

The 1997 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. Choosing a good alfalfa variety is a key step in establishing a stand of alfalfa. The choice of variety can impact yield, thickness of stand, and persistence of alfalfa 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). In general, varieties with lower dormancy ratings take more warm weather in spring to initiate growth, and they 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 to 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 top growth of infected plants appears stunted and yellow.

Anthracnose, 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 and 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.

In years with overly cool and wet spring weather, alfalfa stands have suffered great damage to Aphanomyces when planted to varieties that are susceptible to this disease.

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 such as are reported in this publication or others like it. 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 at Mayslick (1994), Lexington (1995 and 1997), Bowling Green (1992 and 1996), and Princeton (1993 and 1997), 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 tests are on soils that are naturally infested with both Phytophthora and Aphanomyces root rot pathogens, and the 1997 seeding in Princeton was found to be infested with the Aphanomyces pathogen.

Plots were 5 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. 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 or oven-dried bulk samples. 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 Lexington, Bowling Green, and Princeton are presented in Table 1. In general, the 1997 growing season could be characterized as being unseasonably wet and cool for the first half and hot and dry for the latter half. The cool, wet conditions were responsible for the severe outbreak of *Aphanomyces* infection in the 1997 Princeton seeding. The winter of 1996-97 was damaging to the Mayslick study. In April, winter kill was evident and stand ratings were made.

Yield data (on a dry matter basis) for all tests are reported in Tables 2 through 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 1997 and by year for each year of production. Percent stand ratings are included for the 1994 seeding at Mayslick. Color and vigor ratings were made for the 1997 seeding in Princeton. 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. Varieties not significantly different from the highest numerical value in a column 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 CVs and larger LSDs.

The Mayslick data end after the first harvest in 1997 due to the apparent winter damage to the overall study (Table 3). Varieties differed in their survival and yields in 1997. Regrowth after the first harvest was poor, and the study was terminated after the July harvest.

The 1997 seeding in Princeton was diagnosed as being affected by *Aphanomyces* root rot (Table 8). Varieties differed significantly in vigor and color in ratings taken on June 10.

The check varieties (Saranac AR and Arc) as well as varieties known to be susceptible to APH were the most stunted and yellow. The affected varieties were not killed, but were noticeably less vigorous over the entire growing season and had total yields at the bottom of the test.

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 included in that particular test (labeled at the top of the column) while white or unshaded blocks mean that the variety was included in the test. A single asterisk (*) means that the variety was not significantly different from the top-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 labeled 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 here. These publications are available at the local county Extension office.

- AGR-76 Alfalfa: The Queen of the Forage Crops
- AGR-107 Alfalfa: Quality Means Profits
- AGR-64 Establishing Forage Crops
- 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

Table 1. Temperature and Rainfall at Lexington, Bowling Green, and Princeton in 1997.

MONTH	Lexington				Bowling Green				Princeton			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	F	DEP	IN	DEP	F	DEP	IN	DEP	F	DEP	IN	DEP
JAN	31	+0	3.70	+0.84	34	+0	3.34	-0.48	35	+1	2.74	-1.06
FEB	41	+6	3.96	+0.75	44	+6	3.63	-0.50	44	+6	3.83	-0.60
MAR	46	+2	13.82	+9.42	50	+4	12.50	+7.40	52	+5	13.11	+8.17
APR	50	-5	1.89	-1.99	52	-5	2.59	-1.73	54	-5	3.94	-0.86
MAY	58	-6	8.84	+4.37	61	-5	6.49	+1.55	63	-4	5.36	+0.40
JUN	70	-2	9.54	+5.88	72	-3	4.69	+0.52	74	-1	5.09	+1.24
JUL	76	+0	3.32	-1.68	78	+0	0.06	-4.68	79	+1	1.90	-2.39
AUG	73	-2	2.58	-1.35	76	-1	2.86	-0.65	77	-0	2.06	-1.95
SEP	67	-1	2.37	-0.83	70	-0	1.59	-2.13	71	-0	3.89	+0.56
OCT	56	-1	1.92	-0.65	66	+8	2.11	-0.91	68	+9	0.88	2.17

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

Table 2. Dry Matter Yields (Tons/acre) of Alfalfa Varieties Sown 23 April 1993 at Princeton, Kentucky.

Variety	1993 Total	1994 Total	1995 Total	1996 Total	1997 Harvests					1997 Total	5-yr Total	
					May 13	Jun 25	Aug 06	Sep 18	Nov 20			
Commercial Varieties - Available For Farm Use												
CRYSTAL	1.29*	3.90*	6.89*	4.37*	1.17*	1.61*	1.44*	0.50*	0.38*	5.10*	21.55*	
631	1.23*	3.97*	6.76*	4.35*	1.15*	1.58*	1.37*	0.44*	0.33*	4.86*	21.17*	
APOLLO-SUPREME	1.36*	3.79*	6.57*	4.12*	0.95	1.52*	1.31*	0.47*	0.28	4.54	20.38*	
645	1.12*	3.63*	6.40*	4.08*	1.07*	1.56*	1.40*	0.45*	0.28	4.77*	19.99*	
5454	1.11*	4.09*	6.42*	3.75	0.85	1.41	1.21*	0.4	0.31	4.18	19.54	
5373	1.08*	3.54*	6.44*	3.74	0.9	1.52*	1.21*	0.42*	0.33*	4.39	19.19	
FORTRESS	1.35*	3.94*	6.28	3.41	0.67	1.49*	1.29*	0.44*	0.3	4.19	19.18	
WAMPR	1.07*	3.69*	6.36*	3.54	0.74	1.48*	1.23*	0.41	0.29	4.16	18.82	
AGGRESSOR	1.16*	3.4	6.17	4.00*	0.91	1.38	1.12	0.36	0.28	4.07	18.81	
MULTIKING-I	1.43*	4.06*	6.05	3.22	0.64	1.38	1.32*	0.39	0.28	4.02	18.78	
DAWN	1.09*	3.52*	6.18	3.66	0.82	1.40	1.19*	0.47*	0.33*	4.21	18.67	
DK-133	1.00	3.43*	6.34*	3.66	0.89	1.54*	1.07	0.38	0.33*	4.21	18.64	
ARCHER	1.34*	3.47*	6.1	3.55	0.74	1.26	1.26*	0.4	0.36*	4.01	18.47	
DOMINATOR	1.09*	3.51*	6.12	3.57	0.86	1.43*	1.1	0.43*	0.29	4.11	18.41	
DART	1.09*	3.64*	5.9	3.57	0.81	1.35	1.14	0.42	0.31	4.02	18.22	
WL323	1.09*	3.83*	5.97	3.39	0.62	1.39	1.19*	0.39	0.29	3.89	18.16	
RESISTAR	1.02	3.33	6.14	3.49	0.85	1.4	1.09	0.41	0.29	4.05	18.03	
ZENITH	1.48*	3.54*	6.02	3.17	0.7	1.38	0.91	0.4	0.28	3.68	17.89	
MULTISTAR	1.08*	3.65*	6.02	3.11	0.74	1.34	1.12	0.39	0.32*	3.91	17.77	
LEGACY	1.28*	3.71*	5.98	3.2	0.67	1.2	0.95	0.39	0.26	3.46	17.63	
ARC	1.20*	3.42*	5.74	2.99	0.63	1.38	1.20*	0.36	0.24	3.81	17.15	
2852	1.12*	3.86*	6.21	2.69	0.47	1.18	0.83	0.31	0.24	3.04	16.93	
SARANAC-AR	1.23*	3.69*	5.45	2.67	0.41	1.16	0.98	0.31	0.19	3.05	16.1	
Experimental Varieties - Not Available for Farm Use												
AS-BG	1.49*	4.05*	6.80*	3.61	0.78	1.4	1.17*	0.44*	0.35*	4.14	20.09*	
GA-AG-MP	1.40*	3.73*	6.02	3.54	0.8	1.36	1.37*	0.4	0.27	4.2	18.89	
A9109	1.18*	3.54*	6.01	3.53	0.8	1.34	1.27*	0.36	0.23	3.99	18.25	
GA-AG-MP1	1.14*	3.17	5.86	2.97	0.66	1.25	1.1	0.29	0.2	3.5	16.64	
GA-AG-MPG	1.03	3.23	5.36	3.07	0.78	1.29	1.22*	0.37	0.18	3.84	16.53	
Mean	1.2	3.65	6.16	3.5	0.79	1.39	1.18	0.4	0.29	4.05	18.6	
CV,%	25.9	13.1	6.74	9.46	16.3	9.11	17.2	15.4	17.6	9.09	7.28	
LSD,0.05	0.44	0.67	0.58	0.47	0.18	0.18	0.29	0.09	0.07	0.52	1.9	

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

Table 3. Dry matter yields (tons/A) of alfalfa varieties planted 19 April 1994 on the Charles Boyd Farm near Mayslick, Kentucky.								
Variety	% Stand Apr 15 1997	1994 Total	1995 Total	1996 Total	1997 Harvests		1997 Total	4-yr Total
					May 30	Jul 15		
Commercial Varieties - Available for Farm Use								
REWARD	68.75*	2.42	6.96*	4.44*	1.12*	0.89*	2.01*	15.82*
STERLING	53.75	2.86*	6.4*	4.09*	1.01	0.82*	1.83	15.19*
RUSHMORE	57.5*	2.39	6.48*	4.21*	1.12*	0.8*	1.92*	14.99*
GARST630	45.0	2.58*	6.42*	3.98*	1.06*	0.88*	1.94*	14.92*
MORE	67.5*	2.21	6.12	4.24*	1.25*	0.83*	2.08*	14.65*
RESISTAR	47.5	2.73*	6.31*	3.93	0.95	0.69	1.64	14.61*
LEGACY	18.75	2.96*	6.39*	3.72	0.74	0.74	1.47	14.55*
5454	57.5*	2.30	6.35*	3.97*	1.10*	0.78*	1.87*	14.50*
PASTURE-PLUS	81.25*	2.03	6.15*	4.25*	1.26*	0.79*	2.05*	14.47*
CRYSTAL	55.0	2.72*	6.00	3.82	0.92	0.70	1.63	14.17
MAGNUM-IV	53.75	2.31	6.09	4.02*	0.93	0.79*	1.72	14.15
SARANAC-AR	76.25*	2.37	6.02	4.01*	0.93	0.79*	1.72	14.13
WL323	40.0	2.37	6.23*	3.93	0.79	0.62	1.41	13.93
APOLLO	20.0	2.48*	6.36*	3.85	0.60	0.59	1.18	13.87
ARC	41.25	2.38	6.07	3.89	0.81	0.68	1.50	13.83
MULTISTAR	66.25*	2.15	5.81	3.83	1.08*	0.80*	1.88*	13.67
DK133	31.25	2.26	6.18*	3.5	0.98	0.63	1.61	13.55
Experimental Varieties-Not Available for Farm Use								
PGI9047	37.5	2.79*	6.82*	4.32*	0.88	0.77*	1.65	15.58*
ABI923AA	82.5*	2.19	6.05	4.24*	1.39*	0.90*	2.29*	14.77*
ABI9236	72.5*	2.25	6.26*	4.12*	1.08*	0.74	1.82	14.46*
ABI9237	83.75*	1.87	6.2*	4.32*	1.2*	0.83*	2.03*	14.42*
A9008	83.75*	2.37	5.62	4.24*	1.16*	0.90*	2.06*	14.28*
A9109	60.0*	2.01	5.40	3.94	1.07*	0.80*	1.87	13.22
Mean	56.6	2.39	6.20	4.04	1.02	0.77	1.79	14.42
CV,%	33.8	15.01	9.56	8.5	23.81	13.49	17.88	7.85
LSD,0.05	27	0.51	0.84	0.49	0.34	0.15	0.45	1.6

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

Table 4. Dry Matter Yields (Tons/a) of Alfalfa Varieties Sown 6 September 1995 at Lexington, Kentucky.						
Variety	Total 1996	1997 Harvests			Total 1997	2 yr Total
		May 21	Jul 2	Aug 19		
Commercial Varieties - Available for Farm Use						
Rushmore	5.25*	1.25*	1.16*	1.33*	4.33*	9.58*
DK127	5.05*	1.24*	1.28*	1.44*	4.41*	9.46*
Multiqueen	4.50*	1.24*	1.11*	1.25*	4.12*	8.62*
Legacy	4.13	0.82	0.89	0.93	3.01	7.14
Choice	4.54*	1.20*	1.17*	1.23*	4.10*	8.64*
ExcaliburII	4.54*	0.97	1.15*	1.24*	3.84*	8.38*
DK133	4.33	0.97	1.07	1.14	3.82*	8.15*
Saranac AR	4.12	1.14*	1.04	1.19*	3.84*	7.96
WL323	4.45*	1.13*	1.16*	1.28*	4.09*	8.54*
Supercuts	4.35	0.98	1.05	1.16	3.66*	8.02
ARC	4.35	0.94	0.98	1.05	3.35	7.7
329	4.16	1.02	1.06	1.1	3.62	7.77
5454	4.36	0.95	0.97	1.18*	3.55	7.9
Dominator	4.03	1.04	0.99	1.26*	3.68*	7.71
Apollo	3.55	0.8	0.85	0.82	2.79	6.34
630	3.31	0.87	0.94	0.99	3.15	6.46
Experimental Varieties - Not Available for Farm Use						
ZC9346	3.96	1.35*	1.26*	1.25*	4.15*	8.11
GA-MX	3.73	0.67	0.83	0.85	2.74	6.47
ABI9231	4.72*	1.12*	1.12*	1.19*	3.80*	8.52*
GA-APGC	4.49*	1.39*	1.22*	1.37*	4.42*	8.91*
93-116	4.35	0.93	0.98	1.07	3.49	7.84
CV,%	14.05	22.9	13.00	15.6	15.0	12.91
MEAN	4.3	1.05	1.1	1.2	3.71	8.01
LSD,0.05	0.85	0.34	0.2	0.26	0.8	1.5
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.						

Table 5. Dry matter yields (tons/acre) of alfalfa varieties sown 19 April 1996 at Bowling Green, Kentucky.

Variety	1996 Total	1997 Harvests				1997 Total	2-yr Total
		May 22	Jun 26	Sep 19	Nov 26		
Commercial Varieties - Available for Farm Use							
WL324	5.96 *	1.46 *	0.8	0.88 *	0.61 *	3.75 *	9.72 *
TMF-GENERATION	5.22 *	1.56 *	0.84 *	0.81 *	0.59 *	3.80 *	9.03 *
645	5.46 *	1.46 *	0.89 *	0.76 *	0.43	3.54 *	9.00 *
IMPERIAL	5.33 *	1.44 *	0.89 *	0.77 *	0.53 *	3.63 *	8.96 *
DEMAND	5.21 *	1.48 *	0.90 *	0.79 *	0.56 *	3.73 *	8.94 *
FORTRESS	5.30 *	1.33	0.8	0.78 *	0.65 *	3.56 *	8.86 *
ABT405	5.32 *	1.39 *	0.94 *	0.74	0.44	3.51 *	8.84 *
631	4.96	1.59 *	0.91 *	0.78 *	0.60 *	3.88 *	8.84 *
SUPERCUTS	5.02	1.49 *	0.94 *	0.77 *	0.57 *	3.76 *	8.79 *
SARANAC-AR	5.27 *	1.44 *	0.82 *	0.75 *	0.50 *	3.50 *	8.78 *
DEPEND+EV	5.15	1.44 *	0.95 *	0.73	0.47	3.59 *	8.74 *
AFFINITY+Z	5.26 *	1.43 *	0.88 *	0.73	0.43	3.48 *	8.74 *
GEM	5.17	1.45 *	0.87 *	0.7	0.49 *	3.52 *	8.69 *
CHOICE	4.91	1.53 *	0.88 *	0.79 *	0.55 *	3.75 *	8.66
WL325HQ	5.09	1.39 *	0.87 *	0.71	0.56 *	3.53 *	8.62
WL252HQ	5.05	1.31	0.72	0.79 *	0.57 *	3.39 *	8.44
INNOVATOR+Z	4.95	1.40 *	0.90 *	0.75 *	0.42	3.47 *	8.42
DK133	4.95	1.22	0.78	0.83 *	0.55 *	3.38	8.33
DK127	4.92	1.43 *	0.85 *	0.71	0.36	3.35	8.28
BUFFALO-B	5.27 *	1.08	0.62	0.75 *	0.44	2.89	8.17
APOLLO	5.16	1.07	0.64	0.7	0.46	2.88	8.04
ARC	5	1.15	0.73	0.66	0.4	2.93	7.93
RUSHMORE	4.75	1.29	0.74	0.67	0.42	3.12	7.87
LEGACY	4.7	1.18	0.68	0.76 *	0.44	3.07	7.77
BUFFALO-A	4.85	0.88	0.52	0.61	0.33	2.34	7.19
Experimental Varieties - Not Available for Farm Use							
93116	5.57 *	1.43 *	0.83 *	0.76 *	0.48 *	3.49 *	9.06 *
ZG9533	5.39 *	1.46 *	0.87 *	0.71	0.31	3.34	8.73 *
A9107	4.99	1.47 *	0.97 *	0.72	0.50 *	3.66 *	8.66 *
ZG9530	5.09	1.45 *	0.88 *	0.69	0.41	3.42 *	8.51
ZG9543	4.88	1.34	0.92 *	0.74	0.47	3.46 *	8.34
ZG9430	4.79	1.40 *	0.88 *	0.76 *	0.38	3.42 *	8.21
C106	4.6	1.37 *	0.77	0.62	0.46	3.22	7.82
MEAN	5.11	1.37	0.83	0.74	0.48	3.42	8.53
CV, %	0.76	11.78	14.09	12.84	26.19	10.45	8.95
LSD, 0.05	10.63	0.23	0.16	0.13	0.18	0.5	1.07

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

Table 6. Dry Matter Yields (Tons/acre) of Alfalfa Varieties Sown 15 April 1997, at Lexington, Kentucky.

Variety	1997 Harvests			1997 Total
	Jul 2	Sep 10	Nov 12	
Commercial Varieties - Available for Farm Use				
APOLLO	1.04*	1.23*	0.17*	4.09*
AMERIGRAZE	0.96*	1.14*	0.08	3.87*
ABT405	0.95*	1.14*	0.15*	3.85*
ARC	0.89*	1.12*	0.13*	3.85*
HAYGRAZER	0.87*	1.18*	0.14*	3.83*
ALFAGRAZE	0.90*	1.06	0.17*	3.80*
FEAST	0.82	1.10*	0.17*	3.72*
WL326GZ	0.97*	1.01	0.13*	3.72*
GRAZEKING	0.87*	1.01	0.14*	3.71*
FORTRESS	0.91*	1.16*	0.18*	3.57
STAMPEDE	0.85*	0.92	0.12	3.57
SARANAC-AR	0.82	1.06	0.10	3.56
SPREDOR-3	0.80	1.10*	0.12*	3.56
Experimental Varieties - Not Available for Farm Use				
CAR9426	0.89*	1.18*	0.19*	4.01*
GA-APGC	0.93*	1.20*	0.18*	3.99*
94IO5PL1	0.87*	1.30*	0.17*	3.91*
A9508	0.87*	1.05	0.14*	3.85*
W116	0.87*	1.12*	0.14*	3.54
MEAN	0.89	1.12	0.15	3.8
CV,%	15.86	13.8	37.7	8.32
LSD, 0.05	0.20	0.22	0.08	0.50
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.				

Table 7. Dry Matter Yields (Tons/acre) of Alfalfa Varieties Sown 18 April 1997, at Lexington, Kentucky.				
Variety	1997 Harvests			1997 Total
	Jul 2	Sep 10	Nov 12	
Commercial Varieties - Available for Farm Use				
CIMARRON-VR	0.81*	1.31*	0.26*	2.39*
CHOICE	0.85*	1.27*	0.25*	2.37*
631	0.74*	1.31*	0.26*	2.32*
DK141	0.72*	1.20*	0.26*	2.18*
CIMARRON-3i	0.56	1.30*	0.22*	2.08*
DK140	0.71*	1.15*	0.19*	2.06*
WL325HQ	0.77*	1.02	0.25*	2.03*
FORTRESS	0.51	1.23*	0.23*	1.98*
AFFINITY+Z	0.62*	1.12*	0.23*	1.97*
WINTERGREEN	0.57	1.08*	0.18	1.83
SARANAC-AR	0.58	1.03	0.17	1.79
ABT-405	0.50	1.06*	0.17	1.73
GEM	0.48	1.02	0.22*	1.72
ABT205	0.47	1.10*	0.13	1.71
ARC	0.40	1.09*	0.20*	1.68
Experimental Varieties - Not Available for Farm Use				
C231	0.62*	1.24*	0.25*	2.12*
ZB9546	0.48	1.09*	0.16	1.74
ZG9630S	0.39	1.12*	0.14	1.65
ZG9623S	0.44	0.98	0.18	1.60
C106	0.43	0.94	0.22*	1.59
MEAN	0.58	1.13	0.21	1.93
CV,%	31.2	17.10	24.24	17.03
LSD, 0.05	0.30	0.30	0.10	0.50
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.				

Table 8. Dry Matter Yields (Tons/acre) and Ratings for Color and Plant Vigor of Alfalfa Varieties Sown 10 April 1997, at Princeton, Kentucky.¹

Variety	Aphanomyces Resistance ²	Color ³ Jun 10	Vigor ⁴ Jun 10	1997 Harvests			1997 Total
				Jun 25	Aug 6	Sep 18	
Commercial Varieties - Available for Farm Use							
CHOICE	R	4.00*	4.38*	1.01*	0.59*	0.31*	1.91*
FEAST	R	4.00*	3.88*	0.91*	0.63*	0.28*	1.82*
RUSHMORE	HR	3.88*	3.50*	0.86*	0.65*	0.31*	1.81*
ABT405	R	3.75*	3.38*	0.85*	0.57*	0.31*	1.73*
WL326GZ	HR	3.50*	3.75*	0.88*	0.54*	0.25*	1.67*
631	MR	3.13*	3.50*	0.77*	0.59*	0.28*	1.65*
WL332SR	HR	3.63*	3.63*	0.86*	0.51*	0.27*	1.64*
WINTERGREEN	R	3.50*	3.25*	0.81*	0.56*	0.25*	1.62*
ABT205	R	3.63*	3.38*	0.67*	0.55*	0.27*	1.50*
AMERIGRAZE401+Z	R	4.13*	3.75*	0.70*	0.52*	0.28*	1.50*
FORTRESS	-	3.00*	3.00*	0.70*	0.54*	0.23*	1.48*
GEM	S	2.75*	2.75*	0.65*	0.50*	0.22	1.37*
SARANAC AR	-	1.88	1.88	0.54	0.52*	0.17	1.22
ARC	-	2.38	2.5	0.51	0.50*	0.17	1.19
Experimental Varieties - Not Available for Farm Use							
ZG9651	-	4.25*	4.00*	0.95*	0.63*	0.30*	1.88*
MEAN		3.43	3.37	0.78	0.56	0.26	1.6
CV, %		32.32	34.07	37.33	21.19	25.03	26.01
LSD, 0.05		1.58	1.64	0.41	0.17	0.09	0.59

¹ Aphanomyces root rot was diagnosed in this study, causing yellowing and poor vigor especially among the susceptible varieties and the checks, which are Saranac AR and ARC.

² HR=Highly Resistant, R=Resistant, MR=Moderately Resistant, S=Susceptible, and '-' indicates no information is available.

³ 0 to 5 scale, with 5 being dark green and 0 being yellow.

⁴ 0 to 5 scale, with 5 being very vigorous and 0 being very stunted.

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

Variety	Characterization and performance of alfalfa varieties across years and locations		Variety Characteristics ¹										Mayslick ²					Lexington					Bowling Green					Princeton				
	Proprietor/KY Distributor		Disease Resistance ⁴										1994					1995					1996					1997				
	FD ⁶		Bw	Fw	An	PR	APH	94	95	96	97	96	97	97a	97b	96	97	97a	97b	96	97	96	97	93	94	95	96	97				
Stampede	Allied Seed	3	HR	R	R	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Sterling	Cargill Hybrids	4	HR	HR	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Supercuts	ABT/Scott Seed	4	HR	HR	HR	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
TMF Generation	Mycogen Seeds	4	HR	HR	HR	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Trident	ABI/AgriPro	4	R	HR	MR	HR	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Wampr	FFR/Southern States	4	R	R	R	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Wintergreen	ABI Alfalfa/Reink Seed (Wisconsin)	3	HR	HR	HR	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
WL252HQ	W-L Research/Green Seed	2	HR	HR	HR	HR	LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
WL323	W-L Research/Green Seed	4	HR	HR	HR	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
WL324	W-L Research/Green Seed	3	HR	HR	HR	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
WL325HQ	W-L Research/Green Seed	3	HR	HR	HR	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
WL326GZ	W-L Research Inc./Green Seed	4	HR	HR	HR	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
WL332SR	W-L Research Inc./Green Seed	4	HR	HR	HR	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Zenith	Garst Seed Co.	3	HR	HR	HR	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE																																
93-116	W-L Research/Experimental	4	HR	HR	HR	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
A9008	FFR/Southern States	4	HR	HR	R	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
A9107	BARENBRUG USA/Experimental	4	R	HR	HR	-	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
A9109	FFR/Experimental	4	R	R	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
A9410SPL1	Pioneer/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
A9508	FFR/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ABI-9231	ABI/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ABI-9236	ABI/Experimental	3	R	HR	R	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ABI-9237	ABI/Experimental	3	R	HR	R	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ABI-923AA	ABI/Experimental	3	R	HR	R	HR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
AS-BG	Allied Seed/Experimental	4	R	R	R	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CAR9426	ABI Alfalfa/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C106	W-L Research/Experimental	4	HR	HR	HR	HR	LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C231	W-L Research Inc.	4	HR	HR	HR	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GA-APGC	GA Agric. Exp. Sta./Experimental	3	R	R	R	R	MR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GA-AG-MP	GA Agric. Exp. Sta./Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GA-AG-MP1	GA Agric. Exp. Sta./Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GA-AG-MPG	GA Agric. Exp. Sta./Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GA-MX	GA Agric. Exp. Sta./Experimental	7	MR	HR	R	MR	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
PG19047	PG/MBS/Experimental	4	HR	R	HR	R	HR	LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
W116	W-L Research/Experimental	3	HR	HR	R	HR	LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZB9546	ABI/Experimental	4	HR	HR	HR	HR	HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZC9623S	ABI/Experimental	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZC9630S	ABI/Experimental	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZC9346	ABI/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZC9651	ABI/Experimental	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZG9430	ABI/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZG9530	ABI/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZG9533	ABI/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZG9543	ABI/Experimental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

¹Variety Characteristics FD Fall Dormancy Bw Bacterial Wilt Fw Fusarium Wilt An Anthracnose PRR Phytophthora Root Rot APH Aphanomyces Root Rot

²The 2 3 Mayslick test is on soil infested with Aphanomyces root rot.

³The Bowling Green test is on soil infested with Phytophthora and Aphanomyces root rot.

⁴Disease Resistance S Susceptible LR Low Resistance MR Moderate Resistance R Resistance HR High Resistance

⁵ Establishment Year

⁶ Fall Dormancy 2 Vernal 3 Ranger 4 Saranac 5 DuPuits

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.

* Not significantly different from the top ranked variety in the test.



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