



# The 1996 Alfalfa Report

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## Introduction

Alfalfa (*Medicago sativa*) is historically the highest yielding, highest quality forage legume grown in Kentucky. It forms the basis of Kentucky's cash hay enterprise and is an important component in dairy, horse, beef and sheep diets. In 1995, 1.17 million tons of alfalfa hay were produced in Kentucky in addition to that produced for haylage, silage, and grazing. At \$108 per ton, the value of this alfalfa hay alone to Kentucky farmers would be almost \$126 million. Choosing a good alfalfa variety is a key step in establishing a stand of alfalfa because it can make the difference between growing 3 tons of hay per acre per year or 6 tons as well as thicker, more persistent stands.

This report provides current yield data on alfalfa varieties included in yield trials in Kentucky as well as guidelines for selecting alfalfa varieties.

## Considerations in Selecting an Alfalfa Variety

**Local Adaptation and Persistence.** High yields in variety tests over a range of years and locations within the region are the best indication that a variety is locally adapted and persistent. Several varieties are adapted for use in Kentucky as determined from the test results in this report.

**Winter Hardiness.** Each variety has a fall dormancy rating ranging from 1 (very dormant) to 9 (non-dormant). Varieties with lower dormancy ratings start growing later in the spring and stop growing sooner in the fall. This growth habit can, but does not necessarily, reduce annual yields compared to less dormant varieties. Generally alfalfa should have a fall dormancy rating of 2-5 to perform well in Kentucky and have good winter survival. Ratings of 6 and above are not winter-hardy under Kentucky conditions.

**Disease and Pest Resistance.** In Kentucky, producers should use varieties that have at least an "MR" (moderate resistance) rating to: Phytophthora root rot (PRR), anthracnose (An), bacterial wilt (Bw), and fusarium wilt (Fw) as well as an "R" (resistance) rating to Aphanomyces root rot (APH). Kentucky research indicates that APH is a widespread problem in the state and that resistance is beneficial, particularly in soils also infested with Phytophthora root rot.

Phytophthora root rot is a fungal disease associated with poorly drained soils or excessive rainfall. This disease causes yellowish to reddish-brown areas on roots and crowns that eventually become black and rotten. The topgrowth of infected plants appears stunted and yellow.

Anthrachnose, also caused by a fungus, attacks the stems of alfalfa, preventing water flow to the rest of the shoot and causing sudden wilting. These wilted shoots have a characteristic "shepherd's crook" appearance. Anthracnose can also cause a bluish-black crown rot.

Bacterial wilt and fusarium wilt are infections of the water-conducting tissues of alfalfa roots that do not cause any noticeable root rot. These diseases prevent water flow to leaves resulting in wilting of shoots and the eventual death of infected plants. Roots infected with bacterial wilt often have a yellowish-brown discoloration of the inner woody cylinder of the taproot. Fusarium infection can be recognized by brown to red streaks in the inner woody cylinder of the taproot.

Aphanomyces root rot is another fungal disease associated with poorly drained soils or excessive rainfall. Affected seedlings will be stunted but remain upright, unlike symptoms of damping off. In established plants, root symptoms are not as well defined as those for Phytophthora root rot but brown lesions on the taproot indicate where lateral roots were destroyed. This disease can be associated with Phytophthora root rot and, together, they may form a root disease complex. Aphanomyces root rot is known to affect new seedlings in Kentucky but it is still unclear how it affects established alfalfa.

**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

Alfalfa variety tests were established on post-mine land near Quicksand (1995) and at Mayslick (1994), Lexington (1995), Owenton (1996), Bowling Green (1992 & 1996), and Princeton (1993), as part of **The Forage Variety Testing Program**. The soils at most locations are well-suited to alfalfa in that they are generally well-drained silt loams (Lowell, Maury, Heitt, Pembroke, and Crider, at Mayslick, Owenton, Lexington, Bowling Green, and Princeton, respectively). The Bowling Green and Owenton tests are on soils that are naturally infested with both Phytophthora and Aphanomyces root rot pathogens, the soil at Mayslick is infested with only Aphanomyces, and the Lexington and Princeton tests are on soils that are not infested with detectable levels of either pathogen. 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 droughty or poorly drained to the point of remaining flooded, depending on the particle size of the material below and degree of compaction. Plots were 4 x 15 feet in a randomized complete block design with four replications. In each test, 20 pounds of seed per acre were planted into a prepared seedbed using a disk drill. Plots were harvested with a sickle-type forage plot harvester. First cuttings in the seedling year are delayed to allow the alfalfa to completely reach maturity as indicated by full bloom, which generally occurs about 80 days after seeding. Otherwise, harvests were taken when the alfalfa was in the bud to early-flower stage. Fresh weights were measured in the field and converted to dry matter production using long-term averages for alfalfa dry matter percent. Management of all tests for establishment, fertility, pest control, and harvest management was according to University of Kentucky Cooperative Extension Service recommendations. Pests (weeds and insects) are controlled so that they would not limit yield or persistence.

### Results and Discussion

Weather data for Quicksand, Mayslick, Owenton, Lexington, Bowling Green, and Princeton are presented in Table 1. The Mayslick weather data comes from the Ripley Research Farm 15 miles to the north at Ripley, Ohio and data for Owenton is from Williamstown, 10 to the northeast. Temperatures across the state were warmer in the winter and late spring with March and April somewhat cooler. July and August were near normal at all locations except Lexington and Bowling Green where July was cooler. September was also cooler except at Quicksand and Owenton, which were near normal. Temperatures in October were near normal everywhere except Quicksand, which was much warmer. All locations measured a surplus of >3 inches of precipitation, except Bowling Green, which had a deficit of 1.81 inches. Generally, January, April, May, and September were wetter than normal, while February, March, and August were drier. June and October were wetter at Quicksand, Mayslick, Owenton, and Princeton but dry at Lexington and Bowling Green. July was dry everywhere but Princeton. Precipitation was not only unevenly distributed across the season at all locations but also within months. There were numerous rainfall events of greater than 1 inch and several instances in which the total rainfall for the month fell in a matter of 2-3 days.

Yield data (on a dry matter basis) for all tests are reported in Tables 2-8. Varieties are listed in order from highest to lowest total production (for the life of the test). Experimental varieties are listed separately at the bottom of the tables and are not available commercially. Yields are given by cutting for 1996 and by year for each year of production. Percent stand ratings are included for the 1992 seeding at Bowling Green. Statistical analyses were performed on all alfalfa yield data (including experimentals) to determine if the apparent differences are truly due to variety or just due to chance. 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 the two varieties to the Least Significant Difference (LSD) at the bottom of the column. If the

difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at a given location. The Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable and increased variability within a study results in higher CV's and larger LSD's.

Yields of alfalfa grown on post-mine land (Table 2) were considerably less than alfalfa grown on traditionally agricultural soils. However, they were comparable to yields measured in similar tests in 1983-84 (KY Agr Exp Sta Progress Report 295). The Mayslick test sown in 1994 yielded 2 tons/acre less in 1996 than in 1995, as the 1993 seeding at Princeton (Tables 3 & 8). First cutting yields were lower, probably caused by the cool, wet spring. The 1992 seeding at Bowling Green yielded at the same level in 1996 as in 1995 (Table 6). While stands of most varieties were still fairly good, it was evident that some varieties were 'playing out' as indicated by percent stand. As a fall seeding, the test at Lexington (Table 4) performed similarly in the first production year to a test sown at Princeton in the fall of 1990 (KY Agr Exp Sta Progress Report 370) even though first cutting yields were not measured due to a high incidence of weeds. The 1996 seeding at Owenton suffered a severe attack by *Aphanomyces* root rot. Even varieties with high resistance to the disease were adversely affected (Table 5). The effects of the disease were enhanced by the wet spring and poor drainage followed by a two month drought in July and August (Table 1). Most varieties maintained sufficient stands to be productive in the future. Of the varieties labelled 'Buffalo-A' and 'Buffalo-B', one performed well and the other did not. These entries are from seedlots of Buffalo that were sold to Kentucky farmers in 1996. Buffalo is an older variety that is no longer available as certified seed. It is obvious that there is no consistency in production between lots of Buffalo seed and use of this variety would be risky at best. There is, however, consistency in performance within seedlots such that 'Buffalo-B' performed equally well in the 1996 seeding at Bowling Green, while performance by 'Buffalo-A' was equally poor (Table 7). In fact, plots of 'Buffalo-A' stood out visually as having less than 50% stand. Otherwise, in that test exceptional seeding year yields were measured, exceeding that of previous tests by about 1 ton/acre.

Table 9 summarizes information about proprietors, distributors, fall dormancy, disease resistance, and yield performance across years and locations for all the varieties currently included in the tests discussed in this report. 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 9, 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 based on the 5% LSD. It is best to choose a variety that has performed well over several years and locations as indicated by the asterisks. Make sure seed of the variety is properly labelled and will be available when needed.

## Summary

Consistent production of high yields of alfalfa is the result of good variety selection along with the implementation of good management techniques. Soil fertility should be maintained at recommended levels based on soil tests, and pests such as weeds, alfalfa weevil, and potato leafhopper should be controlled using the appropriate cultural and/or chemical methods. Harvesting established stands at the appropriate stage of maturity will produce four to five cuttings annually in Kentucky before mid-September. For further information about alfalfa management, refer to the other College of Agriculture publications listed in Table 10. These publications are available at the local county Extension office.

**TABLE 1. TEMPERATURE AND RAINFALL AT QUICKSAND, MAYS LICK, LEXINGTON, OWENTON,  
BOWLING GREEN, AND PRINCETON IN 1996.**

MN	QUICKSAND				MAYS LICK				LEXINGTON				OWENTON				BOWLING GREEN				PRINCETON			
	TEMP		RAINFALL		TEMP		RAINFALL		TEMP		RAINFALL		TEMP		RAINFALL		TEMP		RAINFALL		TEMP		RAINFALL	
	F	DEP	IN	DEP	F	DEP	IN	DEP	F	DEP	IN	DEP	F	DEP	IN	DEP	F	DEP	IN	DEP	F	DEP	IN	DEP
JAN	34	+3	5.02	+1.73	29	+1	4.81	+2.31	31	+0	4.38	+1.52	31	+1	4.21	+1.67	36	+2	4.18	+0.36	36	+2	4.94	+1.14
FEB	38	+5	2.17	-1.43	32	+1	2.79	+0.13	36	+1	1.50	-1.71	35	+2	2.51	-0.24	39	+1	2.86	-1.27	40	+2	1.74	-2.69
MAR	39	-2	4.04	-0.30	36	-6	3.58	-0.63	39	-5	4.44	+0.04	39	-4	4.24	-0.48	41	-5	4.60	-0.50	43	-4	4.38	-0.56
APR	52	-1	4.59	+0.49	50	-2	6.02	+1.96	51	-4	5.15	+1.27	52	-2	7.55	+3.40	53	-4	4.61	+0.29	56	-3	5.98	+1.18
MAY	66	+4	5.65	+1.17	64	+2	11.27	+6.45	66	+2	8.23	+3.76	66	+3	10.50	+6.09	69	+3	4.39	-0.55	70	+3	5.19	+0.23
JUN	72	+2	5.17	+1.35	72	+2	6.52	+2.64	72	+0	3.45	-0.21	73	+2	4.58	+0.81	74	-1	3.62	-0.55	75	+0	4.13	+0.28
JUL	73	-1	4.75	-0.50	73	-1	6.11	+1.60	73	-3	4.80	-0.20	74	-1	1.68	-2.85	76	-2	3.83	-0.91	77	-1	7.04	+2.75
AUG	74	+1	2.79	-1.22	73	+1	1.50	-2.60	74	-1	3.13	-0.80	75	+1	2.76	-0.97	76	-1	1.67	-1.84	78	+1	0.82	-3.19
SEP	66	+0	4.86	+1.34	-	-	-	-	66	-2	5.11	+1.91	67	-1	4.66	+1.47	67	-3	7.03	+3.31	69	-2	6.52	+3.19
OCT	58	+4	3.44	+0.53	-	-	-	-	57	-0	1.39	-1.18	58	+1	1.83	-1.16	58	+0	2.87	-0.15	61	+2	6.21	+3.16

DATA FOR MAYS LICK IS FROM THE RIPLEY RESEARCH FARM AT RIPLEY, OH, 15 MILES NORTH, DATA FOR SEPTEMBER AND OCTOBER WERE UNAVAILABLE FROM THAT LOCATION.

DATA FOR OWENTON IS FROM WILLIAMSTOWN, KY, 10 MILES NORTHEAST.

DEP IS DEPARTURE FROM THE LONG-TERM AVERAGE FOR THAT LOCATION.

**TABLE 2. DRY MATTER YIELDS OF COMMERCIALY AVAILABLE ALFALFA  
VARIETIES SOWN 14 APRIL 1995 ON POST-MNE LAND  
NEAR QUICKSAND, KENTUCKY.**

VARIETY	1996 HARVESTS			
	MY28	JUN19	SEP10	TOTAL96
EXCALIBUR-II	0.95**	0.52*	0.19	1.66**
HAYGRAZER	0.93*	0.55**	0.15	1.63*
SUPERCUTS	0.94*	0.48*	0.13	1.55*
APOLLO	0.90*	0.49*	0.15	1.54*
WL323	0.86*	0.47*	0.19	1.52*
ARC	0.88*	0.45*	0.17	1.51*
DK127	0.75*	0.39	0.36**	1.50*
PHANTOM	0.90*	0.52*	0.08	1.50*
DK133	0.80*	0.37	0.21*	1.38*
630	0.80*	0.48*	0.10	1.38*
LEGACY	0.76*	0.37	0.23*	1.36*
SARANAC-AR	0.72*	0.38	0.17	1.27*
DOMNATOR	0.61	0.43*	0.20*	1.24*
RUSHMDRE	0.66	0.39	0.15	1.19
5454	0.67	0.37	0.12	1.17
MEAN	0.81	0.44	0.17	1.43
CV, %	22.63	25.91	74.41	21.84
LSD, 0.05	0.26	0.16	0.19	0.44

\*\*HIGHEST NUMERICAL VALUE IN THE COLUMN.

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

**TABLE 3. DRY MATTER YIELDS (TONS/ACRE) OF ALFALFA VARIETIES SOWN 19 APRIL 1994,  
ON THE CHARLES BOYD FARM AT MYSLICK, KENTUCKY.**

VARIETY	1994	1995	1996 HARVESTS						1996	3-YR
	TOTAL	TOTAL	MAY10	JUN12	JUL16	AUG13	SEP10	OCT29	TOTAL	TOTAL
<b>COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE</b>										
REWARD	2.42	6.96**	1.30**	1.32**	0.66*	0.67*	0.49*	0.32**	4.76**	14.13*
STERLING	2.86*	6.40*	1.17*	1.22*	0.66*	0.68*	0.37	0.23*	4.32*	13.58*
RUSHMORE	2.39	6.48*	1.21*	1.28*	0.56	0.69*	0.48*	0.28*	4.49*	13.35*
LEGACY	2.96**	6.39*	1.16*	1.16*	0.49	0.51	0.40	0.23*	3.95	13.30*
630	2.58*	6.42*	1.15*	1.20*	0.57	0.58	0.48*	0.27*	4.25*	13.25*
RESISTAR	2.73*	6.31*	1.16*	1.20*	0.66*	0.59	0.32	0.24*	4.17	13.21*
APOLLO	2.48*	6.36*	1.15*	1.12	0.53	0.55	0.49*	0.18	4.03	12.87*
5454	2.30	6.35*	1.21*	1.19*	0.59	0.62	0.37	0.22	4.19	12.85*
CRYSTAL	2.72*	6.00	1.11	1.18*	0.62	0.61	0.30	0.24*	4.07	12.79*
MDRE	2.21	6.12*	1.22*	1.24*	0.73*	0.71*	0.33	0.21	4.45*	12.78*
WL323	2.37	6.23*	1.06	1.18*	0.64	0.67*	0.38	0.20	4.13	12.72*
PASTURE-PLUS	2.03	6.15*	1.14*	1.20*	0.81**	0.75*	0.34	0.26*	4.50*	12.68*
SARANAC-AR	2.37	6.02	1.12*	1.17*	0.67*	0.68*	0.37	0.25*	4.26*	12.66
MAGNUM-IV	2.31	6.09*	1.17*	1.21*	0.68*	0.63	0.33	0.20	4.23*	12.63
ARC	2.38	6.07	1.08	1.16*	0.62	0.61	0.41*	0.20	4.08	12.53
DK133	2.26	6.18*	0.82	1.02	0.64	0.71*	0.32	0.29*	3.79	12.23
MULTISTAR	2.15	5.81	0.95	1.10	0.73*	0.75*	0.30	0.21	4.05	12.00
<b>EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE</b>										
PGI9047	2.79*	6.82*	1.20*	1.25*	0.66*	0.64	0.57**	0.29*	4.61*	14.22**
ABI9236	2.25	6.26*	1.08	1.18*	0.69*	0.76*	0.42*	0.23*	4.35*	12.86*
ABI923AA	2.19	6.05	1.14*	1.22*	0.70*	0.81*	0.37	0.24*	4.47*	12.72*
ABI9237	1.87	6.20*	1.13*	1.24*	0.74*	0.78*	0.43*	0.29*	4.61*	12.67
A9008	2.37	5.62	1.13*	1.18*	0.78*	0.82**	0.33	0.22	4.46	12.44
A9109	2.01	5.40	0.97	1.03	0.74*	0.77*	0.43*	0.20	4.14	11.55
MEAN	2.39	6.20	1.12	1.18	0.60	0.68	0.18	0.11	4.28	12.87
CV, %	15.01	9.56	11.95	10.86	18.57	18.16	30.13	30.35	8.99	8.56
LSD, 0.05	0.51	0.84	0.19	0.18	0.17	0.17	0.17	0.10	0.54	1.56

1994 TOTAL INCLUDES 3 HARVESTS DATED AUG02, SEP06, AND OCT26.

1995 TOTAL INCLUDES 6 HARVESTS DATED MAY05, JUN07, JUL05, AUG08, SEP11, AND NOV02.

\*\*HIGHEST NUMERICAL VALUE IN THE COLUMN.

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

**TABLE 4. DRY MATTER YIELDS (TONS/ACRE) OF ALFALFA VARIETIES SOWN  
6 SEPTEMBER 1995, AT LEXINGTON, KENTUCKY.**

VARIETY	1996 HARVESTS				1996
	JUN21	AUG09	SEP09	OCT28	TOTAL
<b>COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE</b>					
RUSHMORE	1.07*	2.87**	1.31*	0.70**	5.95**
DK127	1.03*	2.69*	1.32**	0.66*	5.71*
CHOICE	0.81	2.68*	1.06	0.63*	5.18*
EXCALIBUR-II	0.99*	2.38*	1.16*	0.62*	5.15*
MULTI QUEEN	1.03*	2.50*	0.96	0.60*	5.09*
WL323	0.90*	2.49*	1.06	0.62*	5.07*
DK133	1.00*	2.43*	0.89	0.63*	4.96
SUPERCUTS	0.79	2.48*	1.09	0.55	4.90
5454	1.04*	2.23	1.08	0.51	4.87
ARC	0.85*	2.43*	1.07	0.49	4.84
329	0.87*	2.28	1.01	0.54	4.69
SARANAC-AR	0.75	2.43*	0.95	0.55	4.67
DOMINATOR	0.80	2.22	1.00	0.58*	4.61
LEGACY	0.91*	2.19	1.03	0.47	4.59
APOLLO	0.79	1.92	0.84	0.35	3.90
630	0.67	1.87	0.77	0.39	3.70
<b>EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE</b>					
ABI9231	1.15**	2.50*	1.07	0.61*	5.32*
93-116	0.70	2.56*	1.09	0.62*	4.97
GA-APGC	0.86*	2.59*	1.04	0.45	4.94
ZC9346	0.81	2.29	0.86	0.45	4.41
GA-MK	0.84	1.98	0.91	0.47	4.20
MEAN	0.88	2.38	1.03	0.55	4.85
CV, %	24.31	17.10	15.17	19.07	13.75
LSD, 0.05	0.31	0.58	0.22	0.15	0.94

SPRING GROWTH WAS REMOVED MAY13, BUT NOT MEASURED DUE TO A HIGH WEED INFESTATION.

\*\*HIGHEST NUMERICAL VALUE IN THE COLUMN.

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

**TABLE 5. DRY MATTER YIELDS (TONS/ACRE) AND RATINGS FOR PLANT VIGOR AND PERCENT STAND OF COMMERCIALY AVAILABLE ALFALFA VARIETIES SOWN 18 APRIL 1996, AT UNIVERSITY OF KENTUCKY EDEN SHALE FARM NEAR OWENTON, KENTUCKY.**

VARIETY	VIGOR		% STAND		1996 HARVESTS		1996
	MY30	NOV01	JUL23	NOV01	JUL11	AUG22	TOTAL
GEM	1.00	3.25	48.75*	52.50	0.94**	0.11*	1.05**
BUFFALO-B	0.92	2.75	37.50*	47.50	0.76*	0.17**	0.93*
AFFINITY+Z	3.25*	4.00*	50.00*	85.00*	0.77*	0.13*	0.89*
WL252HQ	1.25	3.75	35.75*	63.75*	0.77*	0.12*	0.89*
BUFFALO-A	0.58	1.50	15.25	13.75	0.79*	0.05	0.84*
631	1.17	4.00*	25.00	61.25	0.76*	0.07	0.83*
645	2.75*	3.25	48.00*	72.50*	0.72*	0.11*	0.83*
LEGACY	3.58*	4.75**	37.50*	85.00*	0.69*	0.10*	0.79*
TMF-GENERATION	3.17*	4.50*	42.50*	85.00*	0.68*	0.10*	0.78*
APOLLO	1.50	4.00*	33.75*	68.75*	0.70*	0.07	0.78*
FORTRESS	1.25	3.75	28.25	61.25	0.71*	0.07	0.77*
DEPEND+EV	3.08*	4.50*	47.00*	87.50**	0.65	0.10*	0.75
CHOICE	2.75*	4.00*	35.00*	75.00*	0.66*	0.09*	0.75
DK133	3.75**	4.50*	28.75	85.00*	0.65	0.07	0.73
DK127	3.25*	4.50*	61.25**	82.50*	0.55	0.14*	0.69
SUPERCUTS	2.58*	4.25*	48.75*	83.75*	0.57	0.11*	0.68
ARC	0.67	2.50	28.75	41.25	0.62	0.04	0.66
RUSHMORE	2.75*	3.75	31.25*	73.75*	0.57	0.07	0.64
WL324	3.08*	4.00*	20.00	87.50**	0.52	0.04	0.55
SARANAC-AR	2.25	3.75	31.25*	80.00*	0.48	0.07	0.55
MEAN	2.23	3.76	36.71	69.63	0.68	0.09	0.77
CV, %	40.13	18.43	60.67	24.73	30.39	69.09	27.65
LSD, 0.05	1.27	0.98	31.54	24.38	0.29	0.09	0.30

VIGOR RATING SCALE:                    0=POOR                    5=EXCELLENT

\*\*HIGHEST NUMERICAL VALUE IN THE COLUMN.

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

**TABLE 6. DRY MATTER YIELDS (TONS/ACRE) AND PERCENT STAND RATINGS OF ALFALFA VARIETIES  
SOWN 14 APRIL 1992, AT BOWLING GREEN, KENTUCKY.**

VARIETY	% STAND	1992	1993	1994	1995	1996 HARVESTS						1996	5-YR
	JUL17	TOTAL	TOTAL	TOTAL	TOTAL	MAY09	JUN12	JUL17	AUG14	SEP11	OCT30	TOTAL	TOTAL
<b>COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE</b>													
APOLLO-SUPREME	87.50**	4.80**	5.56*	3.27*	4.62*	0.54*	0.75*	0.67*	0.87**	0.57*	0.34*	3.72*	21.97**
MAGNUM-III	81.25*	4.36*	5.63*	3.30*	4.55*	0.50*	0.74*	0.63*	0.77*	0.52*	0.38*	3.54*	21.37*
STINE-9227	82.50*	3.87	4.62	3.27*	4.74*	0.60**	0.85**	0.73**	0.84*	0.48*	0.42**	3.93**	20.43*
630	81.25*	3.60	5.46*	3.37*	4.41*	0.48*	0.74*	0.67*	0.79*	0.41	0.38*	3.48*	20.33*
5373	83.75*	4.24*	5.44*	3.16*	4.39*	0.39	0.62	0.64*	0.70*	0.39	0.29	3.03	20.25*
DOMINATOR	83.75*	3.83	4.60	3.24*	4.75**	0.56*	0.76*	0.69*	0.79*	0.45*	0.42**	3.66*	20.09*
DAWN	81.25*	3.83	5.27*	3.20*	4.52*	0.46*	0.69	0.64*	0.73*	0.43	0.28	3.22	20.03*
AGGRESSOR	80.00*	4.03*	5.57*	2.96*	4.14*	0.39	0.60	0.68*	0.78*	0.59**	0.29	3.33	20.03*
OVATION	80.00*	4.37*	5.02	3.15*	4.44*	0.43	0.61	0.61*	0.64	0.37	0.32*	2.97	19.96*
MULTISTAR	67.50	4.39*	5.56*	3.00*	4.14*	0.37	0.57	0.54	0.60	0.40	0.24	2.73	19.82*
5454	76.25*	3.39	5.64*	3.39**	4.19*	0.49*	0.65	0.54	0.70*	0.43	0.28	3.09	19.70
CROWN-II	71.25*	3.76	5.01	3.09*	4.51*	0.47*	0.67	0.60*	0.75*	0.41	0.34*	3.24	19.62
WEBFOOT-MPR	73.75*	4.06*	5.40*	3.04*	4.22*	0.35	0.58	0.55	0.63	0.49*	0.27	2.87	19.60
LEGACY	63.75	4.47*	5.95**	2.54	4.08	0.24	0.50	0.49	0.43	0.38	0.20	2.24	19.29
DK133	68.75	4.12*	5.08	2.89*	3.98	0.37	0.61	0.60*	0.69	0.43	0.34*	3.03	19.09
WL322HQ	85.00*	3.70	4.75	3.07*	4.30*	0.40	0.65	0.65*	0.63	0.49*	0.36*	3.18	19.01
ZENITH	62.50	4.03*	5.55*	2.82	3.95	0.31	0.56	0.51	0.56	0.42	0.27	2.63	18.98
SARANAC-AR	83.75*	4.33*	4.67	2.81	4.09*	0.40	0.59	0.57	0.77*	0.43	0.31	3.07	18.97
ASSET	72.50*	3.61	5.51*	2.88*	4.00	0.30	0.56	0.55	0.72*	0.47*	0.29	2.90	18.90
MULTIKING 1	67.50	4.30*	4.88	2.76	3.95	0.39	0.54	0.46	0.51	0.44	0.25	2.59	18.49
DART	83.75*	3.45	5.04	2.82	4.06	0.38	0.60	0.59*	0.80*	0.49*	0.25	3.11	18.49
CIMARRON-VR	60.00	4.22*	5.25*	2.67	3.84	0.34	0.49	0.54	0.52	0.36	0.24	2.49	18.48
2852	61.25	4.15*	5.18*	2.65	3.79	0.23	0.47	0.55	0.58	0.41	0.32*	2.57	18.34
RESISTAR	78.75*	3.75	4.71	2.83	3.90	0.45	0.66	0.59*	0.62	0.40	0.29	3.01	18.20
CF-EDGE	65.00	3.78	4.98	2.98*	3.77	0.34	0.53	0.43	0.66	0.34	0.29	2.59	18.09
FORTRESS	72.50*	3.54	5.21*	2.76	3.63	0.33	0.55	0.57	0.62	0.34	0.26	2.68	17.82
TRIDENT	68.75	3.51	4.74	2.55	3.47	0.24	0.47	0.49	0.75*	0.35	0.28	2.57	16.84
WAMPR	57.50	3.48	5.14	2.31	3.30	0.23	0.42	0.44	0.49	0.41	0.26	2.25	16.48
ARC	56.25	3.55	4.04	2.36	3.30	0.28	0.45	0.40	0.53	0.32	0.19	2.17	15.42
<b>EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE</b>													
A9008	81.25*	3.60	5.15	2.72	4.25*	0.42	0.67	0.60*	0.83*	0.36	0.36*	3.24	18.97
MEAN	73.96	3.94	5.15	2.93	4.11	0.39	0.61	0.57	0.68	0.43	0.30	2.97	19.10
CV, %	16.81	14.81	10.97	13.43	11.66	27.95	16.23	18.51	18.99	25.29	26.29	14.20	8.16
LSD, 0.05	17.48	0.82	0.79	0.55	0.67	0.15	0.14	0.15	0.18	0.15	0.11	0.59	2.19

1992 TOTAL INCLUDES 3 HARVESTS DATED JUL15, AUG10, AND SEP11.

1993 TOTAL INCLUDES 5 HARVESTS DATED MAY12, JUN09, JUL15, AUG10, AND SEP11.

1994 TOTAL INCLUDES 5 HARVESTS DATED APR26, MAY26, JUN29, SEP07, AND OCT26.

1995 TOTAL INCLUDES 6 HARVESTS DATED MAY02, JUN05, JUL05, AUG09, SEP13, AND NOV01.

\*\*HIGHEST NUMERICAL VALUE IN THE COLUMN.

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

**TABLE 7. DRY MATTER YIELDS (TONS/ACRE) OF ALFALFA VARIETIES SOWN 19 APRIL  
1996, AT BOWLING GREEN, KENTUCKY.**

VARIETY	1996 HARVESTS				1996
	JUL17	AUG14	SEP11	OCT30	TOTAL
<b>COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE</b>					
WL324	2.99**	1.32*	1.42**	0.58*	6.31**
645	2.93*	1.11	1.21*	0.54*	5.79*
IMPERIAL	2.63*	1.45**	1.04	0.55*	5.66*
ABT405	2.81*	1.19*	1.11*	0.52*	5.64*
SARANAC-AR	2.96*	1.06	1.02	0.59*	5.63*
FORTRESS	2.82*	1.09	1.18*	0.53*	5.62*
BUFFALO-B	2.69*	1.12	1.30*	0.43	5.53*
TMF-GENERATION	2.59*	1.28*	1.15*	0.51*	5.53*
DEPEND+EV	2.90*	1.20*	0.80	0.62**	5.52*
AFFINITY+Z	2.95*	1.23*	0.92	0.40	5.50*
DEMAND	2.69*	1.27*	1.06	0.48*	5.50*
GEM	2.74*	1.27*	0.97	0.49*	5.47
WL325HQ	2.55*	1.21*	1.11*	0.56*	5.43
APOLLO	2.77*	1.28*	0.95	0.38	5.39
SUPERCUTS	2.60*	1.08	1.11*	0.59*	5.38
WL252HQ	2.65*	1.20*	1.04	0.40	5.29
631	2.68*	1.07	1.01	0.52*	5.28
ARC	2.85*	0.95	1.03	0.42	5.25
INNOVATOR+Z	2.59*	1.28*	0.90	0.47*	5.23
DK133	2.64*	1.18*	0.94	0.47*	5.23
CHOICE	2.54	1.18*	0.99	0.51*	5.22
DK127	2.55*	1.23*	0.97	0.44*	5.19
RUSHMDRE	2.72*	0.94	0.96	0.33	4.95
BUFFALO-A	2.90*	0.82	1.07	0.15	4.94
LEGACY	2.73*	0.74	1.10*	0.35	4.91
<b>EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE</b>					
93-116	2.91*	1.26*	1.19*	0.53*	5.89*
ZG9533	2.96*	1.15	1.12*	0.39	5.63*
ZG9530	2.59*	1.22*	1.08*	0.52*	5.41
A9107	2.97*	1.03	0.80	0.49*	5.29
ZG9543	2.64*	1.16	0.89	0.50*	5.18
ZG9430	2.66*	1.02	0.96	0.38	5.02
C106	2.44	1.05	0.94	0.43	4.86
MEAN	2.74	1.15	1.04	0.47	5.40
CV, %	11.80	17.66	23.74	28.98	10.79
LSD, 0.05	0.45	0.28	0.35	0.19	0.82

\*\*HIGHEST NUMERICAL VALUE IN THE COLUMN.

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

**TABLE 8. DRY MATTER YIELDS (TONS/ACRE) OF ALFALFA VARIETIES SOWN  
23 APRIL 1993, AT PRINCETON, KENTUCKY.**

VARIETY	1993	1994	1995	1996 HARVESTS						1996	4-YR
	TOTAL	TOTAL	TOTAL	MAY09	JUN13	JUL18	AUG15	SEP11	OCT30	TOTAL	TOTAL
<b>COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE</b>											
CRYSTAL	1.29*	3.90*	6.89**	0.78*	1.35**	1.02*	0.91*	0.31*	0.50**	4.87**	16.95**
631	1.23*	3.97*	6.76*	0.81**	1.32*	1.03**	0.90*	0.29*	0.48*	4.83*	16.79*
APOLLO-SUPREME	1.36*	3.79*	6.57*	0.72*	1.25*	0.98*	0.87*	0.30*	0.37	4.50*	16.22*
5454	1.11*	4.09**	6.42*	0.69*	1.21*	0.81	0.79*	0.25*	0.41*	4.15	15.77*
645	1.12*	3.63*	6.40*	0.76*	1.25*	0.91*	0.85*	0.32*	0.34	4.42*	15.57*
FORTRESS	1.35*	3.94*	6.28	0.48	1.09	0.84	0.76	0.25*	0.37	3.78	15.36*
5373	1.08*	3.54*	6.44*	0.62	1.20*	0.86	0.77	0.28*	0.41*	4.15	15.21
AGGRESSOR	1.16*	3.40	6.17	0.64	1.22*	0.99*	0.82*	0.33**	0.45*	4.45*	15.20
MULTIKING-1	1.43*	4.06*	6.05	0.44	0.98	0.74	0.72	0.33**	0.36	3.58	15.12
VAMPR	1.07*	3.69*	6.36*	0.54	1.09	0.90*	0.76	0.26*	0.41*	3.95	15.07
ARCHER	1.34*	3.47*	6.10	0.50	1.10	0.88	0.80*	0.27*	0.48*	4.03	14.93
DK-133	1.00	3.43*	6.34*	0.65	1.17	0.85	0.77	0.22	0.47*	4.13	14.90
DAWN	1.09*	3.52*	6.18	0.62	1.14	0.84	0.75	0.31*	0.35	4.01	14.80
DOMINATOR	1.09*	3.51*	6.12	0.62	1.11	0.81	0.78	0.25*	0.39	3.96	14.69
ZENITH	1.48*	3.54*	6.02	0.40	1.08	0.76	0.71	0.21	0.43*	3.60	14.64
WL323	1.09*	3.83*	5.97	0.54	1.06	0.81	0.73	0.23*	0.36	3.75	14.64
LEGACY	1.28*	3.71*	5.98	0.50	1.00	0.76	0.72	0.23*	0.40	3.60	14.58
DART	1.09*	3.64*	5.90	0.59	1.12	0.80	0.78	0.29*	0.33	3.90	14.53
RESISTAR	1.02	3.33	6.14	0.63	1.17	0.77	0.70	0.22	0.41*	3.91	14.39
2852	1.12*	3.86*	6.21	0.44	0.92	0.69	0.49	0.15	0.40	3.10	14.29
MULTISTAR	1.08*	3.65*	6.02	0.55	0.99	0.72	0.66	0.19	0.30	3.42	14.16
ARC	1.20*	3.42	5.74	0.48	0.92	0.70	0.67	0.23*	0.27	3.26	13.61
SARANAC-AR	1.23*	3.69*	5.45	0.35	0.87	0.62	0.62	0.21	0.25	2.92	13.30
<b>EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE</b>											
AS-BG	1.49**	4.05*	6.80*	0.55	1.08	0.83	0.82*	0.33**	0.46*	4.07	16.40*
GA-AG-MP	1.40*	3.73*	6.02	0.51	1.09	0.89	0.79*	0.26*	0.34	3.87	15.03
A9109	1.18*	3.54*	6.01	0.53	1.01	0.82	0.96**	0.20	0.34	3.87	14.60
GA-AG-MP1	1.14*	3.17	5.86	0.45	0.94	0.65	0.70	0.22	0.21	3.17	13.34
GA-AG-MPG	1.03	3.23	5.36	0.57	0.93	0.70	0.68	0.20	0.21	3.28	12.90
MEAN	1.20	3.65	6.16	0.57	1.10	0.82	0.76	0.25	0.37	3.88	14.89
CV, %	25.86	13.18	6.74	20.32	11.33	12.51	16.44	29.26	18.17	9.44	7.54
LSD, 0.05	0.44	0.67	0.58	0.16	0.17	0.14	0.18	0.11	0.10	0.51	1.58

1993 TOTAL INCLUDES 2 HARVESTS DATED JUL15 AND OCT26.

1994 TOTAL INCLUDES 6 HARVESTS DATED MAY02, JUN01, JUL03, AUG03, SEP07, AND OCT27.

1995 TOTAL INCLUDES 6 HARVESTS DATED MAY03, JUN06, JUL06, AUG10, SEP13, AND NOV02.

\*\*HIGHEST NUMERICAL VALUE IN THE COLUMN.

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







ZG9530	ABI/Experimental	-	-	-	-	-	-														
ZG9533	ABI/Experimental	-	-	-	-	-	-											*			
ZG9543	ABI/Experimental	-	-	-	-	-	-														

<sup>1</sup> Variety Characteristics

<sup>4</sup> Disease Resistance

<sup>5</sup> Establishment Year

<sup>7</sup> Harvest Year

FD Fall Dormancy

S Susceptible

<sup>6</sup> Fall Dormancy

Variety was not in the test.

Bw Bacterial Wilt

LR Low Resistance

2 Vernal

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

Fw Fusarium Wilt

MR Moderate Resistance

3 Ranger

\* Not significantly different from the highest yielding

An Anthracnose

R Resistance

4 Saranac

variety in the test for the year.

PRR Phytophthora Root Rot

HR High Resistance

5 DuPuits

APH Aphanomyces Root Rot

<sup>2</sup> The Mayslick test is on soil infested with Aphanomyces root rot.

<sup>3</sup> The Bowling Green test is on soil infested with Phytophthora and Aphanomyces root rots.

**Table 10. University of Kentucky agricultural extension publications related to alfalfa management**

<b>Publication</b>	<b>Title</b>
AGR-76	Alfalfa: The queen of the forage crops
AGR-107	Alfalfa: Quality means profits
AGR-64	Establishing forage crops
-----	Seed tags: What they reveal
AGR-90	Inoculation of forage legumes
AGR-18	Grain and forage crop guide for Kentucky
AGR-1	Lime and fertilizer recommendations
AGR-148	Weed control strategies for alfalfa and other forage legume crops
ENT-17	Insect management recommendations for field crops and livestock
PPA-10d	Kentucky plant disease management guide for forage legumes
PPA-28	Alfalfa varieties: Relative disease resistance and winter hardiness
AGR-137	Alfalfa hay: Quality makes the difference
ID-97	Grazing alfalfa

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