



2021 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 12 and 13 (Roundup Ready varieties) show a summary of all alfalfa varieties tested in Kentucky during the past 18 years. The UK Forage Extension website (<https://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 3 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.

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2016, 2017, 2018, 2019, 2020, and 2021.

	2016			2017			2018			2019			2020			2021 ²								
	Temp °F	Rainfall		Temp °F	Rainfall		Temp °F	Rainfall		Temp °F	Rainfall		Temp °F	Rainfall		Temp °F	Rainfall							
		DEP ¹	IN		DEP	IN		DEP	IN		DEP	IN		DEP	IN		DEP	IN	DEP	IN				
JAN	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	34	+3	4.51	+1.65
FEB	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	31	-4	4.60	+1.39
MAR	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	50	+6	5.12	+0.72
APR	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	54	-1	2.72	-1.16
MAY	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	62	-2	4.34	-0.13
JUN	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	73	+1	6.26	+2.60
JUL	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	75	-1	5.90	+0.90
AUG	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	76	+1	6.16	+2.23
SEP	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	69	+1	3.03	-0.17
OCT	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	62	+5	3.68	-1.11
NOV	51	+6	1.94	-1.45	47	+2	3.09	-0.30	42	-3	5.64	+2.25	41	-4	5.39	+2.00	49	+4	2.18	-1.21				
DEC	37	+1	9.4	+5.42	35	-1	2.66	-1.32	40	+4	7.35	+3.37	43	+7	5.74	+1.76	36	0	2.27	-1.71				
Total			54.88	+10.33			61.88	+17.33			82.28	+37.73			55.20	+10.65			45.92	+1.37			46.32	+9.14

¹ DEP is departure from the long-term average.
² 2021 data is for ten months through October.

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 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/2021_Alfalfa_Variety_Leaflet.pdf. The Alfalfa Analyst publication also provides good information on diagnosing disease and insect damage. Download from alfalfa.org (under the "Education" tab, select "Publications.")

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.

Table 2. Dry matter yields and stand persistence of alfalfa varieties sown April 5, 2016, at Lexington, Kentucky.

Variety	FD ¹	Percent Stand												Yield (tons/acre)																		
		2016		2017		2018		2019		2020		2021		2016		2017		2018		2019		2020		2021		6-year Total						
Commercial Varieties-Available for Farm Use		Jun 16	Sep 27	Feb 23	Sep 26	Mar 14	Sep 25	Mar 28	Oct 11	Mar 17	Sep 24	Mar 24	Sep 30	2021	2020	2019	2018	2017	2016	Total	Total	May 6	Jun 10	Jul 12	Aug 11	Sep 16	Total	Total				
Rebound 6XT	4	96	94	93	94	94	94	93	89	86	86	84	79	76	84	86	84	79	76	2.04	7.30	5.67	4.18	4.12	4.12	1.17	1.21	1.46	0.72	0.78	5.26	28.56*
GA-497HD	5	97	97	96	96	96	94	90	89	89	89	85	78	79	85	89	88	81	65	2.14	7.50	5.73	4.09	3.73	3.73	1.13	1.09	1.10	0.49	0.77	4.61	27.79*
Contender	5	96	94	93	94	93	92	89	91	88	87	81	64	65	88	88	81	65	64	1.90	7.74	5.66	4.08	3.74	3.74	1.12	1.05	1.07	0.45	0.64	4.30	27.43*
FSG 415BR	4	92	89	91	91	91	92	87	91	84	87	75	58	55	87	87	81	75	55	2.26	7.68	5.46	3.83	3.89	3.89	1.24	0.92	0.96	0.44	0.73	4.28	27.42*
Ameristand 403T Plus	4	97	93	91	92	91	92	89	91	87	87	75	59	59	87	87	81	75	59	2.31	7.69	5.24	3.94	3.96	3.96	1.30	1.08	0.94	0.49	0.77	4.08	27.22*
Evermore	5	97	97	96	96	96	96	94	90	86	86	71	61	61	86	86	81	61	60	2.20	6.95	5.73	4.31	3.78	3.78	1.13	1.04	0.93	0.51	0.67	4.18	27.14
Caliber	4	96	95	94	95	95	94	91	91	88	88	83	73	75	88	88	83	73	75	1.88	7.39	5.17	3.66	3.55	3.55	1.01	1.22	1.09	0.54	0.74	4.60	26.26
WL 365HQ	5	98	95	94	95	95	96	93	93	89	89	88	83	83	93	93	88	83	83	2.10	7.07	4.97	3.95	3.42	3.42	0.90	1.12	1.39	0.66	0.66	4.74	26.25
Bulldog 505	5	93	91	90	90	90	90	89	90	89	89	71	53	40	1.46	7.62	5.49	3.51	3.07	1.46	7.62	5.49	3.51	3.07	3.07	0.98	0.83	0.86	0.35	0.71	3.47	24.61
Saranac AR (certified)	4	94	92	91	91	91	91	85	88	75	88	75	58	33	23	88	85	75	58	1.84	6.90	5.36	3.29	2.81	2.81	0.86	0.68	0.78	0.28	0.70	3.08	23.29
Experimental Varieties																																
AFX095026	4	92	91	90	92	93	94	93	93	91	91	86	78	75	91	91	86	78	75	1.96	7.77	6.18	4.20	4.32	4.32	1.25	1.13	1.50	0.72	0.95	5.62	30.05*
AFX095005	5	95	93	92	94	94	95	94	93	91	91	86	70	74	91	91	86	70	74	1.66	7.42	6.08	3.85	3.64	3.64	0.96	1.16	1.21	0.63	0.67	4.51	27.16
AM-14-900	4	93	92	92	95	94	93	88	87	85	85	75	60	55	88	87	85	60	55	1.97	7.68	5.42	3.40	3.41	3.41	1.00	1.24	1.07	0.51	0.78	4.73	26.61
LS905	4	95	95	96	96	96	96	94	95	92	92	85	74	75	92	92	85	74	75	1.79	6.93	5.24	3.99	3.70	3.70	1.00	1.10	1.18	0.55	0.70	4.36	26.01
AM-09-600	4	95	94	94	94	94	94	91	92	88	88	83	70	58	88	88	83	70	58	1.60	7.73	5.43	3.74	3.33	3.33	0.83	1.06	0.89	0.45	0.67	4.09	25.92
NF11ALF006	6	95	93	91	92	91	92	91	86	84	84	79	63	60	91	91	86	63	60	1.38	5.65	5.05	3.10	3.39	3.39	0.89	0.95	1.32	0.53	0.73	4.17	22.74
Mean		95	93	93	94	93	93	91	90	87	87	79	66	63	91	91	87	66	63	1.91	7.31	5.49	3.82	3.62	3.62	1.05	1.06	1.11	0.52	0.77	4.38	26.53
CV,%		4	4	4	3	3	3	5	5	7	7	11	20	21	21	21	11	20	21	21.81	11.89	9.53	12.64	11.42	11.42	16.78	18.96	22.55	26.65	18.11	13.11	7.62
LSD,0.05		5	6	5	4	4	4	6	6	8	8	12	19	19	19	19	8	12	19	0.59	1.24	0.75	0.69	0.59	0.59	0.25	0.29	0.36	0.20	0.19	0.82	2.88

¹ FD = Fall Dormancy.

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

How to Interpret the Summary Tables

Tables 12 and 13 (Roundup Ready varieties) are summaries of yield data from 2004 to 2021 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 12 and 13, 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 12 and 13 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 (<https://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/variety-Leaflet.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 alfalfa varieties sown April 5, 2017, at Lexington, Kentucky.

Variety	FD ¹	Percent Stand												Yield (tons/acre)												5-year Total
		2017			2018			2019			2020			2021			2020			2021						
		Sep 26	Mar 14	Sep 25	Mar 28	Mar 25	Mar 28	Oct 11	Mar 17	Sep 24	Sep 24	Mar 24	Sep 29	2017 Total	2018 Total	2019 Total	2020 Total	2021 Total	May 9	Jun 10	Jul 12	Aug 11	Sep 16	Total		
Commercial Varieties-Available for Farm Use																										
Evermore	5	93	93	94	96	96	96	94	94	87	81	80	1.96	5.24	3.11	2.96	0.86	1.06	1.18	0.41	0.96	0.96	4.47	17.75*		
Ameristand 403T Plus	4	96	97	96	96	96	95	93	90	84	86	86	2.27	4.75	3.22	2.98	0.70	0.92	1.34	0.47	1.03	1.03	4.46	17.67*		
Fierce	4	96	96	95	96	96	96	95	93	93	83	85	1.89	4.67	3.27	3.08	0.85	1.08	1.15	0.52	1.04	1.04	4.64	17.57*		
Caliber	4	95	95	94	94	94	94	90	86	86	83	81	2.00	4.65	3.14	3.05	0.84	0.88	1.13	0.50	0.98	0.98	4.34	17.18*		
Contender	5	94	94	93	93	93	88	83	76	71	70	70	2.10	4.67	2.85	2.95	0.65	1.06	1.08	0.41	0.90	0.90	4.10	16.68*		
Bulldog 505	5	92	90	90	88	88	89	89	88	88	79	79	1.66	4.33	2.93	2.55	0.41	0.88	1.06	0.39	1.00	1.00	3.73	15.20*		
Saranac AR (certified)	4	87	87	86	86	86	84	84	63	63	48	34	1.83	4.65	2.70	2.43	0.46	0.92	0.71	0.26	0.73	0.73	3.08	14.70		
Experimental Varieties																										
NF11ALF006	6	93	90	90	89	89	84	83	79	76	83	83	1.65	4.64	3.11	2.80	0.66	1.25	1.34	0.38	1.00	1.00	4.63	16.84*		
Mean		93	93	92	93	93	91	89	83	83	75	75	1.92	4.70	3.04	2.85	0.68	1.01	1.12	0.42	0.96	0.96	4.18	16.70		
CV,%		5	6	6	7	7	9	10	11	13	12	12	24.18	10.87	10.16	20.42	44.15	28.70	24.90	28.46	16.23	16.23	15.87	10.98		
LSD,0.05		7	8	8	9	9	12	13	13	13	14	13	0.68	0.75	0.45	0.86	0.44	0.43	0.41	0.17	0.23	0.23	0.98	2.70		

¹ FD = Fall Dormancy.

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

Table 5. Dry matter yields, seedling vigor, and stand persistence of alfalfa varieties sown April 12, 2018, at Lexington, Kentucky.

Variety	FD ¹	Seedling Vigor ²	Percent Stand												Yield (tons/acre)											
			2018			2019			2020			2021			2018			2019			2020			2021		
			May 22	2018	May 25	Mar 28	Oct 11	Mar 17	Sep 24	Mar 24	Sep 29	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Commercial Varieties-Available for Farm Use																										
Ameristand 403T Plus	4	4.8	100	98	96	93	91	73	70	1.30	2.28	3.35	1.31	1.00	0.94	0.45	0.86	4.56	11.49*							
Saranac AR (certified)	4	4.0	99	98	95	86	76	38	45	1.53	2.07	2.29	1.01	0.78	0.65	0.34	0.92	3.69	9.59							
Experimental Varieties																										
BY55028	-	5.0	100	98	95	94	88	75	78	1.43	2.03	2.45	1.64	0.90	0.83	0.53	1.02	4.93	10.83*							
NF11ALF006	6	4.8	99	98	93	72	64	63	68	1.45	2.00	2.55	1.26	0.90	0.99	0.56	1.09	4.80	10.80*							
Mean		4.6	99	98	95	91	86	80	65	1.43	2.10	2.66	1.30	0.89	0.85	0.47	0.97	4.49	10.68							
CV%		6.7	1	2	4	11	16	13	21	16.18	18.91	17.02	16.17	26.97	26.83	24.51	31.16	12.34	10.36							
LSD0.05		0.5	2	4	5	16	22	20	13	0.37	0.63	0.72	0.34	0.38	0.37	0.18	0.48	0.89	1.77							

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

Variety	FD ¹	Seedling Vigor ²	Percent Stand												Yield (tons/acre)											
			2019			2020			2021			2019			2020			2021								
			May 3	Oct 11	Mar 17	Sep 24	Mar 24	Sep 30	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021						
Commercial Varieties-Available for Farm Use																										
GA-535	5	4.8	98	98	94	94	94	94	94	94	1.41	4.39	1.51	1.60	1.80	0.95	1.22	7.08	12.89*							
Ameristand 403T Plus	4	4.5	100	99	99	95	95	95	95	95	1.51	4.31	1.53	1.63	1.83	0.95	1.04	6.98	12.80*							
FSG415BR	4	5.0	100	100	100	98	98	98	98	98	1.29	4.02	1.71	1.56	1.81	0.88	1.04	7.00	12.30*							
Rebound 6XT	4	4.9	100	100	99	97	97	97	97	97	1.30	4.18	1.25	1.61	1.66	0.98	1.19	6.68	12.16*							
Charger	5	4.4	99	98	98	95	96	96	96	96	1.10	4.30	1.30	1.57	1.83	1.00	1.06	6.75	12.16*							
GA-497HD	5	4.9	100	100	99	96	96	96	96	97	0.98	4.30	1.50	1.62	1.65	0.93	1.01	6.70	11.98*							
Paola	5	5.0	100	100	99	91	93	93	93	93	1.47	4.21	1.09	1.37	1.64	0.88	0.97	5.95	11.63*							
WL 349HQ	4	4.6	99	99	99	96	98	98	98	98	0.94	3.91	1.36	1.55	1.82	1.02	0.99	6.74	11.60*							
55V50	5	5.0	100	100	100	95	96	96	96	96	1.26	3.60	1.60	1.57	1.67	0.79	0.91	6.54	11.41*							
Saranac AR (certified)	4	4.5	99	100	99	87	86	84	87	84	1.27	3.97	1.31	1.37	1.37	0.80	1.04	5.88	11.12							
Triade	5	4.9	100	100	97	89	89	89	89	87	1.08	3.94	0.96	1.56	1.29	0.83	0.90	5.54	10.56							
Alfagraz	3	4.1	99	99	98	74	78	78	78	78	0.96	3.38	1.27	1.19	1.38	0.73	0.96	5.53	9.87							
Mean		4.7	99	99	99	92	93	93	93	93	1.21	4.04	1.37	1.52	1.64	0.90	1.03	6.45	11.71							
CV%		4.9	1	1	2	7	5	6	6	6	23.72	15.30	20.96	15.49	17.46	21.31	15.40	11.60	10.38							
LSD0.05		0.3	1	1	3	9	6	8	8	8	0.41	0.89	0.41	0.34	0.41	0.27	0.23	1.08	1.75							

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 3, 2020, at Lexington, Kentucky.

Variety	FD ¹	Seedling Vigor ² June 3, 2020	Percent Stand				Yield (tons/acre)							2-year Total
			2020		2021		2020	2021						
			June 3	Sep 24	Mar 24	Sep 29	Total	May 10	Jun 15	Jul 14	Aug 13	Sep 17	Total	
Commercial Varieties-Available for Farm Use														
FSG415BR	4	4.9	100	100	99	99	2.56	1.98	1.95	1.52	1.06	1.19	7.70	10.27*
HVS4220Q	4	4.8	100	99	99	99	2.15	1.96	2.08	1.46	1.17	1.19	7.86	10.01*
Alfabar	3	4.1	97	96	96	96	2.53	1.95	1.71	1.48	1.10	1.22	7.46	9.99*
GA497HD	5	4.8	98	97	98	98	2.45	1.58	1.85	1.56	1.28	0.98	7.25	9.70*
Paola	5	4.8	99	98	98	99	2.38	1.49	1.71	1.60	1.19	1.22	7.20	9.58*
GA535	5	4.8	98	97	98	98	2.31	1.85	1.89	1.28	1.00	1.01	7.02	9.33*
Triade	5	5.0	100	100	100	100	2.34	1.22	1.70	1.53	1.40	1.14	6.99	9.33*
FSG527	5	4.3	97	98	98	98	1.95	1.65	2.03	1.28	1.16	1.08	7.21	9.16
Ameristand 403TPlus	4	4.3	99	98	97	97	2.21	1.51	1.86	1.37	1.15	1.04	6.93	9.14
Saranac AR (certified)	4	4.5	100	96	96	96	2.23	1.64	1.74	1.32	1.17	0.99	6.85	9.08
GA409	4	4.6	100	100	100	100	2.47	1.13	1.62	1.54	1.20	1.09	6.59	9.06
Alfagraze	3	4.1	96	94	94	94	2.32	1.48	1.71	1.07	0.88	0.97	6.11	8.43
Mean		4.6	99	98	98	98	2.33	1.62	1.82	1.42	1.15	1.09	7.10	9.42
CV,%		9.5	2	2	2	2	11.28	18.42	12.25	24.48	21.09	10.78	8.75	7.08
LSD,0.05		0.6	3	3	3	3	0.38	0.43	0.32	0.50	0.35	0.17	0.89	0.96

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 yield, seedling vigor, and stand persistence of Roundup Ready alfalfa varieties sown May 15, 2020, at Lexington, Kentucky.¹

Variety	FD ²	Seedling Vigor ³ June 11, 2020	Percent Stand				Yield (tons/acre)							2-year Total
			2020		2021		2020	2021						
			Jun 11	Sep 24	Mar 24	Sep 29	Total	May 10	Jun 9	Jul 13	Aug 13	Sep 17	Total	
Commercial Varieties-Available for Farm Use														
438 RR	4	5	100	100	100	100	1.74	2.33	1.80	1.80	1.31	1.19	8.43	10.17*
Ameristand 405T RR	4	5	100	100	100	100	1.91	2.51	1.65	1.76	1.01	1.04	7.95	9.87*
Alfagraze 300 RR	3	5	100	100	100	100	1.60	2.23	1.76	1.85	1.33	0.99	8.16	9.76*
Ameristand 433T RR	3	5	100	100	100	100	1.58	2.38	1.60	1.71	1.05	0.96	7.70	9.28*
Mean		5	100	100	100	100	1.68	2.36	1.68	1.77	1.15	1.03	7.59	9.67
CV,%		0	0	0	0	0	13.60	19.66	16.19	13.54	16.46	8.54	10.34	10.01
LSD,0.05		0	0	0	0	0	0.33	0.66	0.39	0.34	0.27	0.13	0.18	1.38

¹ This trial was sprayed with Roundup twice in 2020 and 2021.

² FD = Fall Dormancy.

³ 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 alfalfa varieties sown April 5, 2021, at Lexington, Kentucky,

Variety	FD ¹	Seedling Vigor ² June 1, 2021	Percent Stand 2021		Yield (tons/acre) 2021			
			Jun 1	Sep 29	Jul 12	Aug 13	Sep 16	Total
Commercial Varieties-Available for Farm Use								
54VQ52	4	5.0	99	99	0.91	0.39	0.89	2.20*
HighFive	5	4.5	99	98	0.84	0.35	0.99	2.18*
MarinerV	4	4.4	96	96	0.94	0.38	0.81	2.21*
55H96	5	4.3	96	96	1.06	0.24	0.77	2.08*
Alfagraze	3	4.3	94	93	0.91	0.25	0.87	2.02*
Ameristand 403TPlus	4	4.1	97	97	1.01	0.21	0.78	2.00*
GA497	5	4.9	100	98	0.96	0.27	0.75	1.99*
FSG450	4	4.8	96	92	0.99	0.25	0.74	1.98*
Saranac AR (certified)	4	4.5	98	96	1.02	0.27	0.68	1.97*
54Q29	4	4.8	100	98	0.90	0.27	0.80	1.97*
54Q16	4	4.9	98	96	0.94	0.28	0.73	1.95*
Signature	4	4.5	98	96	0.94	0.24	0.78	1.95*
Mean		4.6	98	96	0.95	0.28	0.80	2.03
CV,%		11.5	2	3	14.96	35.17	22.78	15.78
LSD,0.05		0.8	3	4	0.20	0.14	0.26	0.46

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. Dry matter yields, seedling vigor, and stand persistence of Roundup Ready alfalfa varieties sown April 5, 2021, at Lexington, Kentucky.¹

Variety	FD ²	Seedling Vigor ³ June 1, 2021	Percent Stand		Yield (tons/acre)			
			2021		2021			
			June1	Sep 29	Jul 12	Aug 13	Sep 16	Total
Commercial Varieties-Available for Farm Use								
54VR10 RR	4	4.9	99	99	1.05	0.41	0.97	2.43*
Ameristand 405T RR	4	4.6	99	99	0.95	0.39	0.91	2.25*
Ameristand 433T RR	3	4.6	98	98	1.10	0.33	0.82	2.25*
438 RR	4	4.6	99	98	1.06	0.40	0.79	2.24*
Alfagraze 300 RR	3	4.6	98	97	0.95	0.34	0.81	2.10*
Mean		4.7	98	98	1.02	0.37	0.86	2.25
CV,%		9.2	1	1	14.85	23.15	17.84	11.42
LSD,0.05		0.7	2	2	0.23	0.13	0.24	0.40

¹ This trial was sprayed with Roundup twice in 2021.

² FD = Fall Dormancy.

³ 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 11. Characterization and proprietors of alfalfa varieties in current trials in Kentucky.

Variety	Proprietor	FD ³	Variety Characteristics ¹				
			Disease Resistance ²				
			Bw	Fw	An	PRR	APH
Commercial Varieties-Available for Farm Use							
Alfabar	Barenbrug	3	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 450	Allied Seed, L.L.C.	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
High Five	Allied Seed, L.L.C.	5	HR	HR	HR	HR	HR
HVS4220Q	MountainView Seeds	4	HR	HR	HR	HR	HR
Mariner V	Allied Seed, L.L.C.	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	-
Signature	Allied Seed, L.L.C.	4	HR	HR	HR	HR	HR
Triade	Interlake Forage Seeds	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
54Q16	Corteva Agriscience	4	HR	HR	HR	HR	HR
54Q29	Corteva Agriscience	4	HR	HR	HR	HR	R
54VQ52	Corteva Agriscience	4	HR	R	HR	HR	HR
55H96	Corteva Agriscience	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/2021_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 12. Summary of Kentucky alfalfa yield trials 2004-2021 (yield shown as a percentage of the mean of the commercial varieties in the test).

Variety	Variety Characteristics ¹										Lexington										Princeton										Mean ⁵ (# trials)															
	Disease Resistance ²					04 ^{3,4}					11					12					15					16						17					18					19				
	FD	Bw	Fw	An	PRR	APH	5yr ⁶	7yr	06	08	11	12	15	16	17	18	19	05	08	09	11	13	04	05	06	08	11	12	15	16		17	18	19	05	08	09	11	13							
A-4440	4	HR	HR	HR	HR	HR	HR	100									99																						100(2)							
A 5225	5	HR	HR	HR	HR	R		104																															106(2)							
Adrenaline	4	HR	HR	HR	HR	HR																																								
Alfagraze	3	HR	HR	HR	HR	HR																																								
Ameristand 403T	4	HR	HR	HR	HR	HR																																								
Ameristand 403T Plus	4	HR	HR	HR	HR	HR																																								
Ameristand 407TQ	4	HR	HR	HR	HR	HR																																								
Ameristand 427TQ	4	HR	HR	HR	HR	HR																																								
Anchormate	-	-	-	-	-	-																																								
Arc (certified)	4	LR	MR	HR	-	-	76																																							
Archer III	5	HR	HR	HR	HR	HR																																								
Baralfa 53HR	5	HR	R	HR	HR	HR																																								
Buffalo	-	-	-	-	-	-	82	86	80	89																																				
Buildog-505	5	-	HR	-	R	-																																								
Caliber	4	HR	HR	HR	HR	HR																																								
Charger	5	HR	HR	HR	HR	HR																																								
Contender	5	HR	HR	HR	HR	HR																																								
DKA 43-13	4	HR	HR	HR	HR	HR																																								
DKA 50-18	5	HR	HR	HR	HR	HR																																								
DG4210	4	HR	HR	HR	HR	HR																																								
Dynagro Everlast	4	HR	HR	HR	HR	HR																																								
Enforcer	4	HR	HR	HR	HR	HR																																								
Evermore	5	HR	HR	HR	HR	HR																																								
Expedition	5	HR	HR	HR	R	RR	107	112																																						
Feast +EV	3	HR	HR	HR	R	R	106																																							
Fierce	4	HR	HR	HR	HR	HR																																								
FSG 403LR	4	HR	HR	HR	HR	HR																																								
FSG 408DP	4	HR	HR	HR	HR	R	105																																							
FSG 415BR	4	HR	HR	HR	HR	HR																																								
FSG 424	4	HR	HR	HR	HR	HR																																								
FSG 426	4	HR	HR	HR	HR	HR																																								
FSG 524	5	HR	HR	HR	HR	HR																																								
FSG 528SF	5	HR	R	HR	HR	R																																								
FSG 497HD	5	HR	HR	HR	HR	HR																																								
GA-535	5	HR	HR	HR	HR	HR																																								
Genoa	4	HR	HR	HR	RR	RR	112																																							
Gunner	5	HR	HR	HR	HR	HR																																								
KingFisher 243	5	HR	HR	HR	HR	HR																																								
Kingfisher 4020	4	HR	HR	HR	HR	HR																																								
L447HD	4	HR	HR	HR	HR	HR																																								
L449Aph2	4	HR	HR	HR	HR	HR																																								
L455HD	4	HR	HR	HR	HR	HR																																								
Lancer	4	HR	HR	HR	HR	HR																																								
Legendairy 5.0	3	HR	HR	HR	HR	HR																																								
Mariner III	4	HR	HR	HR	HR	HR																																								
Optimus	-	HR	HR	HR	HR	HR																																								

continued

Table 13. Summary of Kentucky Roundup Ready alfalfa yield trials 2011-2021 (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	5-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	89	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		105		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	100		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	R	HR	HR		95					99	97(2)
55VR08 RR	Dupont Pioneer	5	-	HR	HR	HR	HR		103	111			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/2021_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 five years, so the final yield report would be "2015 Alfalfa Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

⁵ Mean only presented when respective variety was included in two or more trials.

⁶ Number of years of data.



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