



2020 Alfalfa Report

G.L. Olson, S.R. Smith, C.D. Teutsch, and J.C. Henning, Plant and Soil Sciences

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 11 and 12 (Roundup Ready varieties) show a summary of all alfalfa varieties tested in Kentucky during the past 17 years. The UK Forage Extension website, at www.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 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 (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 is a fungal disease that 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

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2015, 2016, 2017, 2018, 2019 and 2020.

	2015			2016			2017			2018			2019			2020 ²								
	Temp		Rainfall	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	+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	40	+9	3.72	+0.86
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	38	+3	5.14	+1.93
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	3.49	-0.91	51	+7	3.79	-0.61
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	52	-3	4.92	+1.04
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	62	-2	5.69	+1.22
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	72	0	2.56	-1.10
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	79	+3	3.23	-1.77
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	75	0	3.41	-0.52
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	68	0	4.43	+0.83
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	7.55	+5.58	57	0	4.98	+2.41
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	41	-4	5.39	+2.00				
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	43	+7	5.74	+1.76				
Total			69.12	+24.57			54.88	+10.33			61.88	+17.33			82.28	+37.73			55.20	+10.65			41.47	+4.29

¹ DEP is departure from the long-term average.

² 2019 data is for ten months through October.

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 Race1 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/2020_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 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, 2019 and 2020) as part of the forage variety testing program. The summary reports also contain past years results from alfalfa tests in Princeton and Quicksand as well as Lexington. The soils in Lexington (Maury), Princeton (Crider) and Quicksand (Nolan) are well drained silt loams and are 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

Table 2. Dry matter yields and stand persistence of Roundup Ready alfalfa varieties sown March 31, 2015, at Lexington, Kentucky.¹

Variety	FD ²	Percent Stand												Yield (tons/acre)						6-year Total							
		2015		2016		2017		2018		2019		2020		2019 Total		2020 Total		2020									
		Jun 12	Oct 15	Mar 18	Sep 27	Feb 23	Sep 26	Mar 14	Sep 25	Mar 28	Oct 11	Mar 17	Sep 24	2020 Total	2018 Total	2019 Total	May 6	Jun 9	Jul 10		Aug 12	Sep 14	Total				
Commercial Varieties-Available for Farm Use																											
54R02 RR	4	99	99	98	96	95	95	95	95	92	92	92	92	86	81	2.61	7.49	6.56	5.11	3.83	0.90	0.50	0.30	0.72	0.54	2.96	28.56*
Ameristand445TQ RR	4	99	98	99	98	97	97	97	97	92	92	92	88	85	2.06	6.62	6.75	5.34	3.84	0.97	0.62	0.38	0.62	0.60	3.20	27.81*	
55VR08 RR	5	100	100	100	98	97	97	95	97	96	96	95	91	85	2.42	6.92	7.11	4.72	3.60	0.86	0.58	0.34	0.57	0.47	2.81	27.58*	
428 RR	4	97	97	98	96	95	96	95	94	93	91	89	89	84	1.79	6.35	6.08	5.13	4.10	1.07	0.65	0.35	0.66	0.56	3.30	26.74*	
Ameristand405T RR	4	99	99	97	96	96	96	96	94	88	89	89	83	81	2.21	6.87	6.91	4.50	3.50	0.77	0.54	0.36	0.62	0.39	2.67	26.66*	
WL356HQ RR	4	97	98	98	96	96	96	96	92	90	90	84	73	1.79	7.10	6.26	4.60	3.53	0.94	0.64	0.33	0.70	0.52	3.12	26.40*		
Ameristand433T RR	3	98	99	99	95	94	95	95	94	90	91	86	83	2.13	6.57	6.09	5.10	3.30	0.92	0.55	0.42	0.60	0.55	3.04	26.23*		
Alfagrazo 600 RR	6	99	100	98	95	94	95	93	89	74	81	79	71	2.67	6.55	6.25	4.72	3.36	0.54	0.38	0.25	0.85	0.39	2.40	25.95*		
Alfagrazo 300 RR	3	98	99	99	97	96	96	95	92	90	88	89	88	1.64	6.05	6.81	4.66	3.43	1.06	0.54	0.29	0.59	0.45	2.93	25.51*		
55V06 RR	5	99	99	99	97	96	96	95	95	94	93	90	89	1.61	5.92	6.19	4.69	3.94	0.89	0.62	0.40	0.58	0.56	3.04	25.38*		
Mean		98	99	99	96	95	96	95	93	90	90	86	82	2.09	6.64	6.50	4.86	3.64	0.89	0.56	0.34	0.65	0.50	2.95	26.68		
CV-%		2	2	2	2	2	2	2	3	7	5	6	7	30.03	15.77	12.59	13.36	11.27	20.35	22.30	27.90	24.72	32.23	13.89	10.92		
LSD,0.05		3	2	2	3	2	2	3	4	6	5	8	8	0.91	1.52	1.19	0.94	0.60	0.26	0.18	0.14	0.23	0.23	0.59	4.23		

¹ This trial was sprayed with Roundup once in 2015, twice in 2016, once in 2017, 2018, 2019, and twice in 2020.

² FD = Fall Dormancy

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

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 9. 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 2020 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 10 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 11 and 12 (Roundup Ready varieties) are summaries of yield data from 2004 to 2020 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 11 and 12, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations have stable performance; others may have performed well in wet years or on particular soil types. See footnotes in tables 11 and 12 to determine which yearly report should be referenced.

Table 3. Dry matter yields and stand persistence of alfalfa varieties sown April 5, 2016 at Lexington, Kentucky.

Variety	FD ¹	Percent Stand												Yield (tons/acre)					5-year Total						
		2016			2017			2018			2019			2020			2020								
		Jun 16	Sep 27	Feb 23	Feb 23	Feb 23	Sep 26	Mar 14	Sep 26	Mar 25	Mar 28	Oct 11	Mar 17	Sep 24	2016 Total	2017 Total	2018 Total	2019 Total		May 6	Jun 9	Jul 10	Aug 12	Sep 14	
Commercial Varieties-Available for Farm Use																									
Rebound 6XT	4	96	94	93	94	94	94	94	94	93	89	86	86	84	2.04	7.30	5.67	4.18	1.17	1.03	0.80	0.64	0.48	4.12	23.30*
GA-497HD	5	97	96	96	96	96	96	94	90	89	89	89	89	85	2.14	7.50	5.73	4.09	1.13	0.91	0.53	0.70	0.46	3.73	23.19*
Ameristand 403T Plus	4	97	93	91	92	91	92	91	89	89	91	87	87	75	2.31	7.69	5.24	3.94	1.30	0.88	0.60	0.72	0.46	3.96	23.14*
Contender	5	96	94	93	94	93	92	92	89	89	91	88	81	81	1.90	7.74	5.66	4.08	1.12	0.86	0.57	0.72	0.47	3.74	23.13*
FSG-415BR	4	92	89	91	91	91	92	87	91	84	91	84	75	75	2.26	7.68	5.46	3.83	1.24	0.82	0.52	0.83	0.49	3.89	23.13*
Evermore	5	97	97	96	96	96	96	96	94	90	90	86	86	71	2.20	6.95	5.73	4.31	1.13	0.93	0.58	0.64	0.49	3.78	22.96*
Caliber	4	96	95	94	95	95	94	91	91	91	91	88	83	83	1.88	7.39	5.17	3.66	1.01	0.88	0.49	0.78	0.40	3.55	21.66
WL 365HQ	5	98	95	94	95	95	95	96	93	93	93	89	88	88	2.10	7.07	4.97	3.95	0.90	0.74	0.66	0.69	0.42	3.42	21.51
Bulldog 505	5	93	91	90	90	90	90	90	89	89	90	89	71	71	1.46	7.62	5.49	3.51	0.98	0.70	0.43	0.60	0.37	3.07	21.14
Saranac AR(certified)	4	94	92	91	91	91	91	91	85	88	88	75	58	58	1.84	6.90	5.36	3.29	0.86	0.52	0.33	0.61	0.48	2.81	20.20
Experimental Varieties																									
AFX095026	4	92	91	90	92	93	94	93	94	93	93	91	86	86	1.96	7.77	6.18	4.20	1.25	1.05	0.74	0.70	0.59	4.32	24.44*
AFX095005	5	95	93	92	94	94	95	94	95	94	93	91	86	86	1.66	7.42	6.08	3.85	0.96	0.85	0.63	0.62	0.59	3.64	22.65*
AM-14-900	4	93	92	92	95	94	93	88	87	88	87	85	75	75	1.97	7.68	5.42	3.40	1.00	0.75	0.55	0.65	0.46	3.41	21.87
AM-09-600	4	95	94	94	94	94	94	91	92	88	83	88	83	83	1.60	7.73	5.43	3.74	0.83	0.67	0.68	0.72	0.44	3.33	21.84
LS905	4	95	95	96	96	96	96	94	95	92	85	92	85	85	1.79	6.93	5.24	3.99	1.00	1.02	0.63	0.59	0.46	3.70	21.65
NF11ALF006	6	95	93	91	92	91	92	91	92	91	86	84	79	79	1.38	5.65	5.05	3.10	0.89	0.81	0.55	0.66	0.47	3.39	18.57
Mean		95	93	93	94	93	93	93	93	91	90	87	79	79	1.91	7.31	5.49	3.82	1.05	0.84	0.58	0.68	0.47	3.62	22.15
CV,%		4	4	4	3	3	3	3	5	5	5	7	11	11	21.81	11.89	9.53	12.64	16.78	20.33	22.73	21.32	25.87	11.42	7.73
LSD,0.05		5	6	5	4	4	4	4	6	6	6	8	12	12	0.59	1.24	0.75	0.69	0.25	0.24	0.19	0.21	0.17	0.59	2.44

¹ FD = Fall Dormancy

*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.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)
- 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
- 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

About the Authors

G.L. Olson is a research specialist, S.R. Smith and J.C. Henning are Extension professors and forage specialists, and C.D. Teutsch is an associate Extension professor and forage specialist.

Table 4. Dry matter yields and stand persistence of Roundup Ready alfalfa varieties sown April 5, 2016, at Lexington, Kentucky.¹

Variety	FD ²	Percent Stand												Yield (tons/acre) ³											
		2016			2017			2018			2019			2020			2018			2019			2020		
		Jun 16	Sep 27	Feb 23	Feb 23	Mar 14	Mar 14	Mar 25	Mar 25	Mar 28	Oct 11	Mar 17	Mar 17	Sep 24	Sep 24	2017 Total	2018 Total	2019 Total	May 6	Jun 9	Jul 10	Aug 12	Sep 15	Total	4-year Total
Commercial Varieties-Available for Farm Use																									
55VRO8 RR	5	99	94	94	94	94	94	93	93	93	93	91	90	90	7.73	4.95	3.98	1.08	0.82	0.60	0.81	0.65	0.51	3.82	20.49*
Stratica RR	4	96	94	94	93	93	92	89	89	89	86	86	82	82	7.53	4.92	3.40	1.03	0.81	0.60	0.65	0.50	3.60	19.44*	
Alfagraze 300 RR	3	99	99	98	98	98	96	95	96	96	92	88	88	88	7.32	4.91	3.16	1.09	0.78	0.47	0.56	0.38	3.29	18.68*	
Ameristand 433T RR	3	97	93	92	94	93	92	91	91	89	86	86	86	86	7.30	4.61	3.36	0.99	0.75	0.65	0.59	0.43	3.41	18.68*	
428 RR	4	98	86	86	87	88	88	88	88	85	85	85	80	80	7.06	4.75	3.36	1.07	0.80	0.43	0.60	0.50	3.39	18.55*	
54RO2 RR	4	96	92	92	92	91	89	87	87	87	85	81	81	81	7.05	4.55	3.09	1.05	0.64	0.47	0.57	0.47	3.20	17.90*	
Ameristand 405T RR	4	95	88	89	91	90	88	88	88	84	80	76	76	76	6.70	4.14	3.11	1.03	0.67	0.38	0.68	0.40	3.17	17.12	
Mean		97	92	92	93	92	91	90	90	90	87	84	84	84	7.25	4.68	3.35	1.04	0.75	0.53	0.63	0.45	3.41	18.69	
CV,%		3	9	8	8	7	7	8	8	8	9	10	10	10	9.82	13.69	15.56	20.63	24.13	39.02	29.70	28.57	17.82	11.06	
LSD,0.05		4	12	11	11	9	9	10	10	10	11	12	12	12	0.96	0.91	0.74	0.30	0.26	0.29	0.27	0.18	0.86	2.92	

¹ This trial was sprayed with Roundup twice in 2016, once in 2017, 2018, and 2019, and twice in 2020.

² FD = Fall Dormancy.

³ 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 5. Dry matter yields and stand persistence of alfalfa varieties sown April 5, 2017, at Lexington, Kentucky.

Variety	FD ¹	Percent Stand							Yield (tons/acre)									4-year Total
		2017		2018		2019		2020		2017 Total	2018 Total	2019 Total	2020					
		Sep 26	Mar 14	Sep 25	Mar 28	Oct 11	Mar 17	Sep 24	May 6				Jun 9	Jul 10	Aug 12	Sep 15	Total	
Commercial Varieties-Available for Farm Use																		
Evermore	5	93	93	94	96	96	94	87	1.96	5.24	3.11	0.89	0.56	0.45	0.63	0.43	2.96	13.28*
Ameristand 403T Plus	4	96	97	96	96	95	93	90	2.27	4.75	3.22	0.77	0.54	0.53	0.68	0.47	2.98	13.21*
Fierce	4	96	96	95	96	96	95	93	1.89	4.67	3.27	0.69	0.60	0.44	0.73	0.63	3.08	12.92*
Caliber	4	95	95	94	94	94	90	86	2.00	4.65	3.14	0.84	0.60	0.43	0.69	0.50	3.05	12.84*
Contender	5	94	94	93	93	88	83	76	2.10	4.67	2.85	0.62	0.69	0.40	0.70	0.55	2.95	12.58*
Saranac AR (certified)	4	87	87	86	86	86	84	63	1.83	4.65	2.70	0.70	0.34	0.29	0.70	0.40	2.43	11.61*
Bulldog 505	5	92	90	90	88	89	89	88	1.66	4.33	2.93	0.57	0.56	0.32	0.62	0.48	2.55	11.47*
Experimental Varieties																		
NF11ALF006	6	93	90	90	89	84	83	79	1.65	4.64	3.11	0.65	0.57	0.39	0.74	0.45	2.80	12.21*
Mean		93	93	92	92	91	89	83	1.92	4.70	3.04	0.72	0.56	0.41	0.69	0.49	2.85	12.51
CV,%		5	6	6	7	9	10	11	24.18	10.87	10.16	33.02	34.05	34.93	27.27	27.87	20.42	11.59
LSD,0.05		7	8	8	9	12	13	13	0.68	0.75	0.45	0.35	0.28	0.21	0.27	0.20	0.86	2.13

¹ FD = Fall Dormancy

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

Table 6. Dry matter yields, seedling vigor, and stand persistence of alfalfa varieties sown April 12, 2018, at Lexington, Kentucky.

Variety	FD ¹	Seedling Vigor ² May 22, 2018	Percent Stand						Yield (tons/acre)									3-year Total
			2018		2019		2020		2018 Total	2019 Total	2020							
			May 22	Sep 25	Mar 28	Oct 11	Mar 17	Sep 24			May 6	Jun 9	Jul 10	Aug 12	Sep 15	Total		
Commercial Varieties-Available for Farm Use																		
Ameristand 403T Plus	4	4.8	100	98	96	96	93	91	1.30	2.28	0.85	0.56	0.42	0.89	0.63	3.35	6.93*	
Saranac AR (certified)	4	4.0	99	98	95	93	86	76	1.53	2.07	0.57	0.48	0.22	0.66	0.36	2.29	5.90*	
Experimental Varieties																		
NF11ALF006	6	4.8	99	98	93	79	72	64	1.45	2.00	0.60	0.46	0.22	0.68	0.59	2.55	6.00*	
BYS5028		5.0	100	98	98	95	94	88	1.43	2.03	0.61	0.45	0.28	0.64	0.46	2.45	5.91*	
Mean		4.6	99	98	95	91	86	80	1.43	2.10	0.66	0.49	0.29	0.72	0.51	2.66	6.19	
CV,%		6.7	1	2	4	11	16	16	16.18	18.91	24.14	31.93	51.13	20.03	29.55	17.02	13.36	
LSD,0.05		0.5	2	4	5	16	22	20	0.37	0.63	0.25	0.25	0.24	0.23	0.24	0.72	1.32	

¹ FD = Fall Dormancy

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, seedling vigor, and stand persistence of alfalfa varieties sown April 2, 2019, at Lexington, Kentucky.

Variety	FD ¹	Seedling Vigor ² May 3, 2019	Percent Stand				Yield (tons/acre)									2-year Total
			2019		2020		2019 Total	2020								
			May 3	Oct 11	Mar 17	Sep 24		May 7	Jun 10	Jul 14	Aug 13	Sep 15	Total			
Commercial Varieties-Available for Farm Use																
Ameristand 403T Plus	4	4.5	100	99	99	95	1.51	1.22	0.89	0.49	0.88	0.83	4.31	5.82*		
GA-535	5	4.8	98	98	98	94	1.41	1.31	0.77	0.42	1.07	0.82	4.39	5.81*		
Paola	5	5.0	100	100	99	91	1.47	1.14	0.56	0.45	1.24	0.83	4.21	5.68*		
Rebound 6XT	4	4.9	100	100	99	97	1.30	1.09	0.91	0.40	0.94	0.84	4.18	5.48*		
Charger	5	4.4	99	98	98	95	1.10	1.01	0.84	0.45	1.19	0.80	4.30	5.41*		
FSG415BR	4	5.0	100	100	100	98	1.29	1.13	0.62	0.43	0.95	0.88	4.02	5.31*		
GA-497HD	5	4.9	100	100	99	96	0.98	1.24	0.73	0.50	0.93	0.90	4.30	5.27*		
Saranac AR (certified)	4	4.5	99	100	99	87	1.27	1.12	0.47	0.46	1.22	0.71	3.97	5.24*		
Triade	4/5	4.9	100	100	97	89	1.08	0.91	0.73	0.40	1.03	0.87	3.94	5.02*		
55V50	5	5.0	100	100	100	95	1.26	0.90	0.73	0.44	0.82	0.72	3.60	4.87*		
WL 349HQ	4	4.6	99	99	99	96	0.94	0.92	0.71	0.41	1.04	0.83	3.91	4.85*		
Alfagraz	2	4.1	99	99	98	74	0.96	0.81	0.53	0.44	0.97	0.64	3.38	4.34		
Mean		4.7	99	99	99	92	1.21	1.07	0.71	0.44	1.02	0.81	4.04	5.26		
CV,%		4.9	1	1	2	7	23.72	26.85	31.20	28.81	24.07	22.93	15.30	13.44		
LSD,0.05		0.3	1	1	3	9	0.41	0.41	0.32	0.18	0.35	0.27	0.89	1.02		

¹ FD = Fall Dormancy

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 8. Dry matter yields, seedling vigor, and stand persistence of alfalfa varieties sown April 3, 2020, at Lexington, Kentucky.

Variety	FD ¹	Seedling Vigor ² June 3, 2020	Percent Stand		Yield (tons/acre)			
			2020		2020			
			June 3	Sep 24	Jul 10	Aug 12	Sep 15	Total
Commercial Varieties-Available for Farm Use								
FSG415BR	4	4.9	100	100	1.11	0.62	0.83	2.56*
Alfabar		4.1	97	96	0.93	0.74	0.86	2.53*
GA409	4	4.6	100	100	0.90	0.63	0.94	2.47*
GA497HD	5	4.8	98	97	1.00	0.66	0.79	2.45*
Paola	5	4.8	99	98	0.90	0.66	0.82	2.38*
Triade	4/5	5.0	100	100	0.82	0.71	0.81	2.34*
Alfagraze	2	4.1	96	94	0.85	0.59	0.88	2.32*
GA535	5	4.8	98	97	0.87	0.67	0.77	2.31*
Saranac AR (certified)	4	4.5	100	96	0.94	0.62	0.67	2.23*
Ameristand 403T Plus	4	4.3	99	98	0.79	0.68	0.74	2.21*
HVS4220Q	4	4.8	100	99	0.79	0.60	0.76	2.15
FSG527	5	4.3	97	98	0.72	0.55	0.69	1.95
Mean		4.6	99	98	0.88	0.64	0.80	2.33
CV,%		9.5	2	2	20.16	19.20	14.08	11.28
LSD,0.05		0.6	3	3	0.26	0.18	0.16	0.38

¹ FD = Fall Dormancy

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 9. Dry matter yields, seedling vigor, and stand persistence of Roundup Ready alfalfa varieties sown May 15, 2020, at Lexington, Kentucky.

Variety	FD ¹	Seedling Vigor ² June 11, 2020	Percent Stand		Yield (tons/acre)		
			2020		2020		
			Jun 11	Sep 24	Aug 12	Sep 15	Total
Commercial Varieties-Available for Farm Use							
Ameristand 405T RR	4	5	100	100	0.97	0.94	1.91*
438 RR	4	5	100	100	0.93	0.81	1.74*
Alfagraze 300 RR	3	5	100	100	0.77	0.82	1.60*
Ameristand 433T RR	3	5	100	100	0.79	0.79	1.58
Mean		5	100	100	0.85	0.83	1.68
CV,%		0	0	0	17.98	13.16	13.60
LSD,0.05		0	0	0	0.22	0.22	0.33

¹ FD = Fall Dormancy

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 10. Characterization and proprietors of alfalfa varieties in current trials in Kentucky.

Variety	Proprietor	Variety Characteristics ¹					
		FD ³	Disease Resistance ²				
			Bw	Fw	An	PRR	APH
Commercial Varieties-Available for Farm Use							
Alfabar	Barenbrug	4/3/2	HR	HR	HR	HR	HR/R
Alfagraze	America's Alfalfa	2	MR	R	MR	R	-
Ameristand 403TPlus	America's Alfalfa	4	HR	HR	HR	HR	HR
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 527	Farm Science Genetics	5	HR	HR	HR	HR	HR
GA-409	Prof. Alfalfa 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
HVS4220Q	MountainView Seeds	4	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
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
Experimental Varieties⁴							
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	-	-	-	-	-

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 (more detailed disease and insect resistance ratings at www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf).
³ Fall dormancy-check varieties: 1 = Spredor 3, 2 = Vernal, 3 = Ranger, 4 = Saranac, 5 = DuPuits.
⁴ Experimental varieties are not available commercially, but provide an indication of the progress being made by forage breeding companies.

Table 11. Summary of Kentucky alfalfa yield trials 2004-2020 (continued).

Variety	Proprietor	Variety Characteristics ¹					Lexington										Princeton					Mean ⁵ (# trials)					
		FD	Disease Resistance ²				04 ^{3,4}	06	08	11	12	15	16	17	18	05	08	09	11	13							
			Bw	Fw	An	PRR	APH	5yr ⁶	7yr	6yr	6yr	5yr	5yr	4yr	3yr	5yr	5yr	6yr	4yr	3yr							
TripleTrust 500	Central Farm Supply	5	HR	HR	HR	HR	HR				108																
USG 681HY	UniSouth Genetics	6	HR	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)	
WL 343HQ	W-L Research	4	HR	HR	HR	HR	HR		101	110					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						96													-	
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																-	

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. (more detailed disease and insect resistance ratings at www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf)
³ Year trial was established
⁴ 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 6 years, so the final yield report would be “2013 Alfalfa Report” archived in the UK Forage website at <forages.ca.uky.edu>.
⁵ Mean only presented when respective variety was included in two or more trials.
⁶ Number of years of data

Table 12. Summary of Kentucky Roundup Ready alfalfa yield trials 2011-2020 (yield shown as a percentage of the mean of the commercial varieties in the test).

Variety	Proprietor	Variety Characteristics ¹						Lexington				Princeton			Quicksand	Mean ⁵ (# trials)
		FD	Disease Resistance ²				12 ^{3,4}	15	16	11	13	15	14			
			Bw	Fw	An	PRR	APH	6yr ⁶	6yr	4-yr	5yr	4yr	2yr	2yr		
Alfagraze 300 RR	America's Alfalfa	3	HR	R	HR	HR	HR	95	96	100	93	99	93			96(6)
Alfagraze 600 RR	America's Alfalfa	6		R	HR	R	R		97				85	93	92(3)	
Ameristand 405T RR	America's Alfalfa	4	HR	HR	HR	HR	HR	100	100	92	97	100	98	93	97(7)	
Ameristand 433T RR	America's Alfalfa	3	HR	R	R	HR	HR	92	98	100		95	96	107	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	99			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		100	99		104		111	104(4)	
54R02 RR	Dupont Pioneer	4	HR	HR	HR	HR	HR	97	107	96	104		102	97	101(6)	
55VR06 RR	Dupont Pioneer	5	HR	R	Hr	HR	HR		95					99	97(2)	
55VR08 RR	Dupont Pioneer	5	-	HR	HR	HR	HR		103	110			110		108(3)	
6516R RR	NEXGROW	5	HR	-	HR	HR	HR	106					109		108(2)	

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. (more detailed disease and insect resistance ratings at www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf)
³ Year trial was established
⁴ 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 5 years, so the final yield report would be “2015 Alfalfa Report” archived in the UK Forage website at <forages.ca.uky.edu>.
⁵ Mean only presented when respective variety was included in two or more trials.
⁶ Number of years of data



Mention or display of a trademark, proprietary product, or firm in text or figures does not constitute an endorsement and does not imply approval to the exclusion of other suitable products or firms.