

2006 Cool-Season Grass Horse Grazing Tolerance Report

G.L. Olson, S.R. Smith, L.M. Lawrence, G.D. Lacefield, T.D. Phillips, and B. Coleman

Introduction

Cool-season grasses such as bluegrass, tall fescue, and orchardgrass are dominant pasture grasses for horses in Kentucky. While variety evaluations for yield have been carried out for many years, little work has been done to establish the effect of variety on persistence when subjected to close, continuous grazing by horses.

The purpose of this report is to summarize current research on the grazing tolerance of varieties of tall fescue, orchardgrass, and other species when subjected to continuous heavy grazing pressure by horses within the grazing season. The main focus will be on stand survival.

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

Tests were established in Lexington in the fall of 2002, 2003, 2004, and 2005. The soils at this location are well-drained silt loams and are well suited to tall fescue, orchardgrass, and other cool-season grasses. Plots were 5 by 15 feet in a randomized complete block design, with each variety replicated six times. Plots were seeded at the recommended seeding rate per acre and were planted into a prepared seedbed using a disk drill. Grazing was continuous from April to October.

Plots were grazed down to below 4 inches quickly and were maintained at 2 to 4 inches (sometimes less) for the remainder of the grazing season. Supplemental hay was fed during periods of slowest growth. Visual ratings of percent stand were made in the fall several weeks after the horses were removed to check stand survival after the grazing season and in the spring prior to grazing to check on winter survival and spring growth. Since trials were seeded in rows, persistence ratings were based on density within a row and not total ground cover. Grass plots were fertilized with 60 pounds of actual N per acre in the spring and 30 to 40 pounds of actual N in early November after horses were removed from the pasture. Other fertilizers (lime, P, and K) were applied as needed.

Results and Discussion

Weather data for Lexington for 2003, 2004, 2005, and 2006 are presented in Table 1.

Data on percent stand are presented in Tables 2, 3, 4, and 5.

Statistical analyses were performed on all entries (including experimentals) to determine if numerical 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.

In general, commercial varieties of tall fescue and orchardgrass tolerated overgrazing well (Tables 2, 3, and 4), but the varieties of timothy and prairie brome (prairiegrass) [*Bromus willdenoii*] in these trials did not. The sensitivity of timothy and prairie brome to heavy grazing was not surprising, as these are both erect species and sensitive to heavy defoliation. Perennial ryegrasses and Kentucky bluegrasses 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 are alongside tall fescue. 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.

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 the 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 day 2, 5, and 7. Forage density was scored from 0 to 10, where 10 indicated that 100% 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% of the plants had been grazed and 0 indicated that none of the plants had been grazed.

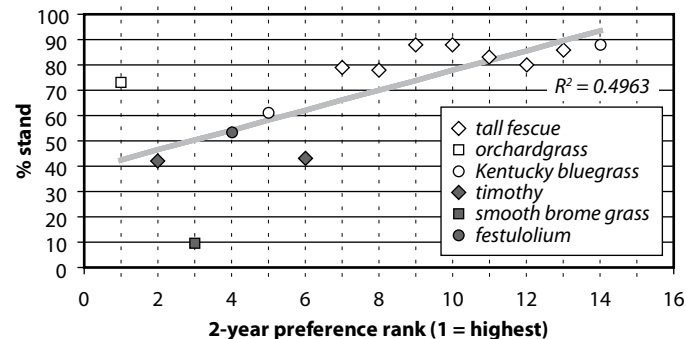
Preference rankings were generated using a combination of measurements including: the % reduction in forage height between day 0 and day 7 (greatest reduction = most preferred); the unit decrease in forage density from day 0 to day 7 (largest unit reduction = most preferred); and the grazing intensity 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 4 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 which was 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 or 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.

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 % stand remaining in fall 2006 was plotted in Figure 1. There is a moderate relationship between preference rank and % stand ($R^2 = 0.49$); least preferred varieties had the highest % stand after three grazing seasons. Two varieties appear to have performed differently than the others; “Haymate” orchardgrass had a relatively high stand percentage (73%) even though it was highly preferred. The “Peak” variety of smooth brome grass had an extremely low stand percentage (10%) compared to all other varieties.

Summary Table

Table 6 summarizes information about distributors and persistence across 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

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



an “x” in the block indicates the variety was in the test but was significantly different from 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.

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, orchardgrass, 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, UK Department of Plant and Soil Sciences
- S.R. Smith, Extension Associate Professor, Forages, UK Department of Plant and Soil Sciences
- L.M. Lawrence, Professor, Horse Nutrition, UK Department of Animal and Food Sciences
- G.D. Lacefield, Extension Professor, Forages, UK Department of Plant and Soil Sciences
- T.D. Phillips, Associate Professor, Tall Fescue Breeding, UK Department of Plant and Soil Sciences
- B. Coleman, Extension Associate Professor, Horse Specialist, UK Department of Animal and Food Sciences

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. Seedling vigor rating and percent stand of forage grasses sown Sept. 19, 2002, at Lexington, Kentucky, in a horse grazing tolerance study.

| Variety | Species | Seedling Vigor ¹ Oct 31, 2002 | Percent Stand | | | | | | | |
|--|--------------|---|---------------|--------|--------|-------|--------|--------|-------|-------|
| | | | 2003 | | 2004 | | 2005 | | 2006 | |
| | | | Mar 25 | Oct 30 | Mar 26 | Nov 8 | Mar 30 | Oct 31 | Apr 4 | Nov 3 |
| Commercial Varieties—Available for Farm Use | | | | | | | | | | |
| Select | tall fescue | 4.2 | 90 | 78 | 94 | 85 | 83 | 87 | 95 | 94* |
| Kenblue (certified) | KY bluegrass | 1.5 | 88 | 36 | 53 | 22 | 63 | 70 | 93 | 86* |
| Jesup MaxQ ² | tall fescue | 3.7 | 90 | 71 | 93 | 80 | 78 | 82 | 89 | 84* |
| Barderbly | KY bluegrass | 1.5 | 88 | 45 | 46 | 30 | 53 | 65 | 77 | 77 |
| Potomac (certified) | orchardgrass | 3.8 | 89 | 67 | 87 | 73 | 72 | 78 | 73 | 76 |
| Potomac (uncertified) | orchardgrass | 4.0 | 88 | 65 | 85 | 67 | 70 | 73 | 72 | 74 |
| Benchmark Plus | orchardgrass | 4.0 | 89 | 74 | 88 | 73 | 75 | 83 | 80 | 72 |
| Haymate | orchardgrass | 3.3 | 85 | 68 | 79 | 65 | 70 | 73 | 70 | 63 |
| Crown Royale Plus | orchardgrass | 3.8 | 89 | 73 | 88 | 73 | 73 | 77 | 76 | 63 |
| Tekapo | orchardgrass | 2.8 | 82 | 55 | 78 | 63 | 54 | 68 | 72 | 60 |
| Benchmark | orchardgrass | 3.5 | 86 | 60 | 78 | 60 | 65 | 68 | 67 | 55 |
| Duo | festulolium | 5.0 | 90 | 79 | 91 | 80 | 85 | 83 | 88 | 53 |
| Experimental Varieties | | | | | | | | | | |
| KYFA 9304 | tall fescue | 4.7 | 90 | 79 | 95 | 88 | 87 | 90 | 95 | 91* |
| KYPP 9901 | KY bluegrass | 1.2 | 84 | 8 | 17 | 13 | 58 | 77 | 86 | 88* |
| KY 31 E- ² | tall fescue | 4.3 | 90 | 79 | 94 | 78 | 85 | 88 | 95 | 86* |
| VB 5649 | KY bluegrass | 1.7 | 88 | 34 | 13 | 13 | 42 | 63 | 73 | 77 |
| HB 120 | KY bluegrass | 1.3 | 89 | 26 | 19 | 16 | 47 | 68 | 75 | 69 |
| HB 121 | KY bluegrass | 1.5 | 90 | 19 | 16 | 9 | 32 | 43 | 56 | 50 |
| Mean | | 3.1 | 88 | 56 | 67 | 55 | 66 | 74 | 80 | 73 |
| CV,% | | 15.9 | 3 | 17 | 10 | 18 | 17 | 19 | 16 | 20 |
| LSD,0.05 | | 0.6 | 3 | 11 | 8 | 11 | 13 | 16 | 14 | 17 |

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

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

² KY 31 E- is the variety of KY 31 where the toxic endophyte has been removed. Jesup MaxQ is a variety that contains a nontoxic endophyte that provides stand persistence with no animal toxicity. All other fescue varieties in this test do not contain an endophyte.

Table 3. Seedling vigor rating and percent stand of forage grasses sown Sept. 17, 2003, at Lexington, Kentucky, in a horse grazing tolerance study.

| Variety | Species | Seedling Vigor ¹ Oct 31, 2003 | Percent Stand | | | | | |
|--|--------------|--|---------------|-------|--------|--------|-------|-------|
| | | | 2004 | | 2005 | | 2006 | |
| | | | Mar 26 | Nov 8 | Mar 30 | Oct 31 | Apr 4 | Nov 3 |
| Commercial Varieties—Available for Farm Use | | | | | | | | |
| Common bluegrass | KY bluegrass | 3.0 | 99 | 75 | 87 | 97 | 96 | 88* |
| Select | tall fescue | 3.7 | 99 | 88 | 88 | 97 | 99 | 83* |
| Haymate | orchardgrass | 4.2 | 98 | 83 | 82 | 95 | 91 | 73* |
| Ginger | KY bluegrass | 2.5 | 81 | 10 | 65 | 90 | 93 | 61 |
| Barfleo | timothy | 3.0 | 96 | 72 | 87 | 42 | 63 | 42 |
| Peak | smooth brome | 3.0 | 91 | 37 | 30 | 14 | 13 | 10 |
| Experimental Varieties | | | | | | | | |
| KYFA9304 | tall fescue | 4.8 | 98 | 90 | 88 | 100 | 99 | 88* |
| KYFA9611 | tall fescue | 3.5 | 96 | 88 | 88 | 99 | 97 | 88* |
| KY 31 E- ² | tall fescue | 5.0 | 99 | 88 | 90 | 100 | 100 | 86* |
| KYTF 2 | tall fescue | 4.7 | 99 | 90 | 90 | 98 | 99 | 80* |
| KYFA 0006 | tall fescue | 5.0 | 99 | 90 | 85 | 99 | 99 | 79* |
| KYFA 9602 | tall fescue | 4.0 | 96 | 83 | 83 | 95 | 92 | 78* |
| KYFA 9819 | tall fescue | 5.0 | 99 | 87 | 80 | 84 | 61 | 53 |
| TM 9901 | timothy | 4.0 | 96 | 78 | 80 | 39 | 43 | 43 |
| Mean | | 4.0 | 96 | 76 | 81 | 83 | 83 | 69 |
| CV,% | | 8.7 | 10 | 11 | 11 | 12 | 14 | 25 |
| LSD,0.05 | | 0.4 | 11 | 10 | 10 | 11 | 13 | 20 |
| * Not significantly different from the highest 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 KY 31 E- is the variety of KY 31 where the toxic endophyte has been removed. All other fescue varieties in this test do not contain an endophyte. | | | | | | | | |

Table 4. Preference rankings determined in the first week of grazing in spring 2004 and spring 2005 for cool-season grass varieties sown Sept. 17, 2003, at Lexington, Kentucky.

| Variety | Species | Preference Rank ¹ | | 2-yr Rank ² |
|--|--------------|------------------------------|-------------|------------------------|
| | | Spring 2004 | Spring 2005 | |
| Haymate | orchardgrass | 2 | 1 | 1 |
| Barfleo | timothy | 1 | 6 | 2 |
| Peak | smooth brome | 3 | 4 | 3 |
| KYFA 9819 | festulolium | 5 | 3 | 4 |
| Ginger | KY bluegrass | 4 | 5 | 5 |
| TM 9901 | timothy | 8 | 2 | 6 |
| KYFA 0006 | tall fescue | 7 | 7 | 7 |
| KYFA 9602 | tall fescue | 6 | 11 | 8 |
| KYFA 9611 | tall fescue | 9 | 8 | 9 |
| KYFA 9304 | tall fescue | 10 | 10 | 10 |
| Select | tall fescue | 12 | 12 | 11 |
| KYTF 2 | tall fescue | 15 | 9 | 12 |
| KY 31- | tall fescue | 11 | 14 | 13 |
| Common | KY bluegrass | 13 | 13 | 14 |
| AR 1 | tall fescue | 14 | 15 | 15 |
| ¹ 1=most 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. | | | | |

| Variety | Species | Seedling Vigor ¹ Nov 8, 2004 | Percent stand | | | |
|--|-------------------------------|--|---------------|--------|-------|-------|
| | | | 2005 | | 2006 | |
| | | | Mar 30 | Oct 31 | Apr 4 | Nov 3 |
| Commercial Varieties—Available for Farm Use | | | | | | |
| Seine | tall fescue | 4.2 | 93 | 100 | 100 | 98* |
| Stockman | tall fescue | 3.8 | 98 | 98 | 99 | 94* |
| Select | tall fescue | 4.2 | 100 | 99 | 100 | 94* |
| Ginger | KY bluegrass | 2.2 | 88 | 89 | 93 | 91* |
| Haymate | orchardgrass | 3.5 | 98 | 98 | 98 | 97* |
| GrandDaddy | tetraploid perennial ryegrass | 5.0 | 82 | 95 | 98 | 83 |
| Express | timothy | 1.8 | 50 | 53 | 53 | 37 |
| Aries | diploid perennial ryegrass | 4.7 | 13 | 65 | 61 | 32 |
| Experimental Varieties | | | | | | |
| KYFA9304 | tall fescue | 4.2 | 100 | 100 | 100 | 97* |
| KYPP9901 | KY bluegrass | 2.0 | 93 | 98 | 98 | 97* |
| KYDG9303 | orchardgrass | 4.3 | 95 | 98 | 99 | 95* |
| OG0204G | orchardgrass | 3.7 | 98 | 99 | 99 | 95* |
| KYFA9811 | tall fescue | 4.5 | 97 | 100 | 100 | 94* |
| OG0205G | orchardgrass | 3.5 | 95 | 99 | 98 | 91* |
| 94-100 | orchardgrass | 3.2 | 98 | 99 | 97 | 88* |
| KY31 ⁻² | tall fescue | 4.7 | 98 | 99 | 100 | 87 |
| Mean | | 3.7 | 87 | 93 | 93 | 85 |
| CV,% | | 15.4 | 8 | 8 | 8 | 12 |
| LSD,0.05 | | 0.7 | 8 | 8 | 9 | 11 |
| * Not significantly different from the highest 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 KY 31 E- is the variety of KY 31 where the toxic endophyte has been removed. All other fescue varieties in this test do not contain an endophyte. | | | | | | |

| Variety | Species | Seedling Vigor ¹ Nov 10, 2005 | Percent stand | |
|--|--------------------|---|--|-------------|
| | | | Apr 4, 2006 | Nov 3, 2006 |
| | | | Commercial Varieties—Available for Farm Use | |
| Select | tall fescue | 3.0 | 94 | 94* |
| KY31 ⁺² | tall fescue | 3.8 | 98 | 87* |
| Benchmark Plus | orchardgrass | 3.5 | 96 | 87* |
| Tekapo | orchardgrass | 2.8 | 90 | 78 |
| Jesup MaxQ ² | tall fescue | 2.5 | 96 | 77 |
| Persist | orchardgrass | 3.2 | 89 | 76 |
| Spring Green | festulolium | 4.3 | 95 | 75 |
| Summit | timothy | 2.0 | 86 | 55 |
| Talon | timothy | 2.0 | 80 | 45 |
| Derby | timothy | 2.7 | 78 | 28 |
| Experimental Varieties | | | | |
| SW ER3575 | perennial ryegrass | 4.8 | 100 | 97* |
| KYFA 9821 | tall fescue | 3.5 | 98 | 96* |
| SW ER3508 FR1 | perennial ryegrass | 4.0 | 96 | 95* |
| KY31 ⁻² | tall fescue | 3.5 | 98 | 93* |
| KYFA 9821/AR584 ² | tall fescue | 3.3 | 96 | 93* |
| KYFA 9821/AR542 ² | tall fescue | 3.5 | 98 | 92* |
| SW ER3579 | perennial ryegrass | 4.5 | 97 | 91* |
| OG 0203G | orchardgrass | 3.5 | 91 | 81* |
| Mean | | 3.5 | 94 | 81 |
| CV,% | | 21.7 | 7 | 18 |
| LSD,0.05 | | 0.9 | 8 | 17 |
| * Not significantly different from the highest value in the column, based on the 0.05 LSD. | | | | |
| ¹ Vigor score based on a rating of 1 to 5 with 5 being the most vigorous seedling growth. | | | | |
| ² KY31 E- is the variety of KY 31 where the toxic endophyte has been removed. Jesup MaxQ contains a nontoxic endophyte that provides stand persistence with no animal toxicity. AR584 and AR542 are nontoxic endophytes. KY31+ contains the toxic endophyte. All other fescue varieties in this test do not contain an endophyte. | | | | |

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

| Variety | Species | Proprietor | 2002 ¹ | | | | 2003 | | | | 2004 | | | | 2005 | | | | | | | | | |
|--|--------------------------|--|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---|---|---|
| | | | Oct ² 03 | Mar 04 | Nov 04 | Mar 05 | Oct 05 | Apr 06 | Nov 06 | Mar 04 | Nov 04 | Mar 05 | Oct 05 | Apr 06 | Nov 06 | Mar 05 | Oct 05 | Apr 06 | Nov 06 | Apr 06 | Nov 06 | | | |
| Commercial Varieties—Available for Farm Use | | | | | | | | | | | | | | | | | | | | | | | | |
| Aries | diploid per. ryegrass | Ampac Seed Company | | | | | | | | | | | | | | | | x | x | x | x | | | |
| Barderby | KY bluegrass | Barenbrug USA | x | x | x | x | x | x | x | | | | | | | | | | | | | | | |
| Barfleo | timothy | Barenbrug USA | | | | | | | | * | x | * | x | x | x | | | | | | | | | |
| Benchmark | orchardgrass | FFR/Southern States | x | x | x | x | x | x | x | | | | | | | | | | | | | | | |
| Benchmark Plus | orchardgrass | FFR/Southern States | * | * | x | * | * | x | x | | | | | | | | | | | | | * | * | |
| Crown Royale Plus | orchardgrass | Grassland Oregon | * | * | x | * | * | x | x | | | | | | | | | | | | | | | |
| Derby | timothy | FFR/Southern States | | | | | | | | | | | | | | | | | | | | x | x | |
| Duo | festulolium | Ampac Seed Company | * | * | * | * | * | * | * | x | | | | | | | | | | | | * | * | |
| Express | timothy | Seed Research of Oregon | | | | | | | | | | | | | | | | x | x | x | x | | | |
| Ginger | KY bluegrass | Dye Seed Ranch, Inc; ProSeeds Marketing | | | | | | | | | x | x | x | * | * | x | x | x | x | * | * | | | |
| Grand Daddy | tetraploid per. ryegrass | Smith Seed Services | | | | | | | | | | | | | | | | x | * | * | * | x | | |
| Haymate | orchardgrass | FFR/Southern States | * | x | x | * | x | x | x | * | * | * | * | * | * | * | * | * | * | * | * | * | * | |
| Jesup Max Q | tall fescue | Pennington Seed | * | * | * | * | * | * | * | | | | | | | | | | | | | * | x | |
| Kenblue | KY bluegrass | Public | x | x | x | x | x | * | * | | | | | | | | | | | | | | | |
| Common | KY bluegrass | Public | | | | | | | | * | x | * | * | * | * | | | | | | | | | |
| KY 31+ | tall fescue | Public | | | | | | | | | | | | | | | | | | | | * | * | |
| Peak | smooth brome | Allied Seed, L.L.C. | | | | | | | | * | x | x | x | x | x | | | | | | | | | |
| Persist | orchardgrass | Smith Seed Services | | | | | | | | | | | | | | | | | | | | x | x | |
| Potomac (cert.) | orchardgrass | Public | x | * | x | * | * | x | x | | | | | | | | | | | | | | | |
| Potomac (uncert.) | orchardgrass | Public | x | x | x | * | x | x | x | | | | | | | | | | | | | | | |
| Seine | tall fescue | Seed Research of Oregon | | | | | | | | | | | | | | | | * | * | * | * | | | |
| Select | tall fescue | FFR/Southern States | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Spring Green | festulolium | Turf-Seed | | | | | | | | | | | | | | | | | | | | * | x | |
| Stockman | tall fescue | Seed Research of Oregon | | | | | | | | | | | | | | | | * | * | * | * | | | |
| Summit | timothy | Allied Seed, L.L.C. | | | | | | | | | | | | | | | | | | | | x | x | |
| Talon | timothy | Seed Research of Oregon | | | | | | | | | | | | | | | | | | | | x | x | |
| Tekapo | orchardgrass | Ampac Seed Company | x | x | x | x | x | x | x | | | | | | | | | | | | | x | x | |
| Experimental Varieties | | | | | | | | | | | | | | | | | | | | | | | | |
| 94-100 | orchardgrass | Agri. Food of Canada | | | | | | | | | | | | | | | | * | * | * | * | | | |
| HB 120 | KY bluegrass | DLF-Jenks | x | x | x | x | x | x | x | | | | | | | | | | | | | | | |
| HB 121 | KY bluegrass | DLF-Jenks | x | x | x | x | x | x | x | | | | | | | | | | | | | | | |
| KY 31- | tall fescue | KY Agric. Exp. Station | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | x | * | * |
| KYDG 9303 | orchardgrass | KY Agric. Exp. Station | | | | | | | | | | | | | | | | * | * | * | * | | | |
| KYFA 0006 | tall fescue | KY Agric. Exp. Station | | | | | | | | * | * | * | * | * | * | * | | | | | | | | |
| KYFA 9304 | tall fescue | KY Agric. Exp. Station | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| KYFA 9602 | tall fescue | KY Agric. Exp. Station | | | | | | | | * | * | * | * | * | * | | | | | | | | | |
| KYFA 9611 | tall fescue | KY Agric. Exp. Station | | | | | | | | * | * | * | * | * | * | | | | | | | | | |
| KYFA 9811 | tall fescue | KY Agric. Exp. Station | | | | | | | | | | | | | | | * | * | * | * | | | | |
| KYFA 9819 | festulolium | KY Agric. Exp. Station | | | | | | | | * | * | * | * | x | x | | | | | | | | | |
| KYFA 9821 | tall fescue | KY Agric. Exp. Station | | | | | | | | | | | | | | | | | | | | * | * | |
| KYFA 9821/AR542 | tall fescue | KY Agric. Exp. Station | | | | | | | | | | | | | | | | | | | | * | * | |
| KYFA 9821/AR584 | tall fescue | KY Agric. Exp. Station | | | | | | | | | | | | | | | | | | | | * | * | |
| KYTF 2 | tall fescue | KY Agric. Exp. Station | | | | | | | | * | * | * | * | * | * | | | | | | | | | |
| KYPP 9901 | KYbluegrass | KY Agric. Exp. Station | x | x | x | x | * | * | * | | | | | | | | * | * | * | * | | | | |
| OG0203G | orchardgrass | FFR/Southern States | | | | | | | | | | | | | | | | * | * | * | * | | | |
| OG0204G | orchardgrass | FFR/Southern States | | | | | | | | | | | | | | | | * | * | * | * | | | |
| OG0205G | orchardgrass | FFR/Southern States | | | | | | | | | | | | | | | | * | * | * | * | | | |
| SW ER3508FRI | perennial ryegrass | SW Seed Ltd | | | | | | | | | | | | | | | | | | | | * | * | |
| SW ER3575 | perennial ryegrass | SW Seed Ltd | | | | | | | | | | | | | | | | | | | | * | * | |
| SW ER3579 | perennial ryegrass | SW Seed Ltd | | | | | | | | | | | | | | | | | | | | * | * | |
| TM 9901 | timothy | FFR/Southern States | | | | | | | | * | x | * | x | x | x | | | | | | | | | |
| VB 5649 | KY bluegrass | Barenbrug USA | x | 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 the stand survival was significantly less than the most persistent variety.

¹ Establishment year.

² Date of rating of percent stand.



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