The 1995 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 the higher yields and quality. 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 typically matures earlier in the spring than its legume companion crop. Much breeding work has been done and continues to be done to develop varieties whose maturity coincides more with alfalfa and improvements have been made. Therefore, if it is to be grown in association with alfalfa or red clover, a later maturing variety of orchardgrass should be selected.

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 either certified or Plant Variety Protected (PVP) seed, which will guarantee that the genetics and performance you are paying for are in the bag. Look for the blue tag, which must be attached to all bags of certified seed or look for Plant Variety Protection labelling, which is the proprietor's guarantee. Other information on the label will include the test date, which must be within the previous 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 will be reported. Orchardgrass varieties were sown in 1993 at Lexington and in 1994 at Princeton, Quicksand, and at a surface mine near Quicksand as part of **The Forage Variety Testing Program**. The soils at Quicksand (Pope),

Lexington (Maury) and Princeton (Crider) were well-drained silt loams. All are well-suited to orchardgrass production. The planting medium at the surface mine is material composed primarily of gray shale and sandstone. These materials are almost always very low in organic matter and frequently low in Phosphorus and Potassium. This medium can be well drained to the point of being drouthy or poorly drained to the point of remaining flooded, depending on the particle size of the material below and degree of compaction. Seedings were made at the rate of 20 lb/A into a prepared seedbed with a disk drill. Plots were 4' x 15' in a randomized complete block design with four replications. Nitrogen was topdressed at 50 lb/A of actual N in March, May, and August. The tests were harvested using a sickle type forage plot harvester to simulate a spring cut hay/summer grazing/fall stockpile management system. The first cutting was harvested at each location when spring growth of alfalfa was at the bud/first flower stage and all orchardgrass varieties had reached at least the boot stage. Fresh weights were measured in the field and converted to dry matter production using long-term averages for percent dry matter of orchardgrass. Management of all tests for establishment, fertility, weed control, and harvest management was according to University of Kentucky Cooperative Extension Service recommendations.

Results and Discussion

Weather data for Quicksand, Lexington, and Princeton are presented in Table 1. For the most part temperatures across the state were warmer in the winter and early spring as well as in the summer months of July and August. Quicksand and Lexington were cooler in May and Princeton was warmer in October. Generally speaking, surplusses in precipitation were measured across the state in January, while general deficiencies were measured in February, March, and April. May was a wet month everywhere. Lexington and Princeton remained wet in June and then dried up until August. Quicksand was dry from June through August but was wetter in September, when it was dry in the rest of the state. Precipation was unevenly distributed across the season and within months at all locations. In every month except June, at every location, with or without a surplus, there was at least one rainfall event of greater than 1 inch. Several months received all of their precipitation in a matter of 2-3 days. In August, Princeton received 2.97 inches in one day. Precipitation was also unevenly distributed across the state such that Quicksand had a seasonal surplus of 0.28 inches, while Lexington had a surplus of 3.53 inches and Princeton had a deficiency for the season of 1.66 inches.

Ratings for emergence, vigor, and maturity and dry matter yields (tons/acre) are reported in Tables 2-5. Yields are given by cutting date and as total annual production. Varieties are listed by descending maturity rating. 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 random chance. In the tables, the variety with the highest numerical value in each column is marked with two asterisks (**) and those varieties not significantly different from that variety 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 CV's and larger LSD's.

Overall varieties matured earlier at Princeton (Table 5) compared to Quicksand (Table 2). While the first harvest at Lexington (Table 4) was a week later, the maturity of most varieties was still within the range of the Princeton and Quicksand harvests. Some varieties were past the optimum stage of harvest for orchardgrass, which is late boot/early head (maturity rating = 6.5-9.5). Yields of the 1993 seeding at Lexington were somewhat lower in 1995 than in 1994. This reduction, occurring mainly in the first and second cuttings, has been observed in variety trials for other cool-season grasses of the same age in Kentucky this year and in previous years. Yields of the test sown at Quicksand in 1994 compare well to the first production year yields of the test sown in 1993 at Lexington, however, 1995 was an exceptional year for newly seeded orchardgrass at Princeton. While first cutting yields were similar to those at Quicksand, later harvests produced much more. The surface mine test did not yield much mainly due to soil factors (Table 3). Yields in May and August in that test were not measurable.

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, shaded areas indicate that the variety was not in that particular test (labelled at the top of the column) while clear blocks mean that the variety was in the test. A double asterisk (**) indicates that the variety was the highest yielding variety in the test for that year. A single asterisk (*) means that the variety was not significantly different from the highest yielding variety. 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 2-5).

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. Other College of Agriculture publications related to the establishment, management, and utilization of orchardgrass are listed in Table 7 and are available from your local county extension office.

Table 6. Characterization of orchardgrass varieties and their performance across years and locations.

1995 Kentucky Orchardgrass Variety Tests

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Variety	Source/KY Distributor	Quicksand 1994	Surface mine 1994	Lexington 1993		Princeton 1994
		95	95	94	95	95
COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE						
89-19	Smith Seed Services/J & M Seed	*				
Benchmark	FFR/Southern States	*		*	*	**
Boone	KY Agric. Exp. Sta./Public				*	
Bronc (8702)	Genesis Turf and Forage/Green Seed			*	*	
Crown	Willamette Seed/Dobbs, Sphar, Lewis, Scott			**	*	
Hallmark	James VanLeeuwen	**				*
Haymate	FFR/Southern States	*				*
OG8073	Fine Lawn Research/Geo.W. Hill	*				
OG91134	International Seeds/Green Seed			*	*	
Orion	Van Dyke Seed/to be determined	*	*			
Paiute	Oregon Orchardgrass Commission/Public					
Pizza	Advanta Seeds West					
Potomac	USDA/Public	*			*	*
Pro-file	J.W. Jenks Seed/Scott Seed	*				*
Pro-gress	J.W. Jenks Seed/Scott Seed					
PS-RR	ProSeeds Marketing/Dobson-Hicks					
SC89-19	The Seed Connection	*				
Shiloh	Green Seed	*		*	*	*
Tekapo	Modern Forage Systems/Oldfields Seed					
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE						
8901	American Seed Producers/Experimental					
GA-OG1	GA Agric Exp Sta/Experimental	*	*			*
ISI8511	International Seeds/Experimental	*	**			*
KYEXP1	KY Agric. Exp. Sta./Experimental					
KYEXP2	KY Agric. Exp. Sta./Experimental			*	*	
KYEXP3	KY Agric. Exp. Sta./Experimental				*	
OFI-C4	Olsen-Fennell Seeds/Experimental					
OFI-C9	Olsen-Fennell Seeds/Experimental					
OFI-T8	Olsen-Fennell Seeds/Experimental			*		
OG9001	FFR/Experimental			*	*	
PL-OG-DR1-SYN 1	U.S. N. Atlantic Regional Pasture Lab/Exp.					
PL-OG-DR1-SYN 2	U.S. N. Atlantic Regional Pasture Lab/Exp.					
PL-OG-DR1-SYN 3	U.S. N. Atlantic Regional Pasture Lab/Exp.					
SCS9007238	Soil Conservation Service/Experimental				**	
Tall Oatgrass	Soil Conservation Service/Experimental				*	
WX0-421-6	Willamette Seed/Experimental					
WX0-422-5	Willamette Seed/Experimental					
WX9-400	Willamette Seed/Experimental				*	

[1] Establishment year

[2] Harvest year

Indicates that the variety was not in the test.

** Highest yielding variety in the test for that year.

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

Table 7. University of Kentucky agricultural extension publications related to orchardgrass management

Publication	Title
AGR-58	Orchardgrass
AGR-64	Establishing forage crops
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AGR-26	Renovating hay an pasture fields
AGR-18	Grain and forage crop guide or Kentucky
AGR-1	Line amd fertilizer recommendations
AGR-103	Fertilization of cool-season grasses
ASC-16	Beef: Grass tetany in beef cattle

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