

# 2008 Alfalfa Report

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## Introduction

Alfalfa (*Medicago sativa*) has historically been 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 variety is a key step in establishing a stand of alfalfa. The choice of variety can impact yield, thickness of stand, and persistence.

This report provides yield data on alfalfa varieties included in current yield trials in Kentucky, as well as guidelines for selecting alfalfa varieties. Table 12 shows a summary of all alfalfa varieties tested in Kentucky during the past 10-plus years. The UK Forage Extension Web site at <[www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage)> contains electronic versions of all forage variety testing reports from Kentucky and surrounding states as well as a large number of other forage publications.

## Considerations in Selecting an Alfalfa Variety

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

**Winter-Hardiness.** Each variety has a fall dormancy (FD) rating that ranges from 1 (very dormant) to 9 (nondormant). In general, varieties with lower dormancy ratings are more winter-hardy but take more warm weather in the spring to initiate growth 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 varieties with FD ratings of 2 to 5 will show good winter survival in Kentucky. Varieties with ratings of 6 and above are not winter-hardy under

Kentucky conditions. Many Kentucky producers have found that FD 4 varieties provide the best combination of yield and winter survival.

**Disease and Pest Resistance.** In Kentucky, producers should use varieties that have at least a moderate resistance (MR) rating to phytophthora root rot (PRR), anthracnose (An), bacterial wilt (Bw), and fusarium wilt (Fw), as well as a resistance (R) rating to aphanomyces root rot (APH). Kentucky research indicates that aphanomyces root rot is a widespread problem in the state during stand establishment 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 those with 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 due to aphanomyces when planted with varieties that are susceptible to this disease.

Although certain alfalfa varieties are reported to have some resistance to sclerotinia crown and stem rot, research at the University of Kentucky has shown that many of these varieties have only marginal protection when conditions are ideal for disease development. Varieties currently in development show promise for true sclerotinia resistance.

**Seed Quality.** Buy premium-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 those that 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, 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 Lexington (2004, 2006 and 2008), Princeton (2005 and 2008) and Bowling Green (2006) as part of the forage variety testing program. Trials were planted in Lexington and Bowling Green in the spring of 2006 but failed due to poor establishment conditions. These were replanted in August of 2006. The soils at most locations are well suited to alfalfa because they are generally well-drained silt loam soils (Maury, Crider, and Pembroke at Lexington, Princeton, and Bowling Green, respectively).

Plots were 5 by 20 feet in a randomized complete block design with four replications with a harvested plot area of 5 by 15 feet. 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 seeding year were delayed to allow alfalfa to reach maturity, indicated by full bloom. Otherwise, harvests were taken when the alfalfa was in the bud-to-early flower stage. Fresh weight samples were taken at each harvest to calculate percentage of dry matter production. Management of all tests for establishment, fertility, pest control, and harvest management was according to Kentucky Cooperative Extension recommendations. Pests (weeds and insects) were controlled so that they would not limit yield or persistence.

## Results and Discussion

Weather data for Lexington, Princeton, and Bowling Green are presented in Tables 1 through 4.

Yield data (on a dry matter basis) for all tests are reported in Tables 5 through 10. Stated yields are adjusted for percentage of weeds, therefore the value listed is for the crop only. 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 2008 and by year for each prior year of production.

Statistical analyses were performed on all alfalfa yield data (including experimentals) to determine if the apparent differences are truly due to variety. Varieties not significantly different from the highest numerical value in a column are marked with an 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.

Table 11 summarizes information about 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; commercial varieties can be purchased through dealerships. In Table 11, open blocks indicate that the variety was not in

that particular test (labeled at the top of the column); an X means that the variety was in the test but yielded significantly less than the top-yielding variety. A single asterisk (\*) means that the variety was not significantly different from the top-yielding variety based on the 5 percent LSD. It is best to choose a variety that has performed well over several years and locations as indicated by the asterisks.

Table 12 is a summary of yield data from 1995 to 2007 of commercial varieties that have been entered in the Kentucky trials. The data is listed as a percentage of the mean of the commercial varieties entered in each specific trial. In other words, the mean for each trial is 100 percent—varieties with percentages over 100 yielded better than average, and varieties with percentages less than 100 yielded lower than average. Direct statistical comparisons of varieties cannot be made using the summary Table 12, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations have very stable performance; others may have performed very well in wet years or on particular soil types. These details may influence variety choice, and the information can be found in the yearly reports. See footnote in Table 12 to determine which yearly report to refer to.

**Table 1. Temperature and rainfall at Lexington, Kentucky in 2004, 2005, 2006, 2007 and 2008.**

	2004				2005				2006				2007				2008			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	30	-1	3.14	+0.28	37	+6	4.35	+1.49	42	+11	4.77	+1.91	37	+6	2.93	+0.07	33	+2	4.60	+1.74
FEB	36	+1	1.32	-1.89	39	+4	1.68	-1.53	36	+1	2.13	-1.08	27	-8	1.83	-1.38	36	+1	5.37	+2.16
MAR	47	+3	3.43	-0.97	41	-3	2.79	-1.61	44	0	3.05	-1.35	52	+8	1.97	-2.43	45	+1	6.28	+1.88
APR	55	0	3.06	-0.82	56	+1	3.30	-0.58	59	+4	3.52	-0.36	53	-2	3.87	-0.01	55	0	5.72	+1.84
MAY	68	+4	9.79	+5.32	61	-3	1.78	-2.69	62	-2	2.99	-1.48	68	+4	1.45	-3.02	62	-2	4.88	+0.41
JUN	72	0	3.13	-0.53	75	+3	1.33	-2.33	70	-2	1.82	-1.84	74	+2	1.77	-1.89	74	+2	3.30	-0.36
JUL	73	-3	7.65	+2.65	77	+1	3.30	-1.70	76	0	5.13	+0.13	74	-2	6.90	+1.90	76	0	2.54	-2.46
AUG	71	-4	2.91	-1.02	78	+3	3.34	-0.59	76	+1	3.23	-0.70	80	+5	2.56	-1.37	75	0	1.08	-2.85
SEP	68	0	2.61	-0.59	72	+4	0.59	-2.21	64	-4	9.27	+6.07	72	+4	1.15	-2.05	72	+4	1.21	-1.99
OCT	58	+1	5.65	+3.08	58	+1	0.92	-1.65	54	-3	4.88	+2.31	63	+6	5.28	+2.71	57	0	1.35	-1.22
NOV	49	+4	6.29	+2.90	47	+2	1.54	-1.85	47	+2	1.78	-1.61	46	+1	2.86	-0.53				
DEC	36	0	3.20	-0.78	32	-4	2.19	-1.79	42	+6	2.45	-1.53	40	+4	5.29	+1.31				
Total			52.18	+7.63			27.51	-17.04			45.02	+0.47			37.86	-6.69			36.33	-0.85

DEP is departure from the long-term average.  
2008 data is for ten months through October.

## Summary

Consistent production of high yields of alfalfa is the result of good variety selection along with the implementation of good management techniques. For further information about alfalfa management, refer to the following College of Agriculture publications, available at the local county Extension office:

- AGR-76—Alfalfa: The Queen of the Forage Crops
- 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
- AGR-137—Alfalfa Hay: Quality Makes the Difference

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**Table 2. Temperature and rainfall at Princeton, Kentucky in 2005, 2006, 2007 and 2008.**

	2005				2006				2007				2008			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	41	+7	5.30	+1.50	46	+12	5.38	+1.58	40	+6	4.89	+1.09	37	+3	2.40	-1.40
FEB	43	+5	2.30	-2.13	38	0	2.66	-1.77	34	-4	2.99	-1.44	39	+1	6.76	+2.33
MAR	47	0	4.11	-0.83	51	+4	4.22	-0.72	58	+11	1.85	-3.09	48	+1	7.55	+2.61
APR	60	+1	4.61	-0.19	63	+4	4.02	-0.78	58	-1	3.95	-0.85	58	-1	6.56	+1.76
MAY	65	-2	1.54	-3.42	66	-1	5.42	+0.46	71	+4	2.29	-2.67	65	-2	6.19	+1.23
JUN	76	+1	3.09	-0.76	75	0	3.39	-0.46	76	1	4.32	0.47	78	+3	1.24	-2.61
JUL	79	+1	2.39	-1.90	79	+1	3.79	-0.50	77	-1	1.77	-2.52	79	+1	5.12	+0.83
AUG	80	+3	11.54	+7.53	80	+3	2.58	-1.43	85	8	0.87	-3.14	77	0	0.69	-3.32
SEP	74	+2	2.17	-1.16	67	-4	9.80	+6.47	75	4	3.52	0.19	74	+3	0.61	-2.72
OCT	60	+1	0.19	-2.86	57	-2	4.5	+1.45	65	+6	8.33	+5.28	60	+1	2.21	-0.84
NOV	50	+3	2.48	-2.15	49	+2	4.31	-0.32	49	+2	2.31	-2.73				
DEC	35	-4	1.92	-3.12	44	+5	4.76	-0.28	42	+3	10.83	+5.79				
Total			42.55	-8.58			54.82	+3.69			47.92	-3.21			39.33	-2.13

DEP is departure from the long-term average.  
 2008 data is for ten months through October.

**Table 3. Temperature and rainfall at Bowling Green, Kentucky (airport location) in 2006, 2007 and 2008.**

	2006				2007				2008			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	45	+11	4.89	+1.07	39	+5	4.04	+0.22	35	+1	3.56	-0.26
FEB	38	0	2.28	-1.85	34	-4	2.00	-2.13	40	+2	4.05	-0.08
MAR	49	+3	2.75	-2.35	56	+10	1.34	-3.76	48	+2	5.86	+0.76
APR	63	+6	4.51	+0.19	56	-1	3.65	-0.67	57	0	5.41	+1.09
MAY	65	-1	3.63	-1.31	70	+4	3.57	-1.37	66	0	5.38	+0.44
JUN	74	-1	2.66	-1.51	76	+1	2.65	-1.52	78	+3	1.20	-2.97
JUL	79	+1	3.30	-1.44	78	0	2.02	-2.72	79	+1	5.52	+0.78
AUG	80	+3	5.97	+2.46	85	+8	0.94	-2.57	77	0	0.74	-2.77
SEP	67	-3	6.78	+3.06	75	+5	1.89	-1.83	73	+3	1.58	-2.14
OCT	56	-2	4.01	+0.99	64	+6	8.38	+5.36	59	+1	3.75	+0.73
NOV	49	+3	3.07	-1.36	48	+2	3.95	-0.48				
DEC	43	+5	3.54	-1.49	43	+5	7.1	+2.07				
Total			47.39	-3.54			41.53	-9.40			37.05	-4.42

DEP is departure from the long-term average.  
 2008 data is for ten months through October.

**Table 4. Temperature and rainfall at the Western Kentucky University Farm at Bowling Green, Kentucky in 2008.**

	2008			
	Temperature		Rainfall	
	°F	DEP	IN	DEP
JAN	34		4.11	
FEB	39		3.83	
MAR	47		6.45	
APR	56		5.05	
MAY	64		5.36	
JUN	76		1.73	
JUL	76		5.73	
AUG	75		0.64	
SEP	72		1.97	
OCT	58		4.24	
NOV				
DEC				
Total			39.11	

Weather Station established in 2007 so no long term average data exists. Check Table 3 for comparison.  
 2008 data is for ten months through October.

**Table 5. Dry matter yields and stand persistence of alfalfa varieties sown April 7, 2004 at Lexington, Kentucky.**

Variety	Percent Stand								Yield (tons/acre)									5-year Total
	2005		2006		2007		2008		2004	2005	2006	2007	2008					
	Apr 8	Oct 28	Apr 7	Oct 17	Mar 28	Oct 11	Apr 4	Oct 13	Total	Total	Total	Total	May 17	Jun 19	Jul 21	Aug 18	Total	
<b>Commercial Varieties-Available for Farm Use</b>																		
WL 357HQ	88	96	98	94	96	96	94	93	1.78	3.37	4.55	3.25	1.49	1.38	0.43	0.46	3.75	16.70*
Phoenix	88	95	95	95	96	96	93	90	1.79	3.02	4.32	2.89	1.33	1.18	0.35	0.40	3.25	15.28*
Genoa	88	95	95	95	97	97	93	89	1.79	2.91	4.21	2.97	1.32	1.22	0.35	0.38	3.28	15.16*
6400HT	88	93	98	95	97	97	93	90	1.70	2.76	4.01	3.06	1.28	1.18	0.31	0.35	3.11	14.64
Mountaineer 2.0	88	96	96	96	96	96	91	90	1.66	2.70	4.20	2.78	1.39	1.21	0.25	0.37	3.22	14.57
Summer Gold	85	94	93	94	93	93	91	89	1.47	3.08	4.02	2.88	1.14	1.11	0.41	0.44	3.10	14.54
Expedition	88	88	94	93	95	95	85	81	1.70	2.83	4.20	2.65	1.27	1.28	0.32	0.27	3.14	14.52
Feast+EV	85	96	96	93	93	93	93	93	1.75	2.94	3.51	3.11	1.27	1.02	0.36	0.42	3.07	14.38
FSG 408DP	83	91	91	90	92	92	86	80	1.69	2.53	3.60	3.25	1.23	1.14	0.41	0.44	3.22	14.30
Enforcer	63	83	95	93	93	93	83	78	1.19	2.57	3.97	2.11	0.97	0.81	0.26	0.32	2.37	12.20
AC Longview	75	89	94	91	90	90	81	74	1.24	2.25	3.24	2.20	1.02	0.69	0.31	0.36	2.38	11.32
Buffalo	60	78	85	84	80	80	70	75	1.04	1.91	3.56	2.33	0.97	0.82	0.18	0.28	2.26	11.10
Saranac AR (certified)	63	85	89	84	84	84	78	71	1.34	2.09	3.18	1.73	0.91	0.65	0.28	0.25	2.09	10.43
Arc	50	75	85	80	81	81	71	63	1.08	2.08	3.53	1.76	0.91	0.55	0.18	0.25	1.89	10.34
<b>Experimental Varieties</b>																		
VL02	83	95	96	91	94	94	91	91	1.88	2.45	4.00	2.63	1.35	0.99	0.35	0.41	3.10	14.06
Mean	78.0	89.8	93.2	91.1	91.6	91.6	86.1	83.0	1.54	2.63	3.87	2.64	1.19	1.01	0.32	0.36	2.88	13.57
CV,%	9.6	9.8	5.0	5.0	5.2	5.2	10.5	15.3	19.27	11.49	13.93	15.89	14.81	15.58	35.83	35.5	14.19	9.79
LSD,0.05	10.7	12.6	6.7	6.6	6.9	6.9	12.9	18.1	0.42	0.43	0.77	0.6	0.25	0.23	0.16	0.18	0.58	1.89

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

**Table 6. Dry matter yields, seedling vigor and stand persistence of alfalfa varieties sown April 15, 2005 at Princeton, Kentucky.**

Variety	Seedling Vigor <sup>1</sup> Jun 13, 2005	Percent Stand								Yield (tons/acre)								4-year Total
		2005 Oct 6	2006		2007		2008		2005 Total	2006 Total	2007 Total	2008						
			Apr 5	Oct 30	Apr 3	Oct 18	Apr 17	Oct 30				May 21	Jun 26	Jul 29	Aug 27	Total		
<b>Commercial Varieties-Available for Farm Use</b>																		
Phirst	4.8	100	99	97	98	96	97	93	2.58	6.49	2.92	1.28	1.37	0.73	0.55	3.92	15.91*	
Baralfa 53HR	5.0	100	99	97	89	91	93	90	2.62	6.50	2.75	1.22	1.36	0.75	0.60	3.94	15.81*	
WL 357HQ	5.0	100	100	99	96	95	97	95	2.69	6.14	2.94	1.29	1.38	0.72	0.60	4.01	15.78*	
6415	5.0	100	100	99	95	92	95	96	2.56	6.01	2.78	1.17	1.36	0.74	0.72	4.00	15.35*	
DynaGro Everlast	5.0	99	100	98	96	95	95	91	2.47	6.16	2.97	1.17	1.33	0.65	0.56	3.71	15.32*	
LegenDairy 5.0	5.0	100	100	99	97	95	97	95	2.62	5.67	2.80	1.25	1.41	0.78	0.70	4.14	15.23*	
Reward II	4.5	100	100	99	97	94	96	97	2.56	5.95	2.90	1.14	1.35	0.67	0.61	3.77	15.18*	
TripleTrust 450	4.8	100	100	100	95	95	95	94	2.52	5.76	2.80	1.08	1.40	0.73	0.63	3.84	14.92*	
Buffalo	5.0	99	100	99	88	94	94	90	2.47	5.89	2.81	1.10	1.28	0.72	0.58	3.69	14.86*	
Genoa	4.8	100	98	98	87	88	92	92	2.56	5.43	2.53	1.33	1.42	0.83	0.69	4.27	14.79*	
Saranac AR (certified)	5.0	98	100	99	95	94	92	89	2.31	5.88	2.83	1.21	1.28	0.66	0.54	3.69	14.70*	
Vernal	4.8	98	100	96	89	90	90	88	2.30	6.12	2.88	1.10	1.13	0.65	0.50	3.38	14.68*	
Arc	4.8	98	100	97	91	89	86	80	2.31	6.08	2.54	1.17	1.27	0.77	0.52	3.72	14.65*	
Expedition	4.8	100	98	96	90	93	88	94	2.44	5.34	2.67	1.18	1.38	0.79	0.64	3.98	14.44	
<b>Experimental Varieties</b>																		
AA108E	5.0	99	100	99	95	96	95	94	2.50	5.86	2.95	1.15	1.33	0.74	0.60	3.82	15.13*	
A-4440	4.5	100	100	98	96	94	97	90	2.50	6.08	2.61	1.23	1.31	0.69	0.53	3.76	14.95*	
Mean	4.8	99.3	99.5	97.9	93.3	93.0	93.6	91.5	2.50	5.96	2.79	1.19	1.34	0.73	0.60	3.85	15.11	
CV,%	8.0	2.0	2.0	1.7	5.0	5.1	7.0	6.0	8.12	9.47	15.58	8.56	9.41	12.64	16.61	7.64	6.02	
LSD,0.05	0.5	2.8	2.8	2.3	6.6	6.7	9.3	7.8	0.29	0.80	0.62	0.15	0.18	0.13	0.14	0.42	1.30	

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

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

**Table 7. Dry matter yields, seedling vigor and stand persistence of alfalfa varieties sown August 14, 2006 at Lexington, Kentucky.**

Variety	Seedling Vigor <sup>1</sup> Oct 17, 2006	Percent Stand					Yield (tons/acre)						2-year Total
		2006	2007		2008		2007	2008					
		Oct 17	Mar 6	Oct 11	Mar 7	Oct 13	Total	May 9	Jun 9	Jul 21	Aug 8	Total	
<b>Commercial Varieties-Available for Farm Use</b>													
L447HD	4.8	76	96	95	95	97	4.26	1.53	1.59	0.60	0.46	4.19	8.45*
Expedition	5.0	99	98	98	99	99	3.98	1.68	1.60	0.52	0.49	4.28	8.27*
DKA 41-18R	4.3	99	98	98	98	99	4.06	1.47	1.51	0.54	0.43	3.95	8.01*
WL 355RR	4.8	98	96	96	95	95	3.90	1.50	1.47	0.46	0.48	3.90	7.80*
WL 343HQ	4.3	99	100	100	100	100	3.69	1.51	1.44	0.47	0.50	3.92	7.61*
Phoenix	4.8	99	98	98	98	100	3.64	1.52	1.39	0.50	0.47	3.89	7.53*
Radiant-AM	5.0	100	97	96	97	98	3.79	1.62	1.32	0.38	0.41	3.73	7.52
Ameristand 403T	5.0	100	98	98	99	99	3.69	1.60	1.36	0.38	0.40	3.74	7.43
LegenDairy 5.0	5.0	100	95	95	94	96	3.53	1.40	1.43	0.49	0.46	3.79	7.31
Buffalo	5.0	99	99	98	99	99	3.67	1.54	1.33	0.37	0.39	3.63	7.30
Withstand	4.8	100	97	98	97	99	3.50	1.57	1.38	0.36	0.40	3.72	7.21
Saranac AR (certified)	4.8	100	96	96	95	94	3.46	1.60	1.24	0.32	0.32	3.48	6.94
<b>Experimental Varieties</b>													
BPR387	5.0	100	98	98	97	98	4.12	1.64	1.44	0.44	0.47	3.99	8.11*
DS617	5.0	99	97	97	96	98	3.82	1.58	1.44	0.53	0.48	4.03	7.85*
Mean	4.8	97.6	97.3	97.2	96.9	97.8	3.79	1.55	1.42	0.45	0.44	3.87	7.67
CV,%	7.6	12.3	2.7	2.8	4.1	2.9	9.36	11.74	7.98	23.33	26.57	10.68	8.46
LSD,0.05	0.5	17.2	3.8	3.9	5.7	4.1	0.51	0.26	0.16	0.15	0.17	0.59	0.93

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.  
\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

**Table 8. Dry matter yields, seedling vigor and stand persistence of alfalfa varieties sown August 24, 2006 at Bowling Green, Kentucky.**

Variety	Seedling Vigor <sup>1</sup> Oct. 30, 2006	Percent Stand					Yield (tons/acre)						2-year Total
		2006	2007		2008		2007	2008					
		Oct 30	Mar 16	Oct 29	Apr 14	Oct 30	Total	May 21	Jun 26	Jul 28	Total		
<b>Commercial Varieties-Available for Farm Use</b>													
Withstand	4.8	99	100	99	99	96	1.62	1.37	1.37	0.78	3.51	5.13*	
Evermore	4.8	100	100	99	100	97	1.33	1.53	1.29	0.62	3.43	4.76*	
Rebound 5.0	4.5	100	100	98	99	97	1.28	1.42	1.27	0.66	3.35	4.63*	
WL 348AP	4.8	99	100	98	100	96	1.14	1.56	1.23	0.61	3.40	4.54*	
TripleTrust 450	5.0	100	99	99	99	100	1.19	1.30	1.30	0.65	3.26	4.45	
CW 15030	5.0	100	99	98	96	98	1.17	1.27	1.30	0.68	3.25	4.42	
Integrity	5.0	100	100	100	100	99	1.16	1.37	1.24	0.64	3.25	4.41	
LegenDairy 5.0	4.8	100	100	98	98	96	1.03	1.31	1.35	0.66	3.33	4.35	
Phirst	4.8	100	99	98	97	97	0.98	1.47	1.18	0.68	3.34	4.32	
DynaGro Everlast	5.0	100	100	99	98	98	1.10	1.40	1.17	0.62	3.19	4.29	
6415	5.0	100	100	100	97	99	1.05	1.51	1.12	0.59	3.23	4.28	
Phoenix	4.8	99	99	98	96	94	1.06	1.49	1.12	0.58	3.19	4.25	
Saranac AR (certified)	4.5	100	100	98	97	95	0.89	1.55	0.96	0.47	2.98	3.87	
Enforcer	4.0	97	96	97	92	83	0.98	1.29	0.92	0.54	2.76	3.74	
Buffalo	4.3	100	99	99	98	92	1.01	1.28	0.89	0.53	2.70	3.71	
<b>Experimental Varieties</b>													
MP04	4.8	100	100	100	100	99	1.23	1.52	1.22	0.68	3.41	4.65*	
AA109E	4.5	99	100	100	99	98	1.09	1.36	1.28	0.64	3.28	4.36	
Mean	4.7	99.5	99.2	98.6	97.8	96.1	1.14	1.41	1.19	0.63	3.23	4.36	
CV,%	9.4	1.6	1.0	1.8	3.7	5.3	26.19	10.93	13.61	13.91	8.48	10.30	
LSD,0.05	0.6	2.3	1.4	2.5	5.1	7.3	0.42	0.22	0.73	0.12	0.39	0.64	

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.  
\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Variety	Percent Stand 2008 Oct 21	Yield (tons/acre), 2008		
		Jun 1	Aug 14	Total
<b>Commercial Varieties-Available for Farm Use</b>				
DKA 50-18	84	0.49	0.38	0.87*
Garst 6552	85	0.44	0.33	0.77*
Anchormate	96	0.47	0.27	0.74*
Saranac AR (certified)	88	0.44	0.30	0.73*
Garst 6417	90	0.44	0.29	0.73*
Rebound 5.0	84	0.41	0.32	0.73*
FSG 528SF	89	0.41	0.31	0.72*
WL 343HQ	91	0.40	0.28	0.68*
Buffalo	89	0.40	0.28	0.68*
A4440	88	0.40	0.25	0.65*
Genoa	73	0.33	0.28	0.61*
Ameristand 403T	70	0.35	0.25	0.60*
A5225	88	0.32	0.26	0.59*
DKA 43-13	84	0.27	0.31	0.58*
Phoenix	91	0.33	0.24	0.57*
PGI 459	93	0.25	0.28	0.53
WL 363HQ	90	0.26	0.27	0.52
Withstand	76	0.28	0.23	0.52
Mean	85.9	0.37	0.28	0.66
CV,%	9.9	43.82	31.73	35.01
LSD,0.05	12.1	0.23	0.13	0.33
*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.				

Variety	Percent Stand, 2008		Yield (tons/acre), 2008		
	May 21	Oct 30	Jun 26	Jul 29	Total
<b>Commercial Varieties-Available for Farm use</b>					
USG 681HY	100	93	0.25	0.34	0.59*
Genoa	99	97	0.24	0.34	0.58*
A5225	100	95	0.24	0.33	0.57*
Ameristand 403T	98	88	0.23	0.34	0.56*
Buffalo	100	91	0.25	0.29	0.54*
FSG 408DP	100	94	0.23	0.28	0.51*
Phoenix	96	91	0.22	0.27	0.49*
Saranac AR (certified)	99	86	0.23	0.25	0.49*
Mariner III	98	90	0.17	0.30	0.47
Arc	98	86	0.23	0.23	0.46
Withstand	96	89	0.20	0.25	0.45
WL 343HQ	99	90	0.16	0.24	0.41
<b>Experimental Varieties</b>					
TS 4027	99	88	0.29	0.34	0.64*
CW 24027	99	94	0.27	0.34	0.61*
Mean	98.5	90.8	0.23	0.30	0.53
CV,%	1.1	5.7	24.86	23.29	20.82
LSD,0.05	1.5	7.4	0.08	0.10	0.16
*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.					

**Table 11. Characterization and performance of alfalfa varieties across years and locations.**

Variety	Proprietor	Variety Characteristics <sup>1</sup>						Lexington								Princeton				Bowling Green			
		FD <sup>4</sup>	Disease Resistance <sup>2</sup>					2004 <sup>3</sup>				2006		2008		2005				2008		2006	
			Bw	Fw	An	PRR	APH	04	05	06	07	08	07	08	08	05	06	07	08	07	08	07	08
<b>Commercial Varieties-Available for Farm Use</b>																							
6400HT	Garst Seed Co.	4	HR	HR	HR	HR	HR	*	x <sup>5</sup>	*	*	x											
6415	Garst Seed Co.	4	HR	HR	HR	HR	HR										*	*	*	*		x	*
6417	Garst Seed Co.	4	HR	HR	HR	HR	HR										*						
6552	Garst Seed Co.	5	HR	HR	HR	HR	HR										*						
A5225	Producers Choice	5	HR	HR	HR	HR	R										*					*	
AC Longview	Newfield Seeds Co. Ltd		HR						x	x	x	x	x										
Ameristand 403T	America's Alfalfa	4	HR	HR	HR	HR	HR						x	*	*							*	
Anchormate	ProSeed Marketing	-	-	-	-	-	-										*						
Arc (certified)	Public	4	LR	MR	HR	-	-	x	x	x	x	x					x	*	*	x	x		
Baralfa 53HR	Barenbrug USA	5	HR	R	HR	HR	HR										*	*	*	*			
Buffalo	Public	-	-	-	-	-	-	x	x	x	x	x	x	x	x	*	*	*	*	x	*	x	x
CW 15030	Allied Seed, L.L.C.	5	HR	HR	R	HR	R															x	*
DKA 41-18RR	Monsanto	4	HR	HR	HR	HR	HR							*	*								
DKA 43-13	Monsanto	4	HR	HR	HR	HR	HR										*						
DKA 50-18	Monsanto	5	HR	HR	HR	HR	HR										*						
Dynagro Everlast	United Agri. Products	3.8	HR	HR	HR	HR	R										*	*	*	x		x	*
Enforcer	FFR/Southern States	4	HR	HR	HR	HR	HR	x	x	*	x	x										x	x
Evermore	FFR/Southern States	5	HR	HR	HR	HR	HR															*	*
Expedition	NK Brand/Syngenta Seeds	5	HR	HR	R	RR	R	*	x	*	*	x	*	*			*	x	*	*			
Feast+EV	Garst Seed Co.	3	HR	HR	R	HR	HR	*	*	x	*	x											
FSG 408DP	Lewis Seed Company	4	HR	HR	HR	HR	R	*	x	x	*	x										*	
FSG 528SF	Lewis Seed Company	5	HR	R	HR	RR	R										*						
Genoa	NK Brand/Syngenta Seeds	4	HR	HR	HR	RR	HR	*	x	*	*	*					*	*	x	*	*	*	
Integrity	PGI Alfalfa, Inc.	4	HR	HR	HR	HR	HR															x	*
L447HD	Legacy seeds, Inc.	4	HR	HR	HR	HR	HR						*	*									
Legendairy 5.0	Croplan Genetics	3	HR	HR	HR	HR	HR						x	*			*	x	*	*		x	*
Mariner III	Allied Seed, L.L.C.	4	HR	HR	HR	HR	HR															x	
Mountaineer 2.0	Croplan Genetics	5	HR	HR	HR	RR	HR	*	x	*	*	*											
Phirst	UniSouth Genetics, Inc.	4	HR	HR	HR	HR	R										*	*	*	*		x	*
Phoenix	FFR/Southern States	5	HR	HR	HR	HR	R	*	*	*	*	*	x	*	*						*	x	*
PGI 459	Producers Choice	4	HR	HR	HR	HR	R										X						
Rebound 5.0	Croplan Genetics	4	HR	HR	HR	HR	HR										*					*	*
Radiant-AM	Ampac Seed Company	4	HR	HR	HR	HR	HR						*	*									
Reward II	PGI Alfalfa, Inc.	4	HR	HR	R	HR	R										*	*	*	x			
Saranac AR (certified)	Public	4	MR	R	HR	LR	-	x	x	x	x	x	x	x	*		x	*	*	x	*	x	x
Summer Gold	Beck's Hybrids	4	HR	HR	HR	HR	HR	*	*	*	*	x											
TripleTrust 450	ABI Alfalfa, Inc	5	HR	HR	HR	HR	HR										*	*	*	x		x	*
USG 681HY	UniSouth Genetics, Inc.	6	HR	HR	R	HR	-														*		
Vernal	Public	2	R	MR	-	-	-										x	*	*	x			
Withstand	FFR/Southern States	4	HR	HR	HR	HR	HR						x	*	x							x	*
WL 343HQ	W-L Research	4	HR	HR	HR	HR	HR						x	*	*							x	
WL 348AP	W-L Research	4	HR	HR	HR	HR	HR																*
WL 355RR	W-L Research	4	HR	HR	HR	HR	HR						*	*									
WL 357HQ	W-L Research	5	HR	HR	HR	HR	HR	*	*	*	*	*					*	*	*	*			
WL 363HQ	W-L Research	5	HR	HR	HR	HR	HR										X						
<b>Experimental Varieties</b>																							
A-4440	PGI Alfalfa, Inc.	4	HR	HR	HR	HR	HR										*	*	*	*	x		
AA108E	ABI Alfalfa, Inc																*	*	*	x			
AA109E	ABI Alfalfa, Inc																					x	*
BPR387	Dairyland Research	4	HR	HR	HR	HR	HR						*	*									
CW 24027	Cal/West Seeds	4	HR	HR	HR	HR	HR															*	
DS617	Dairyland Research	4	HR	HR	HR	HR	HR						*	*									
MP04	Cimarron USA	5	HR	HR	HR	HR	R															*	*
TS4027	Target Seed, LLC	4	HR	HR	HR	HR	R															*	
VL02	Great Plains Research	4	HR	HR	HR	HR	MR	*	x	*	x	x											

<sup>1</sup> Variety characteristics: FD=fall dormancy, Bw=bacterial wilt, Fw=fusarium wilt, An=anthracnose, PRR=phytophthora root rot, APH-aphanomyces root rot. Information provided by seed companies.

<sup>2</sup> Disease resistance: S=susceptible, LR=low resistance, MR=moderate resistance, R=resistance, HR=high resistance.

<sup>3</sup> Establishment year.

<sup>4</sup> Fall dormancy: 1=Spredor 3, 2=Vernal, 3=Ranger, 4=Saranac, 5=DuPuits.

<sup>5</sup> x in the box indicates the variety was in the test but yielded significantly less than the top-ranked variety in the test.

Open boxes indicate the variety was not in the test.

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









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