

2015 Alfalfa Report

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Introduction

Alfalfa (*Medicago sativa*) has historically been the highest-yielding, highest-quality forage legume grown in Kentucky. It is an important part 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 14 shows a summary of all alfalfa varieties tested in Kentucky during the past 15 years. The UK Forage Extension website, at 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.

Table 3. Temperature and rainfall at Quicksand, Kentucky, in 2014 and 2015.

	2014				2015 ²			
	Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP
JAN	29	-2	2.66	-0.63	33	+2	1.89	-1.40
FEB	36	+3	4.52	+0.92	27	-6	3.67	+0.07
MAR	43	+2	5.68	+1.34	46	+5	6.51	+2.17
APR	58	+5	5.12	+1.02	57	+4	9.51	+5.41
MAY	65	+3	2.71	-1.77	67	+5	2.54	-1.94
JUN	75	+5	1.81	-2.01	74	+4	3.06	-0.76
JUL	72	-2	7.14	+1.89	76	+2	7.91	+2.66
AUG	74	+1	7.94	+3.93	73	0	3.48	-0.53
SEP	69	+3	1.93	-1.59	70	+4	2.05	-1.47
OCT	57	+3	6.36	+3.45	57	+3	2.51	-0.40
NOV	41	-1	3.10	-0.78				
DEC	41	+8	2.41	-1.73				
Total			51.38	+4.04			43.13	+3.81

¹ DEP is departure from the long-term average.

² 2015 data is for the ten months through October.

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2011, 2012, 2013, 2014, and 2015.

	2011				2012				2013				2014				2015 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	29	-2	2.10	-0.76	38	+7	4.80	+1.94	38	+7	4.50	+1.64	25	-6	2.28	-0.58	32	+1	2.17	-0.69
FEB	39	+4	6.34	+3.13	40	+5	5.39	+2.18	36	+1	1.78	-1.43	30	-5	5.47	+2.26	26	14	3.08	-0.13
MAR	47	+3	4.76	+0.36	56	+12	5.64	+1.24	39	-5	5.47	+1.07	39	-5	3.08	-1.32	45	+1	7.34	+2.94
APR	58	+3	12.36	+8.48	56	+1	3.26	-0.62	55	0	4.46	+0.58	58	+3	5.27	-1.89	57	+2	13.19	+9.31
MAY	64	0	6.72	+2.25	69	+5	4.02	-0.45	65	+1	5.23	+0.76	66	+2	5.72	+1.25	69	+5	3.02	-1.45
JUN	74	+2	2.61	-1.05	73	+1	2.42	-1.24	72	0	7.32	+3.66	75	+3	2.93	-0.73	75	+3	8.20	+4.54
JUL	80	+4	6.29	1.29	81	+5	2.50	-2.50	72	-4	9.33	+4.33	74	-2	3.18	-1.82	77	+1	10.22	+5.22
AUG	75	0	2.89	-1.04	75	0	1.68	-2.25	72	-3	3.68	-0.25	76	+1	6.53	+2.60	74	-1	3.49	-0.44
SEP	66	-2	5.52	+2.32	67	-1	6.40	+3.20	67	-1	2.21	-0.99	69	+1	3.63	+4.43	72	+4	3.49	+0.29
OCT	55	-2	4.10	+1.53	55	-2	2.00	-0.57	55	-2	7.02	+4.45	57	0	5.55	+2.98	59	+2	2.78	+0.21
NOV	50	+5	9.53	+6.14	43	-2	1.81	-0.65	41	-4	3.06	-0.33	41	-4	2.79	-0.60				
DEC	41	+5	5.58	+1.60	42	+6	9.57	+4.94	36	0	4.19	+0.21	40	+4	2.47	-1.51				
Total			68.80	+24.25			49.49	+4.94			58.25	+13.70			49.4	+4.85			56.98	+19.80

¹ DEP is departure from the long-term average.

² 2015 data is for ten months through October.

Table 2. Temperature and rainfall at Princeton, Kentucky, in 2011, 2012, 2013, 2014, and 2015.

	2011				2012				2013				2014				2015 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	32	-2	2.35	-1.45	40	+6	3.01	-0.79	38	+4	6.31	+2.51	30	-4	1.70	-2.10	34	0	1.51	-2.29
FEB	40	+2	5.71	+1.28	54	+6	1.73	-2.70	39	+1	3.09	-1.34	32	-6	4.75	+0.32	28	-10	4.16	-0.27
MAR	50	+3	5.54	+0.60	60	+13	3.27	-1.67	42	-5	4.34	-0.60	43	-4	7.43	-0.51	46	-1	6.83	+1.89
APR	61	+2	16.15	+11.35	60	+1	0.62	-4.18	57	-2	5.72	+0.92	59	0	8.5	+3.70	60	+1	7.38	+2.58
MAY	66	-1	7.22	+2.26	71	+4	1.36	-3.60	66	-1	4.26	-0.70	68	+1	1.96	-3.00	68	+1	3.52	-1.44
JUN	77	+2	4.60	+0.75	74	-5	2.38	-1.47	74	-1	7.55	+3.70	76	+1	3.25	-0.60	76	+1	2.85	-1.00
JUL	81	+3	2.98	-1.31	83	+5	1.40	-2.89	75	-3	4.44	+0.15	73	-5	1.56	-2.73	79	+1	8.83	+4.54
AUG	77	0	3.95	-0.06	77	0	4.27	+0.26	75	-2	5.59	+1.58	78	0	9.33	+5.32	73	-4	2.90	-1.11
SEP	68	-3	3.86	+0.53	69	-2	5.45	+1.82	71	0	5.37	+2.04	69	-2	0.97	-2.36	71	0	0.82	-2.51
OCT	57	-2	1.35	-1.70	57	-2	2.94	-0.11	59	0	4.04	+0.99	59	0	4.36	+1.31	60	+1	4.15	+1.10
NOV	51	+4	9.12	+4.49	45	-2	2.11	-2.52	44	-3	1.37	-3.26	41	-6	2.02	-2.61				
DEC	42	+3	6.13	+1.09	45	+6	4.77	-0.27	38	-1	5.41	+0.37	40	+1	1.84	-3.20				
Total			68.96	+17.83			33.01	-18.12			57.49	+6.36			44.67	-6.46			42.95	+1.49

¹ DEP is departure from the long-term average.

² 2015 data is for ten months through October.

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 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 (non-dormant). 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 also have 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 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 unclear how it affects established alfalfa. In years with overly cool and wet spring weather, alfalfa stands

Table 4. Dry-matter yields, seedling vigor, and stand persistence of alfalfa varieties sown September 14, 2011, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 11, 2011	Percent Stand												Yield (tons/acre)												4-year Total								
		2011		2012		2013		2014		2015		2012		2013		2014		2015		2015		Total												
		Oct 11	Mar 21	Oct 12	Mar 20	Sep 26	Apr 1	Oct 6	Apr 2	Oct 15	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total														
Commercial Varieties-Available for Farm Use																																		
6422Q	4.5	100	100	100	100	100	100	100	100	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	1.58	1.57	1.10	1.28	0.79	6.31	25.15*
TripleTrust 500	3.9	100	100	100	100	100	97	98	98	95	97	98	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	1.48	1.56	1.11	1.16	0.57	5.88	24.27*
55V48	4.6	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1.56	1.49	1.34	0.98	0.45	5.82	23.83*	
Rebound 6.0	4.9	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1.53	1.46	1.05	1.00	0.50	5.54	23.64*	
WL 363HQ	4.4	100	100	100	100	100	100	100	100	100	100	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	1.47	1.51	1.23	0.90	0.47	5.58	23.39*	
Kingfisher 4020	3.8	100	100	100	100	100	100	100	100	100	100	98	97	95	95	95	95	95	95	95	95	95	95	95	95	95	1.52	1.48	1.14	1.01	0.45	5.59	23.33*	
Ameristand 403T	4.0	100	100	100	100	100	100	100	100	100	100	99	97	97	97	97	97	97	97	97	97	97	97	97	97	97	1.43	1.52	1.34	1.23	0.27	5.79	23.18*	
54Q32	4.1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1.49	1.49	1.19	1.10	0.23	5.50	22.26	
53H92	4.1	100	100	100	100	100	100	100	100	100	100	100	99	99	99	99	99	99	99	99	99	99	99	99	99	99	1.55	1.50	1.27	0.97	0.36	5.65	22.23	
Saranac AR (certified)	4.0	100	100	100	100	100	100	100	100	100	100	97	96	93	92	92	92	92	92	92	92	92	92	92	92	92	1.32	1.31	1.23	1.06	0.33	5.25	21.68	
Arc (certified)	4.5	100	100	100	100	100	100	100	100	100	100	97	96	93	92	91	91	91	91	91	91	91	91	91	91	91	1.38	1.45	0.95	0.74	0.50	5.02	21.13	
Buffalo	4.8	100	100	100	100	100	100	100	100	100	100	95	84	83	83	84	83	84	83	84	83	84	83	84	83	84	1.21	1.23	1.16	0.63	0.30	4.54	20.02	
Mean	4.3	100	100	100	100	100	99	98	96	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	1.46	1.46	1.18	1.00	0.44	5.54	22.84	
CV/%	13.5	0	0	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	12.67	11.24	23.45	26.01	39.62	10.79	6.81	
LSD _{0.05}	0.8	0	0	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0.27	0.24	0.40	0.38	0.25	0.86	2.24	

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous growth.

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

have suffered great damage due to aphanomyces when planted with varieties susceptible to this disease.

Certain alfalfa varieties are reported to have resistance to sclerotinia crown and stem rot; however, research at the Uni-

Table 5. Dry matter yields, seedling vigor, and stand persistence of alfalfa varieties sown August 9, 2012, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Sep 27, 2012	Percent Stand								Yield (tons/acre)								3-year Total
		2012		2013		2014		2015		2013		2014		2015				
		Sep 27	Mar 20	Sep 26	Apr 1	Oct 6	Apr 2	Oct 15	Total	Total	May 8	Jun 11	Jul 16	Aug 13	Sep 16	Total		
Commercial Varieties-Available for Farm Use																		
55V50	5.0	100	100	100	100	99	99	99	99	8.65	6.48	1.75	1.79	1.56	1.27	0.46	6.84	21.87*
Phoenix	4.8	98	99	97	95	97	95	95	95	8.58	6.27	1.63	1.69	1.27	1.25	0.44	6.28	21.13*
Radiance HD	4.5	99	100	100	98	97	94	95	95	8.28	6.32	1.52	1.58	1.20	1.07	0.59	5.95	20.56*
4030	4.5	99	100	99	98	99	96	97	97	8.20	5.96	1.59	1.51	1.47	1.16	0.48	6.20	20.37*
Bulldog-505	5.0	100	100	99	98	98	97	97	97	8.00	6.24	1.61	1.62	1.11	1.06	0.39	5.78	20.01*
Caliber	4.3	98	100	100	99	99	97	95	95	8.14	5.92	1.52	1.54	1.15	1.11	0.64	5.96	20.01*
Evermore	4.8	100	100	100	100	100	98	97	97	8.30	5.92	1.48	1.47	1.20	0.79	0.38	5.33	19.54
Saranac AR (certified)	4.8	100	100	96	96	96	93	94	94	7.86	5.83	1.67	1.48	1.31	0.96	0.41	5.82	19.51
Ameristand 403T	5.0	100	100	100	98	98	98	97	97	8.04	5.94	1.57	1.51	1.08	0.83	0.40	5.39	19.37
Withstand	4.8	100	100	100	98	98	96	96	96	7.84	6.07	1.39	1.47	1.02	0.87	0.59	5.34	19.26
Arc (certified)	4.9	100	100	100	96	94	95	91	92	7.40	5.68	1.69	1.55	0.96	1.03	0.26	5.49	18.57
Experimental Varieties																		
CW 085028	5.0	100	100	100	100	100	99	98	98	8.04	6.47	1.49	1.79	1.28	1.17	0.48	6.21	20.71*
CW 065030	4.8	100	100	100	100	100	98	98	98	7.81	6.37	1.46	1.77	1.38	0.96	0.51	6.08	20.02*
GA-ALFG-1	5.0	100	99	97	97	96	95	95	95	7.21	5.63	1.59	1.57	1.36	0.68	0.45	5.65	18.49
Mean	4.8	99	100	99	98	98	96	96	96	8.02	6.08	1.57	1.60	1.24	1.01	0.46	5.88	19.98
CV,%	6.2	1	1	2	2	2	3	2	2	7.46	8.38	12.94	11.28	25.00	29.02	37.78	11.27	7.27
LSD,0.05	0.4	2	1	3	2	3	4	3	3	0.86	0.73	0.29	0.26	0.44	0.42	0.25	0.95	2.08

¹ 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.

iversity of Kentucky has shown that some 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 it will be available when needed.

Table 6. Dry-matter yields, seedling vigor, and stand persistence of Roundup Ready alfalfa varieties sown August 9, 2012, at Lexington, Kentucky.¹

Variety	Seedling Vigor ² Sep 27, 2012	Percent Stand								Yield (tons/acre)								3-year Total
		2012		2013		2014		2015		2013		2014		2015				
		Sep 27	Mar 20	Sep 26	Apr 1	Oct 6	Apr 2	Oct 15	Total	Total	May 8	Jun 11	Jul 16	Aug 13	Sep 17	Total		
Commercial Varieties-Available for Farm Use																		
Tonnica RR	4.6	100	100	100	97	96	94	95	95	6.37	6.05	1.48	1.66	1.09	1.04	0.50	5.78	18.20*
6516R RR	4.8	99	99	99	98	97	96	96	96	5.87	6.21	1.59	1.61	1.20	1.12	0.44	5.95	18.04*
WL 372HQ RR	4.1	100	100	100	98	99	98	97	97	5.92	5.88	1.64	1.59	1.10	1.15	0.42	5.90	17.70*
DKA44-16 RR	4.5	99	100	100	99	100	99	99	99	5.90	5.61	1.56	1.58	1.18	1.32	0.48	6.13	17.64*
Stratica RR	3.6	94	95	95	91	96	93	94	94	6.10	5.64	1.35	1.50	1.25	1.08	0.45	5.63	17.37*
Ameristand 445TQ RR	4.1	100	100	100	99	99	99	99	99	5.61	5.33	1.61	1.65	1.29	1.21	0.52	6.28	17.22*
AphaTron RR	4.3	100	100	100	99	98	96	97	97	5.66	5.50	1.49	1.68	1.12	1.02	0.57	5.88	17.04*
DKA41-18 RR	4.1	98	99	99	95	97	96	97	97	5.45	5.41	1.53	1.60	1.31	1.19	0.46	6.09	16.95*
Consistency 4.10 RR	4.1	98	98	98	97	98	96	97	97	5.62	5.25	1.53	1.55	1.34	1.13	0.47	6.03	16.90*
WL 355 RR	3.9	99	100	100	97	99	97	97	97	5.46	5.54	1.45	1.54	1.33	1.06	0.49	5.87	16.87*
Ameristand 405T RR	4.5	100	100	100	99	98	95	94	94	5.92	5.15	1.44	1.56	1.19	1.08	0.43	5.70	16.77*
54R02 RR	4.5	94	96	97	97	97	96	96	96	5.45	5.46	1.63	1.62	1.17	1.00	0.43	5.85	16.76*
Ameristand 433T RR	3.4	92	94	93	91	92	90	90	90	5.27	5.18	1.65	1.58	1.19	1.11	0.43	5.97	16.41
WL 356HQ RR	4.1	100	100	100	97	97	95	95	95	5.50	5.17	1.47	1.55	1.20	1.02	0.36	5.60	16.27
Alfagraze 300 RR	3.6	97	98	98	96	97	97	96	96	4.89	4.92	1.72	1.56	1.26	1.03	0.50	6.07	15.87
Mean	4.2	98	98	98	96	97	96	96	96	5.67	5.48	1.54	1.59	1.22	1.10	0.46	5.92	17.07
CV,%	14.9	2	2	2	2	2	2	2	2	10.03	10.37	8.93	9.45	23.31	25.82	40.59	8.37	7.02
LSD,0.05	0.9	3	2	2	3	2	3	3	3	0.81	0.81	0.20	0.21	0.40	0.41	0.27	0.71	1.71

¹ This trial was sprayed with Roundup once in 2012 and 2013, twice in 2014, and once in 2015.

² 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 and stand persistence of alfalfa varieties sown March 31, 2015, at Lexington, Kentucky.

Variety	Percent Stand		Yield (tons/acre)			
	2015		2015			
	Jun 12	Oct 15	Jul 17	Aug 14	Sep 17	Total
Commercial Varieties-Available for Farm Use						
Caliber	95	97	0.75	0.88	0.45	2.08*
FSG-426	95	97	0.63	0.83	0.56	2.01*
Fierce	92	94	0.70	0.84	0.43	1.98
Contender	95	96	0.64	0.82	0.32	1.77*
Ameristand 427TQ	99	98	0.64	0.69	0.38	1.71*
Ameristand 403TPlus	89	95	0.47	0.68	0.32	1.47
Buffalo	96	95	0.60	0.55	0.21	1.36
Saranac AR (certified)	81	88	0.46	0.53	0.24	1.23
Mean	92	95	0.61	0.73	0.36	1.70
CV,%	8	5	27.10	37.34	41.13	20.84
LSD,0.05	11	7	0.24	0.40	0.22	0.52

*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 March 31, 2015, at Lexington, Kentucky.¹

Variety	Percent Stand		Yield (tons/acre)			
	2015		2015			
	Jun 12	Oct 15	Jul 17	Aug 14	Sep 17	Total
Commercial Varieties-Available for Farm Use						
Alfagrace 600 RR	99	100	0.76	1.35	0.56	2.67*
54R02 RR	99	99	0.99	1.21	0.41	2.61*
55VR08 RR	100	100	0.80	1.28	0.34	2.42*
Ameristand 405T RR	99	99	0.76	1.06	0.39	2.21*
Ameristand 433T RR	98	99	0.88	0.79	0.46	2.13*
Ameristand 455TQ RR	99	98	0.62	1.01	0.43	2.06*
428 RR	97	97	0.65	0.77	0.36	1.79*
WL 356HQ RR	97	98	0.64	0.78	0.36	1.79*
Alfagrace 300 RR	98	99	0.50	0.85	0.29	1.64
55VR06 RR	99	99	0.45	0.87	0.28	1.61
Mean	98	99	0.71	1.00	0.39	2.09
CV,%	2	2	37.43	30.55	40.01	30.03
LSD,0.05	3	2	0.38	0.44	0.26	0.91

¹ This trial was sprayed with Roundup once in 2015.

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

Description of the Tests

Alfalfa variety tests were established at Lexington (2011, 2012, and 2015), Princeton (2011 and 2013) and Quicksand (2014) as part of the forage variety testing program. The soils are well suited to alfalfa because they are generally well drained silt loam soils (Maury, Crider, and Nolin at Lexington, Princeton, and Quicksand, respectively).

Plots were 5 feet by 20 feet in a randomized complete block design with four replications with a harvested plot area of 5 feet 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 (P, K, Boron and lime based on regular soil tests), pest control,

Table 9. Dry-matter yields and stand persistence of Roundup Ready alfalfa varieties sown April 7, 2011, at Princeton, Kentucky.¹

Variety	Percent Stand												Yield (tons/acre)												5-year Total
	2011			2012			2013			2014			2015			2014			2015						
	Jun 14	Oct 24	Mar 14	Mar 21	Oct 29	Mar 19	Oct 8	Apr 4	Oct 22	Apr 14	Oct 23	Oct 23	Apr 4	Oct 22	Apr 14	Oct 23	May 7	Jun 10	Jul 15	Aug 12	Sep 18	Total			
Commercial Varieties-Available for Farm Use																									
54R02 RR	94	94	96	97	98	94	91	70	83	83	84	84	1.72	4.58	7.17	4.37	1.13	1.30	1.32	0.68	0.39	4.81	22.66*		
WL 355 RR	98	98	97	98	99	96	96	60	85	93	90	90	1.43	4.01	6.51	4.75	1.15	1.16	1.14	0.70	0.40	4.56	21.91*		
Consistency 4.10 RR	99	99	99	99	99	98	96	70	86	86	79	79	1.64	4.26	6.46	4.23	1.29	1.26	1.32	0.85	0.51	5.23	21.83*		
DKA41-18 RR	98	97	96	97	96	96	94	68	88	92	88	88	1.48	4.16	6.70	4.13	1.13	1.13	1.05	0.65	0.39	4.35	21.60*		
Ameristand 405T RR	96	96	97	96	96	96	94	69	92	91	89	89	1.47	3.95	6.99	4.06	1.21	1.17	1.18	0.72	0.39	4.67	21.14*		
Alfagrace 300 RR	94	94	93	93	93	92	89	45	75	82	83	83	1.24	3.88	6.00	3.64	1.09	1.15	0.92	0.77	0.33	4.26	20.25*		
Experimental Varieties																									
FG R47M120 RR	94	97	96	97	96	97	94	60	90	90	86	86	1.61	4.30	6.90	4.57	1.24	1.31	1.34	0.68	0.45	5.03	22.41*		
FG R46M162 RR	98	98	98	94	93	93	92	66	90	92	88	88	1.53	3.92	6.60	4.35	1.12	1.13	1.35	0.71	0.33	4.64	21.78*		
FG R47M312 RR	92	94	94	95	93	93	93	69	89	89	89	89	1.41	4.04	6.65	4.32	1.14	1.18	1.07	0.96	0.38	4.73	21.15*		
FG R47M319 RR	98	98	99	98	95	95	93	68	90	89	84	84	1.59	4.05	6.10	4.28	1.17	1.17	1.13	0.70	0.48	4.64	20.67*		
Mean	96	96	96	96	96	95	93	64	87	88	86	86	1.51	4.11	6.61	4.27	1.17	1.18	1.18	0.74	0.40	4.69	21.56		
CV,%	3	3	2	2	2	2	3	20	11	8	8	13.66	10.05	7.26	11.84	12.37	12.62	26.90	39.87	31.72	14.40	7.75			
LSD,0.05	4	4	3	3	3	3	5	19	14	11	11	0.30	0.60	0.70	0.79	0.21	0.22	0.46	0.43	0.19	0.98	2.60			

¹ This trial was sprayed with Roundup once in 2012 and twice in 2013, 2014, and 2015.

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

Table 10. Dry-matter yields and stand persistence of alfalfa varieties sown August 23, 2013, at Princeton, Kentucky.

Variety	Percent Stand					Yield (tons/acre)							2-year Total
	2013		2014		2015	2014	2015				Total		
	Sep 17	Apr 4	Oct 22	Apr 14	Oct 23	Total	May 7	Jun 10	Jul 15	Aug 12		Sep 18	
Commercial Varieties-Available for Farm Use													
FSG 424	100	100	100	100	99	8.96	1.92	1.67	1.80	1.26	0.87	7.51	16.47*
GA-535	100	100	100	100	100	8.99	1.95	1.66	1.76	1.26	0.82	7.45	16.44*
55V50	100	100	100	100	100	8.81	1.80	1.59	1.64	1.29	0.84	7.15	15.97*
Bulldog-505	100	100	100	100	100	8.52	1.96	1.60	1.61	1.17	0.80	7.15	15.67*
FSG 403LR	100	100	100	100	100	8.36	1.87	1.77	1.52	1.31	0.71	7.18	15.54*
DG 4210	100	99	100	100	100	8.56	1.46	1.56	1.87	1.11	0.84	6.83	15.39*
Saranac AR(certified)	100	96	100	100	98	8.16	2.01	1.63	1.51	1.23	0.59	6.98	15.14*
L455HD	100	99	100	100	99	8.14	1.79	1.63	1.70	1.09	0.67	6.89	15.03*
Arc (certified)	100	98	99	98	93	8.05	1.87	1.60	1.65	1.40	0.41	6.92	14.97*
FSG 524	100	99	98	99	99	7.87	1.72	1.47	1.67	1.28	0.69	6.82	14.70
Optimus	100	100	100	100	100	7.74	1.91	1.62	1.72	1.25	0.42	6.92	14.66
Ameristand 403T	100	100	100	100	98	7.74	1.91	1.58	1.43	1.41	0.52	6.84	14.58
Buffalo	94	85	93	93	91	7.42	1.80	1.41	1.58	1.20	0.63	6.61	14.03
Experimental Varieties													
LS905	100	100	100	100	100	7.92	1.95	1.81	1.83	1.26	0.63	7.48	15.41*
CW 104038	100	100	100	99	99	8.01	1.97	1.58	1.54	1.33	0.48	6.90	14.91*
GA-ALFG-1	100	100	100	100	98	8.36	1.86	1.38	1.42	1.37	0.45	6.47	14.83*
LS804	100	100	99	99	98	7.97	1.89	1.41	1.48	1.20	0.51	6.48	14.45
Mean	100	98	99	99	98	8.21	1.86	1.59	1.63	1.26	0.64	6.98	15.19
CV,%	3	8	3	3	3	12.29	15.00	9.25	12.54	16.98	40.92	5.54	8.17
LSD,0.05	4	11	4	5	5	1.44	0.40	0.21	0.29	0.30	0.37	0.55	1.76

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

Table 11. Dry-matter yields, seedling vigor, and stand persistence of Roundup Ready alfalfa varieties sown April 9, 2013, at Princeton, Kentucky.¹

Variety	Seedling Vigor ² May 15, 2013	Percent Stand						Yield (tons/acre)							3-year Total	
		2013		2014		2015	2013	2014	2015				Total			
		May 15	Oct 8	Apr 4	Oct 22	Apr 14	Oct 23	Total	Total	May 7	Jun 10	Jul 15		Aug 12		Sep 19
Commercial Varieties-Available for Farm Use																
WL 372HQ RR	3.5	98	83	75	87	85	85	2.38	6.21	1.48	1.40	1.31	0.97	0.48	5.64	14.39*
6516R RR	4.1	99	77	78	72	72	72	2.32	6.29	1.36	1.27	1.18	0.92	0.42	5.15	14.28*
428 RR	2.8	96	96	81	95	96	95	2.66	6.37	1.32	1.43	1.26	0.64	0.51	5.16	14.19*
Tonnica RR	3.6	98	95	74	91	89	83	2.42	5.62	1.53	1.39	1.24	0.88	0.48	5.51	13.56*
Ameristand 445TQ RR	3.9	100	96	86	96	96	96	2.49	5.48	1.23	1.25	1.42	0.86	0.58	5.34	13.32*
DKA46-16 RR	3.8	97	85	90	83	85	85	2.22	5.84	1.32	1.31	1.21	0.70	0.42	4.96	13.12*
AphaTron RR	4.1	98	91	75	89	89	89	2.67	5.64	1.41	1.24	1.23	0.97	0.46	5.31	13.07*
Ameristand 405T RR	3.0	96	94	80	93	89	89	2.57	5.11	1.31	1.33	1.29	0.93	0.49	5.35	13.04*
Alfagraze 300 RR	2.6	76	86	70	86	87	84	2.66	5.20	1.38	1.22	1.09	1.01	0.40	5.10	12.95*
WL 356HQ RR	3.1	96	95	55	93	90	89	2.61	5.20	1.45	1.30	1.26	0.63	0.35	4.99	12.80*
Stratica RR	3.0	96	97	88	95	96	95	2.36	5.47	1.31	1.34	1.32	0.65	0.27	4.89	12.72
Ameristand 433T RR	3.1	95	93	70	87	88	81	2.43	4.89	1.45	1.29	1.24	0.85	0.43	5.26	12.57
Mean	3.4	95	91	76	89	88	87	2.48	5.56	1.38	1.31	1.25	0.83	0.44	5.22	13.28
CV,%	24.2	12	13	24	13	14	16	13.40	10.46	14.20	14.39	16.74	28.46	33.57	10.07	8.13
LSD,0.05	1.2	16	16	30	16	18	20	0.48	0.91	0.28	0.27	0.30	0.34	0.21	0.76	1.67

¹ This trial was sprayed with Roundup twice in 2013, 2014, and 2015.

² 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.

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. Roundup was applied for weed control in the Roundup Ready trials.

Results and Discussion

Weather data for Lexington, Princeton, and Quicksand are presented in tables 1, 2, and 3. Yield data (on a dry-matter basis) for all tests are reported in tables 4 through 12. Stated yields are

Table 12. Dry-matter yields and stand persistence of Roundup Ready alfalfa varieties sown April 17, 2014, at Quicksand, Kentucky.¹

Variety	Percent Stand			Yield (tons/acre)						2-year Total
	2014	2015	2014	2015				Total		
	Nov 3	Apr 8	Oct 29	May 4	Jun 10	Jul 23	Sep 23			
Commercial Varieties-Available for Farm Use										
428 RR	98	97	96	0.63	1.06	1.77	1.47	0.58	4.87	5.50*
Ameristand 433T RR	96	96	94	0.80	1.15	1.62	1.11	0.61	4.50	5.30*
55VR06 RR	98	96	96	0.64	0.77	1.66	1.39	0.48	4.31	4.94*
54R02 RR	97	94	91	0.62	1.02	1.45	1.22	0.52	4.21	4.82*
Ameristand 405T RR	95	92	92	0.57	0.98	1.47	1.18	0.43	4.06	4.63
Alfagraze 600 RR	96	93	90	0.68	0.86	1.43	1.11	0.55	3.95	4.63
Mean	96	95	93	0.66	0.97	1.57	1.25	0.53	4.31	4.97
CV,%	4	5	6	13.20	18.88	16.48	19.49	25.84	12.69	11.32
LSD,0.05	6	7	8	0.13	0.28	0.39	0.37	0.21	0.82	0.85

¹ This trial was sprayed with Roundup once in 2014 and 2015.

*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.

- 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)
- Alfalfa Hay: Quality Makes the Difference (AGR-137)
- "Emergency" Inoculation for Poorly Nodulated Legumes (PPFS-AG-F-04)
- Common Alfalfa Seedling Diseases and Disorders (PPFS-AG-F-03)
- Managing Diseases of Alfalfa (PPFS-AG-F-09)
- Managing Legume-Induced Bloat in Cattle (ID-186)
- Growing Alfalfa in the South, a publication of the National Alfalfa & Forage Alliance, www.alfalfa.org/pdf/alfalfainthesouth.pdf
- Alfalfa Management Guide, www.crops.org/files/publications/alfalfa-management-guide.pdf
- Alfalfa Analyst (ID guide to alfalfa disease and insect damage and soil fertility deficiencies), www.alfalfa.org/pdf/AlfalfaAnalyst.pdf
- Alfalfa Variety Ratings, Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties, www.alfalfa.org/varietyLeaflet.php

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