

2004 Alfalfa Report

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Introduction

Alfalfa (*Medicago sativa*) has historically been the highest yielding, highest quality forage legume grown in Kentucky. It forms the basis of Kentucky's cash hay enterprise and is an important component in dairy, horse, beef, and sheep diets. Choosing a good alfalfa variety is a key step in establishing a stand of alfalfa. The choice of variety can impact yield, thickness of stand, and persistence of alfalfa stands.

This report provides current yield data on alfalfa varieties included in yield trials in Kentucky, as well as guidelines for selecting alfalfa varieties.

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 rating that ranges from 1 (very dormant) to 9 (nondormant). In general, varieties with lower dormancy ratings take more warm weather in the spring to initiate growth, and they stop growing sooner in the fall. This growth habit can, but does not necessarily, reduce annual yields compared to less dormant varieties. Generally, alfalfa should have a fall dormancy rating of 2 to 5 and have good winter survival to yield well in Kentucky. Varieties with ratings of 6 and above are not winter-hardy under Kentucky conditions.

Disease and Pest Resistance. In Kentucky, producers should use varieties that have at least a moderate resistance (MR) rating to phytophthora root rot (PRR), anthracnose (An), bacterial wilt (Bw), and fusarium wilt (Fw), as well as a resistance (R) rating to aphanomyces root rot (APH). Kentucky research indicates that aphanomyces root rot is a widespread problem in the state during stand establishment and that resistance is beneficial, particularly in soils also infested with phytophthora root rot.

Phytophthora root rot is a fungal disease associated with poorly drained soils or excessive rainfall. This disease causes yellowish- to reddish-brown areas on roots and crowns that eventually become black and rotten. The top growth of infected plants appears stunted and yellow.

Anthracnose, also caused by a fungus, attacks the stems of alfalfa, preventing water flow to the rest of the shoot and causing sudden wilting. These wilted shoots have a characteristic

“shepherd’s crook” appearance. Anthracnose can also cause a bluish-black crown rot. Bacterial wilt and fusarium wilt are infections of the water-conducting tissues of alfalfa roots and do not cause any noticeable root rot. These diseases prevent water flow to leaves, resulting in wilting of shoots and the eventual death of infected plants. Roots infected with bacterial wilt often have a yellowish-brown discoloration of the inner woody cylinder of the taproot. Fusarium infection can be recognized by brown to red streaks in the inner woody cylinder of the taproot.

Aphanomyces root rot is another fungal disease associated with poorly drained soils or excessive rainfall. Affected seedlings will be stunted but remain upright, unlike those with symptoms of damping off. In established plants, root symptoms are not as well defined as those for phytophthora root rot, but brown lesions on the taproot indicate where lateral roots were destroyed. This disease can be associated with phytophthora root rot, and together they may form a root disease complex. Aphanomyces root rot is known to affect new seedlings in Kentucky, but it is still unclear how it affects established alfalfa. In years with overly cool and wet spring weather, alfalfa stands have suffered great damage due to aphanomyces when planted with varieties that are susceptible to this disease.

Although certain alfalfa varieties are reported to have some resistance to sclerotinia crown and stem rot, research at the University of Kentucky has shown that these varieties often perform poorly against the disease under Kentucky conditions.

Seed Quality. Buy high-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 other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

Description of the Tests

Alfalfa variety tests were established at Lexington (2000, 2002 and 2004), Bowling Green (1998 and 2003), Princeton (2001) and Eden Shale (2003) as part of the Forage Variety Testing Program. The soils at most locations are well suited to alfalfa because they are generally well-drained silt loams (Maury, Pembroke, and Crider at Lexington, Bowling Green, and Princeton, respectively). Eden Shale has a Nicholson silt loam soil. The Bowling Green tests are on soils that are naturally infested with both phytophthora and aphanomyces root rot pathogens.

Plots were 5 by 15 feet in a randomized complete block design with four replications. 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 seedling year were delayed to allow the alfalfa to completely reach maturity as 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 percent dry matter production. Management of all tests for establishment, fertility, pest control, and harvest management was according to University of Kentucky Cooperative Extension Service recommendations. Pests (weeds and insects) were controlled so that they would not limit yield or persistence.

Results and Discussion

Weather data for Bowling Green, Eden Shale, Lexington, and Princeton are presented in Table 1.

Yield data (on a dry matter basis) for all tests are reported in Tables 2 through 8. 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 for 2004 and by year for each prior year of production.

Statistical analyses were performed on all alfalfa yield data (including experimentals) to determine if the apparent differences are truly 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 truly 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), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Table 9 summarizes information about fall dormancy, disease resistance, and yield performance across years and locations for

all the varieties currently included in the tests discussed in this report. Varieties are listed in alphabetical order with the experimental varieties at the bottom. Remember that experimental varieties are not available for farm use, while commercial varieties can be purchased through dealerships. In Table 9, open blocks indicate that the variety was not in that particular test (labeled at the top of the column), while an x means that the variety was in the test. A single asterisk (*) means that the variety was not significantly different from the top-yielding variety based on the 5% LSD. It is best to choose a variety that has performed well over several years and locations as indicated by the asterisks.

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 these College of Agriculture publications, available at the local county Extension office:

- AGR-1 Lime and Fertilizer Recommendations
- AGR-18 Grain and Forage Crop Guide for Kentucky
- AGR-64 Establishing Forage Crops
- AGR-76 Alfalfa: The Queen of the Forage Crops
- AGR-90 Inoculation of Forage Legumes
- AGR-107 Alfalfa: Quality Means Profits
- AGR-137 Alfalfa Hay: Quality Makes the Difference
- AGR-148 Weed Control Strategies for Alfalfa and Other Forage Legume Crops
- ENT-17 Insect Management Recommendations for Field Crops and Livestock
- PPA-10d Kentucky Plant Disease Management Guide for Forage Legumes
- PPA-28 Alfalfa Varieties: Relative Disease Resistance and Winter Hardiness

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Table 1. Temperature and rainfall at Bowling Green, Eden Shale, Lexington and Princeton, Kentucky in 2004.

	Bowling Green				Eden Shale				Lexington				Princeton			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP		DEP	IN	DEP
JAN	35	+1	2.96	-0.86	30	0	4.3	+1.76	30	-1	3.14	+0.28	36	+2	4.12	+0.32
FEB	39	+1	2.74	-1.39	36	+3	1.35	-1.4	36	+1	1.32	-1.89	39	+1	2.44	-1.99
MAR	51	+5	4.03	-1.07	48	+5	2.92	-1.8	47	+3	3.43	-0.97	53	+6	4.28	-0.66
APR	57	0	5.66	+1.34	56	+2	4.32	+0.17	55	0	3.06	-0.82	59	0	5.32	+0.52
MAY	71	+5	8.69	+3.75	69	+6	7.8	+3.39	68	+4	9.79	+5.32	72	+5	7.34	+2.38
JUN	74	-1	3.82	-0.35	72	+1	1.66	-2.11	72	0	3.13	-0.53	74	-1	3.4	-0.45
JUL	76	-2	5.46	+0.72	73	-2	3.37	-1.16	73	-3	7.65	+2.65	75	-3	4.87	+0.58
AUG	73	-4	4.52	+1.01	71	-3	3.86	+0.13	71	-4	2.91	-1.02	73	-4	3.02	-0.99
SEP	70	0	1.09	-2.63	69	+1	2.14	-1.05	68	0	2.61	-0.59	71	0	0.2	-3.13
OCT	62	+4	5.69	+2.67	58	+1	6.51	+3.52	58	+1	5.65	+3.08	64	+5	4.03	+0.98
NOV	52	+6	5.5	+1.07	49	+4	5.02	+1.47	49	+4	6.29	+2.90	53	+6	6.94	+2.31
Total			50.16	+4.26			43.25	+2.92			48.98	+8.41			45.96	-0.13

DEP is departure from the long-term average for that location.

Table 2. Dry matter yields(tons/acre) of alfalfa varieties sown April 26, 2000 at Lexington, Kentucky.

Variety	Total 2000	Total 2001	Total 2002	Total 2003	2004 Harvests				Total 2004	5-yr Total
					May 24	Jun 28	Aug 10	Sep 16		
Commercial Varieties—Available for Farm Use										
ValuePlus1	1.47	8.37	4.51	4.75	1.72	1.15	1.13	0.94	4.94	24.03*
Geneva	1.54	8.29	4.49	4.84	1.86	1.18	1.11	0.69	4.84	24.00*
Magnum V-wet	1.64	8.63	4.52	4.60	1.68	1.08	1.08	0.70	4.53	23.93*
Magnum V	1.62	8.41	4.34	4.70	1.70	1.08	1.04	0.69	4.50	23.57*
5312	1.57	8.22	4.48	4.42	1.91	1.06	0.99	0.68	4.64	23.33*
Triple Crowna9503	1.61	8.65	4.35	4.50	1.70	0.91	0.94	0.58	4.14	23.24*
Pioneer 53H81	1.87	8.58	4.38	4.57	1.45	0.94	0.94	0.51	3.83	23.23*
Amerigraze 401+Z	1.70	8.53	4.12	4.23	1.29	0.93	1.02	0.68	3.91	22.51*
Abilene+Z	1.62	8.15	4.16	4.24	1.52	1.05	1.01	0.72	4.30	22.47*
54V54	1.49	8.08	4.31	4.37	1.33	0.98	1.07	0.62	4.01	22.26
Pioneer 53H81 ¹	1.91	8.21	4.25	4.16	1.35	0.87	0.88	0.47	3.57	22.10
Rushmore	1.75	8.16	3.96	4.19	1.39	0.80	0.77	0.46	3.42	21.48
Saranac AR	1.43	7.69	4.04	4.07	1.48	0.82	1.00	0.62	3.92	21.16
Arc	1.80	8.35	3.93	3.81	1.15	0.60	0.78	0.32	2.85	20.75
Experimental Varieties										
4M74	1.52	8.46	4.79	4.85	2.05	1.24	1.19	0.91	5.40	25.01*
ZG 9840	1.69	8.76	4.47	4.61	1.78	1.11	1.11	0.70	4.70	24.23*
ZC 9854A	1.58	8.72	4.67	4.61	1.61	1.08	1.05	0.84	4.57	24.15*
ZH 9840H	1.72	8.21	3.88	4.39	1.13	0.86	0.83	0.42	3.23	21.43
ZH 9840H ¹	1.74	7.90	3.89	4.23	1.31	0.90	0.88	0.40	3.49	21.24
Mean	1.65	8.33	4.29	4.43	1.55	0.97	0.99	0.63	4.14	22.85
CV.%	12.38	6.15	6.83	6.06	17.79	9.49	11.45	25.80	10.70	5.40
LSD, 0.05	0.29	0.72	0.42	0.38	0.39	0.13	0.16	0.23	0.63	1.75

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

¹ Variety treated for potato leaf hopper.

Variety	Total 2001	Total 2002	Total 2003	2004 Harvests				Total 2004	4-yr Total
				May 10	Jun 14	Jul 21	Sep 9		
Commercial Varieties—Available for Farm Use									
Hybridforce-400	4.85	6.63	7.86	1.78	1.24	1.21	0.80	5.04	24.38*
Geneva	4.76	6.55	7.85	1.55	1.33	1.11	0.53	4.52	23.68*
54V54	4.57	6.35	7.42	1.68	1.31	1.09	1.14	5.22	23.55*
WL342	4.54	6.45	7.79	1.75	1.26	1.19	0.56	4.76	23.53*
Triple Crown	4.83	6.93	7.66	1.29	1.17	1.00	0.40	3.86	23.27*
FK421	4.95	6.51	7.34	1.54	1.29	1.08	0.51	4.41	23.21*
DK140	4.80	6.66	7.24	1.48	1.12	1.04	0.51	4.14	22.84*
Reward II	4.91	6.82	7.21	1.30	1.10	0.96	0.37	3.73	22.67*
Certified Arc	4.99	6.40	7.03	1.53	1.27	0.99	0.36	4.14	22.57*
Ameristand 403T	4.70	6.52	7.19	1.36	1.14	1.00	0.52	4.02	22.43*
Pegasus	4.49	6.61	7.31	1.03	1.08	0.90	0.75	3.75	22.16
Saranac AR	4.53	6.53	6.97	1.06	1.05	0.93	0.25	3.29	21.32
Experimental Varieties									
BY421	5.25	7.01	7.93	1.69	1.24	1.19	0.68	4.80	25.00*
FG4M76	4.85	7.15	8.09	1.67	1.33	1.21	0.43	4.64	24.73*
SX1002A	4.86	6.94	7.13	1.28	1.07	0.93	0.31	3.60	22.53*
SX1004A	4.91	6.53	6.90	1.37	1.29	1.06	0.41	4.13	22.46*
SX1003A	4.71	6.64	6.98	1.32	1.14	0.89	0.35	3.71	22.04
SX1001A	4.64	6.92	6.82	0.92	1.01	0.78	0.12	2.84	21.22
SX1005A	4.90	6.52	6.49	0.99	0.92	0.68	0.24	2.84	20.74
Mean	4.79	6.67	7.33	1.40	1.18	1.01	0.49	4.07	22.86
CV.%	10.13	7.93	7.53	16.96	13.51	13.58	12.43	16.93	6.74
LSD, 0.05	0.69	0.75	0.78	0.34	0.23	0.21	0.5	0.98	2.18
*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.									

Variety	Total 2002	Total 2003	2004 Harvests				Total 2004	3-yr Total
			May 24	Jun 28	Aug 10	Sep 28		
Commercial Varieties—Available for Farm Use								
4m76	1.25	4.75	1.10	1.41	1.11	1.05	4.67	10.67*
GH744	1.33	4.62	0.97	1.08	0.82	0.90	3.76	9.71*
WL327	1.37	4.25	1.19	1.12	0.94	0.78	4.03	9.65*
WL319hq	1.19	4.33	1.35	1.20	0.94	0.52	4.02	9.55
WL338sr	1.41	4.25	1.09	1.03	0.89	0.84	3.85	9.50
Geneva	1.06	4.47	1.00	1.01	0.92	0.75	3.68	9.20
6420	1.32	4.34	0.94	1.03	0.81	0.74	3.52	9.18
DK140	1.14	4.08	1.17	1.03	0.85	0.82	3.87	9.09
Arc	1.08	4.00	1.23	1.02	0.89	0.70	3.84	8.92
54V54	1.23	4.06	1.00	1.00	0.73	0.78	3.53	8.81
Vernal	1.16	4.08	0.95	0.81	0.77	0.80	3.33	8.57
Buffalo	1.21	4.09	1.10	0.82	0.63	0.67	3.22	8.52
Saranac AR	1.25	3.83	1.18	0.71	0.70	0.60	3.18	8.27
Experimental Variety								
DU202	1.35	4.02	0.96	0.96	0.89	0.82	3.63	9.00
Mean	1.24	4.22	1.09	1.02	0.85	0.77	3.72	9.19
CV.%	14.56	8.93	19.63	15.18	12.52	25.43	11.4	8.39
LSD, 0.05	0.26	0.54	0.31	0.22	0.15	0.28	0.61	1.1
*Not significantly different from the highest numerical value in the column, based on the 0,05 LSD.								

Table 5. Dry matter yields(tons/acre) of alfalfa varieties sown April 23, 2003 at Bowling Green, Kentucky.

Variety	Total 2003	2004 Harvests				Total 2004	2-yr Total
		May 11	Jun 15	Jul 20	Sep 9		
Commercial Varieties—Available for Farm Use							
Regal	1.71	2.87	1.56	1.28	1.04	6.76	8.47*
WL357HG	1.75	3.48	1.27	1.17	0.76	6.69	8.44*
Arc	1.80	3.18	1.15	1.03	1.13	6.50	8.30*
Evermore	1.71	3.12	1.36	1.12	0.81	6.41	8.12*
FSG505	1.62	3.15	1.38	1.13	0.85	6.51	8.12*
FSG406	1.84	3.18	1.22	1.00	0.72	6.12	7.96*
6530	1.79	3.23	1.06	1.00	0.81	6.09	7.88*
54V54	1.75	3.30	1.15	0.94	0.65	6.05	7.79*
Reward II	1.59	2.78	1.41	1.12	0.86	6.18	7.77*
6400HT	1.74	2.92	1.14	1.23	0.73	6.02	7.76*
Saranac AR	1.75	3.15	1.10	0.96	0.68	5.89	7.64*
Feast+EV	1.67	2.91	1.17	0.90	0.83	5.80	7.48*
5-Star	1.73	2.96	0.83	0.65	0.69	5.12	6.85
Experimental Varieties							
GA-984	1.73	3.29	1.35	1.11	0.84	6.59	8.32*
GA4-01	1.74	3.14	1.11	1.12	1.05	6.41	8.16*
GA3-01	2.00	3.02	1.22	1.15	0.70	6.09	8.09*
GA1-01	1.65	2.81	1.45	1.18	0.89	6.33	7.98*
Mean	1.74	3.09	1.23	1.06	0.83	6.21	7.95
CV.%	13.41	12.77	24.53	30.84	39.44	17.26	13.65
LSD, 0.05	0.33	0.56	0.43	0.47	0.46	1.52	1.54
*Not significantly different from the highest numerical value in the column, based on the 0,05 LSD.							

Table 6. Dry matter yields(tons/acre) of alfalfa varieties sown May 14, 1998 at Bowling Green, Kentucky.

Variety	Total 1998	Total 1999	Total 2000	Total 2001	Total 2002	Total 2003	2004 Harvests			Total 2004	7-yr Total
							May 11	Jun 15	Jul 20		
Commercial Varieties—Available for Farm Use											
Pasture+	0.29	4.83	5.24	6.27	4.35	4.01	1.40	1.27	0.70	3.36	28.34*
ABT350	0.32	4.54	4.96	6.37	4.34	3.75	1.30	1.18	0.70	3.18	27.45*
DK141	0.37	4.86	5.46	6.28	4.04	3.82	0.93	0.94	0.33	2.21	27.04*
DK140	0.39	4.77	5.54	5.45	4.30	3.74	1.10	1.10	0.59	2.79	26.98*
Emperor	0.30	4.50	4.87	6.17	4.20	3.96	1.27	1.14	0.74	3.29	26.86*
ABT400SCL	0.30	4.52	5.02	6.11	4.02	3.91	1.19	1.06	0.57	2.81	26.69*
Geneva	0.29	4.53	4.89	5.95	4.14	3.58	1.34	1.12	0.56	3.01	26.39*
Cimmaron 3i	0.33	4.70	5.23	5.82	3.92	3.66	0.76	1.05	0.54	2.35	26.01*
WL326GZ	0.28	4.42	4.99	6.01	3.95	3.74	0.76	0.96	0.56	2.27	25.65
Choice	0.27	4.49	4.90	6.03	4.06	3.59	1.00	0.91	0.30	2.21	25.56
Baralfa 54	0.25	4.28	4.81	5.75	3.95	3.56	1.09	0.94	0.52	2.55	25.15
ProGro	0.23	4.02	5.14	5.98	3.75	3.35	1.14	0.80	0.43	2.37	24.83
Stellar	0.21	4.10	4.72	5.71	3.85	3.52	0.94	1.12	0.57	2.63	24.74
Vernal	0.20	3.65	4.62	5.80	3.95	3.37	1.06	0.91	0.27	2.25	23.84
Certified Arc	0.19	3.91	4.71	5.85	3.88	3.03	0.96	0.83	0.28	2.08	23.64
Saranac AR	0.26	3.87	4.86	5.49	3.61	3.58	0.66	0.91	0.38	1.94	23.61
GoldPlus	0.28	4.15	4.62	5.30	3.78	3.41	0.90	0.84	0.30	2.04	23.59
Experimental Varieties											
ZC9750A	0.25	4.35	5.01	6.26	4.23	3.95	1.34	1.23	0.58	3.15	27.20*
ZC9751A	0.23	4.39	5.03	6.10	4.26	3.80	1.15	1.15	0.62	2.92	26.74*
ZC9651	0.33	4.34	5.28	5.82	3.95	3.83	1.28	1.17	0.65	3.10	26.66*
C416	0.41	4.64	4.97	6.02	3.97	3.77	1.10	1.02	0.50	2.61	26.39*
ZG9640	0.19	4.19	4.62	5.93	4.17	3.92	1.18	1.27	0.59	3.04	26.04*
ZC9650	0.27	4.19	4.77	6.00	4.13	3.76	0.83	1.16	0.62	2.60	25.71*
ZG9641	0.32	4.27	4.61	5.91	4.00	3.63	0.81	1.05	0.54	2.40	25.14
A9503	0.23	4.39	4.98	5.57	4.05	3.69	0.95	0.94	0.23	2.11	25.02
Mean	0.28	4.35	4.82	5.92	4.03	3.68	1.06	1.04	0.50	2.60	25.80
CV.%	36.17	11.09	6.43	10.53	7.94	8.54	30.58	20.94	35.44	21.36	7.23
LSD, 0.05	0.014	0.68	0.44	0.88	0.45	0.44	0.46	0.31	0.25	0.79	2.65

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

Table 7. Dry matter yields(tons/acre) of alfalfa varieties sown August 25, 2003 at the Eden Shale Farm near Owenton, Kentucky.

Variety	2004 Harvests				Total yield
	Jun 1	Jul 1	Aug 9	Sep 24	
Commercial Varieties—Available for Farm Use					
WL357HQ	1.11	0.48	0.40	0.73	2.72*
Evermore	1.06	0.39	0.31	0.73	2.49*
Reward II	1.14	0.43	0.27	0.64	2.48*
Saranac AR	0.99	0.36	0.34	0.76	2.45*
Feast+EV	1.03	0.39	0.33	0.68	2.43
FSG505	1.05	0.43	0.28	0.64	2.40
Buffalo	0.91	0.40	0.31	0.70	2.32
54V46	1.00	0.45	0.27	0.60	2.32
Regal	1.02	0.36	0.25	0.67	2.29
5-Star	0.91	0.44	0.23	0.59	2.18
Mean	1.02	0.41	0.30	0.67	2.41
CV.%	14.56	13.36	25.63	11.31	7.63
LSD, 0.05	0.22	0.09	0.11	0.11	0.27

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

Table 8. Dry matter yields(tons/acre) of alfalfa varieties sown April 7, 2004 at Lexington, Kentucky.

Variety	2004 Harvests			Total Yield
	Jun 24	Aug10	Sep 21	
Commercial Varieties—Available for Farm Use				
Genoa	1.04	0.42	0.32	1.78*
WL357HQ	0.88	0.49	0.40	1.78*
Feast+EV	0.98	0.47	0.30	1.75*
6400HT	0.92	0.49	0.29	1.70*
Expedition	0.93	0.41	0.36	1.70*
FSG408DP	0.90	0.49	0.30	1.69*
Mountaineer 2.0	0.91	0.44	0.31	1.66*
Summer Gold	0.77	0.41	0.29	1.47*
Saranac AR	0.73	0.38	0.23	1.34
AC Longview	0.64	0.40	0.20	1.24
Arc	0.61	0.30	0.17	1.08
Buffalo	0.65	0.32	0.07	1.04
Experimental Varieties				
VL02	1.01	0.52	0.35	1.88*
50T176	1.03	0.44	0.32	1.79*
41H158	0.65	0.34	0.20	1.19
Mean	0.84	0.42	0.27	1.54
CV.%	30.65	15.14	35.32	19.27
LSD, 0.05	0.37	0.09	0.14	0.42

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

Table 9. Characterization and performance of alfalfa varieties across years and locations.

Variety	Variety Characteristics ¹						Lexington								Bowling Green ²								Princeton				Eden Shale				
	Disease Resistance ³						2000 ⁴				2002				2004				1998				2003				2001				2003
	FD ⁵	Bw	Fw	An	PRR	APH	00	01	02	03	04	02	03	04	04	99	00	01	02	03	04	03	04	01	02	03	04	04			
Commercial Varieties—Available for Farm Use																															
4m76	4.7	HR	HR	R	HR	R						*	*	*																	
5312	3	HR	HR	HR	HR	HR	x	*	*	*	*																				
53H81	3	HR	HR	HR	R	HR	*	*	*	*	x																				
54V54	4	HR	HR	HR	HR	HR	x	*	*	*	*	x	*	x	x							*	*	*	x	*	*				
5-Star	5	R	HR	R	R	R															*	x							x		
6400HT														*																	
ABT 350	3	HR	HR	HR	HR	HR									*	x	*	*	*	*	*										
ABT 400SCL	4	HR	HR	HR	HR	HR									*	x	*	*	*	*	*										
Abilene+Z	5	HR	HR	HR	HR	R	*	*	*	x	x																				
AC Longview		HR												x																	
Amerigraze 401+Z	4	HR	HR	HR	HR	R	*	*	*	*	x																				
Ameristand 403T	3	HR	HR	HR	HR	HR																	*	*	*	*	*	x			
Arc	4	LR	MR	HR	-	-	*	*	x	x	x	x	x	x	x	x	*	x	x	x	x	*	*	*	*	*	*	*	*		
Baralfa 54	-	R	HR	HR	HR	HR									*	x	*	*	x	x											
Buffalo A	-	-	-	-	-	-						*	x	x	x														x		
Choice	4	HR	R	R	HR	R									*	x	*	*	*	*	x										
Cimarron 3i	4	HR	HR	HR	HR	MR									*	*	*	*	*	*	x										
DK140	4	HR	HR	HR	HR	HR					x	x	x		*	*	x	*	*	*	*		*	*	*	*	*	*	*		
DK141	4	HR	HR	HR	HR	H									*	*	*	*	*	*	*										
Emperor	4	HR	HR	HR	HR	HR									*	x	*	*	*	*	*										
Evermore	5	HR	HR	HR	HR	HR															*	*							*		
Expedition	5	HR	HR	R	RR	R								*								*	*								
Feast+EV														*							*	*							x		
FK 421	4	HR	H	H	H	H																*	*	*	*	*	*	*	*		
FSG 406	4	HR	HR	HR	HR	HR															*	*									
FSG 408DP	4	HR	HR	HR	HR	R								*																	
FSG 505	5	HR	HR	HR	HR	R															x	*							x		
Garst 6420	4	HR	HR		HR	R					*	*	x																		
Geneva	4	HR	HR	HR	HR	HR	x	*	*	*	*	x	*	x	*	x	*	*	*	*	*		*	*	*	*	*	*	*		
Genoa	4	HR	HR	HR	RR	HR								*																	
GH 744	3.6	HR	HR	HR	HR	MR					*	*	x																		
GoldPlus	4	HR	HR	HR	HR	R									x	x	x	*	x	x											
Hybridforce-400	4	HR	HR	R	HR	MR																*	*	*	*	*	*	*	*		
Magnum V	4	HR	HR	R	HR	MR	*	*	*	*	*																				
Magnum V-Wet	3	HR	HR	R	HR	R	*	*	*	*	*																				
Mountaineer 2.0	5	HR	HR	HR	RR	HR								*																	
Pasture Plus	3	HR	HR	R	HR	MR									*	*	*	*	*	*	*										
Pegasus	4	HR	HR	HR	HR	R																	x	*	*	*	x				
ProGro	4	HR	HR	R	HR	MR									x	*	*	x	x	x											
Regal	5	HR	HR	R	HR	MR															*	*							x		
Reward II	4	HR	HR	R	HR	R															x	*	*	*	*	*	x	*			
Rushmore	4	HR	HR	HR	HR	HR	*	*	x	x	x																				
Saranac AR	4	MR	R	HR	LR	-	x	x	*	x	x	*	x	x	x	x	*	x	x	x	*	*	x	*	x	x	x	*			
Stellar	4	HR	HR	HR	HR	LR									x	x	*	x	x	x											
SummerGold	4	HR	HR	HR	HR	HR								*																	
Triple Crown	4	HR	HR	HR	HR	HR	x	*	*	*	x												*	*	*	*	x				
ValuePlus1	4	HR	HR	HR	HR	R	x	*	*	*	*																				
Vernal	2	R	MR	-	-	-						*	x	x	x	x	*	*	x	x											
WL319HQ	3	HR	HR	HR	HR	HR					*	*	x																		
WL326GZ	4	HR	HR	HR	HR	HR									*	x	*	*	*	*	x										
WL327	4	HR	HR	HR	HR	R					*	*	x																		
WL338SR	4	HR	HR	HR	HR	HR					*	*	x																		
WL342	4	HR	HR	HR	HR	HR																	x	*	*	*	*				
WL357HQ	5	HR	HR	HR	HR	HR								*							*	*							*		

Table 9. Characterization and performance of alfalfa varieties across years and locations.

Variety	Variety Characteristics ¹						Lexington								Bowling Green ²								Princeton				Eden Shale				
	Disease Resistance ³						2000 ⁴				2002				2004				1998				2003				2001				2003
	FD ⁵	Bw	Fw	An	PRR	APH	00	01	02	03	04	02	03	04	04	99	00	01	02	03	04	03	04	01	02	03	04	04			
Experimental Varieties																															
4m74	4	HR	HR	HR	HR	HR	x	*	*	*	*																				
41H158	4	HR	HR	HR	HR	HR								x																	
50T176	5	HR	HR	HR	HR	R								*																	
A9503	3	HR	HR	HR	HR	HR									*	x	*	*	*	*	x										
BY421		HR	HR	R	HR	R																	*	*	*	*					
C416	4	HR	HR	HR	HR	HR									*	x	*	*	*	*											
DU 202	4	HR	HR	HR	HR	R					*	*	x																		
FG 4M76	5	HR	HR	R	HR	R																	*	*	*	*					
GA-1-01	4	HR	HR	R	HR	R																x	*								
GA-984	5	HR	HR	R	HR	HR																*	*								
GA-3-01	6	HR	HR	HR	HR	MR																*	*								
GA-4-01	6	HR	HR	HR	HR	MR																*	*								
SX1001A																							*	*	*	*	x				
SX1002A																							*	*	*	*	x				
SX1003A																							*	*	*	*	x				
SX1004A																							*	*	*	*	x				
SX1005A																							*	*	*	x	x				
VL02	4	HR	HR	HR	HR	MR								*																	
ZC9650	-	-	-	-	-	-									*	x	*	*	*	*	*										
ZC9651	5	-	-	-	-	-									*	*	*	*	*	*	*										
ZC9750A	-	-	-	-	-	-									*	x	*	*	*	*	*										
ZC9751A	-	-	-	-	-	-									*	x	*	*	*	*	*										
ZC9854a	5	HR	HR	HR	HR	HR	x	*	*	*	*	x																			
ZG9640	-	-	-	-	-	-									*	x	*	*	*	*	*										
ZG9641	-	-	-	-	-	-									*	x	*	*	*	*	x										
ZG9840	4	HR	HR	HR	HR	HR	*	*	*	*	x																				
ZH9840H	4	HR	HR	HR	HR	HR	*	*	x	x	x																				

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 The Bowling Green test is on soil infested with phytophthora and aphanomyces root rots.

³ Disease resistance: S=susceptible, LR=low resistance, MR=moderate resistance, R=resistance, HR=high resistance.

⁴ Establishment year.

⁵ Fall dormancy: 1=Spedor 3, 2=Vernal, 3=Ranger, 4=Saranac, 5=DuPuits.

Open boxes indicate the variety was not in the test.

x in the box indicates the variety was in the test but yielded significantly less than the top-ranked variety in the test.

* Not significantly different from the top-ranked variety in the test.



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