



2001 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.

Important Considerations in Selecting an Orchardgrass Variety

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 high-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 four studies are reported. Orchardgrass varieties were sown at a reclaimed mine site in eastern Kentucky (1997) and at Lexington (1999), Quicksand (1999), and Princeton (2000). The planting medium at the reclaimed mine site is composed mainly of gray shale and sandstone and is generally low in organic matter, phosphorus, and potassium. The soils at Princeton (Crider), Lexington (Maury), and Quicksand (Nolin)

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 ft x 15 ft in a randomized complete block design with four replications. Nitrogen was topdressed at 80 lb/A of actual N in March (60 lb/A for newly seeded stands) and 60 lb/A of actual N after the first cutting and again in late summer. 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 Princeton, Lexington, and Quicksand are presented in Table 1. Temperature and rainfall during 2001 were close to normal.

Ratings for maturity and dry matter yields (tons/acre) are reported in Tables 2 through 5. Yields are given by cutting date and as total annual production. Varieties are listed by descending total yield. Experimental varieties are listed separately at the bottom of the tables and 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 LSD (Least Significant Difference) 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 6 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 dealerships. In Table 6, a shaded area indicates that the variety was not in that particular test (labeled at the top of the column), while a clear block means that the variety was in

the test. A single asterisk (*) means that the variety was not significantly different from the top-yielding variety in that study. It is best to choose a variety that has performed well over several years and locations. Remember to consider the distribution of yield across the growing season when evaluating productivity of orchardgrass varieties (Tables 2 through 5).

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.

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

AGR-103: Fertilization of Cool-Season Grasses

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	Quicksand				Lexington				Princeton			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
MON	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	34	+3	2.5	-0.8	31	0	0.9	-1.9	35	+1	1.6	-2.3
FEB	43	+10	3.7	+0.1	40	+5	3.2	0	44	+6	5.0	+0.5
MAR	42	+1	2.2	-2.2	40	-4	2.7	-1.7	44	-3	2.8	-2.1
APR	61	+8	1.7	-2.4	59	+4	1.7	-2.2	64	+5	2.2	-2.6
MAY	66	+4	4.4	-0.1	66	+2	4.9	+0.4	69	+2	2.5	-2.5
JUN	70	0	4.2	+0.4	71	-1	2.0	-1.6	74	-1	4.8	+1.0
JUL	73	-1	6.4	+1.2	75	-1	5.6	+0.6	80	+2	5.5	+1.2
AUG	75	+2	2.4	-1.6	76	+1	4.8	+0.8	79	+2	4.0	-0.1
SEP	66	0	1.1	-2.4	65	-3	3.0	-0.2	69	-2	3.5	+0.2
OCT	58	+4	1.4	-1.6	56	-1	3.6	+1.1	61	+2	7.5	+4.4
NOV	55	+13	1.8	-2.1	51	+6	2.8	-0.6	54	+7	7.8	+3.2

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

Variety	Total 1998	Total 1999	Total 2000	Maturity ¹ May 17, 2001	2001 Harvests		Total 2001	4-yr Total
					May 17	Oct 10		
Commercial varieties – available for farm use								
Benchmark	1.01	1.76	2.31	56.2	0.71	0.54	1.25	6.33*
9007238	0.96	1.62	2.30	59.7	0.70	0.57	1.27	6.16*
Takena	1.17	1.68	2.03	43.8	0.62	0.58	1.20	6.08*
Halmark 1996 ²	1.01	1.70	2.06	55.7	0.62	0.49	1.11	5.89*
Renegade	0.97	1.83	1.94	55.8	0.62	0.51	1.13	5.87*
Summer Green	1.00	1.71	2.05	50.8	0.56	0.53	1.09	5.85*
Condor	1.06	1.60	2.05	48.0	0.59	0.54	1.13	5.84*
Warrior	0.97	1.58	2.20	48.3	0.53	0.52	1.05	5.80*
Progress	1.00	1.71	2.07	45.3	0.51	0.43	0.94	5.72*
Halmark 1970 ²	0.93	1.59	2.03	53.5	0.61	0.56	1.17	5.72*
Crown	1.05	1.64	1.93	50.8	0.55	0.47	1.02	5.63*
Stampede	0.86	1.55	2.14	52.8	0.48	0.49	0.97	5.52*
Ambrosia	0.91	1.57	1.90	33.3	0.47	0.48	0.95	5.33*
Haymate	0.92	1.68	1.64	35.0	0.48	0.48	0.96	5.20
Arctic	0.95	1.59	1.67	42.8	0.48	0.46	0.93	5.14
Martin	1.04	1.30	1.51	61.8	0.83	0.42	1.25	5.09
Bronc	0.68	1.42	1.86	42.7	0.42	0.43	0.84	4.81
Shiloh	0.93	1.39	0.89	53.3	0.55	0.52	1.06	4.27
Experimental varieties – not available for farm use								
KYOG II	0.99	1.79	2.45	59.0	0.87	0.63	1.51	6.75*
Mean	0.97	1.62	2.00	49.9	0.59	0.51	1.10	5.68
CV, %	35.84	26.50	23.66	10.24	33.47	26.37	27.87	22.52
LSD, 0.05	0.40	0.49	0.54	5.86	0.23	0.15	0.35	1.47

* Not significantly different from the highest value in the column, based on the 0.05 LSD.
¹ Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shedding.
² Seed for this test came from fields planted on dates indicated.

Table 3. Dry matter yields (tons/acre) of orchardgrass and Kentucky bluegrass (KBG) varieties sown 23 September 1999 at Lexington, Kentucky.

Variety	Total 2000	Maturity ¹ May 10, 2001	2001 Harvests					Total 2001	2-yr Total
			May 11	Jun 21	Aug 2	Aug 31	Oct 18		
Commercial varieties – available for farm use									
Haymate	8.84	47.8	3.38	1.58	0.74	0.63	0.82	7.15	15.99*
Potomac	8.94	62.0	3.14	1.25	0.89	0.76	0.80	6.84	15.78*
Hallmark 1996 ²	9.02	63.0	3.28	1.17	0.75	0.62	0.89	6.72	15.74*
Benchmark	8.89	61.0	3.16	1.18	0.83	0.68	0.90	6.74	15.63*
Hallmark 1970 ²	8.90	62.0	3.28	1.08	0.76	0.69	0.82	6.63	15.54*
Crown	8.72	61.5	3.15	1.18	0.73	0.65	0.83	6.53	15.25
ISI-Spanish Red	8.37	42.5	2.82	1.58	0.73	0.75	0.96	6.84	15.21
WP300	8.54	52.8	3.20	1.32	0.71	0.60	0.70	6.53	15.07
Megabite	7.46	54.3	3.55	1.23	0.75	0.64	0.62	6.79	14.25
Tekapo	7.99	55.0	2.70	1.06	0.49	0.51	0.56	5.31	13.30
Sidekick (KBG)	6.90	60.3	2.80	1.17	0.78	0.14	0.64	5.53	12.43
Experimental varieties – not available for farm use									
KYO7G23-335	9.39	62.3	3.66	1.21	1.02	0.86	0.94	7.70	17.08*
OG8703	9.11	62.0	3.33	1.13	0.90	0.76	0.80	6.93	16.04*
BAR Dgl 9 BTR-F	8.50	57.5	3.48	1.26	0.75	0.57	0.97	7.04	15.54*
BAR Dgl 9 BTR-G	8.63	56.8	3.21	1.23	0.77	0.60	0.65	6.46	15.09
ISI-OG-10	8.34	40.5	2.97	1.43	0.60	0.61	0.98	6.59	14.93
WX9-400	8.32	54.0	3.00	1.20	0.59	0.68	0.62	6.10	14.41
Mean	8.52	56.2	3.18	1.25	0.75	0.63	0.79	6.61	15.13
CV,%	8.88	5.64	6.77	10.24	18.80	21.31	16.49	8.96	7.45
LSD, 0.05	1.08	4.50	0.31	0.18	0.20	0.19	0.19	0.84	1.60

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

¹ Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shedding.

² Seed for this test came from fields planted on dates indicated.

Table 4. Dry matter yields (tons/acre) of orchardgrass and Kentucky bluegrass (KBG) varieties sown 13 September 1999 at Quicksand, Kentucky.

Variety	Total 2000	Maturity ¹ May 18, 2001	2001 Harvests			Total 2001	2-yr Total
			May 28	Jul 3	Aug 6		
Commercial varieties – available for farm use							
Haymate	4.87	48.8	2.29	0.72	0.87	3.88	8.74*
Benchmark	5.16	57.3	1.96	0.67	0.85	3.48	8.64*
Hallmark 1970 ²	5.16	63.8	1.70	0.55	0.90	3.15	8.31*
Megabite	4.74	57.5	2.03	0.59	0.84	3.46	8.20*
Potomac	4.94	62.5	1.74	0.54	0.89	3.16	8.11*
Hallmark 1996 ²	4.77	64.0	1.59	0.60	1.00	3.19	7.96*
Crown	4.60	56.0	1.74	0.63	0.90	3.26	7.86*
ISI Spanish Red	4.73	38.8	1.30	0.59	1.04	2.93	7.66
Tekapo	4.59	49.5	1.52	0.59	0.92	3.03	7.62
Sidekick (KBG)	2.62	24.8	1.05	0.59	1.16	2.79	5.41
Experimental varieties – not available for farm use							
KYO7G23-335	4.92	37.3	2.00	0.65	0.83	3.48	8.40*
BAR 9 Dgl BTR F	4.73	56.8	1.97	0.51	0.91	3.40	8.13*
BAR 9 Dgl BTR G	4.38	56.0	1.83	0.49	0.87	3.18	7.56
Mean	4.63	51.8	1.75	0.59	0.92	3.26	7.89
CV, %	11.54	11.90	12.77	15.55	21.62	10.65	9.55
LSD, 0.05	0.77	8.85	0.32	0.13	0.29	0.50	1.08
* Not significantly different from the highest value in the column, based on the 0.05 LSD.							
¹ Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shedding.							
² Seed for this test came from fields planted on dates indicated.							

Table 5. Dry matter yields (tons/acre) of orchardgrass and prairiegrass (PGR) varieties sown 21 September 2000 at Princeton, Kentucky.

Variety	2001 Harvests					2001 Total
	May 8	Jun 13	Jul 17	Aug 22	Oct 22	
Commercial varieties – available for farm use						
Bronc	1.95	1.49	0.20	0.66	0.71	5.01*
Haymate	2.01	1.32	0.19	0.48	0.58	4.59*
Udder	1.88	1.40	0.19	0.44	0.61	4.52*
Benchmark	1.69	1.25	0.21	0.64	0.63	4.41*
Boone	1.82	1.30	0.18	0.57	0.55	4.41*
Renegade	1.60	1.29	0.14	0.50	0.47	4.01
Prairie	1.49	1.01	0.26	0.57	0.56	3.90
Experimental varieties – not available for farm use						
K5633d (PGR)	1.74	0.99	0.92	0.62	0.60	4.87*
K5632m (PGR)	1.88	1.08	0.64	0.65	0.59	4.84*
OG9705g	1.55	1.30	0.22	0.58	0.66	4.30*
KYO7G23-335	1.57	1.17	0.29	0.67	0.58	4.28*
CASMG24	1.21	1.03	0.28	0.68	0.64	3.84
K5568k	1.05	1.13	0.20	0.42	0.78	3.58
CASEG23	1.38	1.20	0.23	0.33	0.41	3.55
Mean	1.63	1.21	0.30	0.56	0.60	4.29
CV, %	23.30	13.17	42.18	21.94	17.31	14.92
LSD, 0.05	0.54	0.23	0.18	0.18	0.15	0.92
* Not significantly different from the highest value in the column, based on the 0.05 LSD.						

Table 6. Performance of orchardgrass and Kentucky bluegrass (KGB) varieties across years and locations.

Variety	Proprietor/KY Distributor	Mine Site				Lexington		Quicksand		Princeton
		98 ²	99	00	01	1999		1999		2000
						00	01	00	01	01
Commercial varieties – available for farm use										
Ambrosia	Pennington Seeds	*	*							
Arctic	Willamette Seed Company	*	*							
Benchmark	FFR/Southern States	*	*	*	*	*		*	*	*
Boone	University of Kentucky/Public Variety									*
Bronc	Grassland West Company		*							*
Condor	Hansford Seed Company	*	*	*						
Crown	Previously by Scott Seed Co./Sphar Seed Co.	*	*	*		*		*	*	
Hallmark 1996 ³	James VanLeeuwen	*	*	*		*		*	*	
Hallmark 1970 ³	James VanLeeuwen	*	*	*	*	*		*	*	
Haymate	FFR/Southern States	*	*			*	*	*	*	*
ISI Spanish Red	International Seeds, Inc.					*		*		
Martin		*			*					
Megabite	Turf-Seed Inc.							*	*	
Potomac	USDA/Public					*		*	*	
Prairie	Turner Seed Company									
Progress	J.W. Jenks Seed/Scott Seed	*	*	*						
Renegade	Grassland West Company	*	*	*						
Shiloh		*	*							
Sidekick (KGB)	Ampac Seed Company									
Stampede	J & M Seed	*	*	*						
Summergreen		*	*	*						
Takena	Smith Seed	*	*	*	*					
Tekapo	Ampac Seed Company							*		
Udder	Improved Forages									*
Warrior		*	*	*						
WP 300	Western Productions Inc.					*				
Experimental varieties – not available for farm use										
9007238	Soil Conservation Service	*	*	*	*					
BAR Dgl 9 BTR G	Barenbrug USA					*				
BAR Dgl 9 BTR F	Barenbrug USA					*	*	*	*	
CASEG23	Cascade International Seed									
CASMG24	Cascade International Seed									
ISI OG 10	International Seeds, Inc.					*				
K5568k	Ampac Seeds									
K5632m	Ampac Seeds									*
K5633d	Ampac Seeds									*
KYOG II	KY Agric. Exp. Sta/Experimental	*	*	*	*					
KYO7G23-335	KY Agric. Exp. Sta/Experimental					*	*	*	*	*
OG 8703	Fine Lawn Research/Geo.W. Hill					*	*			
OG9705g	FFR Cooperative									*
WX9-400	Proseeds					*				

¹ Establishment year.

² Harvest year.

* Not significantly different from the highest yielding variety in the test. Shaded boxes indicate that the variety was not in the test. Open boxes indicate the variety was in the test but yielded significantly less than the top ranked variety in the test.

³ Seed for this test came from fields planted on dates indicated.

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