



# 2019 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. Tables 10 and 11 (Roundup Ready varieties) show a summary of all alfalfa varieties tested in Kentucky during the past 16 years. The UK Forage Extension website, at forages.ca.uky.edu, 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 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. 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) or highly resistant (HR) 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. Affect-

Table 1. Temperature and rainfall at Lexington, Kentucky in 2015, 2016, 2017, 2018, and 2019.

	2015				2016				2017				2018				2019 <sup>2</sup>			
	Temp		Rainfall		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	°F	DEP	IN	DEP
JAN	32	+1	2.17	-0.69	32	+1	0.80	-2.06	40	+9	6.81	+3.95	31	0	2.01	-0.85	33	+2	4.11	+1.25
FEB	26	-9	3.08	-0.13	38	+3	6.09	+2.88	47	+12	4.46	+1.25	45	+10	9.77	+6.56	42	+7	7.64	+4.43
MAR	45	+1	7.34	+2.94	52	+8	4.07	-0.33	48	+4	3.34	-1.06	42	-2	5.16	+0.76	43	-1	3.44	-0.91
APR	57	+2	13.19	+9.31	57	+2	3.97	+0.09	62	+7	4.17	+0.29	50	-5	5.52	+1.64	54	+4	4.76	+0.88
MAY	69	+5	3.02	-1.45	64	0	9.17	+4.70	66	+2	7.74	+3.27	73	+9	8.39	+3.92	69	+5	4.49	+0.02
JUN	75	+3	8.20	+4.54	76	+4	5.09	+1.43	73	+1	7.68	+4.02	76	+4	6.42	+2.76	73	+1	6.13	+2.47
JUL	77	+1	10.22	+5.22	79	+3	7.43	+2.43	76	0	4.49	-0.51	77	+1	6.15	+1.15	79	+3	3.30	-1.70
AUG	74	-1	3.49	-0.44	79	+4	4.37	+0.44	74	-1	6.66	+2.73	77	+2	6.45	+2.52	77	+2	2.42	-1.51
SEP	72	+4	3.49	+0.29	74	+6	2.18	-1.02	69	+1	4.72	+1.52	74	+6	12.88	+9.68	77	+9	0.18	-3.02
OCT	59	+2	2.78	+0.21	64	+7	0.37	-2.20	60	+3	6.06	+3.49	59	+2	6.54	+3.97	61	+4	8.15	+5.58
NOV	51	+6	3.72	+0.33	51	+6	1.94	-1.45	47	+2	3.09	-0.30	42	-3	5.64	+2.25				
DEC	49	+13	8.42	+4.44	37	+1	9.4	+5.42	35	-1	2.66	-1.32	40	+4	7.35	+3.37				
Total			69.12	+24.57			54.88	+10.33			61.88	+17.33			82.28	+37.73			44.67	+7.49

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

<sup>2</sup> 2019 data is for ten months through October.

ed 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 have suffered great damage due to aphanomyces when planted

with varieties susceptible to this disease. Producers who have experienced stand losses at the seedling stage in their fields are advised to choose varieties with resistance to both Aphanomyces Race 1 and Race 2. Ask your local seed supplier for more information or download the complete disease and insect ratings for all U.S. varieties at [www.alfalfa.org/pdf/2019\\_Alfalfa\\_Variety\\_Leaflet.pdf](http://www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf).

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

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

**Table 2. Dry matter yields and stand persistence of alfalfa varieties sown March 31, 2015, at Lexington, Kentucky.**

Variety	FD <sup>1</sup>	Percent Stand										Yield (tons/acre)										
		2015		2016		2017		2018		2019		2015	2016	2017	2018	2019					5-year Total	
		Jun 12	Oct 15	Mar 18	Sep 27	Feb 23	Sep 26	Mar 14	Sep 25	Mar 28	Oct 11	Total	Total	Total	Total	May 8	Jun 4	Jul 8	Aug 14	Sep 19		Total
<b>Commercial Varieties-Available for Farm Use</b>																						
Ameristand 427TQ	4	99	98	97	92	91	91	91	90	90	59	1.71	6.36	6.82	4.45	1.23	0.72	0.64	0.48	0.30	3.37	22.71*
Caliber	4	95	97	97	94	93	93	93	92	89	63	2.08	7.02	5.31	4.40	1.17	0.61	0.62	0.40	0.27	3.07	21.89*
Ameristand 403TPlus	4	89	95	95	92	90	89	88	88	85	53	1.47	6.87	5.84	4.33	1.17	0.75	0.67	0.32	0.37	3.28	21.79*
FSG-426	4	95	97	97	94	92	94	94	94	93	65	2.01	6.10	5.91	4.01	1.09	0.87	0.66	0.48	0.32	3.41	21.44*
Fierce	4	92	94	94	89	85	85	86	85	84	53	1.97	6.40	5.67	4.13	1.15	0.66	0.53	0.41	0.29	3.02	21.19*
Contender	5	95	96	96	91	92	90	90	87	84	55	1.77	5.76	6.09	4.07	1.25	0.82	0.59	0.40	0.27	3.33	21.01*
Saranac AR (certified)	4	81	88	89	89	86	84	82	73	63	35	1.23	6.21	5.89	3.70	0.71	0.53	0.40	0.27	0.19	2.10	19.13
Buffalo		96	95	94	89	86	81	79	73	50	35	1.36	6.25	4.82	3.38	0.71	0.41	0.37	0.29	0.18	1.97	17.78
Mean		92	95	95	91	89	88	88	85	80	52	1.70	6.37	5.79	4.06	1.06	0.67	0.56	0.38	0.27	2.95	20.87
CV,%		8	5	5	4	4	45	6	7	12	22	20.84	12.22	8.05	14.49	22.45	22.07	32.16	33.45	35.73	11.83	5.84
LSD,0.05		11	7	7	6	6	7	8	8	14	17	0.52	1.15	0.69	0.86	0.35	0.22	0.26	0.19	0.14	0.51	1.79

<sup>1</sup> FD=Fall Dormancy.

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

**Table 3. Dry matter yields and stand persistence of Roundup Ready alfalfa varieties sown March 31, 2015, at Lexington, Kentucky.<sup>1</sup>**

Variety	FD <sup>2</sup>	Percent Stand										Yield (tons/acre)											
		2015		2016		2017		2018		2019		2015	2016	2017	2018	2019					5-year Total		
		Jun 12	Oct 15	Mar 18	Sep 27	Feb 23	Sep 26	Mar 14	Sep 25	Mar 28	Oct 11	Total	Total	Total	Total	May 8	Jun 4	Jul 8	Aug 14	Sep 19		Total	
<b>Commercial Varieties-Available for Farm Use</b>																							
54R02 RR	4	99	99	98	96	95	95	95	93	92	92	2.61	7.49	6.56	5.11	1.33	0.93	0.79	0.47	0.32	3.83	25.60*	
55VR08 RR	5	100	100	100	98	97	97	95	97	96	95	2.42	6.92	7.11	4.72	1.23	0.86	0.67	0.40	0.45	3.60	24.77*	
Ameristand 445TQ RR	4	99	98	99	98	96	97	97	92	92	92	2.06	6.62	6.75	5.34	1.25	1.04	0.70	0.54	0.31	3.84	24.61*	
Ameristand 405T RR	4	99	99	99	97	96	96	96	94	88	89	2.21	6.87	6.91	4.50	1.28	0.85	0.66	0.44	0.28	3.50	23.99*	
Alfagraze 600 RR	6	99	100	98	95	94	95	93	89	74	81	2.67	6.55	6.25	4.72	1.00	0.88	0.64	0.54	0.30	3.36	23.54*	
428 RR	4	97	97	98	96	95	96	95	94	93	91	1.79	6.35	6.08	5.13	1.40	0.99	0.77	0.52	0.42	4.10	23.44*	
WL 356HQ RR	4	97	98	98	96	96	96	96	92	90	90	1.79	7.10	6.26	4.60	1.16	1.00	0.57	0.47	0.32	3.53	23.28*	
Ameristand 433T RR	3	98	99	99	95	94	95	95	94	90	91	2.13	6.57	6.09	5.10	1.16	0.71	0.59	0.52	0.33	3.30	23.19*	
Alfagraze 300 RR	3	98	99	99	97	96	96	95	92	90	88	1.64	6.05	6.81	4.66	1.27	0.78	0.70	0.37	0.30	3.43	22.58*	
55V06 RR	5	99	99	99	97	96	96	95	95	94	93	1.61	5.92	6.19	4.69	1.30	0.93	0.73	0.61	0.37	3.94	22.34*	
Mean		98	99	99	96	95	96	95	93	90	90	2.09	6.64	6.50	4.86	1.24	0.90	0.68	0.49	0.34	3.64	23.73	
CV,%		2	2	2	2	2	2	2	3	7	5	30.03	15.77	12.59	13.36	13.49	16.66	27.02	33.79	29.48	11.27	11.46	
LSD,0.05		3	2	2	3	2	2	2	3	4	6	5	0.91	1.52	1.19	0.94	0.24	0.22	0.27	0.24	0.15	0.60	3.94

<sup>1</sup> This trial was sprayed with Roundup once in 2015, twice in 2016, and once in 2017, 2018, and 2019.

<sup>2</sup> FD=Fall Dormancy.

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

of other crop and weed seed. Order seed well in advance of planting time to assure it will be available when needed.

## Description of the Tests

The current alfalfa variety tests shown in this report were established at Lexington (2015, 2016, 2017, 2018 and 2019) as part of the forage variety testing program. The summary reports also contain past years results from alfalfa tests in Princeton, Bowling Green, Eden Shale and Quicksand as well as Lexington. The soil in Lexington is a well drained silt loam (Maury) and is well suited for alfalfa production.

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, 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 is presented in Table 1. Yield data (on a dry matter basis) for all tests are reported in tables 2 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 2019 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 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 shows information about proprietors, fall dormancy and disease resistance for all the varieties 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.

Tables 10 and 11 (Roundup Ready varieties) are summaries of yield data from

**Table 4. Dry matter yields and stand persistence of alfalfa varieties sown April 5, 2016, at Lexington, Kentucky.**

Variety	FD <sup>1</sup>	Percent Stand								Yield (tons/acre)									
		2016		2017		2018		2019		2016	2017	2018	2019					4-year Total	
		Jun 16	Sep 27	Feb 23	Sep 26	Mar 14	Sep 25	Mar 28	Oct 11	Total	Total	Total	May 8	Jun 4	Jul 9	Aug 14	Sep 19		Total
<b>Commercial Varieties-Available for Farm Use</b>																			
GA-497HD	5	97	97	96	96	96	94	90	89	2.14	7.50	5.73	1.47	0.94	0.80	0.55	0.34	4.09	19.45*
Contender	5	96	94	93	94	93	92	89	91	1.90	7.74	5.66	1.57	0.94	0.73	0.47	0.37	4.08	19.39*
FSG 415BR	4	92	89	91	91	91	92	87	91	2.26	7.68	5.46	1.61	0.71	0.68	0.60	0.23	3.83	19.24*
Evermore	5	97	97	96	96	96	96	94	90	2.20	6.95	5.73	1.64	0.93	0.86	0.53	0.36	4.31	19.18*
Rebound 6XT	4	96	94	93	94	94	94	93	89	2.04	7.30	5.67	1.47	1.03	0.95	0.46	0.27	4.18	19.18*
Ameristand 403T Plus	4	97	93	91	92	91	92	89	91	2.31	7.69	5.24	1.63	0.77	0.74	0.52	0.27	3.94	19.18*
Caliber	4	96	95	94	95	95	94	91	91	1.88	7.39	5.17	1.51	0.87	0.70	0.40	0.18	3.66	18.10*
WL 365HQ	5	98	95	94	95	95	96	93	93	2.10	7.07	4.97	1.34	1.00	0.84	0.53	0.24	3.95	18.10*
Bulldog 505	5	93	91	90	90	90	90	89	90	1.46	7.62	5.49	1.34	0.74	0.69	0.53	0.21	3.51	18.07*
Saranac AR (certified)	4	94	92	91	91	91	91	85	88	1.84	6.90	5.36	1.45	0.70	0.54	0.35	0.26	3.29	17.39
<b>Experimental Varieties</b>																			
AFX095026	4	92	91	90	92	93	94	93	93	1.96	7.77	6.18	1.55	1.06	0.75	0.55	0.30	4.20	20.11*
AFX095005	5	95	93	92	94	94	95	94	93	1.66	7.42	6.08	1.37	0.89	0.73	0.53	0.32	3.85	19.01*
AM-09-600	4	95	94	94	94	94	94	91	92	1.60	7.73	5.43	1.23	0.93	0.81	0.48	0.30	3.74	18.51*
AM-14-900	4	93	92	92	95	94	93	88	87	1.97	7.68	5.42	1.12	0.82	0.80	0.41	0.26	3.40	18.47*
LS905	4	95	95	96	96	96	96	94	95	1.79	6.93	5.24	1.45	0.90	0.76	0.49	0.39	3.99	17.96*
NF11ALF006	6	95	93	91	92	91	92	91	86	1.38	5.65	5.05	1.08	0.74	0.55	0.50	0.24	3.10	15.18
Mean		95	93	93	94	93	93	91	90	1.91	7.31	5.49	1.43	0.87	0.74	0.49	0.28	3.82	18.53
CV,%		4	4	4	3	3	3	5	5	21.81	11.89	9.53	14.93	18.78	21.84	25.88	35.40	12.64	8.31
LSD,0.05		5	6	5	4	4	4	6	6	0.59	1.24	0.75	0.30	0.23	0.23	0.18	0.14	0.69	2.19

<sup>1</sup> FD=Fall Dormancy.

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

2000 to 2019 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 tables 10 and 11, 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 stable performance; others may have performed well in wet years or on particular soil types. See footnotes in tables 10 and 11 to determine which yearly report should be referenced.

### 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 forages.ca.uky.edu.

- 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)

**Table 5. Dry matter yields and stand persistence of Roundup Ready alfalfa varieties sown April 5, 2016, at Lexington, Kentucky.<sup>1</sup>**

Variety	FD <sup>2</sup>	Percent Stand								Yield (tons/acre) <sup>3</sup>								3-year Total
		2016		2017		2018		2019		2017		2018		2019				
		Jun 12	Oct 15	Mar 18	Sep 27	Feb 23	Sep 26	Mar 14	Sep 25	Total	Total	May 10	Jun 13	Jul 10	Aug 13	Sep 12	Total	
<b>Commercial Varieties-Available for Farm Use</b>																		
55VRO8 RR	5	99	94	94	94	94	93	93	93	7.73	4.95	1.42	1.03	0.72	0.54	0.28	3.98	16.67*
Stratica RR	4	96	94	94	95	93	92	89	89	7.53	4.92	1.18	0.76	0.72	0.44	0.30	3.40	15.84*
Alfagraze 300 RR	3	99	99	98	98	98	96	95	96	7.32	4.91	0.98	0.83	0.70	0.41	0.24	3.16	15.39*
Ameristand 433T RR	3	97	93	92	94	93	92	91	91	7.30	4.61	1.12	0.75	0.69	0.49	0.33	3.36	15.27*
428 RR	4	98	86	86	87	88	88	88	85	7.06	4.75	1.09	0.86	0.71	0.36	0.34	3.36	15.16*
54RO2 RR	4	96	92	92	92	91	89	87	87	7.05	4.55	1.11	0.70	0.61	0.33	0.34	3.09	14.69*
Ameristand 405T RR	4	95	88	89	91	90	88	88	84	6.70	4.14	1.02	0.69	0.72	0.42	0.26	3.11	13.95
Mean		97	92	92	93	92	91	90	90	7.25	4.68	1.13	0.80	0.69	0.43	0.30	3.35	15.28
CV,%		3	9	8	8	7	7	8	8	9.82	13.69	20.48	17.93	22.75	33.78	29.69	15.56	10.18
LSD,0.05		4	12	11	11	9	9	10	10	0.96	0.91	0.33	0.20	0.22	0.21	0.13	0.74	2.20

<sup>1</sup> This trial was sprayed with Roundup once in 2015, twice in 2016, and once in 2017 and 2018.

<sup>2</sup> FD=Fall Dormancy.

<sup>3</sup> Due to variability in yields, the 2016 harvest data is not reported.

\*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 5, 2017, at Lexington, Kentucky.**

Variety	FD <sup>1</sup>	Percent Stand					Yield (tons/acre)									3-year Total
		2017		2018		2019	2017		2018		2019					
		Sep 26	Mar 14	Sep 25	Mar 28	Oct 11	Total	Total	May 8	Jun 4	Jul 9	Aug 14	Sep 19	Total		
<b>Commercial Varieties-Available for Farm Use</b>																
Evermore	5	93	93	94	96	96	1.96	5.24	1.18	0.70	0.60	0.39	0.24	3.11	10.31*	
Ameristand 403T Plus	4	96	97	96	96	95	2.27	4.75	1.19	0.69	0.78	0.33	0.22	3.22	10.23*	
Fierce	4	96	96	95	96	96	1.89	4.67	1.19	0.68	0.75	0.35	0.30	3.27	9.84*	
Caliber	4	95	95	94	94	94	2.00	4.65	1.09	0.83	0.69	0.29	0.24	3.14	9.79*	
Contender	5	94	94	93	93	88	2.10	4.67	0.99	0.66	0.70	0.25	0.24	2.85	9.63*	
Saranac AR (certified)	4	87	87	86	86	86	1.83	4.65	0.91	0.52	0.73	0.26	0.27	2.70	9.18*	
Bulldog 505	5	92	90	90	88	89	1.66	4.33	1.05	0.51	0.71	0.44	0.22	2.93	8.92*	
<b>Experimental Varieties</b>																
NF11ALF006	6	93	90	90	89	84	1.65	4.64	1.05	0.73	0.67	0.46	0.22	3.11	9.41*	
Mean		93	93	92	92	91	1.92	4.70	1.08	0.67	0.70	0.35	0.24	3.04	9.66	
CV,%		5	6	6	7	9	24.18	10.87	12.95	23.14	21.44	36.32	40.65	10.16	10.20	
LSD,0.05		7	8	8	9	12	0.68	0.75	0.21	0.23	0.22	0.19	0.15	0.45	1.45	

<sup>1</sup> FD=Fall Dormancy.

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

- Insect Management Recommendations for Field Crops and Livestock (ENT-17)
- Alfalfa Hay: Quality Makes the Difference (AGR-137)
- Fertilizer Management in Alfalfa (AGR-210)
- “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](http://www.alfalfa.org/pdf/alfalfainthesouth.pdf)
- Alfalfa Management Guide: [www.crops.org/files/publications/alfalfa-management-guide.pdf](http://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](http://www.alfalfa.org/pdf/AlfalfaAnalyst.pdf)
- Alfalfa Variety Ratings, Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties: [www.alfalfa.org/varietyLeaflet.php](http://www.alfalfa.org/varietyLeaflet.php)

### About the Authors

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**Table 7. Dry matter yields and stand persistence of alfalfa varieties sown April 12, 2018, at Lexington, Kentucky.**

Variety	FD <sup>1</sup>	Seedling Vigor <sup>2</sup> 2018	Percent Stand					Yield (tons/acre)					2-year Total
			2018		2019			2018		2019			
			May 22	May 22	Sep 25	Mar 28	Oct 11	Total	May 8	Jun 4	Jul 8	Aug 14	
<b>Commercial Varieties-Available for Farm Use</b>													
Saranac AR (certified)	4	4.0	99	98	95	93	1.53	0.67	0.47	0.59	0.34	2.07	3.61*
Ameristand 403T Plus	4	4.8	100	98	96	96	1.30	0.72	0.47	0.70	0.39	2.28	3.58*
<b>Experimental Varieties</b>													
BYS5028		5.0	100	98	98	95	1.43	0.67	0.39	0.65	0.32	2.03	3.46*
NF11ALF006	6	4.8	99	98	93	79	1.45	0.53	0.50	0.61	0.37	2.00	3.45*
Mean		4.6	99	98	95	91	1.43	0.64	0.46	0.64	0.36	2.10	3.52
CV,%		6.7	1	2	4	11	16.18	20.81	27.45	27.05	38.76	18.91	15.29
LSD,0.05		0.5	2	4	5	16	0.37	0.21	0.20	0.28	0.22	0.63	0.87

<sup>1</sup> FD=Fall Dormancy.

<sup>2</sup> 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.

**Table 8. Dry matter yields, seedling vigor, and stand persistence of alfalfa varieties sown April 2, 2019, at Lexington, Kentucky.**

Variety	FD <sup>1</sup>	Seedling Vigor <sup>2</sup> 2019	Percent Stand		Yield (tons/acre)		
			2019		2019		
			May 3	Oct 11	Jul 12	Aug 15	Total
<b>Commercial Varieties-Available for Farm Use</b>							
Ameristand 403T Plus	4	4.5	100	99	1.06	0.45	1.51*
Paola	5	5.0	100	100	1.07	0.40	1.47*
GA535	5	4.8	98	98	0.97	0.45	1.41*
Rebound 6XT	4	4.9	100	100	0.98	0.32	1.30*
FSG415BR	4	5.0	100	100	0.88	0.40	1.28*
Saranac AR (certified)	4	4.5	99	100	0.96	0.31	1.27*
55V50	5	5.0	100	100	0.95	0.32	1.26*
Charger	5	4.4	99	98	0.71	0.39	1.10*
Triade	4/5	4.9	100	100	0.67	0.41	1.08
GA497HD	5	4.9	100	100	0.66	0.32	0.98
Alfagraze	2	4.1	99	99	0.67	0.29	0.96
WL349HQ	4	4.6	99	99	0.65	0.29	0.94
Mean		4.7	99	99	0.85	0.36	1.21
CV,%		4.9	1	1	27.70	29.74	23.72
LSD,0.05		0.3	1	1	0.34	0.16	0.41

<sup>1</sup> FD=Fall Dormancy.

<sup>2</sup> 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.

**Table 9. Characterization and proprietors of alfalfa varieties in current trials in Kentucky.**

Variety	Proprietor	Variety Characteristics <sup>1</sup>					
		FD <sup>3</sup>	Disease Resistance <sup>2</sup>				
			Bw	Fw	An	PRR	APH
<b>Commercial Varieties-Available for Farm Use</b>							
Alfagraze	America's Alfalfa	2	MR	R	MR	R	-
Ameristand 403TPlus	America's Alfalfa	4	HR	HR	HR	HR	HR
Ameristand 427TQ	America's Alfalfa	4	HR	HR	HR	HR	HR
Buffalo	Public	-	-	-	-	-	-
Bulldog-505	Univ. of Georgia	5	-	HR	-	R	-
Caliber	Beck's Hybrids	4	HR	HR	HR	HR	HR
Charger	Beck's Hybrids	5	HR	HR	HR	HR	HR
Contender	Beck's Hybrids	5	HR	HR	HR	HR	HR
Evermore	Allied Seed, L.L.C.	5	HR	HR	HR	HR	HR
Fierce	Beck's Hybrids	4	HR	HR	HR	HR	HR
FSG 415BR	Farm Science Genetics	4	HR	HR	HR	HR	HR
FSG 426	Farm Science Genetics	4	HR	HR	HR	HR	HR
GA-497HD	Prof. Alfalfa Genetics	5	HR	HR	HR	HR	HR
GA535	Prof. Alfalfa Genetics	5	HR	HR	HR	HR	HR
Paola	Interlake Forage Seeds	5	HR	HR	HR	HR	HR
Rebound 6XT	Croplan Genetics	4	HR	HR	HR	HR	HR
Saranac AR (certified)	Public	4	MR	R	HR	LR	-
Triade	Interlake Forage Seeds	4/5	HR	HR	HR	HR	HR
Withstand	Southern States	4	HR	HR	HR	HR	HR
WL349HQ	W-L Research	4	HR	HR	HR	HR	HR
WL 365HQ	W-L Research	5	HR	HR	HR	HR	HR
55V50	Pioneer	5	HR	R	HR	HR	HR
<b>Experimental Varieties<sup>4</sup></b>							
AM-09-600	Ampac Seed /Cisco	4	HR	HR	HR	HR	HR
AM-14-900	Ampac Seed /Cisco	4	HR	HR	HR	HR	HR
AFX095005	Alforex Seeds	5	HR	HR	HR	HR	HR
AFX095026	Alforex Seeds	4	HR	HR	HR	HR	R
BYS5028	Brett Young	5	HR	HR	HR	HR	HR
LS 905	Legacy Seeds, Inc.	4	HR	HR	HR	HR	HR
NF11ALF0006	Noble Foundation	6	-	-	-	-	-

<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 (more detailed disease and insect resistance ratings at [www.alfalfa.org/pdf/2019\\_Alalfa\\_Variety\\_Leaflet.pdf](http://www.alfalfa.org/pdf/2019_Alalfa_Variety_Leaflet.pdf)).

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

<sup>4</sup> Experimental varieties are not available commercially, but provide an indication of the progress being made by forage breeding companies.

**Table 10. Summary of Kentucky alfalfa yield trials 2000-2019 (yield shown as a percentage of the mean of the commercial varieties in the test).**

Variety	Proprietor	Variety Characteristics <sup>1</sup>						Lexington							Princeton					Mean <sup>5</sup> (# trials)			
		FD	Disease Resistance <sup>2</sup>					04 <sup>3,4</sup>	06	08	11	12	15	16	17	05	08	09	11		13		
			Bw	Fw	An	PRR	APH	5yr <sup>6</sup>	7yr	6yr	6yr	5yr	4yr	3yr	5yr	5yr	6yr	4yr	3yr				
A-4440	Producers Choice	4	HR	HR	HR	HR	HR																100(2)
A 5225	Producers Choice	5	HR	HR	HR	HR	R			104							107						106(2)
Adrenalin	Brett Young Seeds	4	HR	HR	HR	HR	HR											104					-
Ameristand 403T	America's Alfalfa	4	HR	HR	HR	HR	HR			99	91	102	94				100	101	107	99			99(8)
Ameristand 403T Plus	America's Alfalfa	4	HR	HR	HR	HR	HR							104	102	105			94				101(4)
Ameristand 407TQ	America's Alfalfa	4	HR	HR	HR	HR	HR											103	104				104(2)
Ameristand 427TQ	America's Alfalfa	4	HR	HR	HR	HR	HR						109										-
Anchormate	ProSeed Marketing	-	-	-	-	-	-				100												-
Arc (certified)	Public	4	LR	MR	HR	-	-	76				93	92				95	86				95	90(6)
Archer III	America's Alfalfa	5	HR	HR	HR	HR	HR											106					-
Baralfa 53HR	Barenbrug USA	5	HR	R	HR	HR	HR										104						-
Buffalo	Public	-	-	-	-	-	-	82	86	80	89			85			95	78	87			91	86(9)
Bulldog-505	Univ. of GA	5	-	HR	-	R	-					103		96	92				96			103	98(5)
Caliber	Beck's Hybrids	4	HR	HR	HR	HR	HR						99	105	97	101					99		100(5)
Charger	Beck's Hybrids	5	HR	HR	HR	HR	HR													106			-
Contender	Beck's Hybrids	5	HR	HR	HR	HR	HR							101	104	99							101(3)
DKA 43-13	Monsanto	4	HR	HR	HR	HR	HR						102										-
DKA 50-18	Monsanto	5	HR	HR	HR	HR	HR						110										-
DG4210	Crop Production	4	HR	HR	HR	HR	HR														101	103	102(2)
Dynagro Everlast	United Agr. Prod.	4	HR	HR	HR	HR	R										101						-
Enforcer	Southern States	4	HR	HR	HR	HR	HR	90															-
Evermore	Southern States	5	HR	HR	HR	HR	HR						100		102	106							103(3)
Expedition	NEXGROW	5	HR	HR	R	RR	R	107	112								96						105(3)
Feast +EV	NEXGROW	3	HR	HR	HR	R	HR	106															-
Fierce	Beck's Hybrids	4	HR	HR	HR	HR	HR						102		101								102(2)
FSG 403LR	Farm Sci. Genetics	4	HR	HR	HR	HR	HR															102	-
FSG 408DP	Allied Seeds	4	HR	HR	HR	HR	R	105										110					108(2)
FSG 415BR	Allied Seeds	4	HR	HR	HR	HR	HR								103								-
FSG 424	Farm Sci. Genetics	4	HR	HR	HR	HR	HR															109	-
FSG 426	Farm Sci. Genetics	4	HR	HR	HR	HR	HR							103									-
FSG 524	Farm Sci. Genetics	5	HR	HR	HR	HR	HR															96	-
FSG 528SF	Lewis Seed Co.	5	HR	R	HR	HR	R				107												-
GA-497HD	Pref. Alfalfa Genetics	5	HR	HR	HR	HR	HR								104								-
GA-535	Pref. Alf. Genetics	5	HR	HR	HR	HR	HR															107	-
Genoa	NEXGROW	4	HR	HR	HR	RR	HR	112		99							98	118					107(4)
Gunner	Croplan Genetics	5	HR	HR	HR	HR	HR														103		-
KingFisher 243	Cal/West	5	HR	HR	HR	HR	HR												98				-
Kingfisher 4020	Legacy Seeds	4	HR	HR	HR	HR	HR					101											-
L447HD	Legacy Seeds	4	HR	HR	HR	HR	HR			105													-
L449Aph2	Legacy Seeds	4	HR	HR	HR	HR	HR														97		-
L455HD	Legacy Seeds	4	HR	HR	HR	HR	HR															102	-
Lancer	Allied Seeds	4	HR	HR	HR	HR	HR														101		-
LegenDairy 5.0	Croplan Genetics	3	HR	HR	HR	HR	HR			99							103						101(2)
Mariner III	Allied Seeds	4	HR	HR	HR	HR	HR											99					-
Optimus	Brett Young Seeds		HR	HR	HR	HR	HR															98	-
PerForm	Dairyland Research	4	HR	HR	HR	HR	HR			106													-
PGI 459	Producers Choice	4	HR	HR	HR	HR	R				102												-
Phirst	UniSouth Genetics	4	HR	HR	HR	HR	R										105						-
Phoenix	Southern States	5	HR	HR	HR	HR	R	113	99	102		105						101			94		102(6)
Radiance HD	Ampac Seed/Cisco	4	HR	HR	HR	HR	HR						101							105	103		103(3)
Radiant-AM	Ampac Seed	4	HR	HR	HR	HR	HR			97													-
Rebound 5.0	Croplan Genetics	4	HR	HR	HR	HR	HR												103				103(2)
Rebound 6.0	Croplan Genetics	4	HR	HR	HR	HR	HR					104									101		103(2)
Rebound 6XT	Croplan Genetics	4	HR	HR	HR	HR	HR								102								-
Reward II	PGI Alfalfa	4	HR	HR	R	HR	R											103					-
Saranac AR (certified)	Public	4	MR	R	HR	LR	-	77	85	86	91	97	92	93	95	95	88	92	82	97			90(13)
TripleTrust 450	ABI Alfalfa	5	HR	HR	HR	HR	HR										100						-
TripleTrust 500	Central Farm Supply	5	HR	HR	HR	HR	HR					108											-
USG 681HY	UniSouth Genetics	6	HR	HR	HR	HR	-											113					-
Vernal	Public	2	R	MR	-	-	-										95						-
Withstand	Southern States	4	HR	HR	HR	HR	HR			100	90		96					100			87		95(5)

continued

**Table 10. Summary of Kentucky alfalfa yield trials 2000-2019 (yield shown as a percentage of the mean of the commercial varieties in the test).**

Variety	Proprietor	Variety Characteristics <sup>1</sup>						Lexington							Princeton					Mean <sup>5</sup> (# trials)						
		FD	Disease Resistance <sup>2</sup>					04 <sup>3,4</sup>	06	08	11	12	15	16	17	05	08	09	11		13					
			Bw	Fw	An	PRR	APH	5yr <sup>6</sup>	7yr	6yr	6yr	6yr	5yr	4yr	3yr	5yr	5yr	6yr	4yr		3yr					
WL 343HQ	W-L Research	4	HR	HR	HR	HR	HR									100									104(3)	
WL 354HQ	W-L Research	4	HR	HR	HR	HR	HR												115							-
WL 357HQ	W-L Research	5	HR	HR	HR	HR	HR	123								106										115(2)
WL 363HQ	W-L Research	5	HR	HR	HR	HR	HR				105	103						105								104(3)
WL 365HQ	W-L Research	5	HR	HR	HR	HR	HR							97												-
4030	Brett Young Seeds	4	HR	HR	HR	HR	HR						104													-
53H92	Pioneer	3	HR	HR	HR	HR	HR				95															-
54Q32	Pioneer	4	HR	HR	HR	HR	HR				99															-
55V48	Pioneer	5	HR	HR	HR	HR	HR				102															-
55V50	Pioneer	5	HR	R	Hr	HR	HR					110												105		108(2)
6400HT	NEXGROW	4	HR	HR	HR	HR	HR	108																		-
6415	NEXGROW	4	HR	HR	HR	HR	HR								103											-
6417	NEXGROW	4	HR	HR	HR	HR	HR				105															-
6422Q	NEXGROW	4	HR	HR	HR	HR	HR				112								102							107(2)
6552	NEXGROW	5	HR	HR	HR	HR	HR				105															-

<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. (more detailed disease and insect resistance ratings at [www.alfalfa.org/pdf/2019\\_Alfalfa\\_Variety\\_Leaflet.pdf](http://www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf))

<sup>3</sup> Year trial was established.

<sup>4</sup> Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific test. For example, the Lexington trial planted in 2008 was harvested for six years, so the final yield report would be "2013 Alfalfa Report" archived in the UK Forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu).

<sup>5</sup> Mean only presented when respective variety was included in two or more trials.

<sup>6</sup> Number of years of data.

**Table 11. Summary of Kentucky Roundup Ready alfalfa yield trials 2011-2019 (yield shown as a percentage of the mean of the commercial varieties in the test).**

Variety	Proprietor	Variety Characteristics <sup>1</sup>						Lexington			Princeton			Quicksand	Mean <sup>5</sup> (# trials)											
		FD	Disease Resistance <sup>2</sup>					12 <sup>3,4</sup>	15	16	11	13	15	14												
			Bw	Fw	An	PRR	APH	6yr <sup>6</sup>	5yr	3-yr	5yr	4yr	2yr	2yr												
Alfagraze 300 RR	America's Alfalfa	3	HR	R	HR	HR	HR	95	95	101	93	99	93													96(6)
Alfagraze 600 RR	America's Alfalfa	6		R	HR	R	R			99					85	93										92(3)
Ameristand 405T RR	America's Alfalfa	4	HR	HR	HR	HR	HR	100	101	91	97	100	98	93												97(7)
Ameristand 433T RR	America's Alfalfa	3	HR	R	R	HR	HR	92	98	100				95	96											98(6)
Ameristand 445TQ RR	America's Alfalfa	4	HR	HR	HR	HR	HR	105	104					100												103(3)
AphaTron RR	Croplan Genetics	4	HR	HR	HR	HR	HR	99					98													99(2)
Consistency 4.10 RR	Croplan Genetics	4	HR	HR	HR	HR	HR	101					102													102(2)
DKA-41-18 RR	Monsanto	4	HR	HR	HR	HR	HR	100					101		100											100(3)
DKA 44-16 RR	Monsanto	4	HR	HR	HR	HR	HR	104						100												102(2)
Stratica RR	Croplan Genetics	4	HR	HR	HR	HR	HR	97			104			96												99(3)
Tonnica RR	Crop Genetics	5	HR	HR	HR	HR	HR	105						101												103(2)
WL 355 RR	W-L Research	4	HR	HR	HR	HR	HR	99					102		110											104(3)
WL 356HQ RR	W-L Research	5	HR	HR	HR	HR	HR	100	98					96												98(3)
WL 372HQ RR	W-L Research	5	HR	HR	HR	HR	HR	102						106												104(2)
428 RR	Allied Seed	4	HR	HR	HR	HR	HR		99	99				104									111			103(4)
54R02 RR	Dupont Pioneer	4	HR	HR	HR	HR	HR	97	108	96	104				102											101(6)
55VR06 RR	Dupont Pioneer	5	HR	R	Hr	HR	HR		94														99			97(2)
55VR08 RR	Dupont Pioneer	5	-	HR	HR	HR	HR		104	109					110											108(3)
6516R RR	NEXGROW	5	HR	-	HR	HR	HR	106							109											108(2)

<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. (more detailed disease and insect resistance ratings at [www.alfalfa.org/pdf/2019\\_Alfalfa\\_Variety\\_Leaflet.pdf](http://www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf))

<sup>3</sup> Year trial was established.

<sup>4</sup> Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific test. For example, the Princeton trial planted in 2011 was harvested for five years, so the final yield report would be "2015 Alfalfa Report" archived in the UK Forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu).

<sup>5</sup> Mean only presented when respective variety was included in two or more trials.

<sup>6</sup> Number of years of data.



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