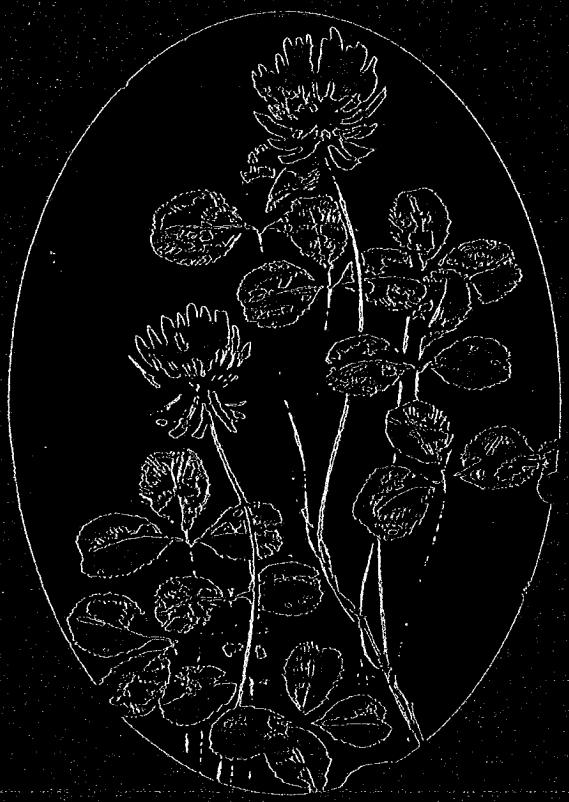
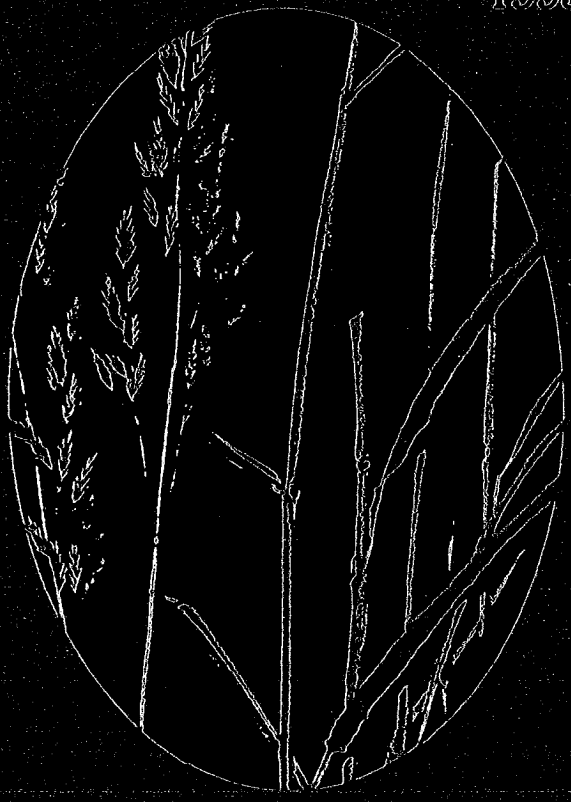
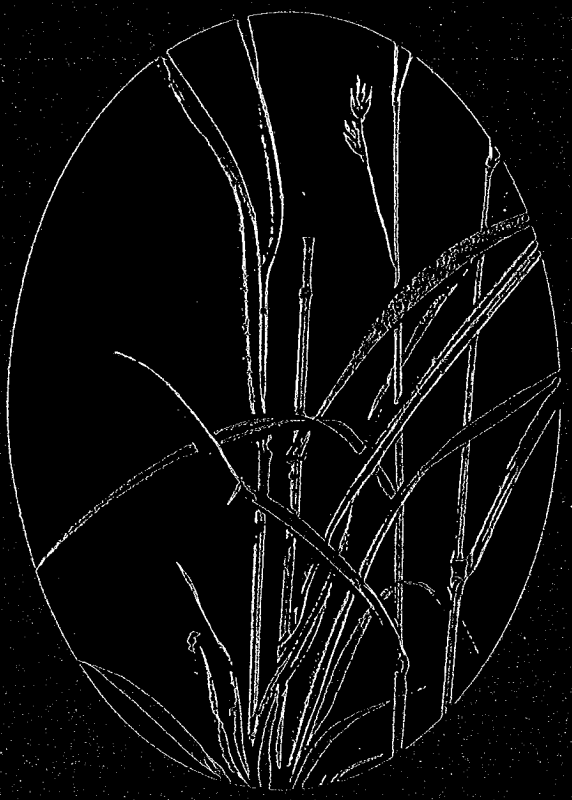
FORAGE

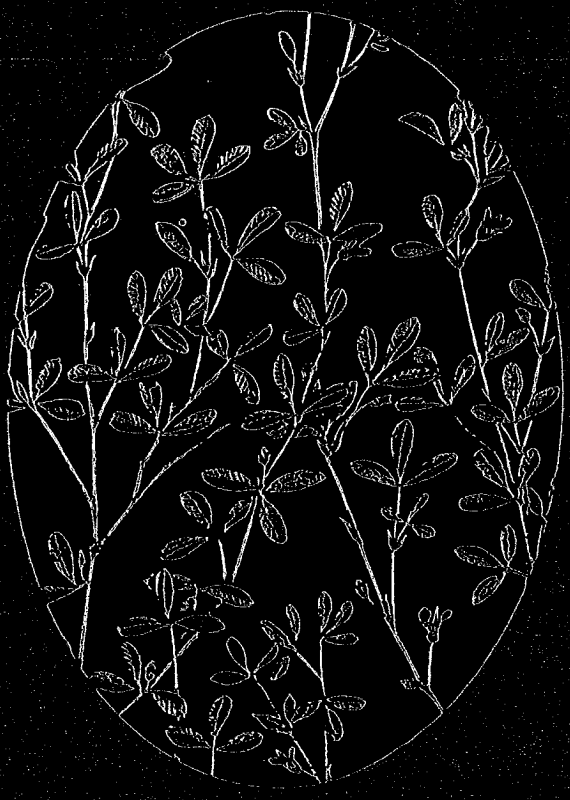
CROPS VARIETY TESTING

1995









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APPENDIX

INTRODUCTION

Evaluation of Forage Crop Varieties in North Carolina

New forage cultivars and hybrids are constantly being released from public and private sources. In addition, forage breeders are continually interested in testing experimentals under various growing conditions. In order to determine adaptability and productivity, it is necessary that these forages be tested under North Carolina growing conditions. The purpose of this publication is to present comparative data on forages tested in North Carolina during 1995.

The varieties tested are classed into three major groups: winter annuals (such as rye, wheat, oats, barley and ryegrass); summer annuals (such as sudangrass, pearl millet, and sorghum-sudan hybrids) and perennial forages (such as alfalfa, orchardgrass, tall fescue, and bermudagrass). All varieties were managed on a multiple-cut system with most varieties being clipped three or more times to simulate rotational grazing or haying conditions. Dry forage yields are reported for all entries tested.

Experimental lines are sponsored through the USDA-ARS, state agricultural experiment stations and privately owned companies. These lines may not be available for farm use. All entries from privately owned companies (experimental lines or commercial varieties) are tested on a fee basis. The Crop Science Department, N. C. State University often enters varieties of interest or proven varieties to be used as standards. All varieties are from certified sources or from sources which would be able to verify origin. This gives assurance as to the purity of the entries tested and that results reported here could be reproduced.

All forage tests were conducted on North Carolina State University Lake Wheeler Road Field Laboratory in 1995. Weather-measuring instruments were located approximately one mile from the test site. Climatological data are listed in the appendix tables.

Most computations and statistical analyses were conducted in the Statistical Laboratory and Computing Center at North Carolina State University. These operations were supervised by Mrs. Sandra Donaghy and Mrs. Joy Smith. We appreciate their cooperation and assistance.

Determining Differences Between Varieties

In order to decide if true differences exist in a set of varieties being tested, field trials are designed so that statistical procedures can be used to determine whether observed differences are most likely real or due only to chance. Measured differences among varieties can result from influences other than their true genetic character. These random effects which may include variation in soil fertility, moisture, temperature, etc. are always present to some degree. Experimental design and statistics help in deciding whether true differences exist. There is always a chance that an observed difference between varieties will be due to chance alone and not due to true varietal differences. It is up to the experimenter to choose the odds that he is willing to accept. Most experimenters will accept chance odds of 5% or less. In other words, the chance of concluding falsely is about one in twenty.

In this publication the Waller-Duncan L.S.D. (least significant difference) test is used to determine if real differences exist among varieties (chance odds of about 5%). In most tables where yields are presented, the L.S.D. values are listed below each yield column. Yield differences between varieties must exceed the L.S.D. values for the difference to be considered statistically significant. An example of the use of the Waller-Duncan L.S.D. is given below.

Table 1a. Example of use of the L.S.D. value.

Variety	Yield (Lbs/A)
1	1600+
2	1570++
3	1450
4	1410
LSD	50

L.S.D. Waller Duncan K Ratio = 100
+Highest yield.
++Not different from highest yield.

By using the L.S.D. value in the above example, it can be determined that:

a. Variety 1 is not different from variety 2 because the observed difference (30) does not exceed the L.S.D. value of 50.

b. Variety 1 is different from varieties 3 and 4 since the yield difference exceeds the L.S.D. value.

c. Likewise, based on similar comparisons, varieties 3 and 4 are not different, but variety 2 is different from varieties 3 and 4.

In studying the information presented in this publication, it should be emphasized that data collected over several years are a better indication of a variety's potential than single year test results. If the reader desires to review data for each harvest for previous years, check the publication for those years.

EXPERIMENTAL PROCEDURES

Recommended small-plot techniques and cultural practices were employed on all tests. Fertilization, seeding rates, dates, and other cultural information of a given test are listed in the table which gives dry matter yields by harvest for the current year. Cultural practices of prior years for perennial forages are given in the appendix tables.

The experimental design used for all tests was a randomized complete block with three, four, or five replications (reps). Drilled plots were 20 feet long and three feet wide. Broadcast plots were 20 feet long and five feet wide. Blocks were separated by six feet and tests were bordered by material comparable to that included in the trial.

The row number and row spacing of the specially designed cone planter was changed from three rows 9 inches apart to five rows 4.5 inches apart in the fall of 1993. All annuals and perennial trials seeded since the fall of 1993 are on the 4.5 inch spacing. The cone planter allows each entry to be adjusted to 100% germination based on germination tests conducted just prior to planting.

Plots were harvested with a self-propelled, flail-knife chopper (Carter harvester). It was designed specifically for small plot work with the wheels spaced so the harvest rows and the stubble were not damaged during harvesting.

Each plot was evaluated for weed percentage. When estimated to be greater than 5% of the harvested forage dry matter, weed contribution was subtracted from total herbage weight. Thus, dry forage yields listed in this publication are on a weed-free basis.

Dry yield determination included drying either the whole plot sample or a subsample. When subsampling, dry matter concentration was determined for each variety in two reps and this average was used to adjust for dry matter in the other reps. Dry yield for each variety was determined by multiplying green weight by dry matter concentration for a particular variety. Subsampling was necessary in some cases due to the bulk of green material being handled and a shortage of drying space. Samples were dried in a forced air drier at 130 degrees Fahrenheit for 24 to 48 hours. Moisture remaining in the samples was determined to be from 2 to 4%. Thus, the term "dry forage" as stated in the table refers to oven-dry forage containing 2 to 4% moisture.

Table 1 Supplemental information for forage variety test locations.

Location	Coordinating Personnel	Soil	Long Term Averave Growing Season (Days)	Annual Rainfall (Inches)
Lake Wheeler Road Field Laboratory Raleigh, NC East Central Piedmont Wake County Approx. Elev. 400 feet	Wallace Baker Ken Snyder	Appling-Cecil Association Gray Sandy Loam soil red, firm clay subsoil	200	46

Table 2 Names and addresses of agencies sponsoring winter annual forage entries in the 1994-1995 trials.

Sponsor	Address	Brand	Cultivar Designation
Conlee Seed. Co.	PO Box 2319 Waco, TX 76702-3219	Conlee	Wintermore Rye
DLF Trifolium	PO Box 742 Albany, OR 97321	DLF Trifolium DLF Trifolium	Rustmaster RG AR-90-RG
Gainey Grain, Inc.	Route 1, Box 92 Laurel Hill, NC 27569	Gainey Gainey	Grazer 94 Rye Grazer 94-10 Rye
Carl R. Gurley, Inc.	PO Box 995 Princeton, NC 27569	Gurley Gurley Gurley	G.I. 85 Ryegrazer Rye G.I. 87 Ryegrazer Rye Gurley Grazer Rye
Ledeboer Farms	22068 Case Rd. NE Aurora, OR 97002	Ledeboer Ledeboer	WH-Y Oat WH-B Oat
NC Agriculture Extension Service	Raleigh, NC 27695		Brooks Oat Boone Barley Wakefield Wheat Gulf Ryegrass NCSU91XFl/OrX 1993LR Ryegrass NCSU91XFla Ryegrass NCSU 91 Ryegrass Fl/OrX1993LRXNCSU 910OR Ryegrass
Pennington Seed, Inc	PO Box 290 Madison, GA 30650	Pennington	Wintergrazer 70 Rye
Production Services International, Inc.	4854 Jefferson-Marrion Turner, OR 97392	Prod. Ser. Prod. Ser. Prod. Ser. Prod. Ser. Prod. Ser. Prod. Ser.	Charisma Oat Charisma Oat/Mega Peas Blend P930A02 Forage Oat P930A19 Forage Oat P930A26 Forage Oat P930A27 Forage Oat
Smith Seed Ser.	PO Box 288 Halsey, OR 97348	Smith Seed Smith Seed	Tetrablend 444 RG 5533 DK Annual RG
Southern States Cooperative	PO Box 26234 Richmond, VA 23260	SS SS	Wheeler Rye Pastar Rye

Table 2 Continued

U.S. Dept. of Agri.	Forage and Turf Research Unit Tifton, GA 31793	USDA	Grazer Ryegrass
Univ. of Fla.	Bldg. 107 Gainsville, FL 32611	Univ. of Fla.	Florida 80 Ryegrass
		Univ. of Fla.	Surrey Ryegrass
		Univ. of Fla.	NCSU 91 RR Ryegrass
		Univ. of Fla.	SurreyXNCSU 91 RG
		Univ. of Fla.	Fl/Or94LR Ryegrass
Willamette Valley Plant Breeders	36100 Hy. 228 Brownsville, Or 97327	WVPB	AR-90-300 Ryegrass
		WVPB	AR-R-3 Ryegrass
		WVPB	AR-92-401 Ryegrass
		WVPB	AR-93-101 Ryegrass
		WVPB	AR-A-9 Ryegrass
		WVPB	AR-ETCO-8-88 RG

Table 3 FVT 256. Dry forage yield of rye, wheat, oats, barley and annual ryegrass at North Carolina State University, Lake Wheeler Road Field Laboratory, Wake County, N.C. 1994-95[1]

Brand or Sponsor	Variety	Harvest Dates 14-Nov	27-Feb	28-Mar	26-Apr	22-May	Total
		Pounds per Acre Dry Forage[2]					
NCSU	Brooks Oat	946	938	735	1141	1044	4803
Prod. Ser.	P930A19 Oat	935	795	609	900	1324	4564
Gainey Grain	Gainey Grazer 94 Rye	835	722	1051	1092	843	4543
Prod. Ser.	P930A27B Oat	1342	597	367	947	1248	4501
Prod. Ser.	60% Charisma Oat 40% Mega Forage pea	1041	740	547	989	1180	4497
Prod. Ser.	Charisma Oat	1044	719	466	899	1365	4493
Carl Gurley	Gurley Grazer Rye	622	409	1490	988	757	4265
Ledeboer Farm	WH-B Oat	733	845	759	1427	499	4264
Prod. Ser.	P930A02 Oat	1265	689	390	633	1188	4165
Prod Ser.	P930A26 Oat	843	709	509	844	1202	4108
Sou. States	Wheeler Rye	558	270	1050	1170	998	4045
Seed. Prod.	Wintergrazer 70 Rye	468	329	1522	1235	479	4033
Gainey Grain	Gainey Grazer 94-10 Rye	511	359	1467	1097	550	3984
Carl Gurley	G.I. 85 Rye Grazer Rye	747	470	760	1385	585	3946
Ledeboen Farm	WH-Y Oat	319	566	703	1073	1229	2890
Smith Seed	SS33 DK RG	586	499	1336	617	758	3797
WVPB	AR-A-9 (4N) RG	775	625	1099	795	436	3729
WVPB	AR-90-300 (2N) RG	443	333	1379	787	763	3705
NCSU	Boone Barley	396	297	1206	1202	601	3701
WVPB	AR-92-401 (4N) RG	664	572	1187	779	424	3627
Univ. Fla.	FL/OR 94 LR RG	629	313	1331	693	522	3488
NCSU	NCSU 91 RG	262	149	1257	762	1006	3435
Univ. Fla.	Surrey X NCSU 91 RG	475	307	1331	808	439	3359
DLF Tri.	AR-90-1 RG	560	330	1045	948	465	3348
NCSU	Gulf RG	519	541	1053	715	467	3294
Univ. Fla.	Surrey RG	536	334	1202	593	610	3275
Conlee	Wintermore Rye	460	366	890	819	708	3243
WVPB	A-R-ETC6-8-88 (4N) RG	689	633	1068	507	334	3231

Table 3 (Continued). FVT 256 Dry forage yield of rye, wheat, oats, barley and annual ryegrass at North Carolina State University, Lake Wheeler Road Field Laboratory, Wake County, N.C. 1994-95[1]

Brand or Sponsor	Variety	Harvest Dates 14-Nov	27-Feb	28-Mar	26-Apr	22-May	Total
		Pounds per Acre Dry Forage[2]					
NCSU	FL/ORX1993 LRXNCSU 91 RG	201	156	1257	1037	580	3231
NCSU	Wakefield Wheat	526	449	1180	296	760	3211
Smith	Tetrablend 44 RG	521	337	837	780	735	3210
NCSU	(UM)NCSU 91 X Fla RG	216	164	1428	898	480	3186
WVPB	AR-93-101(2N) RG	213	172	1102	915	667	3069
WVPB	AR-R-3 (2N) RG	394	305	849	831	656	3035
DLFT	Rustmaster RG	250	265	1212	874	317	2918
NCSU	NCSU 91XFL/ORX1993LR RG	132	112	1147	1035	486	2912
USDA	Grazer RG	555	375	693	647	640	2910
Sou. States	Pastar Rye	703	242	805	380	754	2884
Univ. Fla.	NCSU 91 RR RG	341	239	1224	604	452	2861
Carl Gurley	G.I. 87 Ryegrazer Rye	597	364	463	895	509	2827
Univ. Fla.	Florida 80 RG	500	332	134	607	618	2192
Mean of Test		**549**	**438**	**979**	**869**	**724**	**3604**
L.S.D. Waller Duncan K Ration+100		322	166	482	570	369	900
s.e.		264	144	382	374	298	699
Error d.f.		160	160	160	160	160	160
C.V.		44	33	39	43	41	19

[1]Seeded September 14, 1994 on a Cecil clay loam soil at rate of : Rye - 112 lb/A, Oats - 90 lb/A, Ryegrass - 40 lb/a, Wheat - 120 lb/a and Barley 96 lb/a
Soil Anaysis - pH 5.9, P-I 032, K-I 50, HM% 0.3
Fertilization: Preplant (lb/Acre) 120 P_2O_5, 120 K_2); Postplant (lb/Acre) February 27 - 50N, March 28 - 50N

[2]Average of five replications. +Highest yield. ++Not different from highest yield.

Table 4 Dry forage yeild of rye, wheat, oats, barley and annual ryegrass on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina, 1993-1995.

Sponsor	Variety	1995 Total	1994 Total	1993 Total	3-year Average
		Pounds Per Acre Dry Forage[1]			
NCSU	Brooks Oat	4803	5483	6305	5475
Prod. Services	P930A19 Oat	4564			
Gainey Grain	Gainey Grazer 94 Rye	4543			
Prod. Services	P930A27B Oat	4501			
Prod. Services	60% Charisma Oat 40% Mega Pea	4497			
Prod. Services	Charisma Oat	4493			
Carl Gurley	Gurley Grazer Rye	4265			
Ledeboer Farm	WH-B Oat	4264			
Prod. Services	P920A02 Oat	4165			
Prod. Services	P930A26 Oat	4108			
Southern States	Wheeler Rye	4045	5824	5294	5004
Seed Production	Wintergrazer 70 Rye	4033	6030	5597	5168
Gainey Grain	Gainey Grazer 94-10 Rye	3984			
Carl Gurley	G.I. 85 Rye	3946			
Ledeboer Farm	WH-Y Oat	3890			
Smith Seed	SS33 DK RG	3797			
WVPB	AR-A-9(4N) RG	3729			
WVPB	AR-90-300(2N) RG	3705	7530	6388	5816
NCSU	Boone Barley	3701	4791	5837	4729
WVPB	AR-92-401(4N) RG	3627	6514	6673	5549
Univ. of Fla.	FL/OR 94 LR RG	3488			
NCSU	NCSU 91 RG	3435			
Univ. of Fla.	Surrey X NCSU 91 RG	3359			
DLF Trifolium	AR-90-1 RG	3348	7924	6275	5791
NCSU	Gulf RG	3294	6507	6647	5428
Univ. of Fla.	Surrey RG	3275	6944	7072	5706
Conlee Seed	Wintermore Rye	3243			
WVPB	A-R-ETC6-8-88(4N) RG	3231			
NCSU	FL/OR X 1993 LRXNCSU RG	3231			
NCSU	Wakefield Wheat	3211	5296	5789	4718
Smith Seed	Tetrablend 444 RG	3210			
NCSU	(UM)NCSU 91 X Fla RG	3186			
WVPB	AR-93-101(2N) RG	3069	6790		4930
WVPB	AR-R-3 (2N) RG	3035			
DLFT	Rustmaster RG	2918			
NCSU	NCSU91XFl/OrX1993LR RG	2912			
USDA	Grazer Ryegrass	2910			
Sou. States	Pastar Rye	2884	5462	5244	4485
Univ. of Fla.	NCSU 91 RR RG	2861			
Carl Gurley	G.I. 87 Ryegrazer Rye	2827			
Univ. of Fla.	Florida 80 RG	2192	6985	6515	5178

[1]Average of five replications

Table 5 Names and addresses of agencies sponsoring summer annual forage entries in the 1995 trials.

Sponsor	Address	Brand	Cultivar[1] Designation
Agratech Seeds, Inc.	5559 N. 500 West McCordsville, IN 46055	Agratech	Agratech 610 PM
DeKalb Genetics Corporation	Route 2, Box 56 Lubbock, TX 79415	DeKalb DeKalb	Sudax SX-17 SS Sudax SX-17 SS
Green Seed	PO Box 29247 Atlanta, GA 30359	Green Green Green	Leafy Green PM Green Graze Supreme SS Eversweet SS
Mycogen Plant Sciences	720 St. Croix St. Prescott, WI 54021	Mycogen Mycogen	Kow Kandy II SS T-E Horsepower PM
Northrup King Co	PO Box 249 Grifton, NC 28530	NK NK NK NK NK	Sordan 79 SS X9299 SS Millex 32 PM Trudan 8 Hyb. Sudan X9290 Hyb. Sudan
Pennington Seed Inc.	PO Box 290 Madison, GA 30650	Pennington Pennington	Leafy 22 PM Summergrazer III SS
Pioneer Hi-Bred International	1000 W. Jefferson St. Tipton, IN 46072	Pioneer	855F SS
Southern States Cooperative, Inc.	PO Box 26234 Richmond VA 23260	FFR FFR FFR FFR FFR FFR FFR	FFR 120 Sudan 3-Mil-X PM Mil-Hy 300 PM FFR 221A SS Mil-Hy 100 PM Exp. 102 M PM Exp. 211 MS SS
U.S. Dept. of Agri.	Forage & Turf Research Unit PO Box 748 Tifton, GA 31793	USDA USDA USDA USDA USDA USDA USDA	Tifleaf 2 PM Expt. 1 PM Expt. 2 PM Expt. 4 PM Expt. 5 PM TX623AXDWFGA337 SS TX623AXGA337 SS

[1]SS = Sorghum sudan hybrid, PM = Pearl millet.

Table 6 FVT 258. Dry forage yield of sorghum sudan hybrids and hybrid sudangrass on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina[1].

Sponsor	Variety	Harvest Dates					1995 Total
		15-Jun	7-Jul	24-Jul	21-Sep	9-Nov	
		Pounds Per Acre Dry Forage[2]					
DeKalb	Sudax SX-15	1157	3307	1517	1940	1076	8999+
Sou. States	Exp.211 MS	1410	2523	1458	1776	966	8132++
DeKalb	Sudax SX-17	1481	2775	1490	1543	828	8117++
NK	Trudan 8 Sudan	1554	2756	1468	1584	657	8019
Green Seed	Green Graze Sup.	1447	2708	1396	1565	860	7976
NK	X9299 SS	1263	2963	1317	1602	725	7870
NK	Sordan 79	1600	2542	1333	1651	730	7856
Sou. States	FFR 211A	1579	2271	1342	1325	1297	7815
Mycogen	Kow Kandy	1583	2321	1311	1549	981	7744
Pennington	Summergrazer III	1445	2412	1455	1608	804	7723
USDA	TX823A X Ga337	1163	2675	1234	1802	828	7702
Sou. States	FFR 120 Sudan	1431	2501	1392	1483	821	7628
Pioneer	855F	1308	2145	1418	1748	813	7432
Green Seed	Eversweet	1194	2440	868	1602	979	7082
USDA	TX623A X DwfGa337	826	2456	1177	1588	993	7041
USDA	Brown Midrib Sorg. X Sudangrass	945	2321	1098	1622	755	6741
Mean of Test		1337	2570	1330	1624	882	7742
L.S.D. Waller Duncan KRatio = 100		252	384	333	641	354	910
s.e.		206	301	229	296	232	657
Error d.f.		60	60	60	60	60	60
C.V.		15	12	17	18	26	8

[1]1995 Cultural Practices: Seeded May 16, 1995 on a Cecil loam soil at rate of 40 pounds per acre.
Soil Analysis pH 5.9, P-I 32, K-I 50, HM% 0.3
Fertilization (lb/acre) May 16 - 50N, 50 P_2O_5, 50 K_2O, July 10 - 50N, August 8 - 50N.
[2]Average of five replications
+Highest yield. ++Not different from highest yield

Table 7 FVT 258 Dry forage yield of pearl millet on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina[1].

Sponsor	Variety	Harvest Dates					1995 Total
		6-Jul	25-Jul	21-Aug	21-Sep	8-Nov	
		Pounds Per Acre Dry Forage[2]					
NK	Millex 32	5972	919	938	1569	449	9847+
USDA	Tift Exp. No. 4	4244	1319	905	1822	1193	9482++
USDA	Tifleaf 2	3543	1675	682	1592	1264	8756++
USDA	Tift Exp. No. 5	3443	1525	804	1576	1221	8569
Green Seed	Leafy Green	3931	1381	734	1557	965	8568
Pennington	Leafy 22 Hybrid	3403	1472	830	1484	996	8185
USDA	Tift Exp. No. 2	3069	1679	814	1507	1039	8108
Agratech	Agratech 610	4059	1041	832	1420	587	7938
Sou. States	Mill-Hy100	4148	998	723	1390	482	7741
USDA	Tift Exp. No. 1	3037	1565	717	1260	1106	7685
Mycogen	T-E Horsepower	4429	919	707	1247	354	7656
Sou. States	Exp. 102 M	3950	861	525	1285	393	7013
Sou. States	Mill-Hy300	2992	1246	686	1241	641	6805
Sou. States	3-Mil-X	2739	1259	592	1236	451	6277
Mean of Test		3783	1276	749	1442	796	8045
L.S.D. Waller Duncan KRatio = 100		985	283	436	462	228	
s.e.		785	234	220	280	196	1227
Error d.f.		52	52	52	52	52	52
C.V.		21	18	29	19	25	12

[1]1995 Cultural Practices: Seeded May 16, 1995 on a Cecil loam soil.
Soil Analysis pH 6.0, P-I 32, K-I 50, HM% 0.3
Fertilization (lb/acre) May 16 - 50N, 50 P_2O_5, 50 K_2O, July 10-50N, August 8 - 50N.
[2]Average of five replications
+Highest yield. ++Not different from highest yield

Table 8 Over-year dry forage yield of sorghum sudan hybrids, hybrid sudangrass, and perl millet on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina.

Sponsor	Variety	1995 Total	1994 Total	1993 Total	3-Year Average
		Pounds Per Acre Dry Forage[1]			
SORGHUM SUDAN					
DeKalb	Sudax SX-15	8999+	8521++	6128++	7804
Sou. States	Exp. 211 MS	8132++			
DeKalb	Sudax SX-17	8117++	7799++	7823+	7834
NK	Trudan 8 Sudan	8019			
Green Seed	Green Graze Sup.	7976			
NK	X9299 SS	7870	8064++		7967
NK	Sordan 79	7856	8136++		7996
Sou. States	FFR 211A	7815	8126++	5918++	7214
Mycogen	Kow Kandy	7744			
Pennington	Summergrazer III	7723	7844++		7784
USDA	TX823A X Ga337	7702			
Sou. States	FFR 120 Sudan	7628	8838+	6468++	7568
Pioneer	855F	7432	8008++	5609	6946
Green Seed	Eversweet	7082			
USDA	TX623A X DwfGa337	7041	8001++		7521
USDA	Brown Midrib Sorg. X Sudangrass	6741			
PEARL MILLET					
NK	Millex 32	9847+	8185++		9016
USDA	Tift Exp. No. 4	9482++	7634++	5538	7476
USDA	Tifleaf 2	8756++	8325++	5825++	7559
USDA	Tift Exp. No. 5	8569			
Green Seed	Leafy Green	8568	8357++		8463
Pennington	Leafy 22 Hybrid	8185	8403++		8294
USDA	Tift Exp. No. 2	8108	7634++	5538	7022
Agratech	Agratech 610	7938			
Sou. States	Mill-Hy 100	7741			
USDA	Tift Exp. No. 1	7685	7451	6088++	7004
Mycogen	T-E Horsepower	7656			
Sou. States	Exp. 102 M	7013			
Sou. States	Mill-Hy 300	6805	7195	5186	6331
Sou. States	3-Mil-X	6277	7209	4838	6047

[1]Average of five replications
+Highest yield. ++Not different from Highest yield
NK Millex 32 tested in prior years as X888

Table 9 Names and addresses of agencies sponsoring perennial forage entries in the 1995 trials.

Sponsor	Address	Brand	Cultivar Designation
Agripro Biosciences Inc.	Route 3 Ames, IA 50010	Agripro	Innovator + Z Alf.
Cal/West Seeds	PO Box 1428 Woodland, CA 95776	Cal/West Cal/West Cal/West	C/W-2040 Alfalfa C/W-2043 Alfalfa C/W-2032 Alfalfa
DLF Trifolium	PO Box 742 Albany, OR 97321	DLF Trifolium	Dovey Fescue
Dairyland Seed Co.	PO Box 958 West Bend, WI 53095	Dairyland Dairyland	DS 764 Alfalfa Magnagraze Alfalfa
DeKalb Genetics Corporation	3100 Sycamore Road DeKalb, IL 60115	DeKalb DeKalb	DK 127 Alfalfa DK 133 Alfalfa
FFR Cooperative	4112 E. St Rd 225 West Lafayette, IN 47906	FFR FFR FFR	Resistar Alfalfa Multistar Alfalfa A9008 Alfalfa
Forbes Seed & Grain	PO Box 85 Junction City, OR 97448	Forbes	Enforcer Fescue
Great Plains Reserch Co., Inc.	3624 Kildaire Farm Rd Apex, NC 27502	Great Plains Great Plains Great Plains Great Plains Great Plains Great Plains	Key Alfalfa Cimarron VR Alfalfa Ram Alfalfa Haygrazer Alfalfa Cimarron Alfalfa Dual Alfalfa
Green Seed	PO Box 29247 Atlanta, GA 30359	Green Green	Cattleclub Fescue Shiloh Orchardgrass
International Seeds, Inc.	PO Box 168 Halsey, OR 97348	International International International	FTF 9077 Fescue FTF 8872 Fescue OG-90134 Orchardgrass
NC Agricultural Extension Service	NC State University Raleigh, NC 27695		Ky 31 Fescue Cajun Fescue Rebel II Fescue Triumph Fescue Bison Per Ryegrass Coastal Bermuda Tifton 44 Bermuda Callie Bermuda Tifton 78 Bermuda Pasto Rico Bermuda Tierra Verde Bermuda Guymon Bermuda Pensacola Bahia Tifton 9 Bahia Laurel Spgs Bermuda

Table 9 continued

Northrup King Co.	PO Bpx 249 Grifton, NC 28530	NK NK NK	Taho Alfalfa Crockett Alfalfa Multiking I Alfalfa
Pennington Seed Inc.	PO Box 290 Madison, GA 30650	Pennington	Georgia 5 Fescue
Pioneer Hi-Bred International	1000 W. Jefferson St. Tipton, IN 46072	Pioneer	5454 Alfalfa
Smith Seed Services	PO Box 288 Halsey, OR 97348	Smith Seed	WVPB 89-19 Orchardgrass
Southern States Cooperative, Inc.	PO Box 26234 Richmond, VA 23260	Sou. States Sou. States	Benchmark Orchardgrass Phyter Fescue
Willamette Valley	36100 Hy. 228 Brownsville, OR 97327	WVPB WVPB WVPB	WVPB-OG-89-37 Orchardgrass WVPB-OG-89-35 (PSI) Orchardgrass WVPB-OG-89-309 Orchardgrass
W-L Research, Inc.	8701 W. US Hy 14 Evansville, WI 53536	W-L W-L W-L	WL 252 HQ Alfalfa WL 322 HQ Alfalfa WL 323 Alfalfa

Table 10 FVT 255. Dry forage yield of alfalfa on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina[1].

Brand or Sponsor	Variety	Harvest Dates 1995						1995 Total
		19-Apr	24-May	26-Jun	20-Jul	17-Aug	26-Oct	
		Pounds Per Acre Dry Forage[2]						
FFR	A9008	3394	2715	2944	2122	635	600	12412+
Pioneer	5454	2957	2770	2940	2165	811	625	12268++
Great Plains	Ram	2858	2698	3299	2128	604	661	12250++
Great Plains	Key	3220	2500	3197	1999	595	679	12190++
Northrup King	Crockett	3233	2827	2959	1947	555	657	12177++
Dairyland Seed	Magnagraze	2907	2847	2911	2032	551	577	11824++
Great Plains	Cimarron	2947	2590	2932	2010	621	715	11815++
Cal/West	C/W 2043	2990	2740	2968	1970	594	506	11769++
FFR	Multistar	3164	2765	2879	1862	533	538	11741++
WL	WL 322 HQ	3046	2623	2829	2053	620	509	11680++
Cal/West	C/W 2040	2754	2622	3057	2136	565	511	11645++
Dairyland Seed	DS 764	2770	2583	2855	2254	639	538	11638++
Agripro	Innovator + Z	2984	2432	2755	2286	607	525	11589++
FFR	Resistar	2992	2514	3019	1868	507	530	11431++
Great Plains	Cimarron VR	3106	2497	2944	1812	465	601	11426++
Great Plains	Dual	2944	2487	2953	1952	455	576	11366++
WL	WL 323	2663	2454	3007	1943	490	600	11157
Great Plains	Haygrazer	2940	2334	2984	1784	487	509	11039
DeKalb	DK 133	2730	2478	2853	1847	485	473	10866
Cal/West	C/W 2032	2613	2365	2949	1929	452	535	10842
DeKalb	DK 127	2587	2217	2753	2115	467	411	10550
WL	WL 252 HQ	2432	2327	2875	1785	470	550	10438
Northrup King	Multiking I	2463	2224	2590	1818	414	508	10018
Northrup King	Tahoe	2120	2445	2535	1549	553	757	9959
Mean of Test		2867	2544	2916	1973	549	570	11420
L.S.D. Waller Duncan KRatio=100		856	409	234	243	236	181	1174
s.e.		488	268	181	189	142	119	865
Error d.f.		92	92	92	92	92	92	92
C.V.		17	11	6	10	26	21	8

[1]Seeded September 14, 1994 at rate of 25 lb/acre in five rows 4.5 inches apart with 18 inches between plots and 20 feet in length.
1995 Cultural Practices: Soil Analysis pH 6.3, P-I 72, K-I 70, HM% 0.6
Fertilization (lb/acre) At seeding; 20N, 124 P_2O_5, 124 K_2O, 2 boron, 1500 lime
[2]Insect Control (lb/acre a.i.) March 20 - 0.5 Furadan
Average of five replications
+Highest yield. ++Not different from highest yield

Table 11 FVT 253. Dry forage yield of fescue on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina[1].

Brand or Sponsor	Variety	1995 Harvest Dates 6-Apr	9-May	21-Jun	31-Aug	30-Oct	1995 Total
		Pounds Per Acre Dry Forage[2]					
DLF Trifolium	Dovey	2097	1928	1973	939	3068	10006+
NCSU	Cajun	2380	1918	1549	939	2748	9535++
International	FTF 9077	1781	2004	1277	979	3003	9045++
NCSU	AU Triumph	2316	1693	1567	942	2526	9043++
Sou. States	Stargrazer	1598	1965	1401	1259	2810	9033++
Cascade	EA 18	2026	1987	1124	983	2770	8889
International	FTF 8872	1931	1980	1079	977	2904	8870
NCSU	Ky 31	1709	2353	1262	802	2677	8802
Pennington	Georgia 5	1607	2053	1278	988	2644	8569
Forbes	Enforcer	1619	2026	1191	851	2880	8566
Green Seed	Cattleclub	1705	2174	1340	859	2416	8494
NCSU	Phyter	1440	1796	1274	834	2555	7899
NCSU	Rebel II	1531	1883	743	651	2500	7309
NCSU	Bison Per.R.G.	1704	2189	1821	391	1043	7148
Cascade	Gala Brome	1127	1899	1136	380	492	5033
Mean of Test		1771	1990	1334	852	2469	8416
L.S.D. Waller Duncan KRatio=100		393	476	315	250	520	992
s.e.		315	273	258	203	445	839
Error d.f.		56	56	56	56	56	56
C.V.		18	14	19	24	18	18

[1]1995 Cultural Practices: Soil Analysis pH 6.1, P-I 35, K-I 34, HM% 0.4
Fertilization (lb/acre) March 6, 100N, 50 P_2O_5, 50 K_2O September 4, 75N

[2]Average of five replications
+Highest yield. ++Not different from highest yield

Table 12 Dry forage yield of fescue on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina, 1994-1995.

Sponsor	Variety	1994 Total	1995 Total	2-Year Average
		Pounds per Acre Dry Forage[1]		
DLF Trifolium	Dovey	6975++	10006+	8490+
NCSU	Cajun	6781	9535++	8158++
Sou. States	Stargrazer	6951++	9033++	7992++
International	FTF9077	6673	9045++	7859++
NCSU	AU Triumph	6592	9043++	7818++
NCSU	KY 31	6572	8802	7687++
Forbes	Enforcer	6612	8566	7589++
Pennington	Georgia 5	6506	8569	7538++
Cascade	EA 18	6144	8889	7516++
International	FTF 8872	5924	8870	7397++
Green Seed	Cattleclub	6054	8494	7274++
NCSU	Bison Per. R.G.	7347+	7148	7248++
NCSU	Phyter	5079	7899	6489
NCSU	Rebel II	4568	7309	5938
Cascade	Gala Brome	5070	5033	5051
Mean of Test		6257	8416	7336
L.S.D. Waller Duncan K Ratio=100		540	992	1696
s.e.		540	839	678
Error d.f.		56	56	112
C.V.		7	10	9

[1]Average of five Replications.
+Highest yield. ++Not different from highest yield.

Table 13 FVT253 Dry forage yield of orchardgrass on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina[1]

Brand or Sponsor	Variety	1995 Harvest Dates 6-Apr	9-May	21-Jun	31-Aug	8-Nov	1995 Total
		Pounds Per Acre Dry Forage[2]					
Sou. States	Benchmark	2251	2214	1801	659	2168	9094+
Green Seed	Shiloh	2193	2418	1600	682	1993	8887++
Cascade	EG 1	2283	2172	1719	576	1991	8740++
WVPB	WVPB 89-309	2276	2295	1612	595	1700	8478++
WVPB	WVPB 89-37	1645	2088	2051	620	1869	8273
WVPB	WVPB 89-35 (PSI)	1773	2220	1775	658	1670	8097
Interantional	OG-90134	2056	2082	1075	605	1888	7705
Smith Seed	WVPB OG 89-19	1634	1886	1462	611	1653	7246
Mean of Test		2014	2172	1637	626	1867	8315
L.S.D. Waller-Duncan K Ratio=100		218	243	679	NS	267	797
s.e.		180	178	427	126	195	609
Error d.f.		28	28	28	28	28	28
C.V.		9	8	26	20	10	7

[1]1995 Cultural Practices: Soil Analysis--pH 6.1, P-I 035, K-I 34, HM% 0.4
Fertilization (lb/acre) March 6, 100 N 50 P_2O_5, 50 K_2O September 4, 75N
Average of five replications.
'+Highest yield. ++Not different from highest yield

Table 14 Over-years dry forage yield of orchardgrass on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina, 1994-1995.

Sponsor	Variety	1994 Total	1995 Total	2-Year Average
		Pounds per Acre Dry Forage[1]		
Southern States	Benchmark	5480++	9094+	7287+
Green Seed	Shiloh	5607+	8887++	7247++
Cascade	EG 1	5043	8740++	6892++
WVPB	89-37	4937	8273	6605++
WVPB	89-309	4245	8478++	6362++
International	OG-90134	4958	7705	6331++
WVPB	89-35 (PS-1)	4134	8097	6116++
Smith Seed	WVPB OG 89-19	4865	7246	6055++
Mean of Test		4909	8315	6612
L.S.D. Waller Duncan K Ratio=100		509	797	1198
s.e.		407	609	518
Error d.f.		28	28	56
C.V.		8	7	8

[1]Average of five Replications.
+Highest yield. ++Not different from highest yield.

Table 15 FVT245 Dry forage yield of Bermuda and Bahiagrass on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina[1]

Variety	Species	1995 Harvest Dates 30-May	7-Jul	28-Jul	28-Sep	1995 Total
		Pounds Per Acre Dry Forage[2]				
Tifton 44	Bermuda	2993	3498	2808	3339	12638+
Coastal	Bermuda	3062	2668	2499	3910	12139++
Tifton 9	Bahia	1774	3918	2311	2798	10801
Tifton 78	Bermuda	2320	2460	1915	3535	10230
Laurel Springs	Bermuda	2658	2242	2239	3069	10208
Callie	Bermuda	1877	2319	2000	3563	9759
Tierra Verde	Bermuda	2510	1426	1986	2762	8684
Pasto Rico	Bermuda	2262	1540	1742	2572	8116
Guymon	Bermuda	1454	2012	2069	2429	7964
Pensacola	Bahia	623	2545	1129	2083	6379
Mean of Test		2153	2463	2070	3006	9692
L.S.D. Waller-Duncan K Ratio=100		486	778	613	503	1472
s.e.		413	631	486	416	1235
Error d.f.		36	36	36	36	36
C.V.		19	26	23	14	13

[1]1995 Cultural Practices: Soil Analysis--pH 5.7, P-I 32, K-I 50, HM% 0.3
Fertilization (lb/acre) March 6, P_2O_5 120 K_2O 2,000 Lime April 3, 75N July 10, 50N August 1, 50N
Weed Control (lb/acre a.i.) April 3 1.5 AAtrex

[2]Yield data represents weed-free yield. Weed composition extimated on last three harvests, first harvest was weed-free.
Average of five replications. +Highest yield. ++Not different from highest.
For earlier years cultural practices, see Appendix Table

Table 16 Dry forage yield of Bermuda and Bahia grass on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina

Variety	Species	1993 Total	1994 Total	1995 Total	3-Year Average
		Pounds per Acre Dry Forage[1]			
Tifton 44	Bermuda	7220++	8559+	12638+	9493+
Coastal	Bermuda	7563+	7769++	12139++	9157++
Tifton 9	Bahia	4487	7593++	10801	7627
Callie	Bermuda	6710++	6042	9759	7504
Tifton 78	Bermuda	5817	6176	10230	7408
Laurel Springs	Bermuda	5049	6851	10208	7369
Tierra Verde	Bermuda	2357	4938	8684	5326
Pasto Rico	Bermuda	2654	4282	8116	5017
Guymon	Bermuda	1962	4311	7964	4746
Pensacola	Bahia	490	2791	6379	3220
Mean of Test		4431	5931	9692	6685
L.S.D. Waller Duncan K Ratio=100		1352	1500	1235	1032
s.e.		1160	1249	1235	1215
Error d.f.		36	36	36	108
C.V.		26	21	13	18

[1]Average of five Replications.
+Highest yield. ++Not different from highest yield.

Table 17 Dry forage yield of switchgrass on North Carolina State University Lake Wheeler Road Field Laboratory in Wake County, North Carolina[1]

Variety/ Treatment	1995 Harvest Dates 27-Jun	17-Nov	1995 Total	1994 Total	1993 Total	3-Year Average
	Pounds per Acre Dry Forage2					
Two Cut Management						
NC1	10904	5674	16578	14377	467	10369
Kanlo	12642	3310	15951	14735	6561	12292
Alamo	10593	5053	15646	14467	7335	12358
NC2	9252	3475	12727	13305	895	8886
Cave-in-rovek	8719	3296	12015	12681	6835	10405
Shelter	8067	2469	10536	10805	4801	8627
One Cut Management						
Alamo		12278	12278	12323	5750	10016
NC1		11901	11901	10270	518	7487
NC2		11786	11786	9644	791	7333
Kanlo		10711	10711	12770	5105	9433
Cave-in-rock		7131	7131	8305	3963	6402
Shelter		5625	5625	6608	3005	5029
Mean of Test	10030	6893	11907	11698	3911	9053
L.S.D. Waller Duncan K Ratio=100	2229	1694	2553	2143	1105	
s.e.	1426	1304	1765	683	724	
Error d.f.	15	33	33	29	24	
C.V.	14	19	15	13	19	

[1]1995 Cultural Practices: Soil test-pH 6.0, P-I 166+, K-I 150, HM% 0.7
Fertilization (lb/acre) March 7 80 k20, April 4 90 N to one cut management, 45N to two cut management, June 30 45 N to two cut management.
Weed Control (lbn/acre a.i.(April 3 2.0 AAtrex
Insect Control (lb/acre a.i.) June 30 1.25 Servin
[2]Average of four replications.

APPENDIX

Appendix Table 1 Temperature and percipitation for Wake County 1994-1995.

Month	Temperature (of) Mean	Mean Max	Min.	Highest	Day	Lowest	Day
1994							
November	55.0	66.0	43.9	76	9+	27	20
December	48.2	57.0	39.2	75	7	26	20
1995							
January	43.4	52.5	32.3	73	14	15	6
February	41.9	51.1	32.7	71	26	12	7
March	53.0	63.4	42.6	77	17	24	10
April	62.1	76.0	48.3	88	19	31	3
May	68.5	78.8	58.3	89	18	44	8
June	73.5	82.3	64.7	90	8+	55	17
July	78.7	88.3	69.1	93	16+	64	4
August	80.9	92.4	69.4	98	14	59	21
September	70.7	79.8	61.7	81	1	48	23+
October	63.9	74.8	53.1	83	2	37	30
November	47.8	58.3	37.3	73	3	25	16
December	38.6	49.8	27.4	71	15+	19	16+

Month	Precipitation Total	Greatest in 24 hours	Day	Number days with precipitation 0.10 inches or over
1994	inches			
November	3.16	0.79	27	7
December	1.42	0.33	23	6
1995				
January	5.91	2.90	15	6
February	6.11	2.44	16	7
March	3.65	1.20	1	6
April	1.14	0.68	13	2
May	3.92	1.10	10	6
June	10.36	2.00	6	11
July	2.87	1.42	19	6
August	3.89	2.20	28	3
September	3.66	2.33	23	6
October	9.01	3.90	4	8
November	4.57	1.66	7	10
December	1.58	1.08	9	3
1995 Totals	56.67			

+Also on earlier date or dates.

Appendix Table 2 Cultural practices and fertilization for perennial forages.

A. FVT 245 Bermuda (Wake Co.)

Planted May 1991. Tifton 78, Tifton 44, Callie, Coastal, and Laurel Springs bermudas were established by sprigging. All others were broadcast seeded in plots 10' X 20'.
Soil test at planting: pH 5.6, P-I 094, K-I 60, HM% 1.1
Soil test 1994: pH 5.7, P-I 080, K-I 44, HM% 0.8

Fertilization (lb/acre)

DATE	N	P_2O_5	K_2O	LIME
5/9/91	25	50	50	
2/16/93		50	100	1000
3/31/93	50			
5/10/93	45			
7/2/93	50			
7/29/93	50			
2/22/94	50	50	50	
6/22/94	50			
7/20/94	50			

Weed control (lb/acre a.i.)

3/31/93	1.5 AAtrex
	1.0 2, 4-D
4/15/94	1.5 AAtrex

B. Biomass-Switchgrass (Wake County) Seeded May 22, 1992 NC1 and NC2 reseeded on June 8, 1993. Soil test 1993 pH 6.3, P-I 166+, K-I 70, HM% 0.8
Soil test 1994 pH 6.3, P-I 166+, K-I 68, HM% 0.8

Fertilization (lb/acre a.i.)

3/31/93	45	125	125
5/10/93	50		
7/2/93	90-1cut mgt		
4/18/94	45-2cut mgt		
4/18/94	45-2 cut mgt		
7/1/94			

Weed Control (lb/acre a.i.)

3/31/93	1.5 AAtrex
4/29/93	1.5 Princep
4/15/94	2.0 AAtrex

Insect Control (lb/acre a.i.)

7/20/93	1.5 Sevin
7/6/94	1.25 Sevin

C. FVT 253 Fescue and orchardgrass (Wake County) Seeded September 16, 1993 at rate of 20 lb/acre for orchardgrass. Due to dry weather and poor stand, reseeded October 21, 1993 at original rate. Soil test at planting pH 5.8, P-I 30, K-I 54, HM% 0.3

Fertilization (lb/acre)

9/16/93	25	50	50
3/7/94		50	
7/21/94		75	

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North Carolina
Cooperative Extension Service

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