

# 2006 Orchardgrass Report

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## Introduction

Orchardgrass (*Dactylus glomerata*) is a high-quality, productive, cool-season grass that is well adapted to Kentucky conditions. This grass is used for pasture, hay, green chop, and silage, but it requires better management than tall fescue for higher yields, quality, and long stand life. It produces an open, bunch-type sod, making it very compatible with alfalfa or red clover as a pasture and hay crop or as habitat for wildlife.

This report provides current yield data on orchardgrass varieties included in yield trials in Kentucky as well as guidelines for selecting orchardgrass varieties. New for 2006, Table 1 shows a summary of all orchardgrass varieties tested in Kentucky for the last nine years. Go to the UK Forage Extension Web site at <[www.uky.edu/Ag/Forage](http://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.

## Important Selection Considerations

**Maturity.** Orchardgrass varieties will range in maturity from early to late, based on the date of heading. In this report, early maturing varieties will in general have higher first-cutting yields than later maturing varieties because they are more mature at the date of first cutting. Orchardgrass typically matures earlier in the spring than red clover or alfalfa. Later-maturing varieties are preferred for use with red clover or alfalfa because they are at a more optimal stage of maturity when the legume is ready for cutting.

**Local Adaptation and Seasonal Yield.** Choose a variety that is adapted to Kentucky, as indicated by good performance across years and locations in replicated yield trials such as those presented in this publication. Also, look for varieties that are productive in the desired season of use.

**Seed Quality.** Buy premium-quality seed that is high in germination and purity and free from weed seed. Buy certified seed or proprietary seed of an improved variety. An improved variety is one that has performed well in independent trials. Other information on the label will include the test date (which must be within the past nine months) and the level of germination and other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

## Description of the Tests

Data from six studies are reported. Orchardgrass varieties were sown at Lexington (2003 and 2006), Quicksand (2003 and 2005), and Princeton (2002 and 2004). The soils at Lexington (Maury), Quicksand (Nolin), and Princeton (Crider) are well-drained silt loams and are well suited to orchardgrass production. Seedings were made at the rate of 20 lb/A into a prepared seedbed with a disk drill. Plots were 5 by 15 ft in a randomized complete block design, with four replications. Nitrogen was topdressed at 60 lb/A of actual N in March, after the first cutting and again in late summer, for a total of 180 lb/A per season. The tests were harvested using a sickle-type forage plot harvester to simulate a spring cut hay/summer grazing/fall stockpile management system. Fresh weight samples were taken at each harvest to calculate percent dry matter production. Management practices for establishment, fertility, weed control, and harvest timing were in accordance with University of Kentucky recommendations.

## Results and Discussion

Weather data for Quicksand, Lexington, and Princeton are presented in Tables 1 through 3.

Ratings for maturity and stand and dry matter yields (tons/acre) are reported in Tables 4 through 9. Yields are given by cut-

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

|       | 2003  |     | 2004  |       |       |     | 2005  |       |       |     | 2006  |        |       |     |       |       |
|-------|-------|-----|-------|-------|-------|-----|-------|-------|-------|-----|-------|--------|-------|-----|-------|-------|
|       | Temp. |     | Temp. |       | Temp. |     | Temp. |       | Temp. |     | Temp. |        | Temp. |     |       |       |
|       | °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.

ting date and as total annual production. Stated yields are adjusted for percent weeds; therefore, value listed is for crop only. Varieties are listed by descending total yield. Experimental varieties, listed separately at the bottom of the tables, are not available commercially.

Statistical analyses were performed on all data (including experimentals) to determine if the apparent differences are truly due to varietal differences or just to chance. In the tables, the varieties not significantly different from the top variety in that column are marked with one asterisk (\*). To determine if two varieties are truly different, compare the difference between them 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 the given locations. 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.

Table 10 summarizes information about distributors and yield performance across locations for all varieties currently included in tests discussed in this publication. Varieties are listed in alphabetical order, with the experimental varieties at the bottom. Remember that experimental varieties are not available for farm use, while commercial varieties can be purchased through distributors. In Table 10, 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 means that the variety was in the test but yielded significantly less than the top-yielding variety. 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 and locations. Remember to consider the distribution of yield across the growing season when evaluating productivity of orchardgrass varieties (Tables 4 through 9).

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

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

DEP is departure from the long-term average.

Table 11 is a summary of yield data from 1998-2006 of commercial varieties that have been entered in the Kentucky trials. The data is listed as a percentage of 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 yielded better than average and varieties with percentages less than 100 yielded lower than average. Direct, statistical comparisons of varieties cannot be made using the summary Table 11, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations 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 Table 11 to determine which yearly report to refer to.

## Summary

Selecting a good orchardgrass variety is an important first step in establishing a productive stand of grass. Proper management, beginning with seedbed preparation and continuing throughout the life of the stand, is necessary for even the highest-yielding variety to produce to its genetic potential.

**Table 3. Temperature and rainfall at Quicksand, 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    | 0   | 2.63     | -0.66  | 34    | +3  | 4.48     | +1.19 | 40    | +9  | 4.45     | +1.16  | 44    | +13 | 4.48     | +1.19 |
| FEB   | 35    | +2  | 8.01     | +4.41  | 39    | +6  | 3.45     | -0.15 | 42    | +9  | 3.01     | -0.59  | 37    | +4  | 1.56     | -2.04 |
| MAR   | 50    | +9  | 1.34     | -3.00  | 49    | +8  | 3.84     | -0.5  | 44    | +3  | 2.86     | -1.48  | 47    | +6  | 1.74     | -2.60 |
| APR   | 60    | +7  | 5.02     | +0.92  | 51    | +4  | 4.84     | +0.74 | 58    | +5  | 6.63     | +2.53  | 60    | +7  | 2.95     | -1.15 |
| MAY   | 64    | +2  | 7.05     | +2.57  | 68    | +6  | 11.22    | +6.74 | 63    | +1  | 2.05     | -2.43  | 63    | +1  | 3.45     | -1.03 |
| JUN   | 68    | -2  | 11.92    | +8.10  | 71    | +1  | 6.19     | +2.37 | 75    | +5  | 2.39     | -1.43  | 71    | +1  | 3.00     | -0.82 |
| JUL   | 74    | 0   | 3.36     | -1.89  | 75    | +1  | 2.3      | -2.95 | 78    | +4  | 2.58     | -2.67  | 77    | +3  | 3.85     | -1.40 |
| AUG   | 75    | +2  | 6.34     | +2.33  | 72    | -1  | 1.37     | -2.64 | 79    | +6  | 3.51     | -0.50  | 78    | +5  | 3.55     | -0.46 |
| SEP   | 66    | 0   | 3.12     | -0.40  | 69    | +3  | 6.8      | +3.28 | 72    | +6  | 0.27     | -3.25  | 65    | -1  | 5.56     | -2.04 |
| OCT   | 58    | +4  | 2.93     | +0.02  | 61    | +7  | 4.19     | +1.29 | 59    | +5  | 0.68     | -2.23  | 55    | +1  | 6.00     | +3.09 |
| NOV   | 53    | +11 | 5.95     | +2.07  | 51    | +9  | 3.56     | -0.32 | 49    | +7  | 1.30     | -2.58  | 48    | +6  | 2.32     | -1.56 |
| DEC   | 38    | +5  | 4.02     | -0.12  | 37    | +4  | 3.59     | -0.55 | 34    | +1  | 2.39     | -1.75  |       |     |          |       |
| Total |       |     | 61.69    | +14.35 |       |     | 55.83    | +8.49 |       |     | 32.12    | -15.22 |       |     | 38.46    | -4.74 |

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

The following is a list of University of Kentucky Cooperative Extension publications related to orchardgrass management. They are available from your county Extension office.

- AGR-1 *Lime and Fertilizer Recommendations*
- AGR-18 *Grain and Forage Crop Guide for Kentucky*
- AGR-26 *Renovating Hay and Pasture Fields*
- AGR-58 *Orchardgrass*
- AGR-64 *Establishing Forage Crops*

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**Table 4. Dry matter yields, seedling vigor, maturity, and stand persistence of orchardgrass varieties sown Sept. 16, 2003, at Lexington, Kentucky.**

| Variety  | Seedling Vigor <sup>1</sup><br>Oct 31,<br>2003 | Maturity <sup>2</sup> |                |                | Percent Stand |        |        |        | Yield (tons/acre) |               |        |        |        |       |       | 3-yr<br>Total |
|--|--|-----------------------|----------------|----------------|---------------|--------|--------|--------|-------------------|---------------|--------|--------|--------|-------|-------|---------------|
|  |  | May 13<br>2004        | May 12<br>2005 | May 17<br>2006 | 2005          |        | 2006   |        | 2004<br>Total     | 2005<br>Total | 2006   |        |        |       |       |               |
|  |  |                       |                |                | Apr 8         | Oct 28 | May 17 | Oct 17 |                   |               | May 17 | Jun 28 | Jul 26 | Oct 5 | Total |               |
| <b>Commercial Varieties—Available for Farm Use</b> |  |                       |                |                |               |        |        |        |                   |               |        |        |        |       |       |               |
| Persist  | 4.0  | 54.5                  | 58.0           | 59.0           | 78            | 93     | 95     | 94     | 5.34              | 4.01          | 2.16   | 0.18   | 0.38   | 0.91  | 3.62  | 12.96*        |
| Takena II  | 4.5  | 41.0                  | 54.5           | 57.0           | 86            | 98     | 91     | 83     | 4.69              | 3.88          | 1.49   | 0.22   | 0.38   | 0.95  | 3.04  | 11.61*        |
| Hallmark   | 2.0  | 59.5                  | 57.5           | 59.0           | 95            | 70     | 75     | 64     | 4.43              | 3.97          | 1.16   | 0.15   | 0.32   | 0.72  | 2.35  | 10.76         |
| Intensiv   | 5.0  | 38.0                  | 51.5           | 34.5           | 85            | 95     | 80     | 78     | 5.14              | 3.20          | 1.14   | 0.15   | 0.30   | 0.81  | 2.41  | 10.75         |
| Udder  | 2.0  | 51.0                  | 55.5           | 57.3           | 91            | 90     | 86     | 71     | 4.76              | 3.56          | 0.95   | 0.20   | 0.35   | 0.73  | 2.23  | 10.56         |
| Vision   | 3.5  | 52.0                  | 56.0           | 55.0           | 33            | 28     | 25     | 11     | 3.89              | 1.65          | 0.67   | 0.07   | 0.12   | 0.21  | 1.08  | 6.62          |
| <b>Experimental Varieties</b>                      |  |                       |                |                |               |        |        |        |                   |               |        |        |        |       |       |               |
| KYDG9801   | 5.0  | 50.5                  | 58.0           | 58.5           | 93            | 100    | 95     | 93     | 5.43              | 4.12          | 1.96   | 0.25   | 0.42   | 0.92  | 3.54  | 13.09*        |
| CIS-OG4  | 4.8  | 44.5                  | 56.0           | 57.5           | 90            | 98     | 95     | 91     | 5.28              | 4.08          | 1.71   | 0.31   | 0.34   | 1.16  | 3.51  | 12.86*        |
| KYDG9303   | 4.5  | 43.0                  | 57.5           | 59.5           | 90            | 98     | 95     | 85     | 4.89              | 4.14          | 2.14   | 0.28   | 0.41   | 1.00  | 3.83  | 12.85*        |
| KYDG9701   | 3.0  | 57.0                  | 55.5           | 57.0           | 95            | 98     | 94     | 91     | 5.15              | 4.25          | 2.07   | 0.22   | 0.35   | 0.81  | 3.45  | 12.85*        |
| ECF30  | 4.5  | 53.5                  | 58.0           | 59.5           | 94            | 98     | 94     | 86     | 5.13              | 4.03          | 1.73   | 0.21   | 0.43   | 1.05  | 3.41  | 12.57*        |
| DP65-4928  | 3.5  | 39.8                  | 56.0           | 54.3           | 54            | 71     | 60     | 51     | 5.04              | 2.93          | 0.77   | 0.15   | 0.26   | 0.84  | 2.01  | 9.99          |
| Mean   | 3.9  | 48.7                  | 56.2           | 55.7           | 81.9          | 86.2   | 82.1   | 74.8   | 4.93              | 3.65          | 1.50   | 0.20   | 0.34   | 0.84  | 2.87  | 11.46         |
| CV,%   | 9.1  | 11.1                  | 1.8            | 4.0            | 27.0          | 18.5   | 17.0   | 20.2   | 9.24              | 14.57         | 32.22  | 36.05  | 28.38  | 15.33 | 20.86 | 11.29         |
| LSD,0.05   | 0.5  | 7.8                   | 1.4            | 3.4            | 31.8          | 23.0   | 20.1   | 21.8   | 0.66              | 0.77          | 0.69   | 0.10   | 0.14   | 0.19  | 0.86  | 1.86          |

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

<sup>1</sup> Vigor score based on scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

| Variety  | Seedling Vigor <sup>1</sup><br>May 12 | Percent Stand |        | 2006 Yield (tons/acre) |        |       |       |
|--|---------------------------------------|---------------|--------|------------------------|--------|-------|-------|
|  |                                       | May 12        | Oct 17 | Jun 21                 | Jul 26 | Oct 6 | Total |
| <b>Commercial Varieties—Available for Farm Use</b> |                                       |               |        |                        |        |       |       |
| Udder  | 3.5                                   | 91            | 95     | 1.02                   | 0.95   | 1.30  | 3.27* |
| Icon   | 3.5                                   | 94            | 96     | 0.88                   | 1.00   | 1.23  | 3.11* |
| Harvester  | 3.3                                   | 95            | 95     | 0.93                   | 0.92   | 1.15  | 3.00* |
| Prairie  | 3.0                                   | 93            | 96     | 0.87                   | 0.79   | 1.20  | 2.87* |
| Takena II  | 3.5                                   | 90            | 96     | 0.88                   | 0.76   | 1.18  | 2.82* |
| Bounty   | 3.8                                   | 95            | 96     | 0.88                   | 0.79   | 1.14  | 2.80* |
| Persist  | 3.0                                   | 93            | 96     | 0.78                   | 0.81   | 1.20  | 2.79* |
| Haymaster  | 2.8                                   | 88            | 93     | 0.78                   | 0.78   | 1.14  | 2.70  |
| Tekapo   | 3.8                                   | 98            | 99     | 0.74                   | 0.81   | 1.15  | 2.69  |
| Benchmark Plus                                     | 4.3                                   | 96            | 98     | 0.77                   | 0.88   | 1.01  | 2.66  |
| Century  | 3.5                                   | 95            | 95     | 0.80                   | 0.73   | 1.12  | 2.65  |
| <b>Experimental Varieties</b>                      |                                       |               |        |                        |        |       |       |
| RAD-ECF26  | 3.3                                   | 98            | 98     | 0.87                   | 0.96   | 1.22  | 3.04* |
| RAD-LCF21  | 3.5                                   | 100           | 99     | 0.79                   | 0.89   | 1.23  | 2.91* |
| IS-OG39  | 3.8                                   | 96            | 98     | 0.84                   | 0.94   | 1.10  | 2.89* |
| AGRDG101   | 3.5                                   | 98            | 98     | 0.78                   | 0.74   | 1.17  | 2.70  |
| Mean   | 3.5                                   | 94.5          | 96.4   | 0.84                   | 0.85   | 1.17  | 2.86  |
| CV,%   | 25.9                                  | 4.8           | 2.7    | 19.22                  | 21.48  | 12.32 | 12.81 |
| LSD,0.05   | 1.3                                   | 6.5           | 3.7    | 0.23                   | 0.26   | 0.21  | 0.52  |

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.  
<sup>1</sup> Vigor score based on scale of 1 to 5 with 5 being the most vigorous seedling growth.

| Variety  | Seedling Vigor <sup>1</sup><br>Dec 21, 2004 | Maturity <sup>2</sup><br>May 10 2005 | Percent Stand |       |       |        | Yield (tons/acre) |        |        |        |        | 2-yr Total |       |
|--|---|--------------------------------------|---------------|-------|-------|--------|-------------------|--------|--------|--------|--------|------------|-------|
|  |   |                                      | 2005          |       | 2006  |        | 2005 Total        | 2006   |        |        |        |            |       |
|  |   |                                      | Apr 15        | Nov 3 | Apr 5 | Oct 30 |                   | May 24 | Jun 26 | Jul 24 | Oct 10 |            | Total |
| <b>Commercial Varieties—Available for Farm Use</b> |   |                                      |               |       |       |        |                   |        |        |        |        |            |       |
| Shiloh II  | 3.5   | 47.8                                 | 96            | 98    | 99    | 84     | 4.84              | 2.25   | 0.77   | 0.41   | 0.56   | 3.99       | 8.83* |
| Takena II  | 4.0   | 46.5                                 | 96            | 98    | 98    | 85     | 4.37              | 2.40   | 0.69   | 0.35   | 0.59   | 4.04       | 8.41* |
| Persist  | 4.3   | 50.8                                 | 100           | 99    | 99    | 95     | 4.42              | 1.89   | 0.51   | 0.25   | 0.54   | 3.19       | 7.61* |
| Extend   | 3.3   | 46.5                                 | 81            | 96    | 95    | 85     | 4.32              | 1.68   | 0.79   | 0.33   | 0.41   | 3.22       | 7.53  |
| Hallmark   | 3.3   | 50.8                                 | 100           | 99    | 100   | 97     | 3.99              | 2.02   | 0.54   | 0.32   | 0.55   | 3.42       | 7.41  |
| Ambassador   | 3.8   | 51.0                                 | 99            | 99    | 98    | 97     | 3.90              | 1.81   | 0.59   | 0.37   | 0.59   | 3.35       | 7.25  |
| LG-31  | 3.3   | 36.5                                 | 80            | 96    | 95    | 84     | 3.21              | 2.24   | 0.87   | 0.34   | 0.49   | 3.95       | 7.16  |
| Command  | 3.0   | 40.0                                 | 81            | 99    | 94    | 86     | 3.16              | 1.90   | 0.74   | 0.33   | 0.46   | 3.44       | 6.60  |
| <b>Experimental Varieties</b>                      |   |                                      |               |       |       |        |                   |        |        |        |        |            |       |
| KYDG0101   | 3.5   | 45.0                                 | 91            | 99    | 96    | 96     | 4.58              | 2.17   | 0.67   | 0.33   | 0.63   | 3.80       | 8.38* |
| KYDG9801   | 4.5   | 53.0                                 | 100           | 100   | 100   | 98     | 4.64              | 1.91   | 0.67   | 0.33   | 0.64   | 3.56       | 8.20* |
| ECF27  | 3.8   | 52.5                                 | 98            | 100   | 100   | 93     | 4.65              | 1.98   | 0.64   | 0.36   | 0.53   | 3.50       | 8.15* |
| KYDG9303   | 5.0   | 47.5                                 | 100           | 100   | 100   | 95     | 3.94              | 1.49   | 0.65   | 0.34   | 0.50   | 2.97       | 6.91  |
| 94-100   | 4.0   | 42.5                                 | 91            | 99    | 98    | 95     | 3.81              | 1.61   | 0.67   | 0.35   | 0.41   | 3.03       | 6.84  |
| Mean   | 3.8   | 46.9                                 | 93.4          | 98.5  | 97.7  | 91.3   | 4.14              | 1.95   | 0.68   | 0.34   | 0.53   | 3.50       | 7.64  |
| CV,%   | 10.4  | 9.8                                  | 5.7           | 2.1   | 2.0   | 9.4    | 20.73             | 17.00  | 17.33  | 22.17  | 22.49  | 13.82      | 11.72 |
| LSD,0.05   | 0.6   | 6.6                                  | 7.6           | 3.0   | 2.8   | 12.3   | 1.23              | 0.48   | 0.17   | 0.11   | 0.17   | 0.69       | 1.28  |

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.  
<sup>1</sup> Vigor score based on scale of 1 to 5 with 5 being the most vigorous seedling growth.  
<sup>2</sup> Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

**Table 7. Dry matter yields, maturity, and stand persistence of orchardgrass varieties sown Oct. 9, 2003, at Quicksand, Kentucky.**

| Variety  | Maturity <sup>1</sup><br>May 11<br>2005 | Percent Stand |        |        |       | Yield (tons/acre) |               |        |        |        |       |               |
|--|---|---------------|--------|--------|-------|-------------------|---------------|--------|--------|--------|-------|---------------|
|  |   | 2005          |        | 2006   |       | 2004<br>Total     | 2005<br>Total | 2006   |        |        |       | 3-yr<br>Total |
|  |   | Apr 14        | Nov 28 | Apr 18 | Nov 3 |                   |               | May 31 | Jul 24 | Oct 26 | Total |               |
| <b>Commercial Varieties—Available for Farm Use</b> |   |               |        |        |       |                   |               |        |        |        |       |               |
| Persist  | 62.0                                    | 90            | 90     | 93     | 89    | 5.96              | 4.92          | 2.10   | 0.96   | 0.50   | 3.55  | 14.44*        |
| Benchmark Plus                                     | 62.0                                    | 84            | 88     | 89     | 85    | 5.93              | 4.71          | 1.97   | 1.09   | 0.60   | 3.66  | 14.30*        |
| Takena II  | 61.5                                    | 94            | 83     | 86     | 76    | 5.45              | 4.88          | 2.19   | 1.07   | 0.58   | 3.84  | 14.17*        |
| Udder  | 62.0                                    | 88            | 65     | 70     | 59    | 5.52              | 4.99          | 2.05   | 1.02   | 0.52   | 3.59  | 14.11*        |
| Tekapo   | 62.0                                    | 90            | 80     | 85     | 79    | 5.65              | 4.41          | 1.99   | 1.41   | 0.53   | 3.93  | 13.99*        |
| Prairie  | 62.0                                    | 93            | 91     | 91     | 88    | 5.55              | 4.84          | 2.08   | 1.10   | 0.40   | 3.58  | 13.98*        |
| Haymate  | 61.3                                    | 85            | 76     | 75     | 70    | 4.84              | 4.90          | 2.27   | 1.25   | 0.55   | 4.07  | 13.80*        |
| Crown Royale Plus                                  | 62.0                                    | 93            | 83     | 86     | 84    | 5.45              | 4.14          | 1.93   | 0.98   | 0.46   | 3.37  | 12.96         |
| Hallmark   | 62.0                                    | 96            | 88     | 91     | 83    | 4.62              | 4.82          | 1.97   | 0.98   | 0.51   | 3.45  | 12.89         |
| Vision   | 62.0                                    | 15            | 5      | 4      | 3     | 5.77              | 1.87          | 0.94   | 0.31   | 0.09   | 1.33  | 8.97          |
| <b>Experimental Varieties</b>                      |   |               |        |        |       |                   |               |        |        |        |       |               |
| ECF30  | 62.0                                    | 91            | 85     | 86     | 79    | 5.16              | 4.80          | 2.11   | 1.18   | 0.56   | 3.85  | 13.81*        |
| KYDG 9701  | 61.5                                    | 91            | 79     | 81     | 81    | 5.10              | 4.74          | 2.00   | 0.85   | 0.49   | 3.34  | 13.18*        |
| Mean   | 61.9                                    | 82.8          | 75.5   | 78.1   | 72.8  | 5.41              | 4.50          | 1.97   | 1.02   | 0.48   | 3.46  | 13.38         |
| CV,%   | 0.4                                     | 9.3           | 8.7    | 8.3    | 9.0   | 9.22              | 12.50         | 19.25  | 20.31  | 36.85  | 16.02 | 7.03          |
| LSD, 0.05  | 0.4                                     | 11.0          | 9.5    | 9.4    | 9.4   | 0.72              | 0.81          | 0.54   | 0.30   | 0.26   | 0.80  | 1.35          |

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

<sup>1</sup> Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.

**Table 8. Dry matter yields and stand persistence of orchardgrass varieties sown Sept. 31, 2005, at Quicksand, Kentucky.**

| Variety  | Percent Stand |       | 2006 Yields (tons/acre) |       |       |       |
|--|---------------|-------|-------------------------|-------|-------|-------|
|  | Apr 18        | Nov 3 | May 4                   | Jul 7 | Oct 4 | Total |
| <b>Commercial Varieties—Available for Farm Use</b> |               |       |                         |       |       |       |
| Prairie  | 96            | 96    | 2.48                    | 2.34  | 1.42  | 6.24* |
| Takena II  | 89            | 91    | 2.40                    | 2.13  | 1.57  | 6.10* |
| Benchmark Plus                                     | 94            | 92    | 2.49                    | 2.11  | 1.41  | 6.02* |
| Harvester  | 81            | 90    | 2.22                    | 2.30  | 1.46  | 5.98* |
| Bounty   | 96            | 94    | 2.58                    | 1.97  | 1.24  | 5.79* |
| Persist  | 88            | 93    | 2.17                    | 2.07  | 1.50  | 5.74* |
| Udder  | 89            | 91    | 2.20                    | 2.09  | 1.43  | 5.71* |
| Icon   | 88            | 90    | 2.04                    | 2.02  | 1.62  | 5.68* |
| Tekapo   | 95            | 94    | 2.31                    | 2.05  | 1.28  | 5.65* |
| Century  | 94            | 94    | 2.40                    | 1.91  | 1.28  | 5.60* |
| Haymaster  | 84            | 88    | 2.02                    | 2.07  | 1.41  | 5.49* |
| Mean   | 90.2          | 91.9  | 2.30                    | 2.10  | 1.42  | 5.82  |
| CV,%   | 10.4          | 5.9   | 23.21                   | 9.36  | 23.59 | 15.93 |
| LSD,0.05   | 13.6          | 7.9   | 0.77                    | 0.28  | 0.48  | 1.34  |

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

**Table 9. Dry matter yields, maturity, and stand persistence of orchardgrass varieties sown Sept. 25, 2002, at Princeton, Kentucky.**

| Variety  | Maturity <sup>1</sup> |                | Percent Stand |       |               | Yield(tons/acre) |               |               |               |
|--|-----------------------|----------------|---------------|-------|---------------|------------------|---------------|---------------|---------------|
|  | May 10<br>2004        | May 10<br>2005 | 2005          |       | 2006<br>Apr 5 | 2003<br>Total    | 2004<br>Total | 2005<br>Total | 3-yr<br>Total |
|  |                       |                | Apr 15        | Nov 3 |               |                  |               |               |               |
| <b>Commercial Varieties—Available for Farm Use</b>   |                       |                |               |       |               |                  |               |               |               |
| Benchmark  | 59.5                  | 56.5           | 81            | 89    | 90            | 4.46             | 4.21          | 3.57          | 12.24*        |
| Crown Royale Plus  | 56.0                  | 54.0           | 75            | 65    | 58            | 4.54             | 4.22          | 2.93          | 11.69*        |
| Benchmark Plus   | 60.0                  | 56.0           | 74            | 67    | 63            | 4.41             | 4.43          | 2.74          | 11.58*        |
| Haymate  | 52.5                  | 45.0           | 78            | 92    | 90            | 4.23             | 3.70          | 3.33          | 11.46*        |
| Uncertified Potomac  | 57.0                  | 54.7           | 80            | 84    | 83            | 4.14             | 4.16          | 2.84          | 11.30*        |
| Prairie  | 57.5                  | 56.0           | 73            | 70    | 57            | 4.25             | 4.33          | 2.69          | 11.27*        |
| Hallmark   | 59.5                  | 56.5           | 73            | 93    | 90            | 4.36             | 3.81          | 2.93          | 11.11*        |
| Udder  | 57.5                  | 50.0           | 75            | 65    | 60            | 4.05             | 3.84          | 2.69          | 11.01*        |
| Crown  | 57.5                  | 52.7           | 80            | 80    | 83            | 3.77             | 4.46          | 2.59          | 10.93*        |
| Takena   | 48.5                  | 47.3           | 75            | 80    | 79            | 4.64             | 3.76          | 2.44          | 10.84         |
| Certified Potomac  | 56.5                  | 56.0           | 78            | 83    | 88            | 4.05             | 3.90          | 2.97          | 10.59         |
| Niva   | 49.5                  | 39.0           | 46            | 43    | 40            | 3.47             | 3.59          | 1.65          | 8.71          |
| Abertop  | 58.0                  | 57.0           | 23            | 10    | 8             | 3.82             | 3.02          | 0.87          | 7.68          |
| <b>Experimental Varieties</b>  |                       |                |               |       |               |                  |               |               |               |
| OG 9701  | 60.0                  | 55.5           | 70            | 73    | 70            | 4.18             | 4.22          | 2.80          | 11.21*        |
| OG-1   | 60.0                  | 56.7           | 50            | 43    | 37            | 4.28             | 4.04          | 2.47          | 10.91*        |
| Mean   | 56.6                  | 53.0           | 69.9          | 70.5  | 67.5          | 4.18             | 4.01          | 2.68          | 10.93         |
| CV,%   | 4.5                   | 5.0            | 20.4          | 24.9  | 31.7          | 7.43             | 14.12         | 23.88         | 7.68          |
| LSD,0.05   | 3.9                   | 4.2            | 22.7          | 30.6  | 37.3          | 0.44             | 0.88          | 1.04          | 1.36          |
| *Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.  |                       |                |               |       |               |                  |               |               |               |
| <sup>1</sup> Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed. |                       |                |               |       |               |                  |               |               |               |

**Table 10. Performance of orchardgrass varieties across years and locations.**

| Variety/Proprietor                                 |                            | Princeton         |    |    |      |    | Lexington |    |    |      | Quicksand |    |    |      |
|--|----------------------------|-------------------|----|----|------|----|-----------|----|----|------|-----------|----|----|------|
|  |                            | 2002 <sup>1</sup> |    |    | 2004 |    | 2003      |    |    | 2006 | 2003      |    |    | 2005 |
|  |                            | 03 <sup>2</sup>   | 04 | 05 | 05   | 06 | 04        | 05 | 06 | 06   | 04        | 05 | 06 | 06   |
| <b>Commercial Varieties—Available for Farm Use</b> |                            |                   |    |    |      |    |           |    |    |      |           |    |    |      |
| Abertop  | Pennington Seed, Inc.      | X                 | X  | X  |      |    |           |    |    |      |           |    |    |      |
| Ambassador   | DLF International Seeds    |                   |    |    | *    | *  |           |    |    |      |           |    |    |      |
| Benchmark Plus                                     | FFR/Southern States        | *                 | *  | *  |      |    |           |    |    | X    | *         | *  | *  | *    |
| Benchmark  | FFR/Southern States        | *                 | *  | *  |      |    |           |    |    |      |           |    |    |      |
| Bounty   | Allied Seed                |                   |    |    |      |    |           |    |    | *    |           |    |    | *    |
| Century  | Seed Research of Oregon    |                   |    |    |      |    |           |    |    | X    |           |    |    | *    |
| Command  | Seed Research of Oregon    |                   |    |    | X    | *  |           |    |    |      |           |    |    |      |
| Crown  | Donley Seed                | X                 | *  | *  |      |    |           |    |    |      |           |    |    |      |
| Crown Royale Plus                                  | Donley Seed                | *                 | *  | *  |      |    |           |    |    |      | *         | *  | *  |      |
| Extend   | Allied Seed                |                   |    |    | *    | X  |           |    |    |      |           |    |    |      |
| Hallmark   | James VanLeeuwen           | *                 | *  | *  | *    | *  | X         | *  | X  |      | X         | *  | *  | *    |
| Harvester  | Columbia Seeds             |                   |    |    |      |    |           |    |    | *    |           |    |    | *    |
| Haymaster  | FFR/Southern States        |                   |    |    |      |    |           |    |    | X    |           |    |    | *    |
| Haymate  | FFR/Southern States        | *                 | *  | *  |      |    |           |    |    |      | X         | *  | *  | *    |
| Icon   | Seed Research of Oregon    |                   |    |    |      |    |           |    |    | *    |           |    |    | *    |
| Intensiv   | Barenbrug USA              |                   |    |    |      |    | *         | X  | X  |      |           |    |    |      |
| LG-31  | DLF International Seeds    |                   |    |    | X    | *  |           |    |    |      |           |    |    |      |
| Niva   | DLF-Jenks                  | X                 | *  | X  |      |    |           |    |    |      |           |    |    |      |
| Persist  | Smith Seed Services        |                   |    |    | *    | X  | *         | *  | *  | *    | *         | *  | *  | *    |
| Potomac, certified                                 | public                     | *                 | *  | *  |      |    |           |    |    |      |           |    |    |      |
| Potomac, uncertified                               | public                     | *                 | *  | *  |      |    |           |    |    |      |           |    |    |      |
| Prairie  | Turner Seed Company        | *                 | *  | *  |      |    |           |    |    | *    | *         | *  | *  | *    |
| Shiloh II  | Proseeds Marketing         |                   |    |    | *    | *  |           |    |    |      |           |    |    |      |
| Takena   | Smith Seed Services        | *                 | *  | X  |      |    |           |    |    |      |           |    |    |      |
| Takena II  | Smith Seed Services        |                   |    |    | *    | *  | X         | *  | *  | *    | *         | *  | *  | *    |
| Tekapo   | Ampac Seed Company         |                   |    |    |      |    |           |    |    | X    | *         | *  | *  | *    |
| Udder  | Improved Forages, Inc      | *                 | *  | *  |      |    | X         | *  | X  | *    | *         | *  | *  | *    |
| Vision   | Cropmark Seeds LTD         |                   |    |    |      |    | X         | X  | X  |      | *         | X  | X  |      |
| <b>Experimental Varieties</b>                      |                            |                   |    |    |      |    |           |    |    |      |           |    |    |      |
| AGR DG101  | AgResearch USA             |                   |    |    |      |    |           |    |    | X    |           |    |    |      |
| CIS OG-4   | Cebeco International Seeds |                   |    |    |      |    | *         | *  | *  |      |           |    |    |      |
| DP65-4928  | DLF International Seeds    |                   |    |    |      |    | *         | X  | X  |      |           |    |    |      |
| ECF27  | Radix Research, Inc        |                   |    |    | *    | *  |           |    |    |      |           |    |    |      |
| ECF30  | Radix Research, Inc        |                   |    |    |      |    | *         | *  | *  |      | *         | *  | *  |      |
| GA OG-1  | Pennington Seed, Inc.      | *                 | *  | X  |      |    |           |    |    |      |           |    |    |      |
| IS-OG39  | DLF International Seeds    |                   |    |    |      |    |           |    |    | *    |           |    |    |      |
| KYDG0101   | KY Agric. Exp. Station     |                   |    |    | *    | *  |           |    |    |      |           |    |    |      |
| KYDG9303   | KY Agric. Exp. Station     |                   |    |    | *    | X  | *         | *  | *  |      |           |    |    |      |
| KYDG9701   | KY Agric. Exp. Station     |                   |    |    |      |    | *         | *  | *  |      | *         | *  | *  |      |
| KYDG9801   | KY Agric. Exp. Station     |                   |    |    | *    | *  | *         | *  | *  |      |           |    |    |      |
| OG 9701  | Allied Seed                | *                 | *  | *  |      |    |           |    |    |      |           |    |    |      |
| RAD-ECF26  | Radix Research, Inc        |                   |    |    |      |    |           |    |    | *    |           |    |    |      |
| RAD-LCF21  | Lewis Seed Co.             |                   |    |    |      |    |           |    |    | *    |           |    |    |      |
| 94-100   | Agri-Food of Canada        |                   |    |    | *    | X  |           |    |    |      |           |    |    |      |

<sup>1</sup> Establishment year.

<sup>2</sup> Harvest year.

\*Not significantly different from the highest yielding variety in the test.

x in the box indicates the variety was in the test but yielded significantly less than the top-ranked variety in the test. Open box indicates the variety was not in the test.

**Table 11. Summary of Kentucky Orchardgrass Yield Trials, 1999-2006 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

| Variety/Proprietor |                     | Lexington                                |              |              | Princeton    |              |              | Quicksand    |              |              | Mean <sup>3</sup><br>(# trials) |        |
|--------------------|---------------------|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------------------|--------|
|                    |                     | 1999 <sup>1,2</sup><br>2-yr <sup>4</sup> | 2001<br>2-yr | 2003<br>3-yr | 1998<br>2-yr | 2000<br>2-yr | 2002<br>3-yr | 1999<br>2-yr | 2001<br>2-yr | 2003<br>3-yr |                                 |        |
| Abertop            | Pennington          |  |              |              |              | 71           |              |              |              | -            |                                 |        |
| Albert             | Univ. of Wis.       |  | 103          |              |              |              |              | 106          |              | 105(2)       |                                 |        |
| Amba               | DLF-Jenks           |  | 96           |              |              |              |              | 80           |              | 88(2)        |                                 |        |
| Athos              | DLF-Jenks           |  | 98           |              |              |              |              | 105          |              | 102(2)       |                                 |        |
| Benchmark          | FFR/Sou. St.        | 103                                      |              |              | 101          | 97           | 113          | 106          |              | 104(5)       |                                 |        |
| Benchmark Plus     | FFR/Sou. St.        |  |              |              |              |              | 107          |              | 107          | 107(2)       |                                 |        |
| Boone              | Public              |  |              |              | 103          | 104          |              |              |              | 104(2)       |                                 |        |
| Bronc              | Grassland West      |  |              |              |              | 98           |              |              |              | -            |                                 |        |
| Crown              | Donley Seed         | 101                                      |              |              | 105          |              | 101          | 97           |              | 101(4)       |                                 |        |
| Crown Royale       | Donley Seed         |  |              |              |              |              |              | 110          |              | -            |                                 |        |
| Crown Royale Plus  | Donley Seed         |  |              |              |              |              | 108          |              | 97           | 103(2)       |                                 |        |
| Eastwood           | Ampac Seed          |  | 86           |              |              |              |              | 86           |              | 86(2)        |                                 |        |
| Hallmark           | James VanLeeuwen    |  | 102          | 102          |              |              | 103          |              | 101          | 96           | 101(5)                          |        |
| Haymate            | FFR/Sou. St.        | 106                                      |              |              | 93           | 100          | 106          | 108          | 104          | 103          | 103(7)                          |        |
| Intensiv           | Barenbrug           |  |              | 102          |              |              |              |              |              |              | -                               |        |
| Mammoth            | DLF-Jenks           |  | 102          |              |              |              |              |              | 104          |              | 103(2)                          |        |
| Megabite           | Turf-Seed           | 94                                       | 105          |              |              |              |              | 101          |              |              | 100(3)                          |        |
| Niva               | DLF-Jenks           |  |              |              |              |              | 81           |              |              |              | -                               |        |
| Persist            | Smith Seed          |  |              | 123          |              |              |              |              |              | 108          | 116(2)                          |        |
| Potomac            | Public              | 104                                      |              |              |              |              | 98           | 99           |              |              | 100(3)                          |        |
| Prairie            | Turner Seed         |  | 101          |              |              |              | 95           | 104          |              | 102          | 105                             | 101(5) |
| Renegade           | Grassland West      |  |              |              |              |              | 95           |              |              |              |                                 | -      |
| Shiloh             | Proseeds            |  |              |              | 109          |              |              |              |              |              |                                 | -      |
| Spanish Pink       | International Seeds |  |              |              | 82           |              |              |              |              |              |                                 | -      |
| Spanish Red        | International Seeds | 101                                      |              |              |              |              |              | 94           |              |              |                                 | 98(2)  |
| Takena             | Smith Seed          |  | 107          |              |              |              | 100          |              | 108          |              |                                 | 105(3) |
| Tekena II          | Smith Seed          |  |              | 110          |              |              |              |              |              | 106          |                                 | 108(2) |
| Tekapo             | Ampac Seed          | 88                                       |              |              |              |              |              | 94           | 92           | 105          |                                 | 95(4)  |
| Udder              | Improved Forages    |  |              | 100          |              |              | 102          | 102          |              |              | 106                             | 103(4) |
| Vision             | Cropmark Seeds      |  |              | 63           |              |              |              |              |              | 67           |                                 | 65(2)  |

<sup>1</sup> Year trial was established.

<sup>2</sup> Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 1999 was harvested two years, so the final report would be "2001 Orchardgrass Report" archived in the Kentucky Forage Web site at <[www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage)>.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

<sup>4</sup> Number of years of data.



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