

Alfalfa Varieties
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Few areas of forage agriculture are changing faster than variety development in alfalfa. The 1990 revised "Alfalfa Varieties" publication of the Certified Alfalfa Seed Council listed 26 new alfalfa varieties. Of the available certified alfalfa varieties, only 10 to 15% are public varieties. The remainder are developed and marketed by commercial companies such as Agripro, Dairyland, FFR, Pioneer, Vista, W-L Research, and others. The need for yield and performance information on alfalfa varieties therefore increases yearly. In 1990, the alfalfa variety testing program was re-started under the leadership of the University of Kentucky and Western Kentucky University (WKU). Three locations were seeded in 1990, Spindletop Research Farm - Lexington, WKU Research Farm - Bowling Green, and the UK Research and Education Center - Princeton. A total of 37 varieties were included in these tests (Table 1).

Agressor	Cimarron VR	Haymark	Saranac AR
Alfagraze	Crocket	Impact	Top Ton
Anstar	Dart	Legend	Voyager
Apollo Supreme	Dawn	Liberty	VS 481
Arrow	DK 135	Majestic	Wampr
Asset	Excalibur	MultiKing I	WL 225
B54	FFR87A89	Pioneer 5373	WL 317
Belmont	G2852	Pioneer 5472	WL 320
Buffalo	Garst 630	Sabre	WL83T27
			WL89128

The public varieties Buffalo, Saranac, and Liberty are included for comparison. The Lexington and Bowling Green sites were seeded in the spring of 1990 and Princeton was established in late summer. A full production year is expected in 1991, and a comprehensive summary will be published at the end of the production year.

Choosing an Alfalfa Variety

Choosing an alfalfa variety is a complex process to which there are no simple answers. However, several characteristics should be evaluated before selecting a variety. These characteristics include yield, adaptation, levels of pest resistance, seed availability, and lastly,

Table 2. Yield difference between Buffalo and the top yielding variety in 6 Kentucky Variety Trials.					
Location	Years	No. of Entries	Rank of Buffalo	Difference Between Buffalo and top variety	
				Tons/A	Tons/A/yr.
Princeton	81-85	20	15	1.32	0.26
Lexington	81-85	41	38	2.82	0.56
Princeton	82-85	36	32	2.72	0.68
Lexington	82-85	44	42	2.49	0.62
Princeton	77-82	25	22	3.31	0.66
Lexington	77-82	25	21	2.61	0.52
Average				2.55	0.55

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price. Too often, price is the major criteria for making the choice. This selection method can be an example of taking a short-term savings and losing long-term benefits. For example, according to the last Kentucky alfalfa variety data available, the yield difference between Buffalo and the top variety averaged 0.55 tons of hay per acre per year (Table 2). At \$80/T, this forage has a value of \$44/A/yr. or \$220/A over the 5-year life of a stand. The difference in seeding cost price between Buffalo and the average of 10 current proprietary varieties is only \$18.15/A (Table 3). Even based on 1985 yield data, selection of the top yielding variety from a Kentucky yield trial would have a 12:1 return on the extra investment in seed costs (\$220/\$18.15).

Table 3. Estimated seed cost per pound, per acre, and per year for Buffalo and an average 10 proprietary alfalfa varieties ¹ .			
Varieties	Seed Cost, Dollars		
	Per lb.	Per Acre ²	Per year ³
Buffalo	1.55	23.25	4.65
Avg. of 10	2.76	41.4	8.28
Difference	1.21	18.15	3.63

¹ Varieties are Pioneer 5431 and 5432, WL 317 and 320, Classic, Anstar, Hi-Phy, Haymark, Apollo, and Cimarron.
² 15 lb./A. ³ 5 year stand life.

The ability of an alfalfa variety to resist infection by disease is an important factor in variety selection. Alfalfa varieties that combine high yields with the best combination of disease resistance should be selected. In Kentucky, the most prevalent diseases are bacterial wilt, fusarium wilt, anthracnose, and Phytophthora root rot. Varieties should have at least a moderate resistance (MR) to these diseases.

A new root rot disease called **aphanomyces** has also been isolated in some stands showing unexplained loss of plants and productivity. Like phytophthora, aphanomyces is a disease associated with wet soil conditions, but was not previously thought to be a problem in Kentucky. Aphanomyces attacks the feeder roots of alfalfa. Although the aphanomyces fungus has been isolated from Kentucky alfalfa fields, it is not known if this disease is currently causing economic damage. Fortunately, varieties are presently available which have some level of resistance to this disease. Greenhouse and field studies have been started to get more information on the effect of aphanomyces on alfalfa in Kentucky.

New Developments in Variety Releases

Grazing Tolerance. One new variety that warrants some explanation is the ABI (Agripro) variety "Alfagraze." This explanation should not be interpreted as a blanket recommendation of this variety, but as background information. Alfagraze was developed at the University of Georgia and is promoted as the first 'true' grazing alfalfa. Unlike other grazing-type alfalfas, Alfagraze is not creeping-rooted and was actually selected under heavy, continuous, grazing pressure. As a result, Alfagraze seems to be truly more tolerant of heavy grazing pressure than either traditional hay-type or spreading alfalfas. After four years of grazing in Georgia, Alfagraze maintained over twice as many plants per square foot as Spredor II, Apollo, or Florida 77 (a non-dormant hay-type variety). The synopsis of Alfagraze as a grazing variety seems to be that it is a variety which performs best under controlled, rotational grazing schemes but will tolerate extended periods of overgrazing without severe stand loss, although animal performance would suffer. Expect Alfagraze seed to be available in quantity by the spring of 1992.

Forage Quality. Since the leaf is the most digestible portion of an alfalfa plant, it is logical that increasing the number of leaves will increase forage quality. Multifoliate or multileaf alfalfa is that which has more than three leaflets per leaf. Although multifoliate alfalfa was studied as early as 1938, commercially available certified multileaf varieties have only recently become available. The important question here is 'Are multifoliate higher in quality?' Recent research from Purdue University indicates that multileafiness improved digestibility only slightly over certain normal, three-leaflet alfalfa lines, but had little impact on forage protein concentration (Table 4). These data do not warrant the exclusive use of either multifoliate or "normal" alfalfas. More yield and quality information is needed to evaluate the multifoliate types. It does seem that in the near term, good management of present three-leaflet varieties can result in forage quality that is comparable to multifoliate alfalfas.

Table 4. Forage quality of two multifoliate varieties compared to Vernal and Agate.					
Variety	Seeding Year		First Production Year		
	Digest ¹ , %	Protein, %	Leaflets/Leaf	Leaf, %	Digest, %
Multifoliate A ²	70.4	20.2	3.35	42.5	74.6
Multifoliate B	70.8	21.4	3.33	41.4	73.3
Vernal	69.0	20.3	3.00	42.6	72.0
Agate	69.6	21.2	3.00	41.7	71.3

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¹ Digestibility.

² Multifoliate varieties not named.

Summary

The Kentucky Alfalfa Variety Testing Program has been re-started under the combined leadership of the University of Kentucky and Western Kentucky University. Yield information on 34 proprietary and 3 public varieties will be available in late 1991. The large number of new varieties certified each year and the recent varietal developments such as the release of grazing type and multifoliate alfalfas indicate that the alfalfa seed industry is maintaining a high interest in developing new genetic material in alfalfa.