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The Virginia Perennial Cool-Season Grass Forage Variety Report: A 3-Year Summary (2002-2004)

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Perennial cool-season forage grasses are the foundation of ruminant livestock production systems in Virginia. Sound management of these grasses begins with proper species and variety selection. This report is a summary of forage variety trials performed with perennial cool-season grasses at Virginia Tech Agricultural Research and Extension Centers (ARECs) from 2002 through 2004. It includes trials seeded at the Southern Piedmont AREC (SPAREC) at Blackstone and at the Tidewater AREC, Suffolk, September 2001 and harvested for three years (2002 through 2004) (Tables 1 – 8 and 15 – 18). Data from two trials seeded at the Northern Piedmont AREC (NPAREC), Orange, in April 2002 and September 2002 and harvested for two years (2003 and 2004; Tables 9 – 14 and 19 – 24) also are included. The trials were conducted at multiple locations within the state in order to provide a range of environments.

The tables that follow include summary data of individual harvests within years (presented in pounds of dry matter per acre) and total season yields across years (presented in tons of dry matter per acre). The trials include tall fescue *(Festuca arundinacea* Schreb.) and orchardgrass *(Dactylis glomerata* L.). The varieties were submitted by or specifically requested of cooperating seed companies with appropriate standard varieties included as checks.

All entries in a trial at a location were harvested on the same dates, but harvest dates varied among locations and years. The goal was to harvest in May, June, August, and a final harvest between October and December for a total of four harvests per year. Entries were planted in four replications of a randomized complete block design at each location. Individual plot size averaged 5 feet by 15 feet. All data were reported on a 100 percent dry matter basis; hay yields would be 10 percent to 15 percent higher. The variety trials were managed at high fertility levels. Phosphorus and potassium were maintained in the high range, and 225 to 300 pounds of nitrogen were applied per acre annually in split applications. At each harvest, plots were cut to a three-inch residual height with either a sickle or flail harvester.

Statistical analyses were performed for individual harvests within years and for total season yields across years. These analyses determine whether numerical differences are just random effects or indeed are "true" differences in performance among varieties. The term "LSD (0.05)" appears at the bottom of each table with an accompanying value under each column of data. An LSD (0.05) is the amount by which two varieties' yields in the same column must differ in order to be considered statistically, or meaningfully, different.

Precipitation has a profound effect on forage yield and persistence. Monthly average precipitation data are presented relative to long-term averages for each location at which the trials were conducted (Figs. 1, 2, and 3). At Orange and Blackstone, there was below average precipitation in 2002, above average precipitation in 2003, and near average precipitation in 2004 until fall when hurricane rains dramatically increased seasonal totals. Interestingly, 2002 was the driest year on record

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at Blackstone and 2003 was the wettest year on record. Tidewater irrigated its tall fescue plots in 2002, but not in 2003 and 2004.

When using this publication to select perennial grass forage varieties, it is important to 1) prioritize the relative importance of yield, persistence, and quality for the intended use of the forage and 2) understand the context within which these trials were conducted. These trials did not determine forage quality or palatability. These data reflect the yield and persistence of varieties under optimum management as monocultures. Neither variety compatibility with legumes nor soil adaptation were determined. Varieties that persisted well over several years in these trials may not necessarily persist well under grazing, poor fertility, or a broader range of soil types. Consult your local Extension agent for more information about forage varieties and management.

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2002-2004 Tall Fescue Forage Variety Trials

Table 1. 2002 Fescue Variety Yields - Southern Piedmont AREC, Blackstone, Va., September 2001 Seeding.

Variety	6-May-02	3-Jul-02	19-Dec-02	Total 2002
	Yield (lb dry matter/A)			
JesupMax-Q	4,733	968	4,208	9,909
(E+)TN	4,478	1,132	4,142	9,753
CAS-EA200	4,597	1,109	3,996	9,701
Bronson	4,721	965	3,955	9,640
(E-)KY	3,868	1,297	4,387	9,551
(E+)KY	3,738	1,355	4,379	9,471
Resolute-AR542	4,614	691	3,849	9,154
Q4508	3,595	1,574	3,824	8,994
Quincy	4,508	738	3,726	8,972
Carmine	3,838	1,449	3,612	8,899
(E-)TN	3,945	1,078	3,869	8,892
Rogue	4,869	500	3,392	8,761
KYFA9304	3,317	1,328	4,069	8,714
KYFA9301	3,133	1,425	4,126	8,685
K5666V	3,364	789	2,984	7,138
Kokanee	2,168	1,429	2,503	6,101
Average	**3,968**	**1,114**	**3,814**	**8,896**
LSD (0.05)	**739**	**344**	**648**	**1,262**

04-Oct-01 - Seeded
28-Jan-02 - 1.5 pt/A Banvel + 2,4-D with 0.5% surfactant
22-Feb-02 - 1000 lb/A 10-10-10
07-May-02 - 1000 lb/A 10-20-20
20-Aug-02 - 100 lb N/A

Table 2. 2003 Fescue Variety Yields - Southern Piedmont AREC, Blackstone, Va., September 2001 Seeding.

Variety	2-May-03	8-Jul-03	28-Aug-03	16-Dec-03	Total 2003
	Yield (lb dry matter/A)				
Quincy	7,502	3,986	1,392	4,178	17,059
(E+)KY	6,671	4,556	1,222	4,289	16,738
CAS-EA200	6,292	4,308	1,179	4,642	16,421
KYFA9304	6,995	4,341	1,137	3,903	16,376
JesupMax-Q	6,474	4,107	1,321	4,307	16,209
(E-)KY	6,132	4,583	1,407	3,954	16,075
Rogue	6,712	4,315	1,087	3,671	15,784
Bronson	6,698	3,377	1,300	4,152	15,527
(E+)TN	6,022	4,248	1,130	3,937	15,336
KYFA9301	5,657	4,516	1,137	3,576	14,885
(E-)TN	5,492	4,107	1,144	4,135	14,877
Q4508	5,296	3,491	1,385	4,126	14,298
K5666V	5,236	4,147	1,414	3,060	13,857
Carmine	5,428	3,162	1,023	3,671	13,284
Kokanee	5,360	3,752	1,400	1,848	12,359
Resolute-AR542	1,654	3,330	2,089	2,287	9,359
Average	**5,851**	**4,020**	**1,298**	**3,733**	**14,903**
LSD (0.05)	**1,810**	**487**	**408**	**543**	**1,953**

04-Oct-01 - Seeded
12-Mar-03 - Applied 666 lb/A 15-5-20
9-May-03 - Applied 666 lb/A 15-5-20
29-Aug-03 - Applied 666 lb/A 15-5-20

Table 3. 2004 Fescue Variety Yields - Southern Piedmont AREC, Blackstone, Va., September 2001 Seeding.

Variety	30-Apr-04	24-Jun-04	7-Sep-04	8-Dec-04	Total 2004
	Yield (lb dry matter/A)				
(E+)KY	2,146	2,115	2,039	3,560	9,859
Quincy	2,360	1,772	1,942	3,272	9,346
CAS-EA200	2,429	2,157	1,853	2,896	9,335
Q4508	2,713	1,826	1,784	2,796	9,117
Bronson	2,347	1,915	1,880	2,910	9,051
JesupMax-Q	2,196	1,945	1,570	3,298	9,009
(E+)TN	2,889	1,039	1,963	3,044	8,934
(E-)KY	2,052	1,771	1,880	3,178	8,880
Carmine	2,310	1,865	1,832	2,829	8,836
(E-)TN	1,932	1,956	1,639	3,111	8,638
KYFA9304	2,033	1,502	2,018	3,084	8,637
KYFA9301	1,813	1,409	1,860	2,977	8,057
K5666V	1,567	1,653	1,612	2,414	7,245
Rogue	1,435	1,242	1,681	2,682	7,039
Kokanee	938	1,848	2,624	1,421	6,831
Resolute-AR542	762	482	3,733	1,669	6,645
Average	**1,995**	**1,656**	**1,994**	**2,821**	**8,466**
LSD (0.05)	**432**	**441**	**399**	**523**	**1,119**

04-Oct-01 - Seeded
23-Feb-04 - Applied 1 ton/A lime
03-Mar-04 - Applied 100 lb/A liquid nitrogen
19-May-04 - Applied 666 lb/A 15-5-20
22-Sept-04 - Applied 100 lb/A 15-5-20

Table 4. Fescue Variety Yields - Southern Piedmont AREC, Blackstone, Va., September 2001 Seeding.

Variety	2002	2003	2004	2002-2004 Avg.
	Yield (ton dry matter/A)			
(E+)KY	4.74	8.37	4.93	6.01
CAS-EA200	4.85	8.21	4.67	5.91
Quincy	4.49	8.53	4.67	5.90
JesupMax-Q	4.95	8.10	4.50	5.85
(E-)KY	4.78	8.04	4.44	5.75
Bronson	4.82	7.76	4.53	5.70
(E+)TN	4.88	7.67	4.47	5.67
KYFA9304	4.36	8.19	4.32	5.62
(E-)TN	4.45	7.44	4.32	5.40
Q4508	4.50	7.15	4.56	5.40
KYFA9301	4.34	7.44	4.03	5.27
Rogue	4.38	7.89	3.52	5.26
Carmine	4.45	6.64	4.42	5.17
K5666V	3.57	6.93	3.62	4.71
Kokanee	3.05	6.18	3.42	4.22
Resolute-AR542	4.58	4.68	3.32	4.19
Average	**4.45**	**7.45**	**4.23**	**5.38**
LSD (0.05)	**0.63**	**0.98**	**0.56**	**0.42**

17-Aug-01 - Applied Roundup
29-Aug-01 - Applied Gramoxone
13-Sept-01 - Irrigated 1″
17-Sept-01 - Plowed down 1 ton/A lime
21-Sept-01 - Disked down 600 lb/A 7-20-20; ripped at 12″
04-Oct-01 - Seeded
09-Oct-01 - Irrigated 0.5″
Soil Type: Appling-Cecil
Soil Test: September 2001
pH: 5.9
P: M-
K: M-
Ca: Low +
Mg: M+

2002-2004 Tall Fescue Forage Variety Trials

Table 5. 2002 Fescue Variety Yields - Tidewater AREC, Suffolk, Va., September 2001 Seeding.

Variety	30-Apr-02	12-Jul-02	11-Sep-02	14-Jan-03	Total 2002
			Yield (lb dry matter/A)		
KY31 (E+) TN	5,281	6,565	2,190	4,961	18,997
Jesup MaxQ	5,639	5,851	1,648	4,300	17,437
KY31 (E+) KY	4,153	6,001	2,287	4,527	16,967
KYFA 9301	3,836	6,396	2,427	4,011	16,670
KY31 (E-) KY	4,458	5,403	2,205	4,069	16,136
KY31 (E-) TN	4,088	5,336	2,102	4,210	15,735
Bronson	4,746	4,151	1,902	4,492	15,291
Quincy	4,540	3,982	2,028	4,621	15,171
KYFA 9304	3,548	4,952	2,242	3,929	14,671
CAS-EA200	3,783	3,982	2,065	4,081	13,910
K5666V	3,812	4,117	1,902	3,976	13,807
Resolute-AR542	5,081	1,083	1,362	6,133	13,659
Kokanee	1,674	4,140	2,257	3,026	11,097
Potomac OG	4,182	2,594	1,265	1,689	9,731
Average	**4,201**	**4,611**	**1,992**	**4,144**	**14,948**
LSD (0.05)	**1,067**	**1,956**	**385**	**616**	**2,817**

10-Oct-01 - Seeded
7-Mar-02 - Applied 1000 lb/A 10-10-10
30-Apr-02 - Applied 80 lb/A N using ammonium nitrate
11-Sept-02 - Applied 100 lb N/A

Table 6. 2003 Fescue Variety Yields - Tidewater AREC, Suffolk, Va., September 2001 Seeding.

Variety	29-Apr-03	16-Jul-03	14-Jan-04	Total 2003
		Yield (lb dry matter/A)		
Quincy	5,841	1,654	4,147	11,643
KY31 (E+) TN	5,289	1,716	4,519	11,524
Bronson	5,412	1,315	4,124	10,851
Jesup MaxQ	5,848	1,315	3,640	10,804
CAS-EA200	6,058	1,192	3,485	10,735
KY31 (E-) TN	5,244	1,541	3,915	10,701
KYFA 9301	5,239	1,624	3,601	10,464
KY31 (E+) KY	5,072	1,531	3,857	10,460
KY31 (E-) KY	5,283	1,459	3,625	10,367
KYFA 9304	5,133	1,336	3,404	9,873
K5666V	4,057	1,552	3,903	9,512
Resolute-AR542	4,826	884	3,636	9,346
Kokanee	3,885	2,137	2,591	8,613
Potomac OG	5,317	904	1,673	7,894
Average	**5,179**	**1,440**	**3,580**	**10,199**
LSD (0.05)	**520**	**325**	**533**	**858**

10-Oct-01 - Seeded
4-Mar-03 - Applied 600 lb/A 15-5-20
11-Sept-03 - 150 lb/A 15-5-20

Table 7. 2004 Fescue Variety Yields - Tidewater AREC, Suffolk, Va., September 2001 Seeding.

Variety	6-May-04	22-Jun-04	23-Sep-04	9-Feb-05	Total 2004
			Yield (lb dry matter/A)		
KY31(E+)TN	3,688	3,742	2,528	2,761	12,719
Quincy	4,094	2,960	2,471	2,444	11,967
KY31(E+)KY	3,198	3,451	2,557	2,688	11,893
KYFA9301	3,872	3,226	2,002	2,529	11,628
KY31(E-)KY	3,728	3,281	2,068	2,150	11,227
KY31(E-)TN	3,623	3,262	1,800	2,309	10,717
CAS-EA200	3,787	2,880	1,868	2,102	10,635
JesupMaxQ	3,689	3,347	1,466	1,943	10,443
Bronson	3,976	2,737	1,437	2,236	9,911
KYFA9304	3,309	2,662	1,686	1,991	9,649
K5666V	3,093	2,760	1,619	1,503	8,974
PotomacOG	4,199	2,323	967	440	7,929
Kokanee	1,962	2,778	1,944	660	7,343
Resolute-AR542	2,472	1,496	–	1,625	–
Average	**3,478**	**2,922**	**1,897**	**1,956**	**10,400**
LSD (0.05)	**298**	**769**	**591**	**460**	**757**

10-Oct-01 - Seeded
8-Mar-04 - 100 lb/A N using UAN
6-May-04 - Applied 150 lb/A 15-5-20

Table 8. Fescue Variety Yields - Tidewater AREC, Suffolk, Va., September 2001 Seeding.

Variety	2002	2003	2004	2002-2004 Avg.
		Yield (ton dry matter/A)		
Resolute-AR542	6.83	4.67	–	5.75
Quincy	7.59	5.82	5.98	6.46
Potomac OG	4.87	3.95	3.96	4.26
KYFA 9304	7.34	4.94	4.82	5.70
KYFA 9301	8.33	5.23	5.81	6.46
KY31 (E+) TN	9.50	5.76	6.36	7.21
KY31 (E+) KY	8.48	5.23	5.95	6.55
KY31 (E-) TN	7.87	5.35	5.36	6.27
KY31 (E-) KY	8.07	5.18	5.61	6.29
Kokanee	5.55	4.31	3.67	4.51
K5666V	6.90	4.76	4.49	5.38
Jesup MaxQ	8.72	5.40	5.22	6.45
CAS-EA200	6.96	5.37	5.32	5.88
Bronson	7.65	5.43	4.96	6.22
Average	**7.47**	**5.10**	**5.20**	**5.96**
LSD (0.05)	**1.41**	**0.43**	**0.38**	**0.52**

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Table 9. 2003 Fescue Variety Yields - Northern Piedmont AREC, Orange, Va., April 2002 Seeding.

Variety	22-May-03	12-May-03	15-Jul-03	8-Sep-03	3-Nov-03	Total 2003
	% Stand	Yield (lb dry matter/A)				
KY31E1 KY	95	3,464	4,498	1,221	1,239	10,421
KY31 E(-)TN	90	3,117	4,443	1,393	1,342	10,295
HM-R	89	3,297	4,468	1,337	1,178	10,280
KY31 E(+)TN	90	3,600	4,303	1,209	1,102	10,214
KYFA 93O4	88	2,711	4,217	1,559	1,526	10,012
SELECT	88	3,182	4,028	1,344	1,365	9,920
Q4508 F542	93	3,085	3,821	1,184	1,633	9,722
BAR FA 1004	79	3,044	3,818	1,289	1,570	9,720
QUINCEY	85	3,141	4,234	1,188	926	9,490
KY31EF KY	85	2,892	4,060	1,285	1,149	9,386
CAS-EA200	78	2,958	3,801	1,281	1,325	9,366
KYFA 93O1	92	2,771	4,098	1,113	981	8,963
JESUP MAX Q	88	3,001	3,577	1,220	1,145	8,942
BRONSON	73	2,769	3,261	1,240	1,262	8,532
AGR FA lll	61	2,010	3,457	1,104	1,188	7,759
ROGUE	65	2,223	3,095	1,236	1,022	7,574
RESOLUTE	49	1,960	2,256	1,131	1,023	6,368
KS666V	40	1,960	2,509	977	840	6,286
KOKANEE	41	1,355	2,620	991	666	5,632
AGR LP 113	71	2,423	1,733	603	628	5,387
R4663F542	35	1,228	1,680	863	769	4,540
Average	**75**	**2,676**	**3,523**	**1,179**	**1,137**	**8,515**
LSD (0.05)	**19**	**687**	**973**	**336**	**397**	**1,426**

04-Apr-02 - Seeded
10-Mar-03 - Applied 100-100-100/A
15-May-03 - Applied 50 lb/A N
20-May-03 - Applied 185 lb/A K_2O
08-Sept-03 - Applied 75 lb/A N

Table 10. 2004 Fescue Variety Yields - Northern Piedmont AREC, Orange, Va., April 2002 Seeding.

Variety	21-Apr-04	5-May-04	9-Jun-04	26-Aug-04	16-Nov-04	Total 2004
	% Stand	Yield (lb dry matter/A)				
KY31 E(-)TN	94	5,387	2,628	2,523	2,791	13,328
BAR FA 1004	93	53,38	2,513	2,417	2,866	13,133
JESUP MAX Q	95	5,123	2,474	2,278	2,704	12,578
KY31E1 KY	95	4,098	3,077	2,437	2,657	12,269
Q4508 F542	99	5,059	2,485	1,960	2,722	12,226
KY31 E(+)TN	97	4,333	2,651	2,326	2,893	12,202
HM-R	94	4,467	2,798	2,246	2,678	12,189
KYFA 93O4	95	4,343	2,825	2,227	2,710	12,105
CAS-EA200	91	4,182	2,572	2,145	2,606	11,505
QUINCEY	97	4,456	2,329	2,097	2,482	11,364
SELECT	95	4,194	2,542	2,064	2,521	11,320
KYFA 93O1	97	4,021	2,720	1,942	2,586	11,267
KY31EF KY	90	3,917	2,533	2,213	2,585	11,247
BRONSON	88	3,947	2,453	1,928	2,603	10,931
AGR FA lll	71	4,134	2,260	1,904	2,520	10,818
ROGUE	80	3,838	2,275	1,671	1,732	9,516
KOKANEE	45	2,343	2,827	1,696	1,779	8,644
KS666V	55	3,244	2,220	1,174	1,870	8,508
R4663F542	41	2,697	2,111	1,082	2,417	8,307
RESOLUTE	45	2,225	1,993	673	2,100	6,991
AGR LP 113	51	2,093	1,741	1,347	1,661	6,842
Average	**81**	**3,973**	**2477**	**1,921**	**2,451**	**10,823**
LSD (0.05)	**17**	**713**	**280**	**534**	**319**	**1,431**

04-Apr-02 - Seeded
09-Apr-04 - Sprayed 1 pt/A Banvel and 2 pt/A 2,4-D
07-May-04 - Applied 185 lb/A K_2O
07-May-04 - Applied 50 lb/A N from ammonium nitrate
26-Aug-04 - Applied 75 lb/A N from ammonium nitrate

Table 11. Fescue Variety Yields - Northern Piedmont AREC, Orange, Va., April 2002 Seeding.

Variety	2003	2004	2003-2004 Avg.
	Yield (ton dry matter/A)		
KY31 E(-)TN	5.15	6.66	5.91
BAR FA 1004	4.86	6.57	5.71
KY31E1 KY	5.21	6.13	5.67
HM-R	5.14	6.10	5.62
KY31 E(+)TN	5.11	6.10	5.60
KYFA 93O4	5.01	6.05	5.53
Q4508 F542	4.86	6.11	5.49
JESUP MAX Q	4.47	6.29	5.38
SELECT	4.96	5.66	5.31
CAS-EA200	4.68	5.75	5.22
QUINCEY	4.75	5.68	5.21
KY31EF KY	4.69	5.63	5.16
KYFA 93O1	4.48	5.64	5.06
BRONSON	4.27	5.47	4.87
AGR FA lll	3.88	5.41	4.64
ROGUE	3.79	4.76	4.28
KS666V	3.14	4.26	3.70
KOKANEE	2.82	4.33	3.57
RESOLUTE	3.19	3.50	3.34
R4663F542	2.27	4.15	3.21
AGR LP 113	2.69	3.42	3.06
Average	**4.26**	**5.41**	**4.83**
LSD (0.05)	**0.71**	**0.72**	**0.50**

07-Mar-02 - Disked
04-Apr-02 - Seeded
05-Apr-02 - Cultipacked
16-Apr-02 - Irrigated 0.6″
18-Apr-02 - Irrigated 0.6″
03-May-02 - Irrigated 0.3″

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Table 12. 2003 Fescue Variety Yields – Northern Piedmont AREC, Orange, Va., September 2002 Seeding.

Variety	22-May-03	13-May-03	16-Jul-03	5-Sep-03	31-Oct-03	Total 2003
	% Stand	Yield (lb dry matter/A)				
KYFA93-04	99	3,514	4,514	1,304	1,401	10,733
AGR-FA2845	93	2,997	4,720	1,376	1,445	10,538
KY 31+	98	3,122	4,797	1,242	1,348	10,509
AGR-FA106	97	2,851	4,491	1,364	1,686	10,392
QUINCEY	96	2,812	5,014	1,226	1,302	10,354
SELECT	99	2,898	4,350	1,458	1,556	10,262
KYFA93-01	96	2,669	4,496	1,668	1,330	10,164
QUANTUM 542	98	2,628	3,997	1,443	1,939	10,007
KY 31-	96	2,865	4,605	1,062	1,337	9,869
ARK PLUS	95	2,468	4,444	1,516	1,307	9,735
CAS-EA200	91	2,386	4,311	1,385	1,558	9,641
AGR-FA114	97	2,852	4,393	1,087	1,277	9,610
BRONSON	93	2,275	3,960	1,608	1,719	9,563
QUANTUM 542	91	2,168	3,750	1,538	2,079	9,535
JESUP MAX Q	91	2,102	4,183	1,509	1,708	9,502
BAROLEX	95	2,222	4,340	1,275	1,309	9,146
BARCEL	97	2,097	4,093	1,295	1,549	9,034
AGR-FA111	93	1,907	4,537	1,081	1,302	8,828
BARIANE	91	2,191	3,898	906	1,296	8,291
KS666V	89	1,897	3,479	951	1,157	7,484
RESOLUTE	67	466	2,740	405	754	4,364
Average	**93**	**2,447**	**4,244**	**1,271**	**1,444**	**9,406**
LSD (0.05)	**9**	**469**	**566**	**332**	**353**	**891**

10-Sept-02 - Seeded
10-Mar-03 - Applied 100-100-100/A
15-Apr-03 - Sprayed 1/2 pt/A Banvel and 1 pt/A 2,4-D
15-May-03 - Applied 50 lb/A nitrogen
08-Sept-03 - Applied 75 lb/A nitrogen

Table 13. 2004 Fescue Variety Yields - Northern Piedmont AREC, Orange, Va., September 2002 Seeding.

Variety	21-Apr-04	4-May-04	8-Jun-04	17-Aug-04	16-Nov-04	Total 2004
	% Stand	Yield (lb dry matter/A)				
KYFA93-04	93	3,816	2,863	2,319	3,065	12,063
QUANTUM	95	4,818	2,385	2,066	2,787	12,055
QUANTUM 542	97	4,274	2,589	1,891	3,112	11,866
JESUP MAX Q	93	4,691	2,533	1,868	2,718	11,811
QUINCEY	93	3,979	2,729	2,022	3,004	11,734
KY 31+	95	3,362	3,242	2,178	2,787	11,569
AGR-FA2845	95	4,356	2,307	1,914	2,873	11,449
ARK PLUS	94	3,520	2,639	2,105	2,986	11,250
AGR-FA106	94	4,364	2,326	1,684	2,658	11,032
KY 31-	95	3,485	2,838	1,725	2,749	10,797
BARCEL	89	3,412	2,777	2,099	2,443	10,731
BRONSON	90	3,883	2,490	1,716	2,577	10,666
KYFA93-01	92	3,276	2,696	1,960	2,657	10,588
AGR-FA114	96	3,431	2,400	1,708	2,978	10,516
BAROLEX	91	3,500	2,537	1,512	2,849	10,398
CAS-EA200	94	3,917	2,463	1,242	2,517	10,138
AGR-FA111	90	3,190	2,233	1,647	2,882	9,952
SELECT	95	3,832	2,829	20	2,679	9,361
BARIANE	89	2,509	2,838	1,474	2,478	9,299
KS666V	90	2,672	2,217	966	1,876	7,731
RESOLUTE	86	2,504	1,553	725	1,639	6,421
Average	**93**	**3,657**	**2,547**	**1,659**	**2,681**	**10,544**
LSD (0.05)	**4**	**378**	**289**	**611**	**322**	**1,318**

10-Sept-02 - Seeded
26-Feb-04 - Applied 1000 lb/A 10-10-10-6S
07-May-04 - Applied 185 lb/A K_2O
07-May-04 - Applied 50 lb/A N from ammonium nitrate
18-Aug-04 - Applied 75 lb/A N from ammonium nitrate

Table 14. Fescue Variety Yields - Northern Piedmont AREC, Orange, Va., September 2002 Seeding.

Variety	2003	2004	2003-2004 Avg.
	Yield (ton dry matter/A)		
KYFA93-04	5.37	6.03	5.70
QUINCEY	5.18	5.87	5.52
KY 31+	5.25	5.78	5.52
AGR-FA2845	5.27	5.72	5.50
QUANTUM 542	5.00	5.93	5.47
QUANTUM	4.77	6.03	5.40
JESUP MAX Q	4.83	5.91	5.37
AGR-FA106	5.20	5.52	5.36
ARK PLUS	4.87	5.63	5.25
KYFA93-01	5.08	5.29	5.19
KY 31-	4.93	5.40	5.17
BRONSON	4.78	5.33	5.06
AGR-FA114	4.81	5.26	5.03
CAS-EA200	4.81	5.07	4.94
BARCEL	4.51	5.37	4.94
SELECT	5.13	4.68	4.91
BAROLEX	4.57	5.20	4.89
AGR-FA111	4.41	4.98	4.69
BARIANE	4.07	4.65	4.36
KS666V	3.74	3.87	3.80
RESOLUTE	2.18	3.21	2.70
Average	**4.70**	**5.27**	**4.99**
LSD (0.05)	**0.45**	**0.66**	**0.39**

04-Sept-02 - Disked and cultimulched
05-Sept-02 - Applied 500 lb/A 5-10-10-3S
10-Sept-02 - Seeded
10-Sept-02 - Cultipacked
12-Sept-02 - Irrigated 0.6″
04-Oct-02 - Irrigated 0.6″

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Table 15. 2002 Orchardgrass Variety Yields - Southern Piedmont AREC, Blackstone, Va., October 2001 Seeding

Variety	18-Apr-02	4-Jun-02	19-Dec-02	Total 2002
	Yield (lb dry matter/A)			
CAS-EG39/42	2,818	3,204	1,931	7,953
Tekapo	2,776	2,960	2,006	7,742
Eastwood	2,355	3,015	2,024	7,394
Benchmark	2,892	2,749	1,679	7,320
GAOG1	2,976	2,771	1,539	7,287
CISOG28	2,060	2,849	1,922	6,830
Amba	2,413	2,794	1,091	6,298
AberTop	1,270	3,514	1,399	6,183
Average	**2,445**	**2,982**	**1,699**	**7,126**
LSD (0.05)	**630**	**503**	**651**	**1,019**

04-Oct-01 - seeded
22-Feb-02 - 1000 lb/A 10-10-10
01-Apr-02 - 1 ton/A lime
07-May-02 - 1000 lb/A 10-20-20
20-Aug-02 - 100 lb/A N

Table 16. 2003 Orchardgrass Variety Yields - Southern Piedmont AREC, Blackstone, Va., October 2001 Seeding.

Variety	24-Apr-03	8-Jul-03	28-Aug-03	16-Dec-03	Total 2003
	Yield (lb dry matter/A)				
CAS-EG39/42	4,002	4,752	1,575	1,985	12,313
Benchmark	3,922	4,516	1,566	1,582	11,587
CISOG28	3,181	4,679	1,601	1,993	11,455
Tekapo	3,344	4,570	1,566	1,958	11,439
GAOG1	3,946	4,289	1,540	1,373	11,147
AberTop	2,159	5,361	1,925	1,294	10,739
Amba	2,850	4,861	1,610	1,381	10,702
Eastwood	1,660	5,479	1,531	1,687	10,358
Average	**3,133**	**4,813**	**1,614**	**1,657**	**11,218**
LSD (0.05)	**350**	**473**	**324**	**421**	**823**

04-Oct-01 - seeded
12-Mar-03 - 666 lb/A 15-5-20
25-Apr-03 - 666 lb/A 15-5-20
29-Aug-03 - 666 lb/A 15-5-20

Table 17. 2004 Orchardgrass Variety Yields - Southern Piedmont AREC, Blackstone, Va., October 2001 Seeding.

Variety	30-Apr-04	2-Jul-04	21-Sep-04	9-Dec-04	Total 2004
	Yield (lb dry matter/A)				
CAS-EG39/42	3,049	3,284	1,887	2,088	10,308
Benchmark	2,634	3,075	2,105	2,002	9,815
Tekapo	1,842	3,181	2,077	2,148	9,248
CISOG28	1,851	3,057	1,715	2,094	8,716
GAOG1	2,315	2,626	1,733	1,911	8,583
Eastwood	144	3,495	1,651	1,814	7,104
Amba	186	3,241	1,596	1,782	6,806
AberTop	62	3,464	1,488	1,679	6,694
Average	**1,510**	**3,178**	**1,781**	**1,940**	**8,409**
LSD (0.05)	**898**	**428**	**511**	**203**	**1,200**

04-Oct-01 - seeded
23-Feb-04 - 1 ton/A lime
19-May-04 - 666 lb/A 15-5-20
22-Sept-04 - 666 lb/A 15-5-20

Table 18. Orchardgrass Variety Yields - Southern Piedmont AREC, Blackstone, Va., October 2001 Seeding.

Variety	2002	2003	2004	2002-2004 Avg.
	Yield (ton dry matter/A)			
CAS-EG39/42	3.98	6.16	5.15	5.10
Benchmark	3.66	5.79	4.91	4.79
Tekapo	3.87	5.72	4.62	4.74
CISOG28	3.42	5.73	4.36	4.50
GAOG1	3.64	5.57	4.29	4.50
Eastwood	3.70	5.18	3.55	4.14
Amba	3.15	5.35	3.40	3.97
AberTop	3.09	5.37	3.35	3.94
Average	**3.56**	**5.61**	**4.20**	**4.46**
LSD (0.05)	**0.51**	**0.41**	**0.60**	**0.28**

17-Aug-01 - Roundup
29-Aug-01 - Gramoxone
13-Sept-01 - 1″ irrigation
17-Sept-01 - plow
21-Sept-01 - 600 lb/A 7-20-20 disked down; ripped at 12″
04-Oct-01 - seeded
09-Oct-01 - 0.5″ irrigation
04-Dec-01 - 0.1 oz/A Ally
Soil Type: Appling-Cecil
Soil Test: September 2001
pH: 5.8
P: L
K: L
Ca: L
Mg: M

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Table 19. 2003 Orchardgrass Variety Yields - Northern Piedmont AREC, Orange, Va., April 2002 Seeding.

Variety	22-May-03	7-May-03	15-Jul-03	8-Sep-03	31-Oct-03	Total 2003
	% Stand	Yield (lb dry matter/A)				
GA OG1	98	4,764	3,533	568	288	9,152
OG 9705-G	96	4,107	3,859	631	502	9,098
CAS-EG39/42	95	4,002	4,079	625	344	9,050
BENCHMARK PLUS	98	4,085	3,753	636	419	8,893
BENCHMARK	96	3,924	3,770	543	450	8,687
CIS OG28	96	3,538	3,963	657	417	8,575
TEKAPO	94	3,738	3,847	585	388	8,558
WP 300	95	3,517	3,687	485	417	8,106
EASTWOOD	79	1,402	3,832	635	479	6,348
ABER TOP	45	496	2,941	668	405	4,509
Average	**89**	**3,357**	**3,726**	**603**	**411**	**8,097**
LSD (0.05)	**13**	**607**	**513**	**152**	**186**	**896**

04-Apr-02 - Seeded
10-Mar-03 - Applied 1000 lb/A 10-10-10 fertilizer
15-May-03 - Applied 50 lb/A N
20-May-03 - Applied 185 lb/A K_20
08-Sept-03 - Applied 75 lb/A N

Table 20. 2004 Orchardgrass Variety Yields - Northern Piedmont AREC, Orange, Va., April 2002 Seeding.

Variety	21-Apr-04	5-May-04	8-Jun-04	25-Aug-04	16-Nov-04	Total 2004
	% Stand	Yield (lb dry matter/A)				
CAS-EG39/42	96	4,404	1,930	1,473	1,998	9,806
GA OG1	98	4,687	1,609	1,450	2,024	9,769
OG 9705-G	98	4,571	1,730	1,379	2,006	9,686
BENCHMARK PLUS	98	4,360	1,870	1,385	2,053	9,667
CIS OG28	96	3,880	2,118	1,551	2,017	9,565
BENCHMARK	98	4,362	1,869	1,366	1,869	9,464
WP 300	97	3,641	1,828	1,360	1,946	8,775
TEKAPO	95	3,390	1,875	1,412	1,936	8,613
EASTWOOD	86	2,635	2,250	1,620	2,019	8,525
ABER TOP	75	3,107	1,970	1,576	1,618	8,271
Average	**94**	**3,904**	**1,905**	**1,457**	**1,949**	**9,214**
LSD (0.05)	**11**	**456**	**184**	**232**	**220**	**610**

04-Apr-02 - Seeded
26-Feb-04 - apply 1000 lb/A 10-10-10-6S
09-Apr-04 - Spray with 2 pt/A 2,4-D LV and 1 pt/A Banvel
07-May-04 - 185 lb/A K_20 + 50 lb/A ammonium nitrate
26-Aug-04 - applied 75 lb/A N

Table 21. Orchardgrass Variety Yields - Northern Piedmont AREC, Orange, Va., April 2002 Seeding.

Variety	2003	2004	2003-2004 Avg.
	Yield (ton dry matter/A)		
GA OG1	4.58	4.89	4.73
CAS-EG39/42	4.53	4.91	4.71
OG 9705-G	4.55	4.84	4.70
BENCHMARK PLUS	4.45	4.84	4.64
CIS OG28	4.29	4.78	4.54
BENCHMARK	4.34	4.73	4.54
TEKAPO	4.28	4.31	4.30
WP 300	4.05	4.39	4.22
EASTWOOD	3.18	4.27	3.72
ABER TOP	2.26	4.14	3.19
Average	**4.05**	**4.61**	**4.33**
LSD (0.05)	**0.45**	**0.31**	**0.26**

07-Mar-02 - Disked
04-Apr-02 - Seeded
05-Apr-02 - Cultipacked
16-Apr-02 - Irrigated 0.6″
18-Apr-02 - Irrigated 0.6″
03-May-02 - Irrigated 0.3″

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Table 22. 2003 Orchardgrass Variety Yields - Northern Piedmont AREC, Orange, Va., September 2002 Seeding.

Variety	22-May-03	13-May-03	16-Jul-03	5-Sep-03	31-Oct-03	Total 2003
	% Stand	Yield (lb dry matter/A)				
CAS-EG39/42	93	2,476	3,601	1,296	831	8,204
BENCHMARK PLUS	94	2,514	3,379	1,060	872	7,826
BENCHMARK	89	2,400	3,365	1,383	672	7,821
WP300	90	2,379	3,484	1,173	769	7,804
CIS OG28	91	2,514	3,423	911	694	7,542
TEKAPO	85	2,280	3,394	984	611	7,269
BARIDANA	91	1,995	3,822	842	574	7,234
GA OG1	91	2,323	3,428	924	492	7,166
BARULA	90	2,107	3,689	611	566	6,972
EASTWOOD	51	562	3,563	1,356	1,035	6,515
ABER TOP	68	598	2,951	951	439	4,939
Average	**85**	**2,014**	**3,464**	**1,044**	**687**	**7,209**
LSD (0.05)	**12**	**460**	**420**	**498**	**188**	**913**

10-Sept-02 - Seeded
10-Mar-03 - Applied 100-100-100 per acre
12-Mar-03 - Applied 2.5 tons/A lime
15-Apr-03 - Sprayed 1/2 pt/A Banvel and 1 pt/A 2,4-D
15-May-03 - Applied 50 lb/A N
08-Sept-03 - Applied 75 lb/A N

Table 23. 2004 Orchardgrass Variety Yields - Northern Piedmont AREC, Orange, Va., September 2002 Seeding.

Variety	21-Apr-04	4-May-04	8-Jun-04	17-Aug-04	18-Nov-04	Total 2004
	% Stand	Yield (lb dry matter/A)				
GA OG1	99	4,676	1,612	902	1,910	9,099
BENCHMARK PLUS	96	4,192	1,757	1,151	1,837	8,938
CAS-EG39/42	94	4,438	1,594	958	1,874	8,863
CIS OG28	95	4,071	1,535	905	1,986	8,496
WP300	98	4,090	1,627	808	1,897	8,422
BENCHMARK	94	4,069	1,618	852	1,678	8,216
TEKAPO	95	3,392	1,675	914	1,607	7,588
BARIDANA	93	2,741	1,720	788	1,573	6,821
BARULA	88	1,972	2,051	946	1,684	6,653
EASTWOOD	86	2,410	1,702	899	1,615	6,626
ABER TOP	86	1,967	2,037	1,049	1,283	6,335
Average	**93**	**3,456**	**1,721**	**924**	**1,722**	**7,823**
LSD (0.05)	**5**	**413**	**162**	**355**	**327**	**1,017**

10-Sept-02 - Seeded
26-Feb-04 - Applied 1000 lb/A 10-10-10-6S
07-May-04 - Applied 185 lb/A K_2O
07-May-04 - Applied 50 lb/A N from ammonium nitrate
18-Aug-04 - Applied 75 lb/A N from ammonium nitrate

Table 24. Orchardgrass Variety Yields - Northern Piedmont AREC, Orange, Va., September 2002 Seeding.

Variety	2003	2004	2003-2004 Avg.
	Yield (ton dry matter/A)		
CAS-EG39/42	4.10	4.43	4.27
BENCHMARK PLUS	3.91	4.47	4.19
GA OG1	3.58	4.55	4.07
WP300	3.90	4.21	4.06
CIS OG28	3.77	4.25	4.01
BENCHMARK	3.91	4.11	4.01
TEKAPO	3.64	3.79	3.72
BARIDANA	3.62	3.41	3.51
BARULA	3.49	3.33	3.41
EASTWOOD	3.26	3.31	3.29
ABER TOP	2.47	3.17	2.82
Average	**3.60**	**3.91**	**3.76**
LSD (0.05)	**0.46**	**0.51**	**0.33**

04-Sept-02 - Disked and cultimulched
05-Sept-02 - Applied 500 lb/A 5-10-10-3S
10-Sept-02 - Seeded
10-Sept-02 - Cultipacked
12-Sept-02 - Irrigated 0.6″
04-Oct-02 - Irrigated 0.6″