	1412	1879	933	8703	29
Mean	836	1614	1748	1388	2059	985	8630	20
LSD (0.05)	200	446	413	428	626	416	1376	19
CV (%)	17.0	19.7	16.9	22.0	21.7	30.1	11.4	69.0
R^2 (%)	66.4	42.3	54.5	20.9	35.1	46.7	33.5	63.1

[1]Planting Date: 10/06/04. Soil: Marietta Loam.
Fertilizer: 400 lb/A 15-5-10 on 10/06/04, 1/25/05, and 3/10/05; 200 lb/A 34-0-0 on 11/19/04 and 4/05/05.
Herbicide: Paraquat at 1 pt/A prior to planting.
[2]Percent seedhead.

Table 7. Dry Matter Yield of Annual Ryegrass at Newton, Mississippi, 2004-2005.[1]

Variety	Harvest Date				Total	Maturity
	12/13/04	2/22/05	3/30/05	5/16/05	Yield	4/27/05[2]
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*%*
3LWD81822	978	1096	1404	2133	5611	7
4XTetraploid	1116	862	1516	2463	5957	12
BAR9TAM	905	1018	1502	2329	5754	5
Brigadier	1182	1311	1475	2110	6078	5
DiamondT	1257	1040	1391	2481	6169	8
DynaGain	1326	857	1464	2170	5817	8
Ed	1541	933	1478	2499	6451	7
FL/Nex2004(misc2	1413	1202	1392	1953	5959	3
FLX2001(new1)4xL	1696	1172	1442	2461	6771	2
FLX2002(New1)4xL	1679	1293	1546	2126	6648	3
FLX2002(new3)LCR	1800	1280	1599	2725	7404	7
FLX2003(BD)4xLRC	1635	1048	1428	2221	6331	5
FlyingA	1263	1016	1527	2376	6181	5
GrazeNGro	1480	857	1425	2524	6285	5
Jackson	1760	964	1420	2289	6433	3
Jumbo	1754	1003	1419	2540	6717	5
King	1390	1020	1429	2246	6085	7
Lonestar	1300	1004	1456	1942	5702	8
M/FLX2004(4x)LRC	1638	998	1455	2086	6177	8
M/FLX2004(new4)L	1629	1160	1412	2483	6684	3
Marsha11	2118	1021	1281	2466	6885	3
Maximus	1293	975	1582	2259	6109	8
ME3	1302	1787	1899	3317	8305	2
ME94	2089	1007	1452	2199	6747	2
MSR103	773	2078	2404	3265	8520	0
Passerel Plus	1978	866	1261	2399	6504	0
Prine Tetraploid	1604	1119	1316	1979	6019	2
Ribeye	1342	937	1565	2260	6104	7
Rio	1470	1033	1717	2785	7005	8
Shiwasuaboa	947	564	1021	2010	4543	33
Striker	1768	1037	1381	2411	6598	0
TAM90	1221	934	1506	2212	5872	7
TXR-2005-T2EM	907	1190	1632	2447	6176	5
TXR-2005-TBO	1372	1133	1449	2142	6095	2
TXR2004-BAR	857	895	1570	2146	5468	7
TXR2004BAR03LM4	1212	846	1487	2148	5693	8
WD-40	1189	810	1502	2135	5637	22
WMN97	1413	762	1480	2173	5828	2
WVPB-SS-93-AR-K4	1168	926	1368	2396	5858	13
Mean	1404	1053	1489	2341	6287	6
LSD (0.05)	235	281	205	350	996	5
CV (%)	10.3	16.4	8.5	9.2	9.7	50.1
R^2 (%)	89.0	78.1	81.8	74.9	67.2	84.5

[1]Planting Date: 9/29/04. Soil: Prentiss Sandy Loam.
Fertilizer: 500 lb/A 13-13-13 on 9/29/04 and 200 lb/A 34-0-0 on 12/8/04, 3/02/05, and 3/30/05.
Herbicide: None.
[2]Percent seedhead.

Table 8. Source of Ryegrass and Cereal Rye Seed.

Variety	Seed Company/Source	Variety	Seed Company/Source
3LWD8181-2	Barenburg	M/FL x 2005(4x) ER	Dr. Prine/Florida
3LWD81822	Barenburg	M/FL x 2005(4x) LRCT	Dr. Prine/Florida
4XTetraploid	Oregro	M/FLX2004(4x)LRCT	Dr. Prine/Florida
Angus I	DLF International Seeds	M/FLx2004(new4)LRCT	Dr. Prine/Florida
Attain	Smith Seed Services	Marshall	Wax Seed Co.
BAR9TAM	Dr. Nelson/Texas	Maton (Rye)	Noble Foundation
BeefBuilder III	Forbes Grain and Seed	Maximus	Barenburg
Big Boss	Smith Seed Services	ME-3	Wax Seed Co.
Brigadier	East Texas Seed Co.	ME-4	Wax Seed Co.
Bulldog Grazer	Athens Seed/Georgia	ME-94	Wax Seed Co.
DH-3	Oregro Seeds, Inc.	MSR103	MAFES
Diamond T	Oregro Seeds, Inc.	NF65 (Rye)	Noble Foundation
DynaGain	UAP	P5	Plainview Seed
Dyna-Gain Oregro	Oregro Seeds, Inc.	Passerel Plus	Pennington Seed
Ed	Smith Seed	Prine Tetraploid	East Texas Seed Co.
ED/I5-1-AR02	Smith Seed Services	Ribeye	Barenburg
FL x 2002(LA3) LRCT	Lewis Seed Co.	Rio	ProSeeds Marketing
FL/NE x 2005(Misc 2x) LRCT	Dr. Prine/Florida	Shiwasuaboa	Pennington Seed
FL/NEx2004(misc2x)LRCT	Dr. Prine/Florida	Stockaid	Olsen Agriculture
FLX2001(New1)4xLRlate	Smith Seed Services	Striker	Seed Research of Oregon
FLX2002(new3) LRCT	Barenburg	Surrey II	DLF International Seeds
FLX2002(new3)LCRT03LM1	Barenburg	TAM90	Dr. Nelson/Texas
FLX2002(new3)LRCTSelect03LM1	Barenburg	TRX2004-Bar	Barenburg
FLX2003(BD)4xLRCT	Smith Seed	TXR2004BAR03LM4	Barenburg
FLX2004(G)4xER	Barenburg	TXR-2005-T2EM	Dr. Nelson/Texas
Flying A	Oregro Seeds, Inc.	TXR-2005-TBO	Dr. Nelson/Texas
GrazeNGro	Seed Research of Oregon	Verdue	Smith Seed Services
Jackson	Wax Seed Co.	WD-40	Oregro Seeds, Inc.
Jumbo	Barenburg	WMN97	Wax Seed Co.
King	Lewis Seed Co.	WMN97	Wax Seed Co.
Lonestar	Grassland Oregon	WVPB-SS-93-AR-K4n	Smith Seed Services

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