

Table 2. Preference rankings determined in the first week of grazing in Spring 2004 and Spring 2005 for cool season grass varieties sown September 17, 2003 at Lexington, Kentucky.

Variety	Species	Preference Rank ¹			Percent Stand Oct. 25, 2007 ³
		Spring 2004	Spring 2005	2-yr Rank ²	
Haymate	orchardgrass	2	1	1	58
Barfleo	timothy	1	6	2	17
Peak	smooth brome	3	4	3	7
KYFA 9819	festulolium	5	3	4	16
Ginger	KY bluegrass	4	5	5	54
TM 9901	timothy	8	2	6	17
KYFA 0006	tall fescue	7	7	7	74
KYFA 9602	tall fescue	6	11	8	37
KYFA 9611	tall fescue	9	8	9	61
KYFA 9304	tall fescue	10	10	10	66
Select	tall fescue	12	12	11	65
KYTF 2	tall fescue	15	9	12	63
KY 31- ⁴	tall fescue	11	14	13	69
Common	KY bluegrass	13	13	14	58
AR 1	tall fescue	14	15	15	73

¹ 1=most preferred, 15=least preferred; see text for explanation of ranking process.
² 1=most preferred based on 2-year total; when two varieties had the same 2-year total, ties were broken using the 2004 rank.
³ Stand survival after 4 years of continuous grazing.
⁴ "-" indicates variety is endophyte free.

varieties of timothy in these trials did not. The sensitivity of timothy to heavy grazing was not surprising, as it is an erect species and sensitive to heavy defoliation. Perennial ryegrasses, Kentucky bluegrasses, and festuloliums vary in tolerance to grazing.

The lack of a defined "grazing-tolerant variety" for these species makes absolute interpretation difficult. For example, endophyte-infected "Kentucky 31" (KY31+) is known to be grazing tolerant. However, there are no proven grazing-tolerant varieties for the other species. Still, certain varieties were clearly more tolerant than others.

Differences in tolerance among varieties could be due to true grazing tolerance but also to preference, especially where highly palatable species such as bluegrass and ryegrass were in the same test as tall fescue. Because of potential preference between species, comparison between varieties is most accurate within a species. These data should be taken as an indication of tolerance to periods of overgrazing. For best pasture stands, forage grasses should not be abused as in this study.

Table 3. Seedling vigor, grazing preference and stand persistence of forage grasses sown September 6, 2007 in a horse grazing tolerance study at Lexington, Kentucky.

Variety	Species	Seedling Vigor ¹ Nov 16, 2007	Grazing Preference ²			Percent Stand								
			2009	2010	2011	2007	2008		2009		2010		2011	
			Jun 11	May 11	May 2	Nov 16	Apr 7	Oct 20	Apr 9	Nov 19	Apr 9	Dec 3	Mar 22	Nov 9
Commercial Varieties-Available for Farm Use														
KY31+ ³	tall fescue	4.2	1.8	1.2	2.3	92	93	94	98	97	97	97	94	97*
BarOptima PLUS E34	tall fescue	4.0	1.0	2.5	3.7	87	86	84	89	89	90	88	89	88*
Throughblue	KY bluegrass	1.3	4.8	7.7	7.0	66	73	80	93	92	93	86	83	83*
Select	tall fescue	3.0	3.2	1.2	2.2	77	74	60	83	82	81	73	63	62
Nanryo	tall fescue	2.4	3.8	1.0	1.6	65	72	56	61	60	65	59	55	58
Barderby	KY bluegrass	1.0	6.8	4.7	4.8	79	74	63	77	59	65	60	54	53
Benchmark Plus	orchardgrass	3.3	5.2	1.8	5.0	89	84	83	88	81	86	41	41	38
Lato	KY bluegrass	1.8	5.4	6.0	7.4	70	71	43	38	37	49	33	33	33
Granddaddy	perennial ryegrass	4.3	6.2	8.5	-	78	83	71	35	37	39	7	1	1
Experimental Varieties														
KYFA 9301/AR584	tall fescue	4.3	2.2	1.0	1.5	91	86	85	94	95	83	84	83	89*
KYFA 9821/AR584	tall fescue	3.7	3.8	1.0	2.3	92	91	85	89	90	90	87	76	86*
KY31- ³	tall fescue	4.2	2.0	1.0	2.0	87	87	82	85	85	84	83	81	81*
Mean		3.3	3.8	3.0	3.6	81.9	81.4	73.9	77.5	75.2	76.8	66.4	62.8	64.6
CV,%		21.5	52.4	33.4	43.5	16.5	19.5	21.6	19.0	20.8	22.3	26.5	31.2	29.9
LSD,0.05		0.9	2.3	1.2	1.9	16.4	18.7	18.8	17.0	18.1	19.8	20.4	22.6	22.9

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
² Preference score based on a scale of 1 to 9 with 9 indicating all forage was grazed. Grazing time before rating; 2009-25 days, 2010-19 days, 2011-12 days.
³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. AR584 is a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other fescue varieties in this test do not contain an endophyte.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 4. Seedling vigor, grazing preference and stand persistence of forage grasses sown September 11, 2008 in a horse grazing tolerance study at Lexington, Kentucky.

Variety	Species	Seedling Vigor ¹ Oct 14, 2008	Grazing Preference ²			Percent Stand						
			2009	2010	2011	2008	2009		2010		2011	
			Jun 5	May 11	May 2	Oct 14	Apr 9	Nov 19	Apr 8	Dec 3	Mar 15	Nov 9
Commercial Varieties- Available for Farm Use												
Cowgirl	tall fescue	3.5	3.5	1.5	1.0	96	98	99	99	97	97	98*
Select	tall fescue	3.2	2.7	1.0	1.0	95	98	100	100	99	97	98*
KY31+ ³	tall fescue	2.7	5.5	1.2	1.2	93	93	95	96	96	96	97*
Jesup MaxQ	tall fescue	2.8	4.5	1.0	1.0	90	93	91	94	93	93	94*
Benchmark Plus	orchardgrass	3.3	2.5	4.0	2.2	93	98	93	96	59	73	49
Ginger	KY bluegrass	1.0	6.8	3.3	1.5	27	79	74	70	45	43	43
Granddaddy	perennial ryegrass	4.8	3.0	7.8	6.0	97	100	97	88	35	30	22
Climax	timothy	2.3	4.5	6.8	4.2	94	98	93	95	9	18	8
Giant	bentgrass species	2.3	5.7	6.8	2.0	89	88	83	86	8	11	7
Experimental Varieties												
KY31- ³	tall fescue	2.3	4.3	1.7	1.0	93	98	98	98	97	95	99*
TF 0201	tall fescue	3.2	4.7	1.0	1.0	93	94	93	96	85	95	94*
B-8.0082	colonial bentgrass	1.5	7.7	8.3	5.0	88	85	93	94	93	92	91*
TM 0501G	timothy	1.3	5.0	6.7	4.5	78	85	91	93	12	17	7
TM 0502G	timothy	1.2	5.5	6.0	6.0	52	79	80	84	10	8	3
Mean		2.6	4.7	4.1	2.6	84.0	91.8	91.4	92.0	59.7	62.2	56.4
CV,%		26.0	31.6	27.2	44.6	17.3	11.8	8.9	11.7	24.9	23.4	22.9
LSD,0.05		0.8	1.7	1.3	1.6	16.8	12.5	9.4	12.4	17.2	16.9	15.5

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
² Preference score based on a scale of 1 to 9 with 9 indicating all forage was grazed. Grazing time before rating; 2009-25 days, 2010-19 days, 2011-12 days.
³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ contains a non-toxic endophyte. The other fescue varieties in this test do not contain an endophyte.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Ranking Varieties by Preference

Differences in tolerance among varieties could be due to true grazing tolerance but also to preference, as horses may graze the preferred varieties more intensely than the less preferred varieties. In spring 2004 and spring 2005, the varieties sown in fall 2003 were used to assess the grazing preferences of horses. During the first week of grazing in both years, variety plots were measured for forage height and scored for forage density and evidence of grazing. Measurements were made before horses were given access to plots and on days 2, 5, and 7. Forage density was scored from 0 to 10, where 10 indicated that 100 percent of the plot was covered with the seeded variety and 0 indicated that there were no plants of the seeded variety. Similarly, grazing intensity was scored from 0 to 10; where 10 indicated that 100 percent of the plants had been grazed and 0 indicated that none of the plants had been grazed.

Preference rankings were generated using a combination of measurements including the percent reduction in forage

Table 5. Seedling vigor, grazing preference and stand persistence of forage grasses sown September 4, 2009 in a horse grazing tolerance study at Lexington, Kentucky.

Variety	Species	Seedling Vigor ¹ Oct 12, 2009	Grazing Preference ²		Percent Stand				
			2010	2011	2009	2010		2011	
			Jun 11	May 2	Oct 12	Apr 8	Dec 3	Mar 15	Nov 9
Commercial Varieties- Available for Farm Use									
Jesup MaxQ	tall fescue	2.8	1.0	1.0	97	99	99	99	100*
KY31+ ³	tall fescue	3.8	1.2	2.5	100	100	100	100	100*
Select	tall fescue	3.5	0.5	1.5	96	99	99	99	99*
Benchmark Plus	orchardgrass	3.2	2.7	1.8	98	99	93	92	92*
Tekapo	orchardgrass	2.0	5.7	5.7	97	92	91	91	85
Profit	orchardgrass	2.8	5.7	4.3	97	98	89	91	84
Power	perennial ryegrass	5.0	5.0	7.2	100	100	85	88	81
Granddaddy	perennial ryegrass	4.5	3.0	5.3	101	100	88	92	79
Persist	orchardgrass	2.5	1.7	1.7	95	99	93	91	78
Ginger	KY bluegrass	1.0	8.2	3.0	65	86	63	79	77
Giant	bentgrass species	1.2	6.3	2.8	81	90	84	83	45
Climax	timothy	2.0	4.7	4.2	91	94	58	44	26
Experimental Varieties									
AgR 1521	tall fescue	2.7	0.7	1.0	98	100	99	99	100*
KY31- ³	tall fescue	4.0	0.8	1.8	100	100	100	99	100*
AgR 1502	tall fescue	2.8	1.0	1.5	99	100	99	99	100*
KYFA 0701	tall fescue	3.8	0.8	2.5	100	100	99	100	100*
B-8.0082	colonial bentgrass	1.2	8.5	5.8	69	84	88	82	93*
Mean		3.0	3.4	3.2	94.2	96.4	90.2	89.9	84.6
CV,%		18.0	29.2	35.5	9.9	5.6	9.2	9.5	10.1
LSD,0.05		0.7	1.1	1.3	11.4	6.2	9.5	9.8	9.8

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
² Preference score based on a scale of 1 to 9 with 9 indicating all forage was grazed. Grazing time before rating; 2010-7 days, 2011-12 days.
³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ, AgR1502 and AgR1521 contain a non-toxic endophyte. The other fescue varieties in this test do not contain an endophyte.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

height between day 0 and day 7 (greatest reduction = most preferred); the unit decrease in forage density from day 0 to day 7 (largest unit reduction = most preferred); and the grazing intensity scores from day 7 (highest grazing score = most preferred). The rankings for each characteristic were then totaled, and the varieties with the lowest totals were considered most preferred. Table 2 shows the preference rankings determined in spring 2004 and spring 2005 for the forage varieties sown in fall 2003. A two-year ranking was also determined based on the total from the 2004 and 2005 rankings. When two forages had the same two-year total, the tie was broken using the 2004 score. In general, tall fescue varieties were less preferred by horses than timothy and orchardgrass. However, only one variety of orchardgrass was included in this test. Common bluegrass also appeared to have low palatability to horses, although the "Ginger" variety of bluegrass was well accepted. This acceptance may have been influenced by maturity.

To determine whether grazing preferences might affect the grazing tolerance of cool-season grass varieties, the relationship of the two-year grazing preference ranking to the percent stand remaining in fall 2006 was plotted in Figure 1. There is a moderate relationship between preference rank and percent stand ($R^2 = 0.49$); least preferred varieties had the highest percent stand after three grazing seasons. Two varieties appear to have performed differently than the others: "Haymate" orchardgrass had a relatively high stand percentage (73 percent), even though it was highly preferred; the "Peak" variety of smooth bromegrass had an extremely low stand percentage (10 percent) compared to all other varieties.

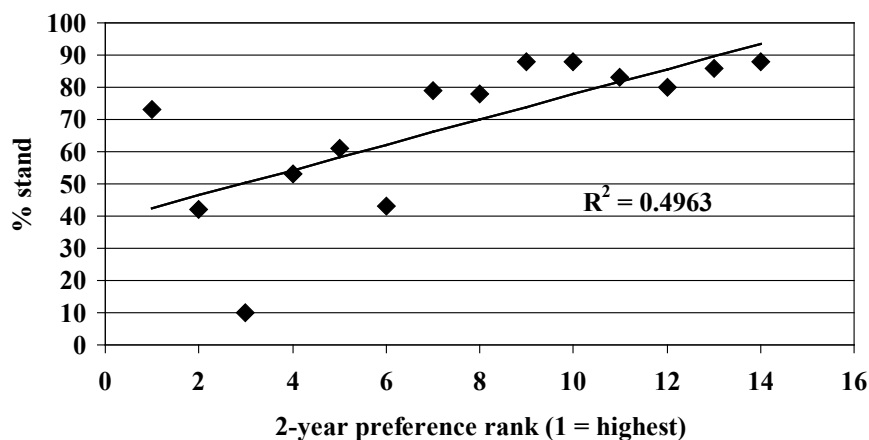
Tables 3, 4, 5, and 6 include preference ratings made two to three weeks after horses started grazing. These ratings do not provide information on initial preference but do provide a good indication of the varieties that the horses repeatedly grazed during the first few weeks on pasture.

Table 6. Seedling vigor, grazing preference and stand persistence of forage grasses sown September 1, 2010 in a horse grazing tolerance study at Lexington, Kentucky.

Variety	Species	Seedling Vigor ¹ Oct 26, 2010	Grazing Preference ² May 2, 2011	Percent Stand		
				2010		2011
				Oct 26	Mar 15	Nov 9
Commercial Varieties-Available for Farm Use						
Jesup EF	tall fescue	3.2	1.0	99	100	100*
KY31+ ³	tall fescue	2.8	1.2	99	100	100*
Tekapo	orchardgrass	3.3	2.7	85	100	100*
Jesup MaxQ	tall fescue	1.9	1.0	96	97	99*
BarOptima PLUS E34	tall fescue	2.2	3.7	97	99	99*
Persist	orchardgrass	3.2	1.7	99	99	99*
Select	tall fescue	2.8	1.0	98	98	99*
Power	perennial ryegrass	5.0	6.7	100	100	98*
Profit	orchardgrass	3.2	2.8	99	99	97*
Granddaddy	perennial ryegrass	4.3	6.0	99	99	96*
Benchmark Plus	orchardgrass	4.3	1.7	100	100	84
Climax	timothy	1.9	5.8	95	94	77
Ginger	KY bluegrass	0.9	5.2	71	71	67
Experimental Varieties						
KY31- ³	tall fescue	3.3	1.0	99	100	100*
AgR 1521	tall fescue	2.3	1.2	96	98	99*
TM 0502G	timothy	0.8	7.0	36	44	34
Mean		2.8	3.1	91.6	93.5	90.4
CV,%		27.6	28.8	12.5	8.0	13.4
LSD,0.05		0.9	1.0	13.2	8.6	13.9

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
² Preference score based on a scale of 1 to 9 with 9 indicating all forage was grazed before rating; 12 days.
³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ and AgR1521 contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other fescue varieties in this test do not contain an endophyte.
 * Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Figure 1. Relationship of preference ranking to percent stand remaining, Fall 2006.



Note: species on above figure are as follows:
 1-orchardgrass, 2-timothy, 3-smooth brome, 4-festulolium,
 5-KY bluegrass, 6-timothy, 7-13-tall fescue, 14-KY bluegrass

Summary Table

Table 7 summarizes information about distributors and persistence across years for all varieties in these tests. Varieties are listed in alphabetical order, with ex-

perimental 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); an "x" in the block indicates the variety was in the test but was significantly different from the most

Table 7. Summary of persistence of forage grasses under heavy grazing pressure by horses across years at Lexington, Kentucky.

Variety	Species	Proprietor/ KY Distributor	2007 ¹												2008			2009			2010																						
			Apr ²	Oct	Apr	Nov	2009	Apr	Nov	2010	Apr	Nov	2011	Dec	Mar	2011	Apr	Nov	2010	Dec	Mar	2011	Apr	Nov	2010	Dec	Mar	2011	Apr	Nov	2010	Dec	Mar	2011	Apr	Nov	2010	Dec	Mar	2011			
Commercial Varieties-Available for Farm Use																																											
Barberby	KY bluegrass	Barenbrug USA	X ⁴	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
BarOptima PLUS E34	tall fescue	Barenbrug USA	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
Benchmark Plus	orchardgrass	FFR/Southern States	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Cowgirl	tall fescue	Rose-Agri Seed																																									
Climax	timothy	Canada Agr. Res. Station																																									
Giant	bentgrass species	Rose-Agri Seed																																									
Ginger	KY bluegrass	ProSeeds Marketing																																									
Granddaddy	perennial ryegrass	Smith Seed Services	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Jesup EF	tall fescue	Pennington Seed																																									
Jesup Max Q	tall fescue	Pennington Seed																																									
KY 31+ ³	tall fescue	Public	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Lato	KY bluegrass	Turf Seed Inc.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Namryo	tall fescue	Japanese Forage Seed/ USDA-ARS, El Reno,OK	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Persist	orchardgrass	Smith Seed Services																																									
Power	perennial ryegrass	Ampac Seed Company																																									
Profit	orchardgrass	Ampac Seed Company																																									
Select	tall fescue	FFR/Southern States	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Tekapo	orchardgrass	Ampac Seed Company																																									
Throughblue	KY bluegrass	ProSeeds Marketing	X	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Experimental Varieties																																											
AgR 1502	tall fescue	AgResearch	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
AgR 1521	tall fescue	AgResearch	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B-8.0082	colonial bentgrass	Blue Moon Farms																																									
KY 31- ³	tall fescue	KY Agric. Exp. Station	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
KYFA 0701	tall fescue	KY Agric. Exp. Station																																									
TF 0201	tall fescue	Winfield Solutions/FFR																																									
TM 0501G	timothy	FFR/Southern States																																									
TM 0502G	timothy	FFR/Southern States																																									

¹ Establishment year

² Date of rating of percent stand.

³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ, AgR1502 and AgR1521 contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other fescue varieties in this table do not contain an endophyte.

⁴ x in the block indicates the variety was in the test but the stand survival was significantly less than the most persistent variety. An open block indicates the variety was not in the test.

* Not significantly different from the most persistent variety in the test.

Table 8. Summary of 1999-2011 Kentucky Tall Fescue Horse Grazing Tolerance Trials in Lexington (stand persistence shown as a percent of the stand rating of KY 31-).

Variety	Proprietor/KY Distributor	1999 ^{1,2}	2001	2002	2003	2004	2005	2006	2007	2008	Mean ³ (#trials)
		3-yr ⁴	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	3-yr	
BarOptima PLUS E34	Barenbrug								107		–
Bronson	Ampac Seed	80									–
Cattle Club	Green Seed	95									–
Cowgirl	Rose Agri-Seed									99	–
Festorina	Advanta Seed	102									–
Jesup MaxQ	Pennington Seed			98			78			95	90(3)
Johnstone	ProSeeds		88								–
KY31+ ⁵	KY Agri. Exp.Sta.		105				102	109	120	99	107(5)
KY31- ⁵	KY Agri. Exp.Sta.	100	100	100	100	100	100	100	100	100	100(9)
Nanryo	Japanese Grassland For. Seed/ USDA-ARS, El Reno, OK								72		–
Seine	Seed Research of OR					135					–
Select	FFR/Southern States	82		109	94	99	73	104	76	99	92(8)
Stargrazer	FFR/Southern States	70									–
Stockman	Seed Research of OR					125					–

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 2001 was grazed 4 years so the final report would be "2005 Cool-Season Grass Horse Grazing Tolerance Report" archived in the KY Forage website 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

⁵ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ contains a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other fescue varieties in this table do not contain an endophyte.

persistent variety. A single asterisk (*) means that the variety was not significantly different from the most persistent variety in that study based on the 0.05 LSD. It is best to choose a variety that has performed well over several years.

Table 8 is a summary of stand persistence data from 1999 to 2011 of commercial tall fescue varieties that have been entered in the Kentucky trials. In Table 8 the data is listed as a percentage of KY31-. In other words, in each trial KY31+ is 100 percent. Varieties with percentages over 100 persisted better than KY31-, and varieties with percentages less than 100 persisted less than KY31-. Direct, statistical comparisons of varieties cannot be made using the summary Table 8, but these comparisons do help identify varieties for further consideration. Varieties that have performed better than average over many years have very stable performance; 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 Table 8 to determine which yearly report to refer to.

Summary

These studies indicate that there are varieties of cool-season grasses that can tolerate overgrazing by horses for three to four seasons and still maintain reasonable stands. 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 generally recommended that tall fescue, orchard-grass, or other cool-season grasses be continuously overgrazed as was done in this trial. Although several varieties expressed tolerance to the level of grazing pressure used in these trials, overgrazing

greatly reduces forage production. This information should be an indication of those varieties that will better withstand overgrazing when it occurs.

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

Authors

- G.L. Olson, Research Specialist, Forages
- S.R. Smith, Extension Professor, Forages
- L.M. Lawrence, Professor, Horse Nutrition
- G.D. Lacefield, Extension Professor, Forages
- T.D. Phillips, Associate Professor, Tall Fescue Breeding



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