

1994 KENTUCKY BLUEGRASS VARIETY TEST REPORT

L.M. Lauriault, A.J. Powell, J.C. Henning, P.B. Burrus, P.C. Vincelli, and T.D. Phillips

Introduction

Kentucky bluegrass (*Poa pratensis*) is the third most prominent cool-season grass used in Kentucky for forage, behind tall fescue and orchardgrass. As with all cool-season grasses, Kentucky bluegrass does best in cooler weather, becoming relatively non-productive in hot, dry conditions. It is a high quality, long-lived, rhizomatous grass that is used for both turf and forage. Compared to other cool-season grasses, Kentucky bluegrass is slower to germinate (2-3 weeks) and generally is lower in seedling vigor and herbage yield. Most recent varieties have been developed for turf use. Several have been used in horse pastures even though they were not developed for forage use because Kentucky bluegrass is a low growing species that is tolerant of close grazing by horses. It is highly palatable to horses and has no known toxicities. In horse pastures, Kentucky bluegrass grows well with white clover, a low growing, grazing-tolerant legume, that is also a favorite of horse pasture managers. While it is more suited for use by grazing animals, Kentucky bluegrass may be harvested as hay. Management is similar to that for other cool-season grasses.

Most Kentucky bluegrass sown in Kentucky pastures is either an unnamed variety, normally called 'common Kentucky bluegrass', or 'Kenblue', a cultivar jointly developed and released in the late 1960's by the University of Kentucky Agricultural Experiment Station and the USDA Agricultural Research Service.

Description of the Test

Kentucky bluegrass varieties were sown at the University of Kentucky Agricultural Experiment Station Farm at Lexington in the late summer of 1992, as part of the Kentucky Forage Variety Testing Program. Table 1 lists the varieties included in the 1992 seeding and gives information about developers and distributors in addition to known characteristics. The objective of this study was to compare dry matter yield of Kentucky bluegrass varieties under simulated grazing and hay management schemes in Central Kentucky.

Seedings were made at the rate of 10 lb/A into a prepared seedbed with a disk drill with rows spaced 7 inches apart. Plots were 4' x 15' arranged 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 test was harvested using a sickle type forage plot harvester leaving a 2" stubble to simulate a hay management system with stockpiling in the fall. The first cutting was harvested when varieties were in the heading stage. Subsequent harvests were to be made during the summer as growth permitted. After mid-August the plots were allowed to grow and accumulate dry matter production until late October. Fresh weights were measured in the field and converted to dry matter production using long-term averages for dry matter percent of Kentucky

bluegrass.

The soil was Maury silt loam, a well-drained soil with initial soil test levels of over 200 lbs P/ac, 437 lbs K/ac, and a pH of 6.0. Plot fertilization and weed control for this study was according to University of Kentucky Extension Service recommendations. College of Agriculture publications related to the establishment, management, and utilization of Kentucky bluegrass are listed in Table 2 and are available from your local county extension office.

Results and Discussion

Weather data for the 1994 growing season at Lexington are presented in Table 3. With the exception of May, the spring months were warmer than normal and precipitation was above average. The summer and fall were cooler and much drier than normal.

In addition to maturity ratings and dry matter yields, spreading habit, leaf width, and disease ratings are reported in Table 4. Statistical analyses were performed on all data to test the significance of varietal differences. In Table 4, the variety with the highest numerical value within each column is marked with two asterisks (**) and those varieties that are not significantly different from that variety are marked with one asterisk (*). To determine if two varieties are significantly different, compare the difference between them to the LSD (Least Significant Difference) at the bottom of that column. If the difference is equal to or greater than the LSD, the varieties are significantly different when grown under those conditions. The Coefficient of Variation (CV), a measure of the variability of the data, is included for each column of means.

The spreading habit rating is a measure of the ability of the variety to form a sod. Kentucky bluegrass is generally known to be a good sod-former, spreading by rhizomes. The rating used in this report is based on how well the variety has filled in the area between seeded rows since establishment in 1992. Leaf width rating is another visual observation. Desirable turf will usually have a narrow leaf blade while a wider blade is preferable for forage production.

Ratings for melting out were made in July and for crown rust in October. Melting out, caused by species of *Helminthosporium* fungi, begins as small 'water soaked' areas that become reddish-brown to purplish-black as they enlarge. When a lesion grows across a leaf or tiller, that leaf or tiller dies and falls off the plant. In severe cases, stand thinning can occur. This disease usually attacks plants during warm, dry weather such as happened in July 1994. Crown rust is caused by *Puccinia coronata*. The cooler than normal temperatures during August and September were conducive to development of a severe rust epidemic. In 1994, a uniform, severe outbreak developed from naturally occurring inoculum, and differences among varieties were clearly apparent. The disease begins as light yellow flecks on the leaves which then become reddish-brown to orange. Eventually the entire leaf becomes yellow to brown with possible stand loss resulting. In this test, resistant varieties maintained a uniform dark green leaf color while susceptible varieties developed a uniform lemon yellow leaf color.

In Table 4, varieties are listed by descending maturity rating taken May 9, just

before the first harvest. Yields are given by harvest date and as total annual production. Yields in 1994 were about 1.5 tons/acre lower than in 1993 despite higher first cutting yields. The lower yields were probably due to the drier summer; the varieties in this test did not produce any measurable yields after the first cutting during the hot, dry weather. Growth began again when temperatures dropped and precipitation increased in August. Since moisture was still limiting in the fall, stockpiled production was depressed.

There was a change in rank from year to year among the top yielders for the duration of the test. 'Kenblue' and 'Lato' produced significantly higher yields than 'Troy' in 1993, but in 1994 'Troy' had the highest yields. In both years 'Troy' was the top yielder for the fall harvest while its summer production was below the test average in 1993. Spring and summer yields for 'Kenblue' and 'Lato' were at the top of the test in 1993; however, there was no measurable summer production in 1994. As a result, 'Kenblue' and 'Lato', still with respectable yields, were significantly lower in yield for 1994 than 'Troy'. The 2-year total indicates that any of the three varieties would yield well. 'Kenblue' and 'Troy' were the most susceptible to the melting out disease in July, and 'Lato' had the widest leaf blade but was not a good sod former under the conditions of this test. As expected, the varieties developed for pasture use (Table 1) produce higher forage yields than turf types.

Final Comments

Selecting a good Kentucky bluegrass variety is an important first step in establishing a productive pasture. When choosing a Kentucky bluegrass variety 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. Proper management, beginning with seedbed preparation and continuing throughout the life of the stand, is necessary for even the highest yielding variety to produce near its genetic potential. Be sure to contact your county extension office for other information about management of Kentucky bluegrass.

TABLE 1. CHARACTERIZATION OF KENTUCKY BLUEGRASS VARIETIES SOWN 15 SEP 1992 AT LEXINGTON, KENTUCKY.

VARIETY	DEVELOPER\PROPRIETOR	DISTRIBUTOR	CHARACTERISTICS
1757	LOFTS SEED	LOFTS SEED	TURF TYPE
BM-3	PURE SEED TESTING	EXPERIMENTAL	TALL, LEAFY, EARLY MATURING
BRONCO	PICKSEED WEST	PICKSEED WEST	VIGOROUS TURF TYPE, LARGE SEEDED
FREEDOM	JACKLIN SEED	JACKLIN SEED	FAST ESTABLISHING TURF TYPE
GEORGETOWN	LOFTS SEED	LOFTS SEED	TURF TYPE
HUNTSVILLE	JACKLIN SEED	JACKLIN SEED	NATURALLY TALL GROWING
KENBLUE	KENTUCKY AGRIC. EXP. STA.	PUBLIC	LOW MANAGEMENT TURF AND PASTURE
LATO	PURE SEED TESTING	PURE SEED TESTING	LATE MATURING, PASTURE TYPE
TROY	MONTANA AGRIC. EXP. STA.	JACKLIN SEED	LEAFY, UPRIGHT, PASTURE TYPE
VOYAGER	PURE SEED TESTING	PURE SEED TESTING	TALL, LEAFY, EARLY MATURING, DROUGHT TOLERANT

TABLE 2. UNIVERSITY OF KENTUCKY
EXTENSION PUBLICATIONS RELATED TO
KENTUCKY BLUEGRASS MANAGEMENT.

<u>PUB.</u>	<u>TITLE</u>
AGR-134	KENTUCKY BLUEGRASS AS A FORAGE CROP
AGR-64	ESTABLISHING FORAGE CROPS ----- SEED TAGS: WHAT THEY REVEAL
AGR-26	RENOVATING HAY AND PASTURE FIELDS
AGR-18	GRAIN AND FORAGE CROP GUIDE FOR KENTUCKY
AGR-1	LIME AND FERTILIZER RECOMMENDATIONS
AGR-103	FERTILIZATION OF COOL-SEASON GRASSES
ASC-120	FORAGES FOR HORSES
AGR-81	HORSE PASTURE
<u>SC-16</u>	<u>BEEF: GRASS TETANY IN BEEF</u> <u>CATTLE</u>

TABLE 3. TEMPERATURE AND RAINFALL
IN LEXINGTON DURING 1994.

<u>RAINFALL</u>	<u>TEMPERATURE</u>		<u>INCHES</u>
	<u>F</u>	<u>DEP.</u>	
<u>MONTH</u>			
<u>DEP.</u>			
JAN	25	-6	3.60
+0.03			
FEB	36	+1	3.41
+0.15			
MAR	43	-1	5.95
+1.12			
APR	58	+3	6.02
+2.01			
MAY	60	-4	4.05
-0.18			
JUN	74	+2	2.01
-2.24			
JUL	76	0	2.62
-2.33			
AUG	72	-3	5.86
+1.90			
SEP	65	-3	1.43
-1.85			
<u>OCT</u>	<u>57</u>	<u>0</u>	<u>1.71</u>
<u>-0.55</u>			

TEMPERATURES ARE IN DEGREES
FAHRENHEIT.
DEP. IS DEPARTURE FROM THE 30-YEAR
AVERAGE FOR THE LOCATION.

TABLE 4. 1994 DRY MATTER YIELDS (TONS/ACRE) AND MATURITY, DISEASE, AND SPREADING HABIT RATINGS OF KENTUCKY BLUEGRASS VARIETIES SOWN 15 SEP 1992 AT LEXINGTON, KENTUCKY.

VARIETY	SPREADING		WIDTH ²	DISEASES ³		1994 MATURITY ⁴			1993	1994 HARVESTS		1994	2-YR
	MAY05	JUN01	JUN01	JUL11	OCT18	MAY05	MAY09	TOTAL	TOTAL	MAY10	OCT24	TOTAL	TOTAL
KENBLUE	2.00	6.25	2.25	7.25*	2.00	9.00**	11.00**	3.87*	3.87*	1.31	0.86	2.17	6.04*
TROY	2.75	5.00	2.00	7.50**	6.75	9.00**	11.00**	3.44	3.44	1.48**	1.19**	2.67**	6.11*
HUNTSVILLE	4.50	6.75	3.00	5.50	5.50	7.00	10.25	3.51	3.51	1.06	1.08*	2.14	5.64
LATO	1.00	1.00	9.00**	6.00	3.25	7.00	10.25	4.21**	4.21**	1.20	1.02	2.22	6.43**
VOYAGER	4.25	5.75	4.00	4.25	6.00	4.00	10.25	3.11	3.11	0.90	0.83	1.72	4.83
BM-3	7.75**	8.00**	5.50	5.75	7.75	7.00	10.00	3.15	3.15	0.95	0.80	1.75	4.90
FREEDOM	3.50	7.50*	3.75	4.25		3.00	10.00	3.35	3.35	0.65	0.90	1.55	4.90
GEORGETOWN	6.50	7.50*	3.25	4.25	7.00	3.00	10.00	3.05	3.05	0.75	0.85	1.60	4.65
1757	7.00*	7.50*	4.00	4.75	7.00	3.00	10.00	3.14	3.14	0.69	0.93	1.61	4.75
BRONCO	2.00	6.00	6.50	6.25*	1.00	1.00	9.00	3.29	3.29	0.51	0.90	1.41	4.70
MEAN	4.13	6.13	4.33	5.58	5.50	5.30	10.18	3.41	3.41	0.95	0.94	1.89	5.30
CV, %	17.32	12.71	12.25	13.09	11.81	11.93	20.66	7.32	7.32	12.61	9.38	8.17	6.47
LSD, 0.05	1.04	1.13	0.77	1.06	0.94	0.92	0.39	0.36	0.36	0.17	0.13	0.22	0.50

¹SPREADING HABIT RATING: 1=LITTLE SPREADING, STILL IN SEEDED ROWS; 9=GOOD GROUND COVER.

²LEAF WIDTH RATING: 1=NARROW-LEAFED; 9=BROAD-LEAFED.

³DISEASE RATINGS: 1=SUSCEPTIBLE (MOST DISEASE PRESENT); 9=RESISTANT (LEAST DISEASE PRESENT). JUL11 RATING IS FOR MELTING OUT; OCT18 RATING IS FOR CROWN RUST.

⁴MATURITY RATING SCALE

1=VEGETATIVE	11=FULL HEAD
3=EARLY BOOT	13=EARLY BLOOM
5=MID BOOT	15=FULL BLOOM
7=LATE BOOT	17=SEED (DOUGH)
9=EARLY HEAD	19=MATURE SEED

1993 TOTAL INCLUDES 4 HARVESTS DATED MAY06, JUN07, JUL13, AND OCT28.

**HIGHEST NUMERICAL VALUE IN THE COLUMN.

*NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN BASED ON THE 5% LSD.