



# 2001 Cool-Season Grass Grazing Tolerance Variety 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 prairiegrass 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, 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.

## Description of the Tests

Grass variety tests for grazing tolerance were established in Lexington in the fall of 1997, 1998, 1999, and 2000. The soils at this location are well-drained silt loams and are well suited to tall fescue and orchardgrass production. Plots were 5 x 15 feet in a randomized complete block design with each variety replicated six times. In each test, 20 pounds of seed per acre were planted into a prepared seedbed using a disk drill. Grazing began in April and was continuous until October. 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 was 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 other fertilizer (lime, P, and K) was applied as needed.

## Results and Discussion

Weather data for Lexington for 1998, 1999, 2000, and 2001 are presented in Table 1. Data on percent stand are presented in Tables 2 through 10. 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 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.

**Tall fescue:** Kentucky 31 tall fescue with the endophyte (KY31+) is considered to be the most grazing-tolerant variety and is the grazing-tolerant check variety. In these studies, several endophyte-free or low-endophyte tall fescue varieties have been grazed continuously and heavily to see whether they can tolerate overgrazing as well as KY31+ and whether there are differences among varieties (Tables 2, 3, 4, and 5). Many endophyte-free tall fescues and other varieties such as Duo have tolerated grazing as well as Ky31+.

It is routine to check the endophyte status of tall fescues in the grazing trials either by checking the tillers from the plots themselves or from the seed. It is expected that commercial varieties should have zero or nearly zero endophyte content. Varieties that are infected with the "novel" endophyte or friendly endophyte should have a high percentage of infection (e.g., Jesup 542). Infected KY31 had nearly 100% infection as was expected.

Perennial ryegrass, festulolium, and prairiegrass varieties were grazed during the 2001 growing season (Table 6). Significant separation occurred by the end of one season.

**Orchardgrass:** Tekapo was the most grazing tolerant of the commercial varieties in the 1997 seeding (Table 7), while Boone, Benchmark, Shiloh, Hallmark, and Haymate were at the top of the 1998 seeding (Table 8). There was no separation among commercial varieties in the 1999 or 2000 seeding (Tables 9 and 10).

Table 11 (fescue, perennial ryegrass, and prairiegrass) and Table 12 (orchardgrass) 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. Shaded areas indicate that the variety was not in that particular test (labeled at the top of the column), while clear blocks mean the variety was in the test. A single asterisk (\*) means that the variety was not significantly different from the top-yielding variety in that study. It is best to choose a variety that has performed well over several years.

## Summary

These studies indicate that there are varieties of cool-season grasses that can tolerate overgrazing for multiple seasons and still maintain reasonable stands. Several varieties of endophyte-free tall fescue have been able to maintain equivalent stands to endophyte-infected KY31. There is no 'KY31+' equivalent to orchardgrass; that is, no variety has historically been proven to be tolerant of overgrazing. Therefore, comparison of the limited years of data on orchardgrass grazing tolerance is difficult. However, it does appear that some separation is occurring among orchardgrass cultivars in the current studies.

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 live-stock operations.

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

**Table 1. Temperature and rainfall at Lexington during the 1998, 1999, 2000, and 2001 growing seasons.**

	1998				1999				2000				2001			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
MON	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	41	+10	3.96	+1.10	36	+5	5.64	+2.78	32	+1	3.48	+0.62	31	0	0.9	-1.9
FEB	41	+6	2.54	-0.67	40	+5	2.32	-0.89	43	+8	4.97	+1.76	40	+5	3.2	0
MAR	46	+2	3.40	-1.00	40	-4	3.27	-1.13	48	+4	3.47	-0.93	40	-4	2.7	-1.7
APR	54	-1	6.20	+2.32	56	+1	1.87	-2.01	53	-2	4.10	+0.22	59	+4	1.7	-2.2
MAY	67	+3	6.14	+1.67	65	+1	1.35	-3.12	67	+3	2.96	-1.51	66	+2	4.9	+0.4
JUN	73	+1	10.81	+7.15	74	+2	3.89	+0.23	73	+1	3.22	-0.44	71	-1	2.0	-1.6
JUL	75	-1	7.98	+2.98	80	+4	1.00	-4.00	74	-2	3.42	-1.58	75	-1	5.6	+0.6
AUG	76	+1	0.29	-3.64	75	0	1.31	-2.62	74	-2	3.38	-0.55	76	+1	4.8	+0.8
SEP	74	+6	0.61	-2.59	69	+1	1.03	-2.17	66	-2	5.47	+2.27	65	-3	3.0	-0.2
OCT	58	+1	2.41	-0.16	57	0	1.91	-0.66	59	+2	0.92	-1.65	56	-1	3.6	+1.1
NOV	47	+2	2.09	-1.28	51	+6	1.70	-1.69	43	-2	1.59	-1.80	51	+6	2.8	-0.6
<b>AVG</b>	<b>59.3</b>	<b>+2.7</b>	<b>4.2</b>	<b>+0.5</b>	<b>58.5</b>	<b>+1.9</b>	<b>2.3</b>	<b>-1.4</b>	<b>57.5</b>	<b>+0.8</b>	<b>3.4</b>	<b>-0.8</b>	<b>57.3</b>	<b>+0.7</b>	<b>3.2</b>	<b>-0.5</b>

DEP is departure from the long-term average for that location.

<b>Table 2. Percent stand ratings for tall fescue varieties sown September 5, 1997, at Lexington, Kentucky, in a grazing tolerance study.</b>						
Variety	Percent Endophyte Infection <sup>1</sup>	Percent Stand				
		Sep 29, 1998	Nov 9, 1999	Oct 20, 2000	Apr 2, 2001	Oct 17, 2001
<b>Commercial varieties — available for farm use</b>						
KY31+ <sup>2</sup>	97.0	100.0	76.7	60.0	57.5	50.8*
Festorina	3.3	100.0	83.3	55.0	55.8	44.2*
Johnstone	1.7	100.0	70.0	48.3	60.0	32.5
Jesup EF	6.7	100.0	85.0	47.5	60.0	31.7
Martin II	10.0	98.2	66.7	41.7	55.8	30.0
Cattle Club	5.0	98.2	68.3	31.7	45.8	19.2
Southern Cross	0.0	90.7	63.3	24.2	40.0	13.3
<b>Experimental varieties — not available for farm use</b>						
KYFA9304	8.3	100.0	75.0	64.2	68.3	53.3*
KYFA9301	0.0	100.0	70.0	59.2	66.7	50.0*
KYFA9303	14.2	100.0	76.7	60.5	64.2	49.2*
KY31- <sup>2</sup>	18.3	100.0	75.0	51.7	63.3	45.8*
KYFA9302	1.7	100.0	70.0	38.3	58.3	43.3*
WVPB-TF-500	10.8	88.9	63.3	38.3	33.3	36.7*
TF8805	8.3	100.0	76.7	40.8	57.5	32.5
KYTF2	21.7	100.0	71.7	49.2	58.3	23.3
B-1	3.3	98.2	73.3	43.3	55.8	20.8
Mean	-	98.4	72.8	47.1	56.3	36.0
CV, %	-	2.35	11.99	23.20	18.9	45.2
LSD, 0.05	-	2.66	10.04	12.57	12.2	18.7
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.						
<sup>1</sup> Means of six replications using tiller samples taken on April 29, 1999.						
<sup>2</sup> "+" indicates variety is endophyte infected; "-" indicates variety is endophyte free.						

**Table 3. Percent stand for tall fescue and perennial ryegrass (PRG) varieties sown September 15, 1998, at Lexington, Kentucky, in a grazing tolerance study.**

Variety	Percent Endophyte Infection <sup>1</sup>	Percent Stand			
		Oct 4, 1999	Oct 10, 2000	Apr 2, 2001	Oct 15, 2001
<b>Commercial varieties — available for farm use</b>					
Kenhy	0.0	79.2	74.7	80.0	50.8*
Vulcan	6.7	73.3	61.7	71.7	48.3*
Select	0.0	81.7	65.3	71.7	47.5*
Johnstone	3.3	81.7	67.2	76.7	46.7*
KY31+ <sup>2</sup>	83.3	71.7	66.8	74.2	44.2*
Cattle Club	0.0	78.3	63.8	60.8	43.3*
Jesup EF	3.3	84.2	64.0	75.0	40.0
Bronson	0.0	73.3	42.0	57.5	16.7
TF33	0.0	74.2	31.7	48.3	15.0
Fuego	0.0	73.3	33.0	47.5	11.7
Polly II (PRG)	0.0	61.7	24.2	30.8	7.5
<b>Experimental varieties — not available for farm use</b>					
KYTF2	36.7	75.8	70.0	79.2	56.7*
Georgia 5-542 <sup>3</sup>	96.7	71.7	39.2	50.8	50.0*
Jesup 542 <sup>3</sup>	96.7	79.2	59.5	69.2	50.0*
Jesup EI	100.0	84.2	56.8	74.2	48.3*
Ampacpp1	6.7	84.2	60.5	57.5	46.7*
KyFA9301	13.3	80.0	66.3	72.5	45.0*
KY31- <sup>2</sup>	6.7	81.7	65.0	76.7	45.0*
Woodburn 97	23.3	39.2	41.3	54.2	39.2
Jesup 502 <sup>3</sup>	93.3	84.2	51.3	67.5	35.0
Mean	-	75.6	55.2	64.6	38.0
CV, %	-	10.2	18.5	14.3	35.2
LSD, 0.05	-	8.9	11.7	10.6	15.4

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

<sup>1</sup> Means of six replications using tiller samples taken on April 29, 1999.

<sup>2</sup> “-” indicates variety is endophyte free; “+” indicates variety is endophyte infected

<sup>3</sup> Novel endophyte tall fescue.

<b>Table 4. Percent stand of tall fescue varieties sown October 4, 1999, at Lexington, Kentucky, in a grazing tolerance study.</b>				
Variety	Seedling Vigor <sup>1</sup> Nov 4, 1999	Percent Stand		
		Oct 23, 2000	Apr 4, 2001	Oct 15, 2001
<b>Commercial varieties — available for farm use</b>				
Ky31+ <sup>2</sup>	3.5	85.2	82.5	65.8*
Duo (festulolium)	4.5*	82.1	82.5	65.8*
Cattle Club	2.5	85.7	80.0	56.7
Select	1.8	80.4	76.7	50.8
BAR9TMPO	2.0	83.3	78.3	45.8
Stargrazer	2.0	76.3	74.2	34.2
Festorina	2.8	74.4	71.7	32.5
<b>Experimental varieties — not available for farm use</b>				
KYFA 9304	3.0	87.1	85.0	69.2*
KYFA 9301	3.5	85.4	83.3	69.2*
KYTF 2	3.2	83.8	81.7	67.5*
Ky31- <sup>2</sup>	3.2	86.7	80.0	65.0*
Ga 156L 542 <sup>3</sup>	2.5	78.5	80.0	64.2*
Jesup 542 <sup>3</sup>	2.3	85.4	80.8	63.3*
Jesup 584 <sup>3</sup>	2.2	87.9	85.8	60.8*
Ga5 584 <sup>3</sup>	2.3	79.6	78.3	48.3
Ampac pp7	3.3	66.9	60.0	40.0
Ga7clone 542 <sup>3</sup>	2.7	73.0	68.3	39.2
Ga153E 542 <sup>3</sup>	2.5	70.4	68.3	35.0
BARFaBTR 6	2.8	78.0	70.8	16.3
BARFaBTR 7	3.0	77.1	72.5	15.8
Ampac pp8	3.8	43.3	50.8	14.2
Ampac pp3	4.8*	22.8	36.7	7.5
Mean	2.9	76.1	74.0	46.7
CV, %	15.10	11.50	9.07	23.10
LSD, 0.05	0.51	10.00	7.7	12.40
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.				
<sup>1</sup> 0 to 5 scale with 5 being most vigorous.				
<sup>2</sup> "+" indicates variety is endophyte infected; "-" indicates variety is endophyte free.				
<sup>3</sup> Novel endophyte tall fescue.				

**Table 5. Percent stand of tall fescue and timothy varieties sown September 19, 2000, at Lexington, Kentucky, in a grazing tolerance study.**

Variety	Percent Stand	
	Apr 9, 2001	Oct 15, 2001
<b>Commercial varieties — available for farm use</b>		
KY31+ <sup>1</sup>	89.2	74.2*
Cattle Club	90.0	67.5
Select	86.7	65.0
Hoedown	90.0	58.3
Stargrazer	87.5	56.7
Kokanee	86.7	45.0
Tuukka (timothy)	86.7	21.7
<b>Experimental varieties — not available for farm use</b>		
AGRFA110	86.7	80.0*
R4663 <sup>2</sup>	89.2	73.3*
KY31- <sup>1</sup>	90.0	72.5*
KYFA9401	90.0	71.7
KYFA9402	90.0	70.8
KYFA9301	89.2	70.0
KYFA9304	90.0	70.0
KYFA9403	90.0	66.7
KYTF2	89.2	65.8
Q4508 <sup>2</sup>	90.0	55.0
Mean	88.9	63.8
CV, %	2.09	11.07
LSD, 0.05	2.14	8.10
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.		
<sup>1</sup> "-" indicates variety is endophyte free; "+" indicates variety is endophyte infected		
<sup>2</sup> Novel endophyte tall fescue.		

**Table 6. Percent stand of perennial ryegrass, festulolium, and prairiegrass (*Bromus willdenowii*) varieties sown September 19, 2000, at Lexington, Kentucky, in a grazing tolerance study.**

Variety	Species	Percent Stand	
		Apr 9, 2001	Oct 17, 2001
<b>Commercial varieties — available for farm use</b>			
Linn	perennial ryegrass	90.0	70.8*
Spring Green	festulolium	90.0	70.0*
Duo	festulolium	90.0	64.2
Matua	prairiegrass	83.3	40.0
Citadel	perennial ryegrass	90.0	30.8
Polly II	perennial ryegrass	90.0	7.5
<b>Experimental varieties — not available for farm use</b>			
AGRLP103	perennial ryegrass	90.0	75.0*
AGRLH101	perennial ryegrass (hybrid)	90.0	55.8
AGRBW101	prairiegrass	87.5	50.8
Mean		89.0	51.7
CV, %		1.79	15.24
LSD, 0.05		1.86	9.19
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.			

Variety	Percent Stand				
	Sep 30, 1998	Nov 9, 1999	Oct 20, 2000	Apr 2, 2001	Oct 17, 2001
<b>Commercial varieties — available for farm use</b>					
Tekapo	78.3	78.3	65.0	63.3	35.0*
Benchmark	88.3	68.3	60.0	58.3	21.7
Ambrosia	78.3	63.3	54.7	47.5	19.2
Crown	85.0	65.0	53.3	60.0	17.5
Warrior	81.7	66.7	50.0	52.5	12.2
Takena	81.7	60.0	47.5	52.5	16.7
Condor	85.0	53.3	45.8	47.5	11.3
Haymate	85.0	58.3	44.2	50.8	15.2
<b>Experimental varieties — not available for farm use</b>					
OFI93E	88.3	73.3	63.0	68.3	40.8*
AV61	86.7	61.7	55.0	54.2	20.8
OFI93M	86.7	63.3	54.2	50.8	14.2
OFI93L	86.7	58.3	47.5	54.2	17.5
Mean	84.3	64.2	53.4	55.0	20.2
CV, %	5.82	10.30	17.58	16.43	48.83
LSD, 0.05	0.57	7.64	10.85	10.46	11.40

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

Variety	Percent Stand			
	Oct 4, 1999	Oct 20, 2000	Apr 4, 2001	Oct 15, 2001
<b>Commercial varieties — available for farm use</b>				
Boone	89.2	81.7	80.0	67.5*
Benchmark	83.3	78.3	74.2	60.0*
Shiloh	85.0	77.5	75.0	55.8*
Hallmark 1970 <sup>1</sup>	84.2	73.0	75.0	55.0*
Haymate	80.8	76.7	68.3	52.5*
Hallmark 1996 <sup>1</sup>	85.8	70.8	74.2	51.7*
Crown	80.8	74.2	69.2	50.0
Cheyenne	81.7	71.7	68.3	49.2
WP 300	77.5	71.0	68.3	49.2
Tekapo	85.0	70.8	62.5	47.5
Pizza	75.0	70.0	60.0	32.5
<b>Experimental varieties — not available for farm use</b>				
OG9501	86.7	82.5	77.5	67.5*
OG9705G	85.0	79.7	80.8	66.7*
KYO7G 23-335	82.5	81.7	76.7	64.2*
KYDG9303	84.2	72.7	75.0	51.7*
Ampac pp 2	80.0	48.0	44.2	23.3
Mean	82.9	73.8	70.6	52.8
CV, %	5.46	12.31	11.29	27.78
LSD, 0.05	5.20	10.44	9.16	16.85

\* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.  
<sup>1</sup> Seed for this test came from fields planted on dates indicated.

**Table 9. Seedling vigor and percent stand of orchardgrass and Kentucky bluegrass (KBG) varieties sown October 1, 1999, at Lexington, Kentucky, in a grazing tolerance study.**

Variety	Seedling Vigor <sup>1</sup>	Percent Stand		
	Nov 11, 1999	Oct 23, 2000	Apr 4, 2001	Oct 15, 2001
<b>Commercial varieties — available for farm use</b>				
Tekapo	1.67	83.33	78.3	62.5*
Hallmark 1996 <sup>2</sup>	2.67*	82.50	80.8	60.0*
Hallmark 1970 <sup>2</sup>	2.67*	84.17	84.2	58.3*
Haymate	1.83	77.83	78.3	55.8*
Benchmark	2.17	80.00	80.0	53.3*
Sidekick (KBG)	1.00	65.00	75.8	49.2*
<b>Experimental varieties — not available for farm use</b>				
KYO7G 23-335	2.00	80.00	80.0	63.3*
OG9705G	2.50*	82.50	82.5	61.7*
BAR Dgl 9 BTR G	1.00	86.67	86.7	57.5*
BAR Dgl 9 BTR F	2.00	82.00	79.2	52.5*
Mean	1.95	80.40	80.6	57.4
CV, %	18.44	6.62	6.15	21.6
LSD, 0.05	0.42	6.19	5.76	14.43
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.				
<sup>1</sup> 0 to 5 scale with 5 being most vigorous.				
<sup>2</sup> Seed for this test came from fields planted on dates indicated.				

**Table 10. Seedling vigor and percent stand of orchardgrass and prairiegrass (*Bromus willdenowii*) varieties sown September 19, 2000, at Lexington, Kentucky, in a grazing tolerance study.**

Variety	Seedling Vigor <sup>1</sup> October 31, 2000	Percent Stand	
		Apr 9, 2001	Oct 17, 2001
<b>Commercial varieties — available for farm use</b>			
Boone	3.2	90.0	75.8*
'CAS-LG31'	1.8	90.0	73.3*
Prairie	3.0	89.2	70.8*
Benchmark	3.0	90.0	68.3*
Haymate	2.5	90.0	55.8
<b>Experimental varieties — not available for farm use</b>			
OG9705G	2.0	89.2	72.5*
K5568K	3.0	90.0	72.5*
KYO7G 23-335	2.0	89.2	68.3*
K5633D (prairiegrass)	5.0*	76.7	15.0
K5632M (prairiegrass)	5.0*	83.3	14.7
Mean	3.1	87.8	58.7
CV, %	7.91	5.18	18.14
LSD, 0.05	0.28	5.29	12.38
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.			
<sup>1</sup> 0 to 5 scale with 5 being most vigorous.			



**Table 11. Persistence of tall fescue, perennial ryegrass (PRG), prairiegrass (*Bromus wildenowii*), festulolium, and timothy varieties under heavy grazing pressure across years and locations.**

		Lexington							
		1997 <sup>1</sup>		1998		1999		2000	
		Oct 2000 <sup>2</sup>	Oct 2001	Oct 2000	Oct 2001	Oct 2000	Oct 2001	Oct 2001	
Variety	Proprietor/KY Distributor								
<b>Commercial varieties — available for farm use</b>									
BAR 9TMPO	Barenbrug USA					*			
Bronson	Ampac Seed Company								
Cattle Club	unknown			*	*	*			
Citadel (PRG)	Donley Seed								
Duo (festulolium)	Ampac Seed Company					*	*		
Festorina	Advanta Seeds	*	*						
Fuego	Advanta Seeds								
Hoedown	Jenks Seed Connection								
Jesup EF	Pennington Seed			*					
Johnstone	Willamette Seed Co./Public			*	*				
Kenhy	Public			*	*				
Kokanee	Ampac Seed Company								
KY31+ (endophyte infected)	KY Agric. Exp. Sta./Public	*	*	*	*	*	*	*	*
Linn (PRG)	Public								*
Martin II	International Seeds, Inc.								
Matua (prairiegrass)	AgResearch (USA)								
Polly II (PRG)	FFR/Southern States								
Select	FFR/Southern States			*	*	*			
Southern Cross									
Spring Green (festulolium)	Turf-Seed, Inc.								*
Stargrazer	FFR/Southern States								
TF 33	Barenbrug								
Tuukka (timothy)	Ampac Seed Company								
Vulcan	International Seeds				*				
<b>Experimental varieties — not available for farm use</b>									
AGRLP103 (PRG)	AgResearch (USA)								*
AGRLH101 (PRG)	AgResearch (USA)								
AGRBW101 (prairiegrass)	AgResearch (USA)								
AGRFA110	AgResearch (USA)								*
Ampac pp1 mix	Ampac Seed Company				*				
Ampac pp3 mix	Ampac Seed Company								
Ampac pp7 mix	Ampac Seed Company								
Ampac pp8 mix	Ampac Seed Company								
B-1	Olsen-Fennell Seeds Inc.								
BARFaBTR 6	Barenbrug USA					*			
BARFaBTR 7	Barenbrug USA								
GA 153E 542	GA Agric. Exp. Sta./Experimental								
GA 156L 542	GA Agric. Exp. Sta./Experimental					*	*		
GA 5 542	GA Agric. Exp. Sta./Experimental				*				
GA 5 584	GA Agric. Exp. Sta./Experimental					*			
GA 7 clone 542	GA Agric. Exp. Sta./Experimental								
GA Jesup E1	GA Agric. Exp. Sta./Experimental				*				
Jesup 502	GA Agric. Exp. Sta./Experimental								
Jesup 542	GA Agric. Exp. Sta./Experimental				*	*	*		
Jesup 584	GA Agric. Exp. Sta./Experimental					*	*		
KY31- (endophyte free)	KY Agric. Exp. Sta./Experimental	*	*	*	*	*	*	*	*

(continued on page 10)

**Table 11. Persistence of tall fescue, perennial ryegrass (PRG), prairiegrass (*Bromus wildenowii*), festulolium, and timothy varieties under heavy grazing pressure across years and locations. (Continued)**

		Lexington						
		1997 <sup>1</sup>		1998		1999		2000
		Oct 2000 <sup>2</sup>	Oct 2001	Oct 2000	Oct 2001	Oct 2000	Oct 2001	Oct 2001
Variety	Proprietor/KY Distributor							
<b>Experimental varieties — not available for farm use</b>								
KYFA9304	KY Agric. Exp. Sta./Experimental	*	*			*	*	
KYFA9401	KY Agric. Exp. Sta./Experimental							
KYFA9402	KY Agric. Exp. Sta./Experimental							
KYFA9403	KY Agric. Exp. Sta./Experimental							
KYTF 2	KY Agric. Exp. Sta./Experimental			*	*	*	*	
Q4508	Wrightson Seed Ltd.							
R4663	Wrightson Seed Ltd.							*
TF 8805	FFR Cooperative							
Woodburn 97	Western Production Inc.							
WVPB TF500	Western Production Inc.		*					

<sup>1</sup> Establishment year.

<sup>2</sup> Date of visual estimation of percent stand.

\* Not significantly different from the most persistent variety in the test. Shaded boxes indicate that the variety was not in the test. Open boxes indicate the variety was in the test but persistence was significantly less than the top-ranked variety in the test.

**Table 12. Persistence of orchardgrass, Kentucky bluegrass (BG), and prairiegrass (*Bromus willdenowii*) varieties under heavy grazing pressure across years and locations.**

		Lexington						
		1997 <sup>1</sup>		1998		1999		2000
Variety	Proprietor/KY Distributor	Oct 2000 <sup>2</sup>	Oct 2001	Oct 2000	Oct 2001	Oct 2000	Oct 2001	Oct 2001
<b>Commercial varieties — available for farm use</b>								
Ambrosia	Pennington Seeds	*						
Benchmark	FFR/Southern States	*		*	*		*	*
Boone	KY Agric. Exp. Sta./Experimental			*	*			*
'CAS-LG31'	Jenks Seed Connection							*
Cheyenne	Western Production Inc.							
Condor	Hansford Seed Co.							
Crown	Scott Seed Co./Sphar Seed Co.			*				
Hallmark 1996 <sup>3</sup>	James VanLeeuwen				*	*	*	
Hallmark 1970	James VanLeeuwen			*	*	*	*	
Haymate	FFR/Southern States			*	*		*	
Pizza	Advanta Seeds West							
Prairie	Turner Seed Company							*
Shiloh	Green Seed			*	*			
Sidekick (BG)	Ampac Seeds						*	
Takena	Smith Seed							
Tekapo	Modern Forage Systems/Oldfields Seed	*	*			*	*	
Warrior	Olsen-Fennel Seeds Inc.							
WP 300	Western Productions, Inc.							
<b>Experimental varieties — not available for farm use</b>								
Ampac pp2	Ampac Seeds							
AV61	Western Production Inc.	*						
BAR Dgl 9 BTR F	Barenbrug USA					*	*	
BAR Dgl 9 BTR G	Barenbrug USA					*	*	
K5568K	Ampac Seeds							*
K5632M (prairiegrass)	Ampac Seeds							
K5633D (prairiegrass)	Ampac Seeds							
KYDG9303	KY Agric. Exp. Sta./Experimental			*	*			
KYO7G 23-335	KY Agric. Exp. Sta./Experimental			*	*		*	*
OFI93E	Olsen-Fennel	*	*					
OFI93L	Olsen-Fennel							
OFI93M	Olsen-Fennel	*						
OG9501	FFR Cooperative			*	*			
OG9705G	FFR Cooperative			*	*	*	*	*

<sup>1</sup> Establishment year.

<sup>2</sup> Date of visual estimation of percent stand.

\* Not significantly different from the most persistent variety in the test. Shaded boxes indicate that the variety was not in the test. Open boxes indicate the variety was in the test but persistence was significantly less than the top-ranked variety in the test.

<sup>3</sup> Seed for this test came from fields planted on dates indicated.

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Issued 1-2002, 2000 copies