

The 1998 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 within the region are the best indication that a variety is locally adapted and persistent. Several varieties are adapted for use in Kentucky as determined from the test 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 APH 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 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 from aphanomyces when planted to varieties that are susceptible to this disease.

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 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, and 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 (1995, 1997, and 1998), Bowling Green (1996), and Princeton (1993 and 1997), 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 (Heitt, Pembroke, and Crider, at Lexington, Bowling Green, and Princeton, respectively). The Bowling Green tests are on soils that are naturally infested with both phytophthora and aphanomyces root rot pathogens, and the 1997 seeding in Princeton was found to be infested with the aphanomyces pathogen.

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 har-

vester. First cuttings in the seedling year are 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. All tests for establishment, fertility, pest control, and harvest management were managed according to University of Kentucky Cooperative Extension Service recommendations. Pests (weeds and insects) are controlled so that they would not limit yield or persistence.

Results and Discussion

Weather data for Lexington, Bowling Green, and Princeton are presented in Table 1. In general, the 1998 growing season could be characterized as being unseasonably wet for the first half and hot and dry for the latter half.

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 1998 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 or just due to chance. Varieties not significantly different from the highest numerical value in a column are marked with one 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 proprietors, distributors, 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, 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. Make sure seed of the variety is properly labeled and will be available when needed.

Summary

Consistent production of high yields of alfalfa is the result of good variety selection along with the implementation of good management techniques. Soil fertility should be maintained at recommended levels based on soil tests, and pests such as weeds, alfalfa weevil, and potato leafhopper should be controlled using the appropriate cultural and/or chemical methods. Harvesting established stands at the appropriate stage of maturity will produce four to five cuttings annually in Kentucky before mid-September. For further information about alfalfa management, refer to these College of Agriculture publications, which are 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, Lexington, and Princeton in 1998.

	Bowling Green				Lexington				Princeton			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
MON	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	43	+9	3.05	-0.77	41	+10	3.96	+1.10	44	+10	2.95	-0.85
FEB	44	+6	2.39	-1.74	41	+6	2.54	-0.67	45	+7	3.43	-1.00
MAR	48	+2	2.01	-3.09	46	+2	3.40	-1.00	50	+3	2.29	-2.65
APR	55	-2	11.36	+7.04	54	-1	6.20	+2.32	59	-0	6.10	+1.30
MAY	70	+4	3.95	-0.99	67	+3	6.14	+1.67	72	+5	3.81	-1.15
JUN	76	+1	12.73	+8.56	73	+1	10.81	+7.15	77	+2	12.62	+8.77
JUL	79	+1	3.54	-1.20	75	-1	7.98	+2.98	80	+2	6.49	+2.20
AUG	78	+1	0.73	-2.78	76	+1	0.29	-3.64	78	+1	1.40	-2.61
SEP	76	+6	0.77	-2.95	74	+6	0.61	-2.59	77	+6	0.26	-3.07
OCT	62	+4	2.14	-0.88	58	+1	2.41	-0.16	63	+4	3.20	+0.15

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

Table 2. Dry Matter Yields (Tons/acre) of Alfalfa Varieties Sown 23 April 1993 at Princeton, Kentucky.

Variety	1993 Total	1994 Total	1995 Total	1996 Total	1997 Total	1998 Harvests				1998 Total	6-yr Total
						May 8	Jun 24	Jul 27	Sep 22		
Commercial Varieties - Available For Farm Use											
Crystal	1.29 *	3.90 *	6.89 *	4.37 *	5.10 *	1.30 *	2.07 *	1.34 *	0.17	4.88 *	26.43 *
631	1.23 *	3.97 *	6.76 *	4.35 *	4.86 *	1.29 *	1.91 *	1.34 *	0.21 *	4.74 *	25.91 *
Apollo-Supreme	1.36 *	3.79 *	6.57 *	4.12 *	4.54	1.22 *	2.04 *	1.33 *	0.11	4.70 *	25.08 *
645	1.12 *	3.63 *	6.40 *	4.08 *	4.77 *	1.29 *	1.88 *	1.25 *	0.23 *	4.65 *	24.64 *
5454	1.11 *	4.09 *	6.42 *	3.75	4.18	1.24 *	2.00 *	1.43 *	0.27 *	4.94 *	24.49 *
Fortress	1.35 *	3.94 *	6.28	3.41	4.19	1.13 *	1.92 *	1.45 *	0.25 *	4.75 *	23.93
5373	1.08 *	3.54 *	6.44 *	3.74	4.39	1.25 *	1.96 *	1.28 *	0.18	4.67 *	23.87
Dawn	1.09 *	3.52 *	6.18	3.66	4.21	1.28 *	1.96 *	1.16 *	0.19	4.59 *	23.26
Wampr	1.07 *	3.69 *	6.36 *	3.54	4.16	1.07	1.96 *	1.18 *	0.19	4.40 *	23.22
Aggressor	1.16 *	3.40	6.17	4.00 *	4.07	1.19 *	1.87 *	1.01	0.19	4.25	23.07
DK-133	1.00	3.43 *	6.34 *	3.66	4.21	1.27 *	1.83 *	1.02	0.17	4.29	22.93
Multiking-I	1.43 *	4.06 *	6.05	3.22	4.02	1.03	1.67	1.29 *	0.09	4.08	22.85
Dominator	1.09 *	3.51 *	6.12	3.57	4.11	1.08	1.90 *	1.21 *	0.22 *	4.40 *	22.81
Dart	1.09 *	3.64 *	5.90	3.57	4.02	1.20 *	1.72	1.34 *	0.21 *	4.47 *	22.69
Archer	1.34 *	3.47 *	6.10	3.55	4.01	0.98	1.66	1.28 *	0.21 *	4.12	22.59
WL323	1.09 *	3.83 *	5.97	3.39	3.89	1.04	1.84 *	1.19 *	0.18	4.24	22.40
Resistar	1.02	3.33	6.14	3.49	4.05	1.17 *	1.80 *	1.12 *	0.21 *	4.30	22.33
Multistar	1.08 *	3.65 *	6.02	3.11	3.91	1.14 *	1.75	1.20 *	0.07	4.16	21.93
Zenith	1.48 *	3.54 *	6.02	3.17	3.68	0.99	1.79	1.03	0.13	3.94	21.83
Legacy	1.28 *	3.71 *	5.98	3.20	3.46	0.99	1.74	1.05	0.20 *	3.97	21.61
Arc	1.20 *	3.42 *	5.74	2.99	3.81	1.04	1.64	1.39 *	0.11	4.17	21.33
2852	1.12 *	3.86 *	6.21	2.69	3.04	0.90	1.52	1.18 *	0.11	3.72	20.65
Saranac-AR	1.23 *	3.69 *	5.45	2.67	3.05	0.73	1.50	1.04	0.13	3.40	19.5
Experimental Varieties - Not Available for Farm Use											
AS-BG	1.49 *	4.05 *	6.80 *	3.61	4.14	1.04	2.02 *	1.20 *	0.25 *	4.51 *	24.60 *
Ga-AG-MP	1.40 *	3.73 *	6.02	3.54	4.20	1.09	2.03 *	1.43 *	0.20 *	4.75 *	23.64
A9109	1.18 *	3.54 *	6.01	3.53	3.99	1.13 *	1.63	1.22 *	0.15	4.14	22.39
Ga-AG-MP1	1.14 *	3.17	5.86	2.97	3.50	0.90	1.94 *	1.09	0.23 *	4.17	20.81
Ga-AG-MPG	1.03	3.23	5.36	3.07	3.84	1.03	1.60	1.22 *	0.15	4.00	20.53
Mean	1.2	3.65	6.16	3.5	4.05	1.11	1.83	1.22	0.18	4.34	22.9
CV, %	25.9	13.1	6.74	9.46	9.09	11.32	10.65	19.89	27.9	8.89	6.9
LSD, 0.05	0.44	0.67	0.58	0.47	0.52	0.18	0.27	0.34	0.07	0.54	2.22

*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 6 September 1995 at Lexington, Kentucky.

Variety	Total 1996	Total 1997	1998 Harvests					Total 1998	3-yr Total
			May 6	Jun 17	Jul 21	Aug 19	Oct 28		
Commercial Varieties - Available for Farm Use									
DK127	5.05 *	4.41 *	1.25	1.56 *	1.18 *	0.82 *	0.29 *	5.09 *	14.55 *
Rushmore	5.25 *	4.33 *	1.19	1.32	1.05	0.82 *	0.29 *	4.69 *	14.27 *
Choice	4.54 *	4.10 *	1.25	1.46 *	1.14 *	0.87 *	0.28	5.01 *	13.65 *
Multiqueen	4.50 *	4.12 *	1.21	1.39	1.05	0.79 *	0.26	4.70 *	13.32 *
WL323	4.45 *	4.09 *	1.24	1.40 *	1.07	0.78 *	0.28	4.78 *	13.32 *
Excalibur II	4.54 *	3.84 *	1.14	1.48 *	1.09	0.80 *	0.41 *	4.93 *	13.31 *
DK133	4.33	3.82 *	1.21	1.52 *	1.15 *	0.83 *	0.36 *	5.07 *	13.22 *
Supercuts	4.35	3.66	1.20	1.42 *	1.14 *	0.83 *	0.35 *	4.93 *	12.95 *
Saranac-AR	4.12	3.84 *	1.21	1.43 *	1.10	0.83 *	0.32 *	4.88 *	12.85 *
Dominator	4.03	3.68	1.23	1.39 *	1.17 *	0.88 *	0.27	4.94 *	12.65
5454	4.36	3.55	1.12	1.31	1.04	0.73	0.23	4.43	12.33
329	4.16	3.62	1.12	1.29	1.11 *	0.76 *	0.27	4.55	12.33
Arc	4.35	3.35	1.12	1.28	0.95	0.62	0.28	4.24	11.95
Legacy	4.13	3.01	1.00	1.25	0.93	0.62	0.23	4.03	11.17
ICI630	3.31	3.15	1.10	1.27	0.99	0.74	0.26	4.35	10.82
Apollo	3.55	2.79	0.89	1.20	0.89	0.56	0.24	3.77	10.11
Experimental Varieties - Not Available for Farm Use									
Ga-APGC	4.49 *	4.42 *	1.34 *	1.46 *	1.07	0.82 *	0.22	4.91 *	13.83 *
ABI9231	4.72 *	3.80 *	1.15	1.41 *	1.25 *	0.90 *	0.30 *	5.01 *	13.53 *
ZC9346	3.96	4.15 *	1.44 *	1.45 *	1.23 *	0.85 *	0.18	5.14 *	13.25 *
93116	4.35	3.49	1.01	1.34	0.97	0.76 *	0.28	4.35	12.19
Ga-Mx	3.73	2.74	0.87	1.28	0.90	0.63	0.22	3.90	10.37
Mean	4.30	3.71	1.16	1.38	1.07	0.77	0.28	4.65	12.66
CV, %	13.7	13.93	10.7	9.28	9.31	13.75	31.26	8.69	9.52
LSD, 0.05	0.83	0.73	0.18	0.18	0.14	0.15	0.12	0.57	1.71

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

Table 4. Dry Matter Yields (Tons/acre) of Alfalfa Varieties Sown 19 April 1996 at Bowling Green, Kentucky.

Variety	1996 Total	1997 Total	1998 Harvests					1998 Total	3-yr Total
			May 12	Jun 23	Aug 4	Sep 23	Nov 23		
Commercial Varieties - Available for Farm Use									
WL324	5.96 *	3.75 *	0.93 *	1.76 *	1.47 *	0.89 *	0.66 *	5.71 *	15.43 *
TMF-Generation	5.22 *	3.80 *	0.86	1.65 *	1.49 *	0.83 *	0.62 *	5.45 *	14.48 *
645	5.46 *	3.54 *	0.82	1.58 *	1.53 *	0.86 *	0.55	5.34 *	14.34 *
Affinity+Z	5.26 *	3.48 *	0.90 *	1.78 *	1.57 *	0.69	0.62 *	5.55 *	14.29 *
Gem	5.17	3.52 *	0.84	1.68 *	1.65 *	0.70	0.68 *	5.56 *	14.25 *
Imperial	5.33 *	3.63 *	0.85	1.65 *	1.36	0.80 *	0.62 *	5.28 *	14.24 *
Depend+EV	5.15	3.59 *	0.82	1.58 *	1.71 *	0.76 *	0.62 *	5.48 *	14.22 *
ABT405	5.32 *	3.51 *	0.83	1.60 *	1.60 *	0.73	0.58 *	5.35 *	14.19 *
Demand	5.21	3.73 *	0.77	1.54	1.57 *	0.73	0.62 *	5.24	14.17
Choice	4.91	3.75 *	0.80	1.72 *	1.50 *	0.80 *	0.67 *	5.49 *	14.15
WL252HQ	5.05	3.39 *	0.80	1.72 *	1.65 *	0.80 *	0.70 *	5.69 *	14.13
631	4.96	3.88 *	0.74	1.52	1.47	0.83 *	0.68 *	5.24	14.08
Saranac-AR	5.27 *	3.50 *	0.78	1.60 *	1.47	0.75 *	0.63 *	5.22	14.00
Supercuts	5.02	3.76 *	0.75	1.56 *	1.42	0.80 *	0.65 *	5.18	13.97
DK133	4.95	3.38	0.67	1.76 *	1.72 *	0.81 *	0.68 *	5.64 *	13.96
Innovator+Z	4.95	3.47 *	0.75	1.71 *	1.57 *	0.72	0.58 *	5.33 *	13.75
Fortress	5.30 *	3.56 *	0.70	1.44	1.28	0.77 *	0.66 *	4.84	13.70
WL325HQ	5.09	3.53 *	0.81	1.46	1.44	0.78 *	0.56 *	5.05	13.67
DK127	4.92	3.35	0.84	1.63 *	1.55 *	0.67	0.53	5.22	13.50
Apollo	5.16	2.88	1.07 *	1.43	1.43	0.72	0.58 *	5.24	13.28
Rushmore	4.75	3.12	0.84	1.60 *	1.61 *	0.66	0.57 *	5.28 *	13.15
Legacy	4.70	3.07	0.74	1.63 *	1.47	0.73	0.63 *	5.19	12.96
Buffalo B	5.27 *	2.89	0.84	1.46	1.24	0.64	0.50	4.68	12.85
Arc	5.00	2.93	0.74	1.55	1.32	0.56	0.41	4.57	12.50
Buffalo A	4.85	2.34	0.82	1.46	1.31	0.56	0.33	4.48	11.67
Experimental Varieties - Not Available for Farm Use									
ZG9530	5.09	3.42 *	0.98 *	1.67 *	1.55 *	0.80 *	0.56	5.56 *	14.36 *
93116	5.57 *	3.49 *	0.81	1.56 *	1.53 *	0.72	0.59 *	5.21	14.27 *
ZG9533	5.39 *	3.34	0.74	1.64 *	1.48 *	0.78 *	0.54	5.18	13.92
A9107	4.99	3.66 *	0.75	1.71 *	1.55 *	0.61	0.53	5.15	13.81
ZG9543	4.88	3.46 *	0.80	1.59 *	1.57 *	0.81 *	0.60 *	5.37 *	13.71
ZG9430	4.79	3.42 *	0.84	1.62 *	1.60 *	0.72	0.50	5.28 *	13.49
C106	4.60	3.22	0.77	1.66 *	1.47 *	0.78 *	0.62 *	5.30 *	13.12
Mean	5.11	3.42	0.81	1.61	1.50	0.74	0.59	5.26	13.79
CV, %	10.63	10.45	16.85	10.05	11.73	13.38	17.44	6.22	6.41
LSD, 0.05	0.76	0.50	0.19	0.23	0.25	0.14	0.14	0.46	1.24
* 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 15 April 1997 at Lexington, Kentucky.

Variety	1997 Total	1998 Harvests					1998 Total	2-yr Total
		May 6	Jun 18	Jul 17	Aug 19	Oct 28		
Commercial Varieties - Available for Farm Use								
Haygrazer	2.40 *	1.40 *	1.76 *	1.39 *	1.17 *	0.29 *	6.01 *	8.41 *
WL326GZ	2.29 *	1.30 *	1.76 *	1.33 *	1.13 *	0.27	5.80 *	8.16 *
Fortress	2.28 *	1.36 *	1.68	1.21	1.08	0.29 *	5.62	8.15 *
ABT405	2.25 *	1.38 *	1.78 *	1.38 *	1.18 *	0.24	5.96 *	8.10 *
Stampede	2.20 *	1.40 *	1.71	1.27	1.07	0.30 *	5.74	8.09 *
GrazeKing	2.19 *	1.29	1.64	1.23	1.08	0.26	5.50	7.99 *
Amerigraze 401Z	2.18 *	1.38 *	1.79 *	1.36 *	1.19 *	0.25	5.97 *	7.94 *
Saranac-AR	2.14 *	1.41 *	1.81 *	1.22	1.07	0.24	5.75	7.88 *
Feast	2.11 *	1.41 *	1.82 *	1.41 *	1.18 *	0.27	6.10 *	7.70
Arc	2.00	1.28	1.60	1.11	1.01	0.25	5.24	7.42
Spredor 3	1.94	1.42 *	1.73 *	1.15	0.96	0.18	5.44	7.25
Apollo	1.94	1.24	1.64	1.15	1.01	0.26	5.31	7.24
AlfaGraze	1.91	1.40 *	1.66	1.16	0.89	0.19	5.29	7.20
Experimental Varieties - Not Available for Farm Use								
94IOSPL1	2.39 *	1.20	1.75 *	1.32 *	1.14 *	0.36 *	5.78 *	8.22 *
A9508	2.36 *	1.36 *	1.83 *	1.22	1.08	0.24	5.74	8.22 *
CAR9426	2.16 *	1.40 *	1.74 *	1.38 *	1.12 *	0.20	5.82 *	7.90 *
GAAPGC	2.07 *	1.32 *	1.74 *	1.25	1.07	0.19	5.56	7.64
W116	1.97	1.35 *	1.59	1.28 *	1.05	0.18	5.45	7.38
Mean	2.16	1.35	1.72	1.27	1.08	0.25	5.67	7.83
CV, %	11.79	6.56	4.79	7.68	6.27	21.99	4.13	4.89
LSD, 0.05	0.36	0.13	0.12	0.14	0.10	0.08	0.33	0.54

* 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 18 April 1997 at Lexington, Kentucky.

Variety	1997 Total	1998 Harvests					1998 Total	2-yr Total
		May 6	Jun 18	Jul 17	Aug 20	Oct 28		
Commercial Varieties - Available for Farm Use								
Choice	2.57 *	1.42 *	1.73 *	1.16 *	1.04 *	0.31 *	5.66 *	8.23 *
Garst 631	2.51 *	1.35 *	1.67 *	1.19 *	1.10 *	0.32 *	5.64 *	8.14 *
DK140	2.24 *	1.38 *	1.73 *	1.24 *	1.06 *	0.35 *	5.76 *	8.00 *
Cimarron VR	2.58 *	1.24	1.66 *	1.10	1.05 *	0.32 *	5.37	7.95 *
DK141	2.35 *	1.35 *	1.57	1.18 *	1.13 *	0.34 *	5.57 *	7.92 *
Affinity+Z	2.13 *	1.29	1.70 *	1.14 *	1.09 *	0.33 *	5.55 *	7.68 *
WL325HQ	2.19 *	1.40 *	1.56	1.10	1.03 *	0.36 *	5.46 *	7.64 *
Cimarron 3i	2.26 *	1.29	1.70 *	1.06	0.98	0.31 *	5.34	7.60 *
Wintergreen	1.99	1.39 *	1.66 *	1.21 *	1.03 *	0.30 *	5.58 *	7.57 *
ABT405	1.88	1.39 *	1.64 *	1.12 *	1.03 *	0.35 *	5.53 *	7.41
ABT205	1.88	1.45 *	1.65 *	1.05	0.99	0.31 *	5.45 *	7.33
Fortress	2.14 *	1.33	1.58 *	1.00	0.90	0.33 *	5.14	7.27
Gem	1.85	1.40 *	1.65 *	1.02	0.97	0.36 *	5.41 *	7.26
Saranac AR	1.95	1.41 *	1.69 *	1.01	0.90	0.28 *	5.29	7.24
Arc	1.82	1.31	1.48	0.88	0.84	0.31 *	4.82	6.64
Experimental Varieties - Not Available for Farm Use								
C231	2.29 *	1.34 *	1.55	1.14 *	1.05 *	0.35 *	5.43 *	7.71 *
ZC9623S	1.73	1.47 *	1.69 *	1.20 *	1.05 *	0.32 *	5.72 *	7.46
ZB9546	1.89	1.38 *	1.62 *	1.20 *	1.01 *	0.27	5.48 *	7.37
ZC9630S	1.81	1.39 *	1.64 *	1.13 *	0.99	0.27	5.41	7.22
C106	1.71	1.23	1.62 *	0.97	0.91	0.29 *	5.02	6.72
Mean	2.09	1.36	1.64	1.10	1.01	0.32	5.43	7.52
CV, %	17.07	6.67	6.70	9.24	8.93	20.5	4.92	7.17
LSD, 0.05	0.51	0.13	0.16	0.14	0.13	0.09	0.38	0.76

* 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 15 April 1997 at Princeton, Kentucky.							
Variety	1997 Total	1998 Harvests				1998 Total	2-yr Total
		May 8	Jun 24	Jul 27	Sep 22		
Commercial Varieties - Available for Farm Use							
Choice	1.91 *	1.29 *	2.15 *	1.33 *	0.30 *	5.07 *	6.97 *
ABT405	1.73 *	1.35 *	2.12 *	1.26 *	0.28 *	5.01 *	6.74 *
Rushmore	1.81 *	1.21 *	2.04 *	1.29 *	0.25 *	4.79 *	6.61 *
Wintergreen	1.62 *	1.29 *	2.07 *	1.24 *	0.29 *	4.88 *	6.50 *
Feast	1.82 *	1.11 *	2.08 *	1.18 *	0.25 *	4.63 *	6.44 *
WL326GZ	1.67 *	1.33 *	1.97 *	1.19 *	0.20	4.69 *	6.36 *
631	1.65 *	1.40 *	1.88	1.19 *	0.22 *	4.69 *	6.34 *
Amerigraze 401Z	1.50 *	1.31 *	2.02 *	1.23 *	0.25 *	4.82 *	6.31 *
WL332SR	1.64 *	1.02	2.12 *	1.25 *	0.25 *	4.64 *	6.28 *
Gem	1.37 *	1.45 *	2.01 *	1.15 *	0.23 *	4.84 *	6.21 *
Fortress	1.48 *	1.26 *	1.95 *	1.26 *	0.23 *	4.70 *	6.18 *
ABT205	1.50 *	1.18 *	2.04 *	1.15 *	0.27 *	4.64 *	6.14 *
ARC	1.19	1.42 *	1.84	1.06	0.24 *	4.56 *	5.75
SaranacAR	1.22	1.24 *	1.87	1.07	0.19	4.37	5.60
Experimental Varieties - Not Available for Farm Use							
ZG9651	1.88 *	1.43 *	2.05 *	1.29 *	0.33 *	5.09 *	6.97 *
Mean	1.60	1.29	2.01	1.21	0.25	4.76	6.36
CV, %	26.01	19.85	9.00	11.64	32.28	9.12	11.99
LSD, 0.05	0.59	0.36	0.26	0.20	0.12	0.62	1.09

* 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 5 May 1998 at Lexington, Kentucky.			
Variety	1998 Harvests		1998 Total
	Jul 17	Sep 2	
Commercial Varieties - Available for Farm Use			
Cleansweep	0.91 *	0.75 *	1.66 *
Arrest	0.86 *	0.67 *	1.54 *
Saranac AR	0.84 *	0.67 *	1.51 *
Amerigraze 401Z	0.89 *	0.61	1.50 *
Fortress	0.80 *	0.68 *	1.48 *
DK131HG	0.72 *	0.70 *	1.42 *
Arc	0.74 *	0.62 *	1.36
Choice	0.71	0.64 *	1.35
LH3	0.68	0.60	1.28
Experimental Varieties - Not Available for Farm Use			
3R22	0.69	0.64 *	1.32
Mean	0.784	0.66	1.44
CV, %	16.68	14.44	14.11
LSD, 0.05	0.19	0.14	0.30
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.			

Variety		Variety Characteristics ¹										Bowling Green ²										Princeton									
		Disease Resistance ³					Lexington					Bowling Green ²					Princeton														
		FD ⁵	Bw	Fw	An	PRR	APH	1995 ⁴	1997a	1997b	1998	1996	1997	1998	1993	1994	1995	1996	1997	1998	1997	1998									
Table 9. Characterization and performance of alfalfa varieties across years and locations																															
	Proprietor/KY Distributor																														
2852	Ciba-Geigy/Bardston Mill, D. Arnold	4	HR	R	MR	R	-																								
329	CAL-WEST/Scott Seed	3	HR	HR	HR	HR	R																								
5373	Pioneer	4	HR	HR	HR	MR	LR																								
5454	Pioneer	4	R	HR	HR	HR	LR																								
630	Garst Seed Company	3	HR	HR	MR	R	-																								
631	Garst Seed Company	4	HR	HR	R	HR	MR																								
645	Garst Seed Company	4	HR	R	HR	HR	MR																								
ABT205	ABT/Scott Seed/Sphar Seed	2	HR	HR	HR	HR	R																								
ABT 350	ABT/Scott Seed/Sphar Seed	3	HR	HR	HR	HR	HR																								
ABT405	ABT/Scott Seed/Sphar Seed	4	HR	HR	HR	HR	R																								
Affinity+Z	ABI/America's Alfalfa	4	HR	HR	HR	HR	R																								
Aggressor	ABI/America's Alfalfa/Scott Seed	4	HR	HR	R	R	MR																								
Alfagraz	America's Alfalfa/Scott Seed/SS	2	MR	R	MR	LR	-																								
Amerigraze401+Z	ABI/America's Alfalfa	4	HR	HR	HR	HR	R																								
Apollo	ABI/America's Alfalfa/Scott Seed	4	R	R	LR	R	-																								
Apollo Supreme	ABI/America's Alfalfa/Scott Seed	4	HR	HR	R	R	S																								
Arc	Public	4	LR	MR	HR	R	-																								
Archer	ABI/America's Alfalfa	5	HR	HR	R	R	-																								
Arrest	Novartis	3	HR	HR	HR	HR	R																								
Buffalo A	Public, uncertified	-	-	-	-	-	-																								
Buffalo B	Public, uncertified	-	-	-	-	-	-																								
Choice	FFR/Southern States	4	HR	R	R	HR	R																								
Cimarron VR	Great Plains Research	5	HR	HR	R	R	MR																								
Cimarron 3i	Great Plains Research	4	HR	HR	HR	HR	MR																								
Clean Sweep 1000	FFR	3	HR	HR	HR	HR	R																								
Crystal	PG/IMBS/Caverdale Farms	4	HR	HR	R	HR	LR																								
Dart	ABI/AgriPro	3	HR	HR	R	HR	S																								
Dawn	ABI/AgriPro	3	R	HR	R	R	MR																								
Demand	ABI/AgriPro	3	HR	HR	HR	HR	R																								
Depend+EV	ABI/AgriPro	-	-	-	-	-	-																								
DK-127	Dekalb Genetics Corporation	3	HR	HR	HR	HR	-																								
DK-131HG	Dekalb Genetics Corporation	3	HR	HR	HR	HR	R																								
DK-133	Dekalb Genetics Corporation	4	HR	HR	HR	HR	R																								
DK-140	Dekalb Genetics Corporation	4	HR	HR	HR	HR	HR																								
DK-141	Dekalb Genetics Corporation	4	HR	HR	HR	HR	HR																								
Dominator	ABI/AgriPro	4	HR	HR	HR	HR	R																								
Excaltur II	Allied Seed	4	HR	HR	HR	HR	R																								
Feast	ABI/AgriPro	3	HR	HR	MR	HR	R																								
Fortress	Northrup King	3	R	R	R	HR	-																								
Geneva	Novartis	4	HR	HR	HR	HR	HR																								
Gem	FFR/Southern States	4	HR	HR	HR	HR	S																								
Grazeking	FFR/Southern States	5	MR	HR	HR	R	S																								
Haygrazer	Great Plains Research	4	HR	HR	R	R	MR																								
Imperial	ABI/America's Alfalfa	3	HR	HR	HR	HR	R																								
Innovator+Z	ABI/America's Alfalfa	3	HR	HR	HR	HR	R																								
Legacy	Genesis Group/Green Seed	4	R	R	R	R	R																								
LH3	Pioneer	4	HR	HR	HR	HR	R																								
MultiKing I	Northrup King	3	HR	MR	HR	R	-																								
MultiQueen	CAL-WEST Seeds	4	HR	HR	HR	HR	R																								
MultiStar	FFR/Southern States	3	HR	HR	HR	HR	R																								
Resistar	FFR/Southern States	4	HR	HR	HR	HR	S																								
Rushmore	Novartis	4	HR	HR	HR	HR	R																								



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