PR-547
UK AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

2006 Cool-Season Grass Grazing Tolerance Report

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Introduction

Cool-season grasses such as tall fescue and orchardgrass are the primary pasture grasses in Kentucky. Other species such as perennial ryegrass, festulolium, and prairie brome can be used in pasture systems. Little is known about the effect of variety on the grazing tolerance of these cool-season grass species.

The purpose of this report is to summarize current research on the grazing tolerance of varieties of tall fescue, orchardgrass, perennial ryegrass, and other species when they are subjected to continuous, heavy grazing pressure by cattle within the grazing season. The main focus will be on plant stand survival. New for 2006, Tables 20, 21, and 22 show the summaries of all tall fescue, orchardgrass and perennial ryegrass varieties tested in Kentucky during the last 10 years. Go to the UK Forage Extension Web site at <www.uky.edu/Ag/Forage> to obtain electronic versions of all forage variety testing reports from Kentucky and surrounding states and from a large number of other forage publications.

Description of the Tests

Grass variety tests for grazing tolerance were established in Lexington in the fall of 2002, 2003, 2004, and 2005 and in Princeton in the fall of 2002 and 2003. The soils at Lexington (Maury) and Princeton (Zanesville) are well-drained silt loams and are well suited to tall fescue, orchardgrass, and ryegrass production. Plots were 5 by 15 feet in a randomized complete block design, with each variety replicated six times. In each test, 20 pounds of seed per acre (8 pounds/acre for timothy) were planted into a prepared seedbed using a disk drill. Grazing began in April and was continuous until late September. Plots were grazed down to below 4 inches quickly by feeder steers and kept at that height or below for the remainder of the grazing season. Supplemental hay or soybean hulls were fed during periods of slowest growth. Animals were removed from plots after all fall growth had been removed and when little regrowth was expected. Visual ratings of percent stand were made in the fall and spring after each grazing season. Grass plots were fertilized with 60 pounds of actual N per acre in the spring and 30 to 40 pounds of actual N in the fall. Other fertilizers (lime, P, and K) were applied as needed.

Results and Discussion

Weather data for Lexington and Princeton are presented in Tables 1 and 2. Data on percent stand are presented in Tables 3 through 15. Statistical analyses were performed on all entries (including experimentals) to determine if the apparent differences are truly due to variety. Varieties not significantly different from the highest numerical value in a column are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between the two varieties to the Least Significant Difference (LSD) at the bottom of the column. If

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2003, 2004, 2005, and 2006.

	2003				2004				2005				2006			
	Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	26	-5	0.96	-1.90	30	-1	3.14	+0.28	37	+6	4.35	+1.49	42	+11	4.77	+1.91
FEB	32	-3	3.59	+0.38	36	+1	1.32	-1.89	39	+4	1.68	-1.53	36	+1	2.13	-1.08
MAR	47	+3	2.09	-2.31	47	+3	3.43	-0.97	41	-3	2.79	-1.61	44	0	3.05	-1.35
APR	57	+2	3.14	-0.74	55	0	3.06	-0.82	56	+1	3.30	-0.58	59	+4	3.52	-0.36
MAY	63	-1	6.68	+2.21	68	+4	9.79	+5.32	61	-3	1.78	-2.69	62	-2	2.99	-1.48
JUN	69	-3	4.85	+1.19	72	0	3.13	-0.53	75	+3	1.33	-2.33	70	-2	1.82	-1.84
JUL	74	-2	2.68	-2.32	73	-3	7.65	+2.65	77	+1	3.30	-1.70	76	0	5.13	+0.13
AUG	75	0	5.26	+1.33	71	-4	2.91	-1.02	78	+3	3.34	-0.59	76	+1	3.23	-0.70
SEP	65	-3	4.22	+1.02	68	0	2.61	-0.59	72	+4	0.59	-2.21	64	-4	9.27	+6.07
OCT	56	-1	1.61	-0.96	58	+1	5.65	+3.08	58	+1	0.92	-1.65	54	-3	4.88	+2.31
NOV	50	+5	4.63	+1.24	49	+4	6.29	+2.90	47	+2	1.54	-1.85	47	+2	1.78	-1.61
DEC	36	0	3.26	-0.72	36	0	3.20	-0.78	32	-4	2.19	-1.79				
Total			42.97	-1.58			52.18	+7.63			27.51	-17.04			42.57	+2.00

DEP is departure from the long-term average.

Table 2. Temperature and rainfall at Princeton, Kentucky, in 2003, 2004, 2005, and 2006.

	2003				2004				2005				2006			
	Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	31	-3	2.19	-1.61	36	+2	4.12	+0.32	41	+7	5.30	+1.50	46	+12	5.38	+1.58
FEB	35	-3	7.45	+3.02	39	+1	2.44	-1.99	43	+5	2.30	-2.13	38	0	2.66	-1.77
MAR	50	+3	2.46	-2.48	53	+6	4.28	-0.66	47	0	4.11	-0.83	51	+4	4.22	-0.72
APR	60	+1	6.99	+2.19	59	0	5.32	+0.52	60	+1	4.61	-0.19	63	+4	4.02	-0.78
MAY	67	0	4.81	-0.15	72	+5	7.34	+2.38	65	-2	1.54	-3.42	66	-1	5.42	+0.46
JUN	71	-4	5.05	+1.20	74	-1	3.40	-0.45	76	+1	3.09	-0.76	75	0	3.39	-0.46
JUL	79	+1	4.75	+0.46	75	-3	4.87	+0.58	79	+1	2.39	-1.90	79	+1	3.79	-0.50
AUG	79	+2	2.05	-1.96	73	-4	3.02	-0.99	80	+3	11.54	+7.53	80	+3	2.58	-1.43
SEP	69	-2	6.17	+2.84	71	0	0.20	-3.13	74	+2	2.17	-1.16	67	-4	9.80	+6.47
OCT	60	+1	3.73	+0.68	64	+5	4.03	+0.98	60	+1	0.19	-2.86	57	-2	4.5	+1.45
NOV	53	+6	5.85	+1.22	53	+6	6.94	+2.31	50	+3	2.48	-2.15	49	+2	4.31	-0.32
DEC	40	+1	2.39	-2.65	37	-1	4.29	-0.75	35	-4	1.92	-3.12				
Total		.	53.89	+2.76			50.25	-0.88			42.55	-8.58			50.07	+3.98

DEP is departure from the long-term average.

the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at a given location. The Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Kentucky 31 tall fescue with the endophyte (KY31+) is considered to be the most grazing-tolerant variety and was the grazing-tolerant check entry in all tall fescue trials. The central questions in grazing tolerance among tall fescues are: 1) Can endophyte-free varieties persist as well as KY31+ and 2) Will the new novel, or "friendly," endophyte materials persist as well as other tolerant varieties? After three and four seasons, several fescue varieties were comparable to KY31+ in regards to grazing tolerance (Tables 3 and 4). The extreme drought of 2005 may have contributed to greater stand loss in lines without grazing tolerance.

Table 17 (fescue, perennial ryegrass, festulolium, and prairie brome), Table 18 (orchardgrass, Kentucky bluegrass, and prairie brome), and Table 19 (perennial ryegrass, festulolium, and prairie brome) summarize information about distributors and persistence across locations and years for all varieties in these tests. Varieties are listed in alphabetical order, with experimental varieties listed at the bottom. An open block indicates that the variety was not in that particular test (labeled at the top of the column), while an "x" in the block indicates the variety was in the test but plant survival was significantly less than the most persistent variety. A single asterisk (*) means that the variety was not significantly different from the most persistent variety in that study. It is best to choose a variety that has performed well over several years.

Tables 20, 21, and 22 are summaries of stand persistence data from 1996-2006 of commercial tall fescue, orchardgrass, and perennial ryegrass varieties that have been entered in the Kentucky trials. In Table 20 the data is listed as a percentage of KY31+. In other words, in the tall fescue trials KY31+ is 100% - varieties with percentages over 100 persisted better than KY31+ and varieties with percentages less than 100 persisted less than KY31+. In Tables 21 and 22 the data is listed as a percentage of

Table 3. Percent stand and seedling vigor of tall fescue, Kentucky bluegrass (BG), and perennial ryegrass (PRG) varieties sown Sept. 19, 2002, in a cattle grazing tolerance study at Lexington, Kentucky.

	Seedling Vigor1	Percent Stand							
		2003		2004		2005		2006	
Variety	Oct 31, 2002	Mar 24	Oct 30	Mar 26	Nov 8	Mar 30	Oct 31	Apr 4	Aug 7
Commercial Varieties—Available for Farm Use									
Jesup MaxQ	3.5	90	81	95	82	88	98	99	93*
Festival	4.0	88	78	93	87	88	99	100	91*
Common(BG)	1.8	90	74	93	50	68	92	94	91*
KY31+[2]	4.8	90	81	95	78	88	99	99	90*
Select	4.0	90	83	95	85	90	99	98	90*
Kenblue(BG)	1.7	89	69	86	53	73	92	97	90*
Orygun	4.5	90	80	95	85	90	98	100	89*
Experimental Varieties									
KY31-[2]	4.8	90	83	95	85	85	100	100	93*
HM 11	4.3	89	84	95	82	90	98	99	93*
KYFA 9304	5.0	89	84	95	87	90	98	98	92*
KYFA9301	4.5	90	83	95	83	87	98	96	78
EC 411(PRG)	5.0	90	84	95	90	0	16	14	9
Mean	3.9	90	80	94	80	79	91	92	84
CV,%	10.1	2	5	2	9	6	4	4	13
LSD,0.05	0.5	2	5	3	9	6	4	4	13

*Not significantly different from the highest value in the column, based on the 0.05 LSD.
[1] Vigor rating based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
[2] "+" indicates variety is endophyte infected; "-" indicates variety is endophyte-free.

the mean of the commercial varieties entered in each specific trial. In other words, the mean for each trial is 100% - varieties with percentages over 100 persisted better than average and varieties with percentages less than 100 persisted less than average. Direct, statistical comparisons of varieties cannot be made using the summary Tables 20, 21, and 22, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better then average over many years have very stable performance, while others may have performed very well in wet years or on particular soil types. These details may influence variety choice and the information can be found in the yearly reports. See footnote in Tables 20, 21, and 22 to determine which yearly report to refer to.

Table 4. Percent stand of tall fescue, perennial ryegrass (PRG) and Kentucky bluegrass (BG) varieties sown Sept. 25, 2002, in a cattle grazing tolerance study at Princeton, Kentucky.

	Percent Stand							
	2003		2004		2005		2006	
Variety	Apr 3	Dec 2	Apr 1	Dec 21	Apr 15	Nov 3	Apr 5	Oct 30
Commercial Varieties—Available for Farm Use								
Jesup MaxQ	90	79	83	77	73	82	83	86*
KY31+[1]	90	78	78	75	72	81	80	82*
Select	90	78	77	78	68	83	78	80*
Festival	90	76	75	80	72	78	72	73
Certified Kenblue (BG)	90	23	25	25	33	33	33	36
Calibra (PRG)	90	85	79	67	72	37	27	27
Experimental Varieties								
AGRFA 106	90	77	78	75	78	82	83	86*
FA 2845	90	80	84	80	78	87	82	86*
KY31-[1]	90	81	79	78	72	81	78	86*
FA 2458	90	75	77	77	73	78	83	84*
AGRFA 104	90	78	80	77	77	82	82	83*
AGRFA 114	90	78	78	85	73	82	75	81*
KYFA 9301	90	79	78	80	77	83	78	80*
FA 2720	90	78	80	80	73	77	68	79*
FA 2651	90	77	76	75	72	78	77	78*
HM11	90	75	70	80	77	72	77	78*
KYFA 9304	90	79	78	80	78	83	73	71
FABE 9301A	90	78	78	75	72	77	72	68
AGRFA 111	90	70	73	67	68	62	65	67
PBR	86	78	66	70	60	67	67	65
KYPP 9901 (BG)	86	12	26	28	33	40	33	32
EC411 (PRG)	90	83	84	77	70	53	38	29
HB96 (BG)	6	13	5	10	18	22	16	26
HB95 (BG)	5	10	13	15	18	17	13	13
Mean	83	68	67	67	65	68	64	66
CV,%	2	11	12	12	15	15	17	18
LSD,0.05	2	9	9	9	11	11	12	13

*Not significantly different from tne highest numerical value in the column, based on the 0.05 LSD.
[1] "+" indicates variety is endophyte infected; "-" indicates variety is endophyte-free.

Summary

These studies indicate that there are varieties of cool-season grasses that can tolerate overgrazing for multiple seasons and still maintain reasonable stands. Some varieties of endophyte-free as well as novel, or "friendly," endophyte tall fescue have been able to maintain equivalent stands to endophyte-infected KY31. There is no "KY31+" equivalent in orchardgrass; that is, no variety has historically been proven to be tolerant of overgrazing. However, some varieties have exhibited good tolerance to grazing abuse even after three and four seasons.

This information should be used along with yield and other information (for example, relative maturity in spring) in selecting the best grass variety for each individual use. It is not recommended that tall fescue or orchardgrass be continuously overgrazed, as was done in these trials. While several varieties expressed tolerance to the level of grazing pressure used in these trials, overgrazing greatly reduces yield and therefore profitability of these varieties. This information should be an indication of those varieties that will better withstand the occasional overgrazing that sometimes becomes necessary in livestock operations.

Good management for maximum life from any grass would be to allow it to become completely established before grazing and to avoid overgrazing it during times of extreme stress, such as drought.

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Table 5. Percent stand, seedling vigor, and grazing preference of tall fescue and festulolium (FL) varieties sown Sept. 19, 2003, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Grazing Preference[1] May 31, 2005	Seedling Vigor[2] Oct 31, 2003	Percent Stand					
			2004		2005		2006	
			Mar 26	Nov 8	Mar 30	Oct 31	Apr 4	Oct 23
Commercial Varieties—Available for Farm Use								
KY31+[3]	37	4.8	98	90	90	100	85	99*
Jesup MaxQ	25	4.2	99	90	87	99	100	98*
Select	20	3.8	97	90	90	99	99	98*
Jesup EF	19	4.0	98	87	87	98	98	97*
Bariane	73	4.2	95	90	88	97	96	96*
Experimental Varieties								
KY31-[3]	25	5.0	99	90	90	100	99	99*
KYFA 0006	58	4.6	99	90	90	99	99	99*
AGRFA 117	26	4.6	98	90	80	98	99	98*
KYFA 9304	37	4.6	97	88	90	99	100	98*
KYFA 9602	53	4.2	98	88	88	98	98	98*
KYFA 9611	73	4.0	94	90	90	100	100	98*
AGRFA 2860	14	4.8	99	90	90	98	98	98*
KYTF 2	42	5.0	98	88	90	100	99	98*
AGRFA 121	32	4.8	98	90	75	97	99	97*
AGRFA 120	19	4.4	98	90	83	98	100	96*
AGRFA 2861	22	4.4	100	90	88	100	100	96*
AGRFA 111	73	4.6	97	88	77	75	78	77
KYFA 9819 (FL)	97	4.8	97	90	83	85	71	58
Mean	41	4.5	98	90	87	97	95	94
CV,%	31	15.1	3	3	6	8	13	10
LSD,0.05	15	0.9	3	3	6	9	15	11

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Percent of the forage in the plot that was grazed between April 20 and May 31, 2005.
[2] Vigor rating based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
[3] "+" indicates variety is endophyte infected; "-" indicates variety is endophyte-free.

Table 6. Percent stand of tall fescue varieties sown Aug. 26, 2003, in a cattle grazing tolerance study at Princeton, Kentucky.

Variety	Percent Stand					
	2004		2005		2006	
	Apr 1	Dec 21	Apr 15	Nov 3	Apr 5	Oct 30
Commercial Varieties—Available for Farm Use						
Jesup EF	95	88	91	95	99	100*
Jesup MaxQ	93	90	89	94	98	100*
Experimental Varieties						
AGRFA 120	93	90	90	94	98	100*
AGRFA 2847	93	90	89	94	97	100*
AGRFA 2848	96	90	90	95	98	100*
AGRFA 117	88	88	90	95	97	99*
AGRFA 2846	93	90	89	94	99	99*
AGRFA 2850	96	90	90	95	98	99*
AGRFA 2860	97	88	90	94	94	99*
AGRFA 2861	94	90	91	95	98	99*
AGRFA 121	94	90	93	95	98	99*
AGRFA 2845	92	90	91	95	98	99*
AGRFA2849	95	90	92	95	99	99*
Mean	94	90	90	95	98	100
CV,%	4	2	2	1	3	1
LSD,0.05	4	2	2	1	3	1

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 7. Percent stand and seedling vigor rating of tall fescue varieties sown Sept. 14, 2004, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Nov 8, 2004	Percent Stand			
		2005		2006	
		Apr 8	Oct 31	Apr 4	Oct 23
Commercial Varieties—Available for Farm Use					
Stockman	3.5	97	99	100	98*
KY31+[2]	2.3	87	97	99	98*
Experimental Varieties					
KYFA 9304	3.7	88	99	99	99*
KY31-[2]	4.0	95	99	100	98*
KYFA 9811	3.8	95	100	99	98*
TF0203G	4.0	97	98	100	98*
PST-5NF	3.2	90	99	99	97*
Mean	3.5	93	99	100	98
CV,%	21.0	10	2	2	3
LSD,0.05	0.9	10	2	2	3

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
[2] "+" indicates variety is endophyte infected; "-" indicates variety is endophyte free.

Table 8. Percent stand and seedling vigor of tall fescue and festulolium (FL) varieties sown Sept. 8, 2005, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Nov 7, 2005	Percent Stand Apr 17, 2006	Percent Stand Oct 20, 2006
Commercial Varieties—Available for Farm Use			
KY31+[2]	3.5	96	96*
Jesup MaxQ	2.3	87	91*
Spring Green (FL)	3.7	96	91*
Barolex	2.8	86	90*
Select	1.8	83	90*
Duo (FL)	3.8	97	84
Barianne	1.3	57	68
Experimental Varieties			
KYFA9301/AR584	3.8	94	96*
AGRFA148	2.8	94	95*
KY31-[2]	3.0	94	95*
KYFA9301/AR542	3.5	94	95*
KYFA9821/AR542	3.2	94	95*
KYFA9821/AR584	3.2	93	94*
KYFA9821EF	2.8	92	93*
KYFA9301EF	2.7	88	93*
TF0203G	2.3	92	93*
AGRFA144	2.8	89	92*
IS-FTF25	2.5	84	92*
TF0101	2.5	92	92*
KYFA9304EF	2.7	87	89*
BE9301a	2.7	85	88*
IS-FTF12	1.8	83	87
TF9801	2.0	81	84
UMTF	0.8	13	17
Mean	2.7	85	87
CV,%	26.0	8	8
LSD,0.05	0.8	8	8

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

[2] "+" indicates variety is endophyte infected; "-" indicates variety is endophyte-free.

Table 9. Percent stand and seedling vigor of orchardgrass and Kentucky bluegrass (BG) varieties sown Sept. 19, 2002, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Oct 31, 2002	Percent Stand 2003 Mar 25	2003 Oct 30	2004 Mar 26	2004 Nov 8	2005 Mar 30	2005 Oct 31	2006 Apr 4	2006 Aug 7
Commercial Varieties—Available for Farm Use									
Common (BG)	1.0	88	57	93	50	77	89	91	87*
Crown Royale Plus	5.0	89	75	95	58	80	67	70	62
Benchmark Plus	4.7	90	78	95	67	82	78	73	60
Uncertified Potomac	4.8	89	74	95	53	78	68	67	60
Certified Potomac	4.8	90	76	94	65	83	61	62	58
Prairie	4.8	85	65	94	52	78	70	67	58
Benchmark	4.0	87	68	91	60	77	75	70	57
Haymate	3.8	83	75	93	53	70	52	62	50
Niva	3.5	82	67	93	58	72	42	50	38
Tekapo	2.8	75	67	88	52	45	37	45	37
Abertop	2.3	63	36	79	23	27	12	23	19
Experimental Varieties									
GA-OG1	5.0	88	71	93	60	82	73	73	73*
DG9930B	4.0	84	79	93	80	27	26	37	25
DG9911	4.2	85	80	95	73	40	25	38	23
Mean	3.9	84	69	92	58	66	55	59	51
CV,%	9.4	4	9	4	19	17	25	21	27
LSD,0.05	0.4	4	8	2	13	13	16	14	16

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

[1] Vigor rating based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

Table 10. Percent stand of orchardgrass and Kentucky bluegrass (BG) varieties sown Sept. 25, 2002, in a cattle grazing tolerance study at Princeton, Kentucky.

Variety	Percent Stand 2003 Apr 3	2003 Dec 2	2004 Apr 1	2004 Dec 21	2005 Apr 15	2005 Dec 13	2006 Apr 5
Commercial Varieties—Available for Farm Use							
Benchmark	90	73	39	27	19	8	8
Benchmark Plus	90	76	36	27	18	9	8
Certified Potomac	90	74	41	27	17	8	7
Tekapo	89	83	34	25	13	8	6
Crown Royale Plus	90	76	37	20	13	8	5
Hallmark	84	68	34	25	13	7	5
Niva	90	79	38	22	17	8	5
Haymate	90	73	30	27	17	7	5
Prairie	90	71	41	25	17	7	5
Experimental Varieties							
KYPP 9901 (BG)	89	53	33	33	40	42	40*
GA-OG1	90	66	36	22	17	10	8
Mean	89	72	36	25	18	11	9
CV,%	1	7	30	32	52	33	35
LSD,0.05	1	6	13	9	11	4	4

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 11. Percent stand and sedling vigor of orchardgrass varieties sown Sept. 17, 2003, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Oct 31, 2003	Percent Stand 2004 Mar 26	2004 Nov 8	2005 Mar 30	2005 Oct 31	2006 Apr 4	2006 Oct 23
Commercial Varieties—Available for Farm Use							
Haymate	4.2	96	90	88	99	98	95
Tekapo	4.5	97	90	78	98	98	95
Intensiv	4.3	95	90	88	95	94	87
Hallmark	1.3	63	77	77	91	90	86
Experimental Varieties							
CIS-OG29	4.7	98	90	85	100	100	99*
CIS-OG28	5.0	98	88	88	99	100	98*
KYDG 9801	5.0	83	88	90	97	97	98*
KYDG 9303	4.8	98	90	88	98	99	94
KYDG 9701	2.8	90	87	83	98	98	91
Mean	4.1	91	88	85	97	97	93
CV,%	10.6	14	5	5	2	3	4
LSD,0.05	0.5	15	5	5	3	3	4

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

Table 12. Percent stand and seedling vigor of orchardgrass and prairie brome (PB) [*Bromus wildenovii*] varieties sown Sept. 14, 2004, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Nov 8, 2004	Percent Stand 2005 Mar 30	2005 Oct 31	2006 Apr 4	2006 Oct 23
Commercial Varieties—Available for Farm Use					
Certified Potomac	2.2	65	88	92	88*
Command	2.0	58	82	83	75
AGRBW 101 (PB)	3.0	62	32	23	18
Grasslands Mutua (PB)	2.7	28	16	10	11
Experimental Varieties					
KYDG9303	3.5	90	96	98	93*
94-100	2.8	82	94	94	88*
AGRBP 101 (PB)	4.2	58	27	28	16
AGRBW 103 (PB)	3.7	33	12	9	9
AGRBW 102 (PB)	5.0	28	12	6	7
Mean	3.2	56	51	49	45
CV,%	13.7	29	22	16	14
LSD,0.05	0.5	19	13	9	7

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

Table 13. Percent stand and seedling vigor of orchardgrass varieties sown Sept. 8, 2005, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Nov 7, 2005	Percent Stand Apr 17, 2006	Oct 20, 2006
Commercial Varieties—Available for Farm Use			
Athos	2.5	93	97*
Tekapo	3.0	94	97*
Benchmark Plus	3.7	96	96*
Persist	2.8	95	95*
Experimental Varieties			
IS-OG28	3.5	96	96*
AGRDG101	3.3	75	81
Mean	3.1	91	93
CV,%	18.4	5	6
LSD,0.05	0.7	5	6

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

Table 14. Percent stand and seedling vigor of orchardgrass varieties sown Sept. 8, 2005, in a cattle rotational grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Nov 7, 2005	Percent Stand Apr 17, 2006	Oct 20, 2006
Commercial Varieties—Available for Farm Use			
Athos	3.0	94	98*
Persist	3.0	96	98*
Benchmark Plus	3.3	95	97*
Tekapo	3.0	92	95*
Experimental Varieties			
IS-OG28	2.7	94	97*
AGRDG101	3.3	67	85
Mean	3.1	90	95
CV,%	21.1	9	4
LSD,0.05	0.8	9	4

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

Table 15. Percent stand and seedling vigor of perennial ryegrass, Italian ryegrass, and prairie brome (*Bromus wildenovii*) varieties sown Sept. 17, 2003, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Species	Seedling Vigor[1] Oct 31, 2003	Percent Stand					
			2004		2005		2006	
			Mar 26	Nov 8	Mar 30	Oct 31	Apr 4	Oct 23
Commercial Varieties—Available for Farm Use								
Remington	perennial ryegrass	3.5	100	90	87	93	94	92*
AGRLP 103	perennial ryegrass	4.5	33	63	23	52	56	53
Linn	perennial ryegrass	4.3	99	90	34	60	70	52
AGRBW 101	prairie brome	4.8	58	67	37	31	33	36
Grasslands Matua	prairie brome	4.5	33	50	20	18	13	14
Experimental Varieties								
AGRLP 108	perennial ryegrass	4.5	63	85	22	63	70	71
AGRLP 116	perennial ryegrass	4.3	52	90	28	63	74	70
AGRLP 113	perennial ryegrass	4.5	36	82	16	38	39	38
AGRBP 101	prairie brome	2.5	48	45	32	34	35	18
AGRLM 108	Italian ryegrass	5.0	37	75	11	2	5	4
AGRLM 109	Italian ryegrass	5.0	61	85	8	2	3	2
AGRBW 102	prairie brome	5.0	13	18	6	3	2	2
Mean		4.4	53	70	27	38	41	38
CV,%		9.8	47	23	54	44	43	42
LSD,0.05		0.5	29	19	17	19	20	18

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

Table 16. Percent stand and seedling vigor of perennial ryegrass varieties sown Sept. 8, 2005, in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor[1] Nov 7, 2005	Percent Stand	
		Apr 17, 2006	Oct 20, 2006
Commercial Varieties—Available for Farm Use			
BG34	3.2	96	97*
Tonga	3.5	97	96*
Quartet	4.7	93	94
Experimental Varieties			
SW ER3508FRI	2.8	94	97*
SW ER3579	3.7	97	96*
SW ER3575	3.3	95	96*
Mean	3.5	95	96
CCV,%	14.3	2	2
LSD,0.05	0.6	2	3

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

Table 17a. Summary of persistence of tall fescue, perennial ryegrass (PRG), festulolium (FL), and Kentucky bluegrass (BG) varieties under heavy grazing pressure across years at Lexington, Kentucky[1].

		Lexington																	
		2002[2]							2003						2004				2005	
Variety/Proprietor		Oct[3] 03	Mar 04	Nov 04	Mar 05	Oct 05	Apr 06	Aug 06	Mar 04	Nov 04	Mar 05	Oct 05	Apr 06	Oct 06	Mar 05	Oct 05	Apr 06	Oct 06	Apr 06	Oct 06
Commercial Varieties—Available for Farm Use																				
Barianne	Barenbrug USA								*	*	*	*	*	*					x	x
Barolex	Barenbrug USA																		x	*
Duo (FL)	Ampac Seed Company																		*	x
Festival	Pickseed West, Inc.	x	*	*	*	*	*	*												
Jesup EF	AgResearch (USA)								*	x	*	*	*	*						
Jesup Max Q	Pennington Seed	*	*	*	*	*	*	*	*	*	*	*	*	*					x	*
Kenblue (BG)		x	x	x	x	x	*	*												
Common (BG)	Public	x	*	x	x	x	x	*												
KY 31+[4]	KY Agric. Exp. Station	*	*	x	*	*	*	*	*	*	*	*	*	*	*	x	*	*	*	*
Orygun		*	*	*	*	*	*	*												
Select	FFR/Southern States	*	*	*	*	*	*	*	*	*	*	*	*	*					x	*
Spring Green (FL)	Turf-Seed, Inc.																		*	*
Stockman	Seed Research of Oregon														*	*	*	*		
Experimental Varieties																				
AGRFA 111	AgResearch (USA)								*	*	x	x	x	x						
AGRFA 117	AgResearch (USA)								*	*	x	*	*	*						
AGRFA 120	AgResearch (USA)								*	*	x	*	*	*						
AGRFA 121	AgResearch (USA)								*	*	x	*	*	*						
AGRFA 144	Noble Foundation, Inc.																		*	*
AGRFA 148	Noble Foundation, Inc.																		*	*
AGRFA 2860	AgResearch (USA)								*	*	*	*	*	*						
AGRFA 2861	AgResearch (USA)								*	*	*	*	*	*						
EC 411 (PRG)	Emerald Commodities, Inc.	*	*	*	x	x	x	x												
FABE 9301A	Barenbrug USA																		x	*
HM 11	FFR/Southern States	*	*	*	*	*	*	*												
IS-FTF12	DLF International Seeds																		x	x
IS-FTF25	DLF International Seeds																		x	*
KY 31-[4]	KY Agric. Exp. Station	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
KYFA 0006	KY Agric. Exp. Station								*	*	*	*	*	*						
KYFA 9301	KY Agric. Exp. Station	*	*	*	*	*	*	x											x	*
KYFA 9301/ AR542	KY Agric. Exp. Station																		*	*
KYFA 9301/ AR584	KY Agric. Exp. Station																		*	*
KYFA 9304	KY Agric. Exp. Station	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	x	*
KYFA 9602	KY Agric. Exp. Station								*	*	*	*	*	*						
KYFA 9611	KY Agric. Exp. Station								x	*	*	*	*	*						
KYFA 9811	KY Agric. Exp. Station														*	*	*	*		
KYFA 9819 (FL)	KY Agric. Exp. Station								*	*	x	x	x	x						
KYFA 9821	KY Agric. Exp. Station																		*	*
KYFA 9821/ AR542	KY Agric. Exp. Station																		*	*
KYFA 9821/ AR584	KY Agric. Exp. Station																		*	*
KYTF 2	KY Agric. Exp. Station								*	*	*	*	*	*						
PST-5NF	Turf-Seed, Inc.														*	*	*	*		
TF0101	FFR/Southern States																		*	*
TF0203G	FFR/Southern States														*	*	*	*	*	*
TF9801	FFR/Southern States																		x	x
UMTF	Pickseed Canada																		x	x

*Not significantly different from the most persistent variety in the test. An open block indicates the variety was not in the test, while an "x" in the block indicates the variety was in the test but plant survival was significantly less then the most persistent variety.

[1] For detailed stand ratings over years, see individual trial tables.

[2] Establishment year.

[3] Date of rating of percent stand.

[4] "+" indicates variety is endophyte infected, "-" indicates variety is endophyte-free.

Table 17b. Summary of persistence of tall fescue, perennial ryegrass (PRG), festulolium (FL), and Kentucky bluegrass (BG) varieties under heavy grazing pressure across years at Princeton, Kentucky[1].

		Princeton												
		2002[2]							2003					
Variety/Proprietor		Dec[3] 03	Apr 04	Dec 04	Apr 05	Nov 05	Apr 06	Oct 06	Apr 04	Dec 04	Apr 05	Nov 05	Apr 06	Oct 06
Commercial Varieties—Available for Farm Use														
Calibra (PRG)	Donley Seed	*	*	x	*	x	x	x						
Duo (FL)	Ampac Seed Company													
Festival	Pickseed West, Inc.	x	x	*	*	*	*	x						
Jesup EF	AgResearch (USA)								*	*	*	*	*	*
Jesup Max Q	Pennington Seed	*	*	*	*	*	*	*	*	*	x	*	*	*
Kenblue (BG)		x	x	x	x	x	x	x						
Common (BG)	Public													
KY 31+[4]	KY Agric. Exp. Station	*	*	x	*	*	*	*						
Orygun														
Select	FFR/Southern States	*	*	*	*	*	*	*						
Experimental Varieties														
AGRFA 104	AgResearch (USA)	*	*	*	*	*	*	*						
AGRFA 106	AgResearch (USA)	*	*	x	*	*	*	*						
AGRFA 111	AgResearch (USA)	x	*	x	*	x	x	x						
AGRFA 114	AgResearch (USA)	*	*	*	*	*	*	*						
AGRFA 117	AgResearch (USA)								x	*	x	*	*	*
AGRFA 120	AgResearch (USA)								*	*	x	*	*	*
AGRFA 121	AgResearch (USA)								*	*	*	*	*	*
AGRFA 2845	AgResearch (USA)								x	*	*	*	*	*
AGRFA 2846	AgResearch (USA)								*	*	x	*	*	*
AGRFA 2847	AgResearch (USA)								*	*	x	*	*	*
AGRFA 2848	AgResearch (USA)								*	*	x	*	*	*
AGRFA 2849	AgResearch (USA)								*	*	*	*	*	*
AGRFA 2850	AgResearch (USA)								*	*	x	*	*	*
AGRFA 2860	AgResearch (USA)								*	*	x	*	*	*
AGRFA 2861	AgResearch (USA)								*	*	*	*	*	*
EC 411 (PRG)	Emerald Commodities, Inc.	*	*	*	*	x	x	x						
FA 2458	AgResearch (USA)	*	*	*	*	*	*	*						
FA 2651	AgResearch (USA)	*	*	*	*	*	*	*						
FA 2720	AgResearch (USA)	*	*	*	*	*	x	*						
FA 2845	AgResearch (USA)	*	*	*	*	*	*	*						
FABE 9301A	Barenbrug USA	*	*	x	*	*	*	x						
HB 95 (BG)	DLF-Jenks	x	x	x	x	x	x	x						
HB 96 (BG)	DLF-Jenks	x	x	x	x	x	x	x						
HM 11	FFR/Southern States	x	x	*	*	x	*	*						
KY 31-[4]	KY Agric. Exp. Station	*	*	*	*	*	*	*						
KYPP 9901 (BG)	KY Agric. Exp. Station	x	x	x	x	x	x	x						
KYFA 9301	KY Agric. Exp. Station	*	*	*	*	*	*	*						
KYFA 9304	KY Agric. Exp. Station	*	*	*	*	*	*	x						
PBR	Barenbrug USA	*	x	x	x	x	x	x						

*Not significantly different from the most persistent variety in the test. An open block indicates the variety was not in the test, while an "x" in the block indicates the variety was in the test but plant survival was significantly less then the most persistent variety.

[1] For detailed stand ratings over years, see individual trial tables.

[2] Establishment year.

[3] Date of rating of percent stand.

[4] "+" indicates variety is endophyte infected, "-" indicates variety is endophyte-free.

Table 18. Summary of persistence of orchardgrass, Kentucky bluegrass (BG), and Prairie brome (PB) [*Bromus wildenovii*] varieties under heavy grazing pressure across years and locations.

		Lexington																		Princeton					
		2002[1]							2003						2004				2005		2002					
Variety/Proprietor		Oct2 03	Mar 04	Nov 04	Mar 05	Oct 05	Apr 06	Aug 06	Mar 04	Nov 04	Mar 05	Oct 05	Apr 06	Oct 06	Mar 05	Oct 05	Apr 06	Oct 06	Apr 06	Oct 06	Dec 03	Apr 04	Dec 04	Apr 05	Dec 05	Apr 06
Commercial Varieties—Available for Farm Use																										
Abertop	Pennington Seed, Inc.	x	x	x	x	x	x	x																		
AGRBW101 (PB)	AG Research USA														x	x	x	x								
Athos	DLF-Jenks																		*	*						
Benchmark	FFR/Southern States	x	x	x	*	*	x	x													*	*	*	x	x	x
Benchmark Plus	FFR/Southern States	*	*	x	*	*	x	x											*	*	x	*	*	x	x	x
Command	Seed Research of Oregon														x	x	*	x								
Common (BG)	Public	x	*	x	*	*	*	*																		
Crown Royale Plus	Donley Seed Co.	*	*	x	*	x	x	x													x	x	x	x	x	x
Grasslands Matua (PB)	AG Research USA														x	x	x	x								
Hallmark	James VanLeeuwen								x	x	x	x	x	x							x	x	*	x	x	x
Haymate	FFR/Southern States	*	*	x	*	x	x	x	*	*	*	*	*	x							x	*	*	x	x	x
Intensiv	Barenbrug USA								*	*	*	x	x	x												
Niva	DLF-Jenks	x	*	x	*	x	x	x													*	x	x	x	x	x
Persist	Smith Seed Services																		*	*						
Potomac certified	Public	*	*	x	*	x	x	x							x	*	*	*			x	*	*	x	x	x
Potomac uncertified	Public	*	*	x	*	x	x	x																		
Prairie	Turner Seed Company	x	*	x	*	x	x	x													x	*	*	x	x	x
Takena	Smith Seed Services																									
Tekapo	Ampac Seed Co.	x	x	x	x	x	x	x	*	*	x	*	*	x					*	*	*	*	*	x	x	x
Experimental Varieties																										
94-100	Ag Food of Canada														*	*	*	*								
AGRBP 101 (PB)	AG Research USA														x	x	x	x								
AGRBW 102 (PB)	AG Research USA														x	x	x	x								
AGRBW 103 (PB)	AG Research USA														x	x	x	x								
AGRDG101	AG Research USA																		x	x						
CIS-OG28	Cebeco Int'l Seeds								*	*	*	*	*	*												
CIS-OG29	Cebeco Int'l Seeds								*	*	*	*	*	*												
DG 9911	Pennington Seed, Inc.	*	*	*	x	x	x	x																		
DG 9930b	Pennington Seed, Inc.	*	*	*	x	x	x	x																		
GA-OG1	Pennington Seed, Inc.	x	*	x	*	*	x	*													x	*	x	x	x	x
IS-OG28	DLF International																		*	*						
KYDG 9303	KY Agric. Exp. Station								*	*	*	*	*	x	*	*	*	*								
KYDG 9701	KY Agric. Exp. Station								*	*	x	*	*	x												
KYDG 9801	KY Agric. Exp. Station								*	*	*	x	*	*												
KYPP 9901 (BG)	KY Agric. Exp. Station																				x	x	*	*	*	*

*Not significantly different from the most persistent variety. Open blocks indicate the variety was not in the test, while an "x" in the block indicate the variety was in the test but stand survival was significantly less than the most persistent variety.

[1] Establishment year.

[2] Date of visual rating of percent stand.

Table 19. Summary of persistence of perennial ryegrass, and prairie brome (PB) [*Bromus wildenovii*] varieties under heavy grazing pressure across years at Lexington.

Variety/Proprietor		2003[1] Mar2 04	Nov 04	Mar 05	Oct 05	Apr 06	Oct 06	2005 Apr 06	Oct 06
Commercial Varieties—Available for Farm Use									
AGRBW 101 (PB)	AgResearch USA	x	x	x	x	x	x		
AGRLP 103	AgResearch USA	x	x	x	x	x	x		
BG34	Barenbrug USA							*	*
Grasslands Matua (PB)	AgResearch USA	x	x	x	x	x	x		
Linn	Public	*	*	x	x	x	x		
Quartet	Ampac Seed Co.							x	x
Remington	Barenbrug USA	*	*	*	*	*	*		
Tonga								*	*
Experimental Varieties									
AGRBP 101 (PB)	AgResearch USA	x	x	x	x	x	x		
AGRBW 102 (PB)	AgResearch USA	x	x	x	x	x	x		
AGRLM 108	AgResearch USA	x	*	x	x	x	x		
AGRLM 109	AgResearch USA	x	*	x	x	x	x		
AGRLP 108	AgResearch USA	x	*	x	x	x	x		
AGRLP 113	AgResearch USA	x	*	x	x	x	x		
AGRLP116	AgResearch USA	x	*	x	x	*	x		
SW ER3508FRI	SW Seed Ltd.							x	*
SW ER3575	SW Seed Ltd.							*	*
SW ER3579	SW Seed Ltd.							*	*

*Not significantly different from the most persistent variety. An open block indicates the variety was not in the test, while an "x" in the block indicates the variety was in the test but plant survival was significantly less than the most persistent variety.

[1] Establishment year.

[2] Date of visual rating of percent stand.

Table 20. Summary of Kentucky Tall Fescue Grazing Trials, 1996-2006 (stand persistence shown as a percent of the stand rating for KY 31+).

Variety/Proprietor		Lexington 1996[1,2] 3yr[4]	1997 4yr	1998 3yr	1999 4yr	2000 4yr	2001 4yr	2002 4yr	2003 3yr	Princeton 2002 4yr	Mean[3] (# trials)
Bariane	Barenbrug USA								97		–
Barcel	Barenbrug USA	92									–
BAR9TMPO	Barenbrug USA				75						–
Bronson	Ampac Seed			39							–
Cattle Club	Green Seed		37	98	70	93	91				78(2)
Carmine	DLF-Jenks						90				–
Dovey	Barenbrug USA	92									–
Festival	Pickseed West						100	101		89	97(3)
Festorina	Advanta Seeds	98	86		57						80(3)
Fuego	Advanta Seeds			27							–
Hoedown	DLF-Jenks					88					–
Jesup EF	Pennington Seed		63	91					98		84(3)
Jesup MaxQ	Pennington Seed			114	79			103	99	105	100(5)
Johnstone	Proseeds		65	107			92				88(3)
KY31+	KY Agri. Exp Sta.	100	100	100	100	100	100	100	100	100	100(9)
KY31-	KY Agri. Exp Sta.	94	90	102	84		98	103	100	105	97(8)
Kenhy	Public			116							–
Kokanee	Ampac Seed					43					–
Martin II	International Seeds		59								–
Maximize	Turf Seed						99				–
Orygun								99			–
Resolute	Ampac Seed						23				–
Select	FFR/Sou. St.			109	69	107	101	100	99	98	98(7)
Southern Cross			25								–
Stargrazer	FFR/Sou. St.	90			52	86	89				79(4)
TF33	Barenbrug USA			34							–
Vulcan	International Seeds			109							–

[1] Year trial was established.

[2] Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in in 1997 was grazed four years so the final report would be "2001 Cool-Season Grass Grazing Tolerance Report" archived in the Kentucky Forage Extension Web site at <www.uky.edu/Ag/Forage>.

[3] Mean only presented when respective variety was included in two or more trials.

[4] Number of years of data.

Table 21. Summary of Kentucky Orchardgrass Grazing Trials, 1996-2006 (stand persistence shown as a percent of the mean of the commercial varieties in the trial).

Variety/Proprietor		Lexington								Princeton	Mean[3] (# trials)
		1996[1,2] 3yr[4]	1997 4yr	1998 3yr	1999 4yr	2000 4yr	2001 4yr	2002 4yr	2003 3yr	2002 4yr	
Abertop	Pennington Seed							38			–
Albert	Univ. of Wisconsin						115				–
Amba	DLF-Jenks						71				–
Ambrosia	Pennington Seed		90								–
Athos	DLF-Jenks						93				–
Benchmark	FFR/Sou. States	100	105	115	94	118	123	114		133	113(8)
Benchmark Plus	FFR/Sou. States							120		133	127(2)
Boone	Public			131		102					117(2)
Cheyenne	Western Prod. Inc.			94							–
Crown	Donley Seed		86	96							91(2)
Crown Royale	Donley Seed						100				–
Crown Royale Plus	Donley Seed							124		83	104(2)
Hallmark	James VanLeeuwen	107		104	103		115		95	83	101(6)
Haymate	FFR/Sou. States	93	71	102	96	53	115	100	105	83	91(9)
Intensiv	Barenbrug USA								96		–
Mammoth	DLF-Jenks						115				–
Megabite	Turf Seed						77				–
Niva	DLF-Jenks							76		83	80(2)
Pizza	Advanta Seeds			63							–
Potomac	Public	98						116		117	110(3)
Prairie	Turner Seed					127	121			83	110(3)
Profile	Scott Seed	98						116			107(2)
Progress	Scott Seed	111									–
Tekapo	Ampac Seed	93	166	92	104		55	74	105	100	99(8)
Takena	Smith Seed		81				99				90(2)
WP300	Western Prod. Inc.			94							–

[1] Year trial was established.
[2] Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 1997 was grazed four years so the final report would be "2001 Cool-Season Grass Grazing Tolerance Report" archived in the Kentucky Forage Extension Web site at <www.uky.edu/Ag/Forage>.
[3] Mean only presented when respective variety was included in two or more trials.
[4] Number of years of data.

Table 22. Summary of Kentucky Perennial Ryegrass Grazing Trials, 2000-2006 (stand persistence shown as a percent of the mean of the commercial varieties in the trial).

Variety/Proprietor		2000[1,2] 4yr[4]	2001 3yr	2003 3yr	Mean[3] (# trials)
AGRLP103	AgResearch USA	133		81	107(2)
Aries	Ampac Seed		139		–
Citadel	Donley Seed	112			–
Granddaddy	Smith Seed Services		121		–
Lasso	DLF-Jenks		130		–
Linn	Public	117	129	79	108(3)
Maverick	Ampac Seed		36		–
Polly II	FFR/Southern States	37	68		53(2)
Quartet	Ampac Seed		77		–
Remington	Barenbrug USA			140	–

[1] Year trial was established.
[2] Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2000 was grazed four years so the final report would be "2004 Cool-Season Grass Grazing Tolerance Report" archived in the Kentucky Forage Extension Web site at <www.uky.edu/Ag/Forage>.
[3] Mean only presented when respective variety was included in two or more trials.
[4] Number of years of data.

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12-2006