

# 2011 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 10 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 are slower to initiate growth in the spring and show reduced fall growth. Therefore, fall dormancy can lead to reduced 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 usually not winter-hardy under Kentucky conditions. Many Kentucky producers have found that FD 4 varieties provide the best combination of yield and winter survival. In recent years some companies have also begun to report a winter survival index (WS) that ranges from 1 to 6. Varieties with a WS of 1 show superior winter survival, and varieties with a WS of 6 are not winter-hardy.

**Disease and Pest Resistance.** In Kentucky, producers should use varieties that are resistant (R) to aphanomyces root rot (APH), phytophthora root rot (PRR) and anthracnose (AN) and have at least a moderate resistance (MR) to bacterial wilt (Bw), and fusarium wilt (Fw). 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-

**Table 1. Temperature and rainfall at Lexington, Kentucky in 2006, 2007, 2008, 2009, 2010 and 2011.**

	2006			2007			2008			2009			2010			2011 <sup>2</sup>		
	Temp. °F	DEP <sup>1</sup>	Rainfall IN DEP	Temp. °F	DEP	Rainfall IN DEP	Temp. °F	DEP	Rainfall IN DEP	Temp. °F	DEP	Rainfall IN DEP	Temp. °F	DEP	Rainfall IN DEP	Temp. °F	DEP	Rainfall IN DEP
JAN	42	+11	4.77 +1.91	37	+6	2.93 +0.07	32	+2	3.91 +1.05	28	-3	2.45 -0.41	29	-2	2.40 -0.46	29	-2	2.10 -0.76
FEB	36	+1	2.13 -1.08	27	-8	1.83 -1.38	36	+1	6.11 +2.90	38	+3	2.86 -0.35	29	-6	1.38 -1.83	39	+4	6.34 +3.13
MAR	44	0	3.05 -1.35	52	+8	1.97 -2.43	44	+1	6.51 +1.91	48	+4	2.19 -2.21	47	+3	1.05 -3.35	47	+3	4.76 +0.36
APR	59	+4	3.52 -0.36	53	-2	3.87 -0.01	55	0	5.89 +2.01	55	0	4.48 +0.60	59	+4	2.74 -1.14	58	+3	12.36 +8.48
MAY	62	-2	2.99 -1.48	68	+4	1.45 -3.02	62	-2	4.33 +0.14	64	0	5.05 +0.58	67	+3	7.84 +3.37	64	0	6.72 +2.25
JUN	70	-2	1.82 -1.84	74	+2	1.77 -1.89	74	+2	3.59 -0.07	74	+2	5.41 -1.75	76	+4	4.61 +0.95	74	+2	2.61 -1.05
JUL	76	0	5.13 -0.13	74	-2	6.90 +1.90	76	0	3.41 -1.59	71	-5	5.89 +0.89	78	+2	5.49 +0.49	80	+4	6.29 1.29
AUG	76	+1	3.23 +0.70	80	+5	2.56 -1.37	75	0	2.18 -1.75	73	-2	5.38 +1.45	78	+3	1.54 -2.39	75	0	2.89 -1.04
SEP	64	-4	9.27 +6.07	72	+4	1.15 -2.05	72	+4	1.42 -1.78	68	0	5.37 +2.17	71	+3	1.14 -2.06	66	-2	5.52 +2.32
OCT	54	-3	4.88 +2.31	63	+6	5.28 +2.71	57	0	1.53 -1.04	54	-3	4.83 +2.26	59	+2	1.22 -1.35	55	-2	4.10 +1.53
NOV	47	+2	1.78 -1.61	46	+1	2.86 -0.53	43	-2	2.53 -0.86	49	+4	0.94 -2.45	47	+2	4.58 +1.19			
DEC	42	+6	2.45 -1.53	40	+4	5.29 +1.31	35	-1	6.03 +2.05	36	0	3.86 -0.12	28	-8	2.15 -1.93			
Total			45.02 +0.47			37.86 -6.69			47.24 +2.69			48.71 +4.16			36.14 -8.41			53.69 +16.51

<sup>1</sup> DEP is departure from the long-term average.  
<sup>2</sup> 2011 data is for ten months through October.

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.

Certain alfalfa varieties are reported to have resistance to sclerotinia crown and stem rot; however, research at the University of Kentucky has shown that many of these varieties have only limited resistance when conditions are ideal for disease development. Therefore, the best prevention against sclerotinia is to plant by mid-August if fall seeding or plant in the spring. If seeding in the fall, sclerotinia-resistant varieties can provide additional insurance.

**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 the percentage of 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 (2006 and 2008) and Princeton (2008, 2009 and 2011), as part of the forage variety testing program. A trial was planted in Lexington in spring 2010 but did not establish well, so it was replanted in September 2011. The soils at most locations are well suited to alfalfa because they are generally well drained silt loam soils (Maury and Crider at Lexington and Princeton, 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 and Princeton are presented in Tables 1 and 2.

Yield data (on a dry matter basis) for all tests are reported in Tables 4 through 8. 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 date for 2011 and as total annual production.

Statistical analyses were performed on all alfalfa yield data (including experimentals) to determine if the apparent differences are 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 statistically 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), a measure of the variability of

**Table 2. Temperature and rainfall at Princeton, Kentucky in 2008, 2009, 2010 and 2011.**

	2008				2009				2010				2011 <sup>2</sup>			
	Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall	
	°F	DEP <sup>1</sup>	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	37	+3	2.40	-1.40	33	-1	0.94	-2.86	31	-3	3.06	-0.74	32	-2	2.35	-1.45
FEB	39	+1	6.76	+2.33	42	+4	3.28	-1.15	33	-5	1.54	-2.89	40	+2	5.71	+1.28
MAR	48	+1	7.55	+2.61	53	+6	2.89	-2.05	48	+1	3.24	-1.70	50	+3	5.54	+0.60
APR	58	-1	6.56	+1.76	58	-1	5.35	+0.55	62	3	3.3	-1.54	61	+2	16.15	+11.35
MAY	65	-2	6.19	+1.23	67	0	6.14	+1.18	69	+2	10.41	+5.45	66	-1	7.22	+2.26
JUN	78	+3	1.24	-2.61	77	+2	7.97	+4.12	79	4	4.82	0.97	77	+2	4.60	+0.75
JUL	79	+1	5.12	+0.83	74	-4	7.45	+3.16	80	2	2.73	-1.56	81	+3	2.98	-1.31
AUG	77	0	0.69	-3.32	75	-2	2.44	-1.60	81	4	2.46	-1.55	77	0	3.95	-0.06
SEP	74	+3	0.61	-2.72	71	0	4.61	+1.28	72	1	0.94	-2.39	68	-3	3.86	+0.53
OCT	60	+1	2.21	-0.84	55	-4	9.08	+6.03	60	+1	0.97	-2.08	57	-2	1.35	-1.70
NOV	46	-1	2.59	-2.04	52	+5	1.50	-3.13	49	+2	3.98	-1.65				
DEC	39	0	6.49	+1.95	36	-3	2.73	-2.31	32	-7	1.57	-3.47				
Total			48.95	-2.18			54.31	+3.22			39.02	-12.11			53.71	+12.25

<sup>1</sup> DEP is departure from the long-term average.

<sup>2</sup> 2011 data is for ten months through October.

the data, is included for each column of means. Low variability is desirable; increased variability within a study results in higher CVs and larger LSDs.

Table 9 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 9, 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 0.05 LSD. It is best to choose a variety that has performed well over several years and locations as indicated by the asterisks.

Table 10 is a summary of yield data from 2000 to 2011 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 10, 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 10 to determine which yearly report to refer to.

**Table 3. Dry matter yields, seedling vigor and stand persistence of alfalfa varieties sown August 14, 2006 at Lexington, Kentucky.**

Variety	Percent Stand												Yield (tons/acre)												
	2006		2007		2008		2009		2010		2011		2010		2011		2011		2011		5-year Total				
	Oct 17	Oct 17	Mar 26	Oct 11	Mar 27	Oct 13	Mar 24	Oct 7	Mar 29	Oct 15	Mar 21	Oct 10	Oct 10	Mar 27	Oct 10	Mar 27	Oct 10	May 6	Jun 7	Jul 11	Aug 15	Sep 27	Total		
<b>Commercial Varieties-Available for Farm Use</b>																									
Expedition	5.0	99	98	98	99	99	100	100	99	97	97	90	3.98	4.28	6.32	5.66	1.26	1.20	0.97	0.94	0.38	0.38	0.38	4.74	24.98*
L447HD	4.8	76	96	95	95	97	97	98	97	95	92	87	4.26	4.19	5.69	5.33	1.12	0.96	0.86	0.88	0.46	0.46	0.46	4.28	23.75*
PerForm	5.0	100	98	98	97	98	98	98	97	97	96	90	4.12	3.99	5.62	5.33	1.29	1.10	0.84	0.95	0.42	0.42	0.42	4.60	23.67*
DKA41-18RR	4.3	99	98	98	98	99	98	100	97	96	95	90	4.06	3.95	5.62	5.17	1.13	1.13	0.89	0.92	0.40	0.40	0.40	4.47	23.26*
WL355RR	4.8	98	96	96	95	95	95	99	96	94	91	88	3.90	3.90	5.83	5.19	1.13	1.05	0.86	0.90	0.40	0.40	0.40	4.34	23.16*
Phoenix	4.8	99	98	98	98	100	98	97	97	95	95	91	3.64	3.89	5.66	4.97	1.30	1.01	0.84	0.94	0.47	0.47	0.47	4.55	22.71
Legendairy 5.0	5.0	100	95	95	94	96	96	96	99	95	87	83	3.53	3.79	5.75	5.21	1.05	1.10	0.87	0.80	0.34	0.34	0.34	4.15	22.42
Withstand	4.8	100	97	98	97	99	99	99	98	95	90	86	3.50	3.72	5.87	4.97	1.15	1.03	0.87	0.94	0.33	0.33	0.33	4.31	22.37
WL343HQ	4.3	99	100	100	100	100	100	100	99	98	97	92	3.69	3.92	5.34	4.96	1.18	1.14	0.91	0.84	0.38	0.38	0.38	4.45	22.36
Ameristand 403T	5.0	100	98	98	99	99	99	98	96	95	93	89	3.69	3.74	5.57	4.91	1.26	0.98	0.91	0.87	0.41	0.41	0.41	4.44	22.36
Radiant-AM	5.0	100	97	96	97	98	96	96	96	95	92	91	3.79	3.73	5.48	4.85	1.13	0.95	0.73	0.94	0.41	0.41	0.41	4.16	22.00
Saranac AR (certified)	4.8	100	96	96	95	94	92	93	93	91	89	80	3.46	3.48	4.95	4.40	1.10	0.80	0.66	0.88	0.35	0.35	0.35	3.79	20.09
Buffalo	5.0	99	99	98	99	99	99	97	94	93	88	85	3.67	3.63	4.69	4.07	1.00	0.94	0.70	0.89	0.23	0.23	0.23	3.75	19.81
<b>Experimental Varieties</b>																									
DS617	5.0	99	97	97	96	98	98	99	98	97	96	86	3.82	4.03	5.84	5.21	1.31	1.07	0.85	0.91	0.45	0.45	0.45	4.59	23.50*
Mean	4.8	97.6	97.3	97.2	96.9	97.8	97.5	97.6	96.7	95.1	92.6	87.6	3.79	3.87	5.59	5.02	1.17	1.03	0.84	0.90	0.39	0.39	0.39	4.33	22.60
CV%	7.6	12.3	2.7	2.8	4.1	2.9	3.1	2.5	3.0	3.5	7.1	7.0	9.36	10.68	7.87	9.30	10.86	11.48	14.49	16.05	14.81	14.81	14.81	9.48	6.23
LSD/0.05	0.5	17.2	3.8	3.9	5.7	4.1	4.3	3.5	4.2	4.8	9.4	8.9	0.51	0.59	0.63	0.67	0.18	0.17	0.17	0.21	0.08	0.08	0.08	0.59	2.17

<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 4. Dry matter yields and stand persistence of alfalfa varieties sown April 8, 2008 at Lexington, Kentucky.**

Variety	Percent Stand							Yield (tons/acre)									
	2008 Oct 21	2009		2010		2011		2008 Total	2009 Total	2010 Total	2011					4-year Total	
		Mar 24	Oct 7	Mar 29	Oct 15	Mar 21	Oct 10				May 6	Jun 7	Jul 11	Aug 15	Sep 27		Total
<b>Commercial Varieties-Available for Farm Use</b>																	
DKA 50-18	84	74	89	88	84	78	70	0.87	5.55	5.84	1.01	1.19	0.83	1.08	0.48	4.59	16.85*
FSG 528SF	89	93	93	93	89	86	79	0.72	5.54	5.81	1.07	1.17	0.84	0.96	0.49	4.52	16.59*
Garst 6417	90	88	89	89	84	83	73	0.73	5.30	5.65	1.14	1.35	0.84	1.00	0.43	4.76	16.45*
WL 343HQ	91	93	94	95	91	87	83	0.68	5.51	5.33	1.09	1.29	0.96	0.94	0.49	4.77	16.30*
Garst 6552	85	84	84	87	86	83	76	0.77	5.17	5.66	1.06	1.26	0.92	0.89	0.49	4.62	16.22*
Rebound 5.0	84	84	88	88	82	80	70	0.73	5.34	5.59	1.11	1.22	0.90	0.81	0.38	4.43	16.09*
A5225	88	85	86	86	84	80	70	0.59	5.38	5.57	1.07	1.19	0.86	0.86	0.52	4.49	16.03*
DKA 43-13	84	83	89	88	87	81	73	0.58	5.39	5.29	1.01	1.31	0.95	1.00	0.42	4.69	15.94*
WL 363HQ	90	89	90	91	89	83	74	0.52	5.12	5.67	1.05	1.31	0.91	0.88	0.46	4.61	15.93*
Phoenix	91	89	90	90	89	88	75	0.57	5.36	5.48	1.12	1.10	0.77	0.93	0.50	4.42	15.83*
PGI 459	93	90	93	94	89	89	74	0.53	5.18	5.47	1.09	1.17	0.86	0.90	0.44	4.47	15.65*
Genoa	73	68	79	80	78	68	66	0.61	5.25	5.34	0.99	1.19	0.90	0.88	0.41	4.37	15.58*
A4440	88	89	91	89	86	86	78	0.65	4.95	5.62	1.05	1.20	0.85	0.85	0.36	4.32	15.54*
Anchormate	96	96	95	95	94	91	84	0.74	4.98	5.46	1.19	1.03	0.78	0.86	0.43	4.28	15.45*
Ameristand 403T	70	65	73	73	75	74	66	0.60	4.68	5.24	0.94	1.05	0.78	0.97	0.33	4.06	14.58
Saranac AR (certified)	88	85	85	88	88	81	71	0.73	4.54	5.05	0.97	0.94	0.69	0.89	0.27	3.77	14.08
Withstand	76	78	76	76	75	69	55	0.52	4.79	5.02	1.01	0.89	0.65	0.90	0.28	3.73	14.05
Buffalo	89	90	90	89	84	80	60	0.68	4.77	4.91	0.92	0.77	0.67	0.85	0.21	3.41	13.77
Mean	85.9	84.4	87.3	87.5	85.1	81.4	71.9	0.66	5.16	5.44	1.05	1.15	0.83	0.91	0.41	4.35	15.61
CV,%	9.9	10.5	6.8	5.9	5.9	8.6	14.1	35.01	8.80	6.41	12.78	12.19	11.90	15.91	16.57	8.86	7.11
LSD,0.05	12.1	12.5	8.4	7.3	7.2	10.0	14.4	0.33	0.64	0.50	0.19	0.20	0.14	0.21	0.10	0.55	1.58

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

## 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 or in the "Publications" section of the UK Forage website at [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage).

- *Alfalfa: The Queen of the Forage Crops* (AGR-76)
- *Establishing Forage Crops* (AGR-64)
- *Inoculation of Forage Legumes* (AGR-90)

- *Grain and Forage Crop Guide for Kentucky* (AGR-18)
- *Lime and Fertilizer Recommendations* (AGR-1)
- *Weed Control Strategies for Alfalfa and Other Forage Legume Crops* (AGR-148)
- *Insect Management Recommendations for Field Crops and Livestock* (ENT-17)
- *Kentucky Plant Disease Management Guide for Forage Legumes* (PPA-10D)
- *Alfalfa Hay: Quality Makes the Difference* (AGR-137)
- *"Emergency" Inoculation for Poorly Nodulated Legumes* (PPFS-AG-F-04)
- *Growing Alfalfa in the South*, a publication of the National Alfalfa & Forage Alliance, <http://www.alfalfa.org/pdf/alfalfainthesouth.pdf>.

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**Table 5. Dry matter yields, seedling vigor and stand persistence of alfalfa varieties sown April 17, 2009 at Princeton, Kentucky.**

Variety	Seedling Vigor <sup>1</sup> May 12 2009	Percent Stand						Yield (tons/acre)									3-year Total
		2009		2010		2011		2009 Total	2010 Total	2011							
		May 12	Oct 28	Mar 18	Oct 12	Apr 8	Oct 24			May 10	Jun 14	Jul 21	Aug 16	Sep 22	Total		
<b>Commercial Varieties-Available for Farm Use</b>																	
Ameristand 403T	3.3	98	94	94	96	98	95	2.09	3.85	1.53	1.32	1.05	0.55	0.49	4.94	10.88*	
WL 363HQ	3.5	96	96	96	98	100	100	1.84	3.72	1.38	1.25	1.19	0.76	0.65	5.24	10.80*	
Adrenalin	2.8	98	91	91	95	97	98	1.74	3.77	1.58	1.22	1.09	0.75	0.60	5.24	10.75*	
Radiance HD	2.8	99	96	97	97	98	100	1.72	3.85	1.44	1.23	1.10	0.77	0.62	5.17	10.74*	
Ameristand 407TQ	4.3	100	97	97	97	99	99	1.65	3.82	1.20	1.16	1.29	0.82	0.64	5.10	10.57*	
Syngenta 6422Q	3.3	95	97	97	96	97	99	1.63	3.65	1.38	0.96	1.11	0.77	0.55	4.78	10.05*	
Archer III	3.0	98	97	95	97	100	100	1.53	3.57	1.22	1.15	1.11	0.82	0.66	4.96	10.05*	
Saranac AR (certified)	3.3	99	91	90	94	99	97	1.60	3.56	1.33	1.22	1.16	0.60	0.52	4.83	9.99*	
Ameristand 403TPlus	3.5	100	95	95	95	98	97	1.57	3.61	1.43	1.25	0.99	0.66	0.47	4.81	9.99*	
Rebound 5.0	2.8	95	96	90	93	96	97	1.48	3.64	1.19	1.13	1.13	0.74	0.67	4.86	9.97*	
Buffalo	3.3	100	91	93	94	94	91	1.61	3.42	1.41	1.09	1.12	0.53	0.52	4.67	9.71	
KingFisher 243	1.3	94	93	92	93	99	98	1.44	3.16	1.25	1.17	1.13	0.68	0.58	4.81	9.41	
<b>Experimental Varieties</b>																	
BYEXP723	3.8	98	98	97	96	98	98	2.16	4.02	1.28	1.24	1.13	0.75	0.67	5.07	11.25*	
TS 4010/A4535	3.5	100	98	97	97	97	97	1.68	3.85	1.44	1.27	1.13	0.75	0.59	5.18	10.71*	
GA505	2.8	99	95	93	93	99	99	1.72	3.45	1.45	1.29	1.08	0.66	0.50	4.98	10.16*	
CW 055023/PGI557	3.8	100	97	96	97	98	99	1.43	3.49	1.37	1.14	1.00	0.82	0.60	4.94	9.86	
GA-APGC	4.0	98	91	94	97	99	97	1.63	3.34	1.43	1.24	1.14	0.57	0.48	4.85	9.82	
GA-MPX	1.8	96	92	93	96	98	96	1.42	3.12	1.31	0.89	1.08	0.60	0.50	4.38	8.92	
Mean	3.1	97.8	94.6	94.2	95.3	97.9	97.4	1.66	3.61	1.37	1.18	1.11	0.7	0.57	4.93	10.2	
CV,%	37.6	4.3	4.8	4.1	3.1	2.2	2.1	24.87	12.72	12.97	14.84	12.59	11.6	13.05	6.5	9.17	
LSD,0.05	1.7	5.9	6.5	5.5	4.1	3.0	2.9	0.59	0.65	0.25	0.25	0.2	0.12	0.11	0.46	1.33	

<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 6. Dry matter yields and stand persistence of alfalfa varieties sown April 17, 2008 at Princeton, Kentucky.**

Variety	Percent Stand												Yield (tons/acre)													
	2008			2009			2010			2011			2008 Total			2009 Total			2010 Total			2011			4-year Total	
	May 21	Oct 30	Apr 17	Apr 17	Oct 28	Mar 18	Oct 12	Apr 8	Oct 24	Oct 12	Apr 8	Oct 24	Oct 12	Apr 8	Oct 24	May 10	Jun 14	Jul 21	Aug 16	Sep 22	Total	Total	Total	Total		
<b>Commercial Varieties-Available for Farm Use</b>																										
Genoa	99	97	95	93	93	95	91	89	93	91	89	93	91	89	93	0.89	1.00	0.98	0.43	0.41	3.19	4.19	3.19	3.19	3.72	11.67*
USG 681HY	100	93	94	91	91	93	90	90	90	90	90	90	90	90	90	0.85	0.98	0.97	0.37	0.37	3.17	3.99	3.17	3.17	3.53	11.27*
FSG 408DP	100	94	95	91	89	93	88	91	89	89	91	89	89	89	89	0.96	1.02	0.90	0.38	0.32	3.18	3.69	3.18	3.18	3.59	10.97*
A5225	100	95	96	96	96	95	88	85	84	85	84	85	84	85	84	0.76	0.86	0.85	0.37	0.37	3.03	3.90	3.03	3.03	3.22	10.71*
Phoenix	96	91	85	85	84	85	76	80	76	80	76	76	76	80	76	0.82	0.89	0.77	0.24	0.24	3.07	3.64	3.07	3.07	2.95	10.15
Ameristand 403T	98	88	83	84	84	89	79	80	74	80	74	74	74	80	74	0.80	0.87	0.84	0.26	0.28	2.86	3.62	2.86	2.86	3.04	10.09
WL 343HQ	99	90	89	96	93	93	88	91	91	91	91	91	91	91	91	0.77	0.96	0.86	0.33	0.32	3.03	3.39	3.03	3.03	3.25	10.08
Withstand	96	89	84	88	88	88	81	85	85	85	85	85	85	85	85	0.87	0.90	0.70	0.24	0.30	3.05	3.52	3.05	3.05	3.01	10.03
Mariner III	98	90	86	86	86	85	84	79	83	84	79	83	83	79	83	0.71	0.90	0.82	0.27	0.25	2.85	3.55	2.85	2.85	2.95	9.83
Saranac AR (certified)	99	86	83	79	80	80	81	81	73	80	81	73	73	81	73	0.75	0.81	0.71	0.22	0.22	2.82	2.92	2.82	2.82	2.71	8.95
Arc (certified)	98	86	89	78	78	78	71	66	63	78	71	66	63	66	63	0.61	0.77	0.53	0.17	0.16	2.73	3.34	2.73	2.73	2.24	8.78
Buffalo	100	91	89	66	66	68	61	53	53	53	53	53	53	53	53	0.40	0.63	0.53	0.18	0.19	2.26	3.16	2.26	2.26	1.93	7.89
<b>Experimental Varieties</b>																										
TS 4027	99	88	83	83	83	80	73	76	78	78	76	78	78	76	78	0.86	0.95	0.95	0.34	0.29	3.02	3.66	3.02	3.02	3.40	10.72*
CW 24027	99	94	95	96	96	96	88	79	81	88	79	81	81	79	81	0.70	0.88	0.81	0.32	0.29	2.99	4.06	2.99	2.99	2.99	10.65*
Mean	98.5	90.8	88.8	86.4	86.4	86.7	81.3	80.3	79.3	81.3	80.3	79.3	79.3	80.3	79.3	0.77	0.89	0.80	0.29	0.29	2.95	3.62	2.95	2.95	3.04	10.13
CV%	1.1	5.7	8.7	9.4	9.4	9.3	13.0	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	16.65	13.27	16.38	23.19	20.22	9.52	13.10	9.52	9.52	12.64	8.39
LSD:0.05	1.5	7.4	11.0	11.7	11.7	11.6	15.1	13.4	13.3	15.1	13.4	13.3	13.3	13.4	13.3	0.18	0.17	0.19	0.10	0.08	0.40	0.68	0.40	0.40	0.55	1.21

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

**Table 7. Dry matter yields and stand persistence of alfalfa varieties [including Roundup Ready (RR)] sown April 7, 2011 at Princeton, Kentucky.**

Variety	Percent Stand		Yield (tons/acre)			
	2011		2011			
	Jun 14	Oct 24	Jul 21	Aug 16	Sep 22	Total
<b>Commercial Varieties-Available for Farm Use</b>						
WL354HQ	99	100	1.10	0.55	0.37	2.03*
Ameristand 403T	96	96	1.01	0.58	0.33	1.92*
Phoenix	93	94	0.91	0.53	0.38	1.82*
Gunner	96	97	0.89	0.55	0.36	1.80*
Charger	95	97	0.95	0.52	0.32	1.79*
L-449Aph2	98	99	0.90	0.49	0.35	1.74*
Caliber	96	97	0.90	0.49	0.30	1.69*
Radiance HD	95	97	0.91	0.44	0.32	1.67*
DS4210	97	99	0.83	0.50	0.29	1.62*
Consistency 4.10 RR	99	97	0.81	0.52	0.28	1.61*
Rebound 6.0.	98	99	0.82	0.48	0.30	1.60
Lancer	91	95	0.83	0.46	0.28	1.57
54R02 RR	92	95	0.79	0.45	0.32	1.57
DKA41-18 RR	96	97	0.81	0.47	0.27	1.55
Alfagraze 300 RR	94	94	0.90	0.40	0.25	1.54
Withstand	95	93	0.82	0.44	0.24	1.50
WL355 RR	96	97	0.73	0.48	0.28	1.49
Saranac AR (certified)	98	97	0.84	0.42	0.21	1.48
Ameristand 405T RR	99	98	0.79	0.46	0.22	1.47
Ameristand 407TQ	96	96	0.78	0.43	0.25	1.46
<b>Experimental Varieties</b>						
TS4013	99	98	1.00	0.52	0.36	1.88*
FG R47M120 RR	92	95	0.83	0.50	0.29	1.61*
FG R47M319 RR	97	98	0.76	0.45	0.33	1.54
FG R47M312 RR	95	97	0.77	0.43	0.27	1.47
FG R46M162 RR	98	95	0.80	0.37	0.24	1.41
Mean	95.8	96.6	0.86	0.48	0.30	1.63
CV,%	3.2	3.5	18.88	18.29	28.32	18.58
LSD,0.05	4.5	5.0	0.23	0.12	0.12	0.43

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

**Table 8. Dry matter yields and stand persistence of Roundup Ready alfalfa varieties sown April 7, 2011 at Princeton, Kentucky.<sup>1</sup>**

Variety	Percent Stand		Yield (tons/acre)			
	2011		2011			
	Jun 14	Oct 24	Jul 21	Aug 16	Sep 22	Total
<b>Commercial Varieties-Available for Farm Use</b>						
54R02 RR	94	94	0.83	0.53	0.36	1.72*
Consistency 4.10 RR	99	99	0.89	0.44	0.32	1.64*
DKA41-18 RR	98	97	0.80	0.43	0.25	1.48*
Ameristand 405T RR	96	96	0.73	0.42	0.32	1.47*
WL355 RR	98	98	0.79	0.38	0.26	1.43*
Alfagraze 300 RR	94	94	0.67	0.38	0.19	1.24
<b>Experimental Varieties</b>						
FG R47M120 RR	94	97	0.87	0.47	0.27	1.61*
FG R47M319 RR	98	98	0.78	0.45	0.36	1.59*
FG R46M162 RR	98	98	0.78	0.44	0.31	1.53*
FG R47M312 RR	92	94	0.71	0.42	0.28	1.41
Mean	96.1	96.4	0.79	0.44	0.29	1.51
CV,%	2.8	2.6	12.11	15.37	25.21	13.66
LSD,0.05	3.9	4.3	0.14	0.10	0.11	0.30

<sup>1</sup> Weed control in 2011 was the same as on the other alfalfa trials.

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





Variety	Variety Characteristics <sup>1</sup>										Lexington										Princeton																
	Disease Resistance <sup>2</sup>					APH					2006 <sup>3</sup>					2008					2008					2009					2011						
	FD <sup>4</sup>	Bw	Fw	An	PRR	Bw	Fw	An	PRR	APH	07	08	09	10	11	08	09	10	11	08	09	10	11	08	09	10	11	09	10	11	2011	2011					
<b>Commercial Varieties-Available for Farm Use</b>																																					
Radiant-AM	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	*	*	X	X	*																						
Rebound 5.0	4	HR	HR	HR	HR	HR	HR	HR	HR	HR					*																						
Rebound 6.0	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
Saranac AR (certified)	4	MR	R	HR	LR	-	X	X	X	X	X	X	X	X	*	X	X	X	X	*	X	X	*	X	X	*	X	X	*	X	X	*	X	X			
Syngenta 6422Q	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
USG 681HY	6	HR	HR	R	HR	-																															
Withstand	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	X	*	*	X	X	X	X	X	X	X	X	*	X	X	*	X	X	*	X	X	*	X	X	*	X		
WL 343HQ	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	X	*	*	X	X	*	X	X	X	*	X	X	*	X	X	*	X	X	*	X	X	*	X	X			
WL 354HQ	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
WL 355 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
WL 363HQ	5	HR	HR	HR	HR	HR	HR	HR	HR	HR					X	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
<b>Experimental Varieties</b>																																					
BYEXP 723	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
CW 055023/PGI 557	5	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
CW 24027	4	HR	HR	HR	HR	HR	HR	HR	HR	HR						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
DS617	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	*	*	*	*	*																						
FG R46M162 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
FG R47M120 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
FG R47M312 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
FG R47M319 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
GA 505																																					
GA-APGC																																					
GA-MPX																																					
TS 4010/A4535																																					
TS 4013	4	HR	HR	HR	HR	HR	HR	HR	HR	HR																											
TS4027	4	HR	HR	HR	HR	HR	HR	HR	HR	R						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	

1 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.

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

3 Establishment year.

4 Fall dormancy-check varieties: 1=Spredor 3, 2=Vernal, 3=Ranger, 4=Saranac, 5=DuPuits.

5 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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