

2002 Alfalfa Report

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Introduction

Alfalfa (*Medicago sativa*) is historically 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 ranging from 1 (very dormant) to 9 (non-dormant). In general, varieties with lower dormancy ratings take more warm weather in 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 to yield well in Kentucky and have good winter survival. 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 an "MR" (moderate resistance) rating to phytophthora root rot (PRR), anthracnose (An), bacterial wilt (Bw), and fusarium wilt (Fw) as well as an "R" (resistance) 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 (1997, 1999, 2000, and 2002), Bowling Green (1996 and 1998), Princeton (1997, 1999, and 2001), and Eden Shale (1998) as part of the Forage Variety Testing Program. The soils at most locations are well suited to alfalfa, in that 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 x 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. All locations experienced above-average rainfall in the spring followed by the fourth hottest and driest summer on record. This drought reduced the yield and frequency of summer harvests and total yield for 2002.

Yield data (on a dry matter basis) for all tests are reported in Tables 2 through 11. 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 2002 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 11 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 11, shaded areas indicate that the variety was not in that particular test (labeled at the top of the column), while white or unshaded blocks mean 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-76: Alfalfa: The Queen of the Forage Crops
- AGR-107: Alfalfa: Quality Means Profits
- AGR-64: Establishing Forage Crops
- AGR-90: Inoculation of Forage Legumes
- AGR-18: Grain and Forage Crop Guide for Kentucky
- AGR-1: Lime and Fertilizer Recommendations
- 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
- AGR-137: Alfalfa Hay: Quality Makes the Difference

Table 1. Temperature and rainfall at Bowling Green, Eden Shale, Lexington, and Princeton in 2002.

	Bowling Green				Eden Shale				Lexington				Princeton			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	40	+6	3.70	-0.12	39	+9	2.84	+0.30	38	+7	2.12	-0.74	41	+7	3.79	-0.01
FEB	39	+1	0.91	-3.22	39	+6	1.24	-1.51	38	+3	1.28	-1.93	42	+4	2.40	-2.03
MAR	47	+1	7.60	+2.50	45	+2	6.09	+1.37	45	+1	7.93	+3.53	49	+2	8.18	+3.24
APR	60	+3	7.30	+2.98	59	+5	4.71	+0.56	58	+3	4.19	+0.31	63	+4	5.72	+0.92
MAY	64	-2	5.56	+0.62	62	-1	5.68	+1.27	61	-3	4.36	-0.11	66	-1	9.04	+4.08
JUN	76	+1	1.20	-2.97	75	+4	4.54	+0.77	74	+2	2.45	-1.21	77	+2	1.88	-1.97
JUL	80	+2	3.57	-1.17	79	+4	1.10	-3.43	78	+2	1.10	-3.90	81	+3	2.13	-2.16
AUG	80	+3	5.10	+1.59	79	+5	0.37	-3.36	77	+2	0.95	-2.98	80	+3	2.06	-1.95
SEP	75	+5	9.46	+5.74	73	+5	5.13	+1.94	72	+4	4.90	+1.70	74	+3	5.90	+2.57
OCT	62	+4	5.24	+2.22	56	-1	2.69	-0.30	55	-2	5.61	+3.04	59	0	6.12	+3.07
NOV	48	+2	5.00	+0.57	44	-1	3.13	-0.42	43	-2	3.76	+0.37	47	0	2.49	-2.14

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

Table 2. Dry matter yields (tons/acre) of alfalfa varieties sown April 19, 1996, at Bowling Green, Kentucky.

Variety	Total 1996	Total 1997	Total 1998	Total 1999	Total 2000	Total 2001	2002 Harvests				Total 2002	7-yr Total
							May 28	Jun 20	Jul 24	Sep 20		
Commercial Varieties — Available for Farm Use												
Garst 631	4.96	3.88	5.24	5.69	5.89	8.06	1.47	1.16	1.07	0.66	4.35	38.07*
WL 324	5.96	3.75	5.71	5.91	5.68	7.13	1.26	0.91	1.10	0.51	3.77	37.92*
Affinity+Z	5.26	3.48	5.55	5.87	5.49	7.40	1.51	0.95	1.14	0.62	4.21	37.26*
WL 252 HQ	5.05	3.39	5.69	6.01	5.49	7.57	1.57	0.94	1.08	0.42	4.00	37.2*
DK 133	4.95	3.38	5.64	5.69	5.36	7.86	1.62	1.02	1.07	0.60	4.31	37.18*
Imperial	5.33	3.63	5.28	5.91	5.68	7.33	1.37	0.97	1.11	0.56	4.01	37.16*
Depend+EV	5.15	3.59	5.48	5.78	5.56	7.39	1.58	1.01	1.07	0.41	4.08	37.04*
TMF-Generation	5.22	3.80	5.45	5.89	5.31	7.27	1.41	0.86	1.17	0.40	3.84	36.79*
Supercuts	5.02	3.76	5.18	5.75	5.70	7.36	1.35	1.01	1.08	0.54	3.98	36.76*
Choice	4.91	3.75	5.49	5.70	5.47	7.32	1.59	0.97	1.08	0.44	4.08	36.73*
645	5.46	3.54	5.34	5.56	5.44	7.27	1.46	0.92	1.11	0.58	4.08	36.68*
DK 127	4.92	3.35	5.22	5.71	5.53	7.48	1.62	1.03	1.11	0.66	4.41	36.63*
Gem	5.17	3.52	5.56	5.69	5.27	7.20	1.65	0.90	0.97	0.35	3.87	36.28*
ABT 405	5.32	3.51	5.35	5.55	5.20	7.22	1.40	0.95	1.16	0.52	4.03	36.19
Innovator+Z	4.95	3.47	5.33	5.39	5.38	7.52	1.50	0.97	1.09	0.45	4.01	36.06
Saranac AR	5.27	3.50	5.22	5.49	5.44	7.40	1.40	0.86	0.92	0.53	3.71	36.03
Demand	5.21	3.73	5.24	5.54	5.58	6.62	1.23	0.83	0.97	0.44	3.47	35.38
Rushmore	4.75	3.12	5.28	5.37	5.35	7.43	1.62	0.96	1.06	0.41	4.05	35.34
WL325 HQ	5.09	3.53	5.05	5.56	4.90	7.25	1.37	1.06	1.10	0.38	3.92	35.30
Fortress	5.30	3.56	4.84	5.40	5.11	6.94	1.32	0.88	0.99	0.57	3.76	34.91
Legacy	4.70	3.07	5.19	5.53	5.30	7.23	1.25	0.73	0.92	0.27	3.17	34.19
Apollo	5.16	2.88	5.24	5.30	5.10	7.01	1.37	0.82	1.00	0.28	3.47	34.16
Buffalo-B	5.27	2.89	4.68	5.25	5.04	7.00	1.21	0.66	0.93	0.30	3.11	33.26
Arc	5.00	2.93	4.57	4.82	5.04	6.89	1.21	0.74	1.03	0.44	3.42	32.67
Buffalo-A	4.85	2.34	4.48	4.61	4.60	6.43	1.28	0.70	0.97	0.16	3.12	30.42
Experimental Varieties												
ZG9543	4.88	3.46	5.37	5.76	5.48	7.10	1.46	1.01	1.07	0.57	4.12	36.17
ZG9530	5.09	3.42	5.42	5.32	5.34	7.16	1.48	1.05	1.09	0.63	4.25	36.00
ZG9430	4.79	3.42	5.28	5.70	5.49	7.37	1.38	0.90	1.02	0.49	3.79	35.84
A9107	4.99	3.66	5.15	5.33	5.19	7.20	1.68	0.94	0.99	0.37	3.98	35.51
C106	4.60	3.22	5.30	5.77	5.40	7.12	1.39	1.13	1.04	0.43	3.99	35.40
ZG9533	5.39	3.34	5.18	5.63	5.44	6.81	1.18	0.83	1.06	0.48	3.55	35.35
93116	5.57	3.49	5.21	5.27	5.00	6.81	1.43	0.81	1.00	0.42	3.66	35.02
Mean	5.11	3.42	5.26	5.55	5.35	7.22	1.43	0.92	1.05	0.47	3.86	35.78
CV, %	10.63	10.45	6.22	6.22	5.63	6.15	18.75	12.99	13.19	30.17	11.21	3.59
LSD, 0.05	0.76	0.5	0.46	0.49	0.40	0.62	0.38	0.17	0.19	0.20	0.61	1.80

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

Table 3. Dry matter yields (tons/acre) of alfalfa varieties sown April 18, 1997, at Lexington, Kentucky.

Variety	Total 1997	Total 1998	Total 1999	Total 2000	Total 2001	2002 Harvests				Total 2002	6-yr Total
						May 11	Jun 17	Jul 18	Nov 1		
Commercial Varieties — Available for Farm Use											
Garst 631	2.51	5.64	4.54	8.55	5.84	1.31	1.24	0.79	0.63	3.97	31.03*
Choice	2.57	5.66	4.73	8.24	5.56	1.20	1.12	0.52	0.62	3.47	30.23*
DK 140	2.24	5.76	4.61	8.33	5.65	1.12	1.17	0.64	0.58	3.51	30.10*
Wintergreen	1.99	5.58	4.80	8.42	5.84	1.10	1.11	0.53	0.62	3.37	30.00*
WL 325 HQ	2.19	5.46	4.35	8.51	5.82	1.17	1.21	0.61	0.56	3.55	29.87*
ABT 405	1.88	5.53	4.64	8.31	5.54	1.14	1.11	0.58	0.61	3.44	29.34*
Cimarron 3i	2.26	5.34	4.63	8.40	5.17	1.17	1.02	0.47	0.58	3.24	29.04*
ABT 205	1.88	5.45	4.60	8.26	5.47	1.20	1.10	0.49	0.54	3.34	28.99*
Gem	1.85	5.41	4.82	8.13	5.37	1.06	1.02	0.55	0.66	3.30	28.89
Affinity+Z	2.13	5.55	4.37	8.01	5.38	1.16	1.04	0.59	0.56	3.35	28.79
DK 141	2.35	5.57	4.08	8.08	5.37	1.10	1.02	0.48	0.58	3.18	28.64
Cimarron VR	2.58	5.37	3.90	8.11	5.24	1.16	1.06	0.48	0.62	3.31	28.52
Fortress	2.14	5.14	4.38	7.72	5.24	1.06	0.97	0.52	0.63	3.18	27.80
Saranac AR	1.95	5.29	4.42	7.68	5.07	1.02	0.97	0.47	0.62	3.07	27.49
Arc	1.82	4.82	3.98	7.23	4.68	0.90	0.87	0.39	0.57	2.73	25.25
Experimental Varieties											
C231	2.29	5.43	4.86	8.67	5.54	1.03	1.05	0.64	0.64	3.36	30.14*
ZB9546	1.89	5.48	5.00	7.99	5.66	1.11	1.14	0.59	0.59	3.42	29.46*
ZC9630s	1.81	5.41	4.62	7.92	5.49	1.06	1.09	0.53	0.61	3.30	28.55
C106	1.71	5.02	4.07	8.21	5.82	1.12	1.21	0.73	0.57	3.62	28.44
ZC9623s	1.73	5.72	4.93	7.73	5.14	1.03	1.02	0.53	0.61	3.18	28.44
Mean	2.09	5.43	4.52	8.13	5.45	1.11	1.08	0.56	0.60	3.34	28.95
CV, %	17.07	4.92	8.94	6.02	6.03	12.17	11.52	22.32	8.30	9.95	5.12
LSD, 0.05	0.51	0.38	0.57	0.69	0.47	0.19	0.18	0.18	0.07	0.47	2.10

* Not significantly different from the highest numerical value in the column.

Table 4. 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	2002 Harvests				Total 2002	5-yr Total
					28-May	20-Jun	25-Jul	20-Sep		
Commercial Varieties — Available for Farm Use										
DK 141	0.37	4.86	5.46	6.28	1.54	1.09	1.04	0.37	4.04	21.01*
Pasture Plus	0.29	4.83	5.24	6.27	1.80	1.20	1.03	0.32	4.35	20.97*
ABT 350	0.32	4.54	4.96	6.37	1.78	1.17	1.01	0.38	4.34	20.52*
DK 140	0.39	4.77	5.54	5.45	1.64	1.29	1.02	0.35	4.30	20.45*
Emperor	0.30	4.50	4.87	6.17	1.58	1.16	1.07	0.40	4.20	20.04*
Cimarron 3i	0.33	4.70	5.23	5.82	1.65	0.98	0.96	0.33	3.92	20.00*
ABT 400 SCL	0.30	4.52	5.02	6.11	1.54	1.13	0.96	0.39	4.02	19.97*
Geneva	0.29	4.53	4.89	5.95	1.78	1.09	0.89	0.38	4.14	19.79*
Choice	0.27	4.49	4.90	6.03	1.67	1.09	1.00	0.30	4.06	19.76*
WL 326 GZ	0.28	4.42	4.99	6.01	1.59	1.13	0.98	0.25	3.95	19.64*
ProGro	0.23	4.02	5.14	5.98	1.43	1.08	0.93	0.31	3.75	19.11*
Baralfa 54	0.25	4.28	4.81	5.75	1.59	1.04	0.91	0.40	3.95	19.04*
Stellar	0.21	4.10	4.72	5.71	1.60	1.23	0.84	0.18	3.85	18.60
Arc	0.19	3.91	4.71	5.85	1.69	0.90	0.97	0.32	3.88	18.53
Vernal	0.20	3.65	4.62	5.80	1.80	0.99	1.00	0.16	3.95	18.22
GoldPlus	0.28	4.15	4.62	5.30	1.62	1.01	0.83	0.32	3.78	18.14
Saranac AR	0.26	3.87	4.86	5.49	1.50	0.95	0.86	0.30	3.61	18.09
Experimental Varieties										
ZC9750A	0.25	4.35	5.01	6.26	1.63	1.20	1.00	0.40	4.23	20.10*
ZC9751A	0.23	4.39	5.03	6.10	1.77	1.06	0.98	0.46	4.26	20.02*
C416	0.41	4.64	4.97	6.02	1.62	1.10	0.98	0.27	3.97	20.01*
ZC9651	0.33	4.34	5.27	5.82	1.47	1.16	0.93	0.39	3.95	19.72*
ZC9650	0.27	4.19	4.77	6.00	1.72	1.12	0.97	0.32	4.13	19.35*
A9503	0.23	4.39	4.98	5.57	1.76	1.03	0.93	0.32	4.05	19.22*
ZG9641	0.32	4.27	4.61	5.91	1.54	1.11	0.95	0.40	4.00	19.12*
ZG9640	0.19	4.19	4.62	5.93	1.64	1.17	0.96	0.40	4.17	19.09*
Mean	0.28	4.35	4.82	4.48	1.64	1.10	0.96	0.34	4.03	19.54
CV, %	36.17	11.09	6.43	11.85	13.16	11.29	9.54	30.56	7.94	7.47
LSD, 0.05	0.14	0.68	0.44	0.75	0.30	0.18	0.13	0.15	0.45	2.06

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

Table 5. Dry matter yield (tons/acre) of alfalfa varieties sown May 15, 1998, at Eden Shale, Kentucky.

Variety	Total 1998	Total 1999	Total 2000	Total 2001	2002 Harvests		Total 2002	5-yr Total
					Jun 14	Aug 13		
Commercial Varieties — Available for Farm Use								
Stampede	0.34	4.85	6.66	6.55	0.41	0.65	1.06	19.46*
Gem	0.36	4.95	6.04	6.95	0.32	0.67	1.00	19.29*
Wintergreen	0.37	4.64	6.15	6.83	0.40	0.89	1.29	19.27*
DK 140	0.34	4.69	6.27	6.70	0.34	0.58	0.93	18.92*
Choice	0.38	4.71	6.19	6.62	0.30	0.71	1.01	18.92*
Grazeking	0.39	4.45	6.24	6.75	0.33	0.68	1.01	18.85*
Amerigraze 401+Z	0.41	4.64	6.23	6.52	0.45	0.55	1.00	18.8*
Geneva	0.43	4.72	5.99	6.59	0.35	0.64	0.99	18.71*
Saranac AR	0.35	4.69	6.03	6.49	0.31	0.77	1.08	18.64*
ABT 350	0.37	4.69	6.10	6.48	0.35	0.59	0.94	18.59*
Spredor-3	0.35	4.56	6.17	6.43	0.32	0.75	1.07	18.58*
Haygrazer	0.33	4.37	6.20	6.54	0.37	0.62	0.99	18.43*
Fortress	0.35	4.58	5.71	6.46	0.35	0.83	1.19	18.29*
WL 326 GZ	0.33	4.48	6.07	6.31	0.33	0.69	1.03	18.22*
Baralfa	0.32	4.86	5.75	6.31	0.33	0.63	0.97	18.21*
Alfagraze	0.34	4.43	5.92	6.09	0.37	0.71	1.09	17.86
Cimarron 3i	0.30	4.24	6.00	6.33	0.24	0.61	0.85	17.72
Vernal	0.35	4.49	5.64	6.27	0.34	0.56	0.90	17.66
Arc	0.29	4.32	5.38	6.40	0.38	0.60	0.98	17.37
Emperor	0.42	4.40	4.76	6.39	0.37	0.72	1.09	17.06
Mean	0.36	4.59	5.98	6.50	0.35	0.67	1.02	18.44
CV, %	19.36	7.50	8.93	6.69	38.04	25.05	20.10	5.36
LSD, 0.05	0.10	0.49	0.76	0.62	0.19	0.24	0.35	1.40

* 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 4, 1999, at Lexington, Kentucky.

Variety	Total 1999	Total 2000	Total 2001	2002 Harvests				Total 2002	4-yr Total
				May 11	Jun 17	Jul 19	Nov 1		
Commercial Varieties — Available for Farm Use									
DK 131 HG	1.17	6.75	6.12	0.98	1.14	0.49	0.55	3.15	17.19*
Cimarron SR	1.09	6.42	5.79	1.19	1.31	0.44	0.59	3.52	16.82*
Ameriguard 302+Z	1.03	6.53	6.10	1.02	1.12	0.44	0.55	3.12	16.77*
TMF 4355 LH	1.04	6.27	6.01	0.95	1.12	0.40	0.55	3.02	16.35*
54H69	1.09	6.40	5.70	0.99	1.17	0.40	0.50	3.06	16.25*
Arc	1.04	6.32	5.86	1.06	1.04	0.34	0.56	3.00	16.23*
Saranac AR	1.05	6.26	5.55	0.92	1.02	0.38	0.55	2.87	15.73
LH4	1.01	5.95	5.59	0.98	1.15	0.37	0.53	3.03	15.58
Experimental Varieties									
ZH9841H	1.02	6.44	5.94	1.03	1.14	0.40	0.59	3.16	16.56*
3A30	1.02	6.30	5.71	1.00	1.16	0.40	0.57	3.13	16.16*
Mean	1.05	6.37	5.84	1.01	1.14	0.41	0.55	3.11	16.36
CV, %	12.66	6.86	8.31	13.32	11.05	29.61	10.33	9.38	6.91
LSD, 0.05	0.13	0.44	0.48	0.13	0.13	0.12	0.06	0.29	1.13

* 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 April 13, 1999, at Princeton, Kentucky.

Variety	Total 1999	Total 2000	Total 2001	2002 Harvests				Total 2002	4-yr Total
				May 30	Jul 18	Sep 5	Oct 22		
Commercial Varieties — Available for Farm Use									
Abilene+Z	1.70	6.95	6.91	1.05	1.30	0.59	0.33	3.27	18.84*
54V54	1.94	7.00	6.92	0.84	1.10	0.50	0.29	2.73	18.59*
ABT 400 SCL	1.70	6.89	6.97	0.97	1.18	0.55	0.31	3.01	18.57*
DK 140	1.88	7.02	6.75	0.91	0.98	0.54	0.34	2.76	18.40*
Cimarron SR	1.95	6.71	6.77	0.93	1.16	0.54	0.31	2.94	18.36*
Affinity+Z	1.85	7.00	6.83	0.87	0.94	0.53	0.26	2.60	18.28*
WL 325 HQ	1.85	6.81	6.87	0.90	1.04	0.50	0.29	2.73	18.25*
Arc	1.93	6.92	6.68	0.87	1.07	0.51	0.23	2.68	18.21*
WL 327	1.95	7.05	6.42	0.95	1.07	0.51	0.27	2.80	18.21*
53Q60	1.90	6.84	6.56	1.00	1.07	0.48	0.27	2.82	18.12*
Amerigraze 401+Z	1.98	6.74	6.55	0.98	0.97	0.51	0.28	2.74	18.02
Geneva	1.85	6.96	6.58	0.89	0.98	0.49	0.24	2.61	18.00*
Reward	1.93	6.49	6.56	0.98	1.12	0.50	0.27	2.86	17.84*
TMF 4464	1.88	6.67	6.57	0.90	1.05	0.51	0.26	2.72	17.83*
ABT 350	1.78	6.67	6.53	0.88	1.05	0.54	0.28	2.76	17.75*
DK 141	1.85	6.89	6.32	0.97	0.94	0.47	0.24	2.62	17.69*
5246	1.89	6.75	6.61	0.80	0.97	0.44	0.22	2.43	17.69*
Experimental Varieties									
C416	1.83	7.05	6.64	0.93	1.05	0.50	0.27	2.75	18.26*
GA-AG-MPX	1.89	6.85	6.56	0.99	1.12	0.52	0.27	2.91	18.21*
W318	1.90	6.69	6.58	1.06	1.07	0.52	0.29	2.94	18.1*
A9503	1.72	6.67	6.71	0.97	1.15	0.43	0.23	2.78	17.88*
W326	1.82	6.60	6.39	0.97	1.14	0.62	0.30	3.03	17.85*
Mean	1.86	6.83	6.65	0.94	1.07	0.51	0.28	2.79	18.13
CV, %	12.42	6.89	7.54	15.89	18.04	13.20	27.47	11.55	5.82
LSD, 0.05	0.33	0.66	0.71	0.21	0.27	0.10	0.11	0.46	1.49

* 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 26, 2000, at Lexington, Kentucky.

Variety	Total 2000	Total 2001	2002 Harvests				Total 2002	3-yr Total
			May 11	Jun 14	Jul 18	Nov 1		
Commercial Varieties — Available for Farm Use								
Pioneer 53H81	1.87	8.58	1.53	1.43	0.74	0.68	4.38	14.84*
Magnum V-wet	1.64	8.63	1.60	1.47	0.67	0.78	4.52	14.88*
Triple Crown	1.61	8.65	1.62	1.35	0.64	0.74	4.35	14.61*
Magnum V	1.62	8.41	1.57	1.41	0.62	0.74	4.34	14.37*
Amerigraze 401+Z	1.70	8.53	1.43	1.37	0.61	0.72	4.12	14.36*
ValuePlus 1	1.47	8.37	1.53	1.55	0.67	0.76	4.51	14.35*
Geneva	1.54	8.29	1.57	1.51	0.66	0.76	4.49	14.33*
5312	1.57	8.22	1.61	1.45	0.68	0.73	4.48	14.27*
Arc	1.80	8.35	1.47	1.24	0.56	0.67	3.93	14.09*
Abilene+Z	1.62	8.15	1.43	1.39	0.64	0.70	4.16	13.93*
54V54	1.49	8.08	1.47	1.48	0.66	0.70	4.31	13.88*
Rushmore	1.75	8.16	1.51	1.26	0.53	0.65	3.96	13.87*
Saranac AR	1.43	7.69	1.53	1.31	0.52	0.68	4.04	13.17
Experimental Varieties								
ZC9854A	1.58	8.72	1.65	1.54	0.67	0.80	4.67	14.97*
ZG9840	1.69	8.76	1.50	1.52	0.72	0.72	4.47	14.91*
4m74	1.52	8.46	1.66	1.59	0.72	0.82	4.79	14.77*
ZH9840H	1.72	8.21	1.42	1.21	0.59	0.65	3.88	13.81*
Mean	1.65	8.33	1.53	1.40	0.64	0.72	4.29	14.28
CV, %	12.38	6.15	7.68	9.67	17.91	6.64	6.83	5.86
LSD, 0.05	0.29	0.72	0.17	0.19	0.16	0.07	0.42	1.19

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

Table 9. Dry matter yields (tons/acre) of alfalfa varieties sown April 19, 2001, at Princeton, Kentucky.

Variety	Total 2001	2002 Harvests				Total 2002	2-yr Total
		May 31	Jul 8	Sep 5	Oct 22		
Commercial Varieties — Available for Farm Use							
Triple Crown	4.83	2.65	2.56	0.62	1.10	6.93	11.75*
Reward II	4.91	2.69	2.43	0.61	1.09	6.82	11.73*
HybriForce- 400	4.85	2.45	2.37	0.66	1.15	6.63	11.48*
DK140	4.80	2.51	2.49	0.56	1.11	6.66	11.46*
FK421	4.95	2.52	2.36	0.61	1.03	6.51	11.46*
Arc	4.99	2.38	2.38	0.55	1.10	6.40	11.40*
Geneva	4.76	2.28	2.48	0.69	1.10	6.55	11.31*
Ameristand 403T	4.70	2.65	2.26	0.61	1.01	6.52	11.22*
Pegasus	4.49	2.52	2.38	0.60	1.11	6.61	11.10*
Saranac AR	4.53	2.55	2.36	0.56	1.07	6.53	11.06*
WL 342	4.53	2.24	2.47	0.62	1.12	6.45	10.99*
54V54	4.57	2.41	2.24	0.60	1.09	6.35	10.91
Experimental Varieties							
BY421	5.25	2.58	2.60	0.71	1.12	7.01	12.27*
FG4M76	4.85	2.76	2.61	0.63	1.14	7.15	12.00*
SX1002A	4.86	2.84	2.38	0.57	1.15	6.94	11.80*
SX1001A	4.64	2.69	2.53	0.53	1.17	6.92	11.56*
SX1004A	4.91	2.53	2.41	0.51	1.08	6.53	11.44*
SX1005A	4.90	2.63	2.28	0.53	1.07	6.52	11.42*
SX1003A	4.71	2.65	2.25	0.58	1.15	6.64	11.35*
Mean	4.79	2.55	2.41	0.60	1.10	6.67	11.45
CV, %	10.13	12.19	9.64	17.78	6.99	7.93	8.03
LSD, 0.05	0.69	0.44	0.33	0.15	0.11	0.75	1.31

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

Table 10. Dry matter yield (tons/acre) of alfalfa varieties sown April 12, 2002, at Lexington, Kentucky.

Variety	2002 Harvests		2002 Total
	Jul 5	Nov 20	
Commercial Varieties — Available for Farm Use			
WL 338 SR	0.74	0.67	1.41*
WL 327	0.77	0.60	1.37*
GH 744	0.74	0.59	1.33*
6420	0.77	0.55	1.32*
4m76	0.71	0.55	1.25*
Saranac AR	0.62	0.63	1.25*
54V54	0.64	0.59	1.23*
Buffalo	0.62	0.59	1.21*
WL 319 HQ	0.66	0.54	1.19*
Vernal	0.62	0.54	1.16*
DK 140	0.59	0.56	1.14
Arc	0.53	0.55	1.08
Geneva	0.52	0.54	1.06
Experimental Varieties			
DU 202	0.67	0.69	1.35*
Mean	0.66	0.59	1.24
CV, %	15.14	21.73	14.56
LSD, 0.05	0.14	0.18	0.26

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

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