

PUBLICATIONS

1986

**Forage Research
In Texas,
1986**

Alfalfa Variety and Fertility Trials on Brazos Riverbottom Soil

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Summary

Only small yield differences between alfalfa varieties occurred in 1985, the second year of production. Forage yields from six harvests ranged from 11,300 to 13,300 lb DM/A. Armor, Florida 77, Weevlchek, and Cimarron were the top yielding varieties. Percent stands were down for all varieties from April 85 to April 86. Florida 77, Baron, Southern Special, and Siriver stands exceeded 75 percent. Stands of Vancor, Hi-phy, Classic, Raidor, and Saranac AR had decreased to less than 50 percent by spring 1986. After 2 years there was still no response to fertilizer.

Introduction

Alluvial soils along the Brazos River from Waco, and the Colorado River from Austin, to near the Gulf of Mexico amount to 800,000 acres. Most of these soils are planted to row crops because of their natural high fertility. However, monoculture cropping systems cause an increase in disease, insect, nematode, and weed problems which result in increased production costs and/or lower yields. Alfalfa would fit well into a row crop rotation by reducing pest problems and improving soil structure and fertility. High quality alfalfa hay brings a premium from dairies and horse owners. Present alfalfa acreage on these alluvial soils is estimated between 5,000 and 10,000 acres.

Alfalfa variety and fertilizer studies were planted in fall 1983 in the Brazos riverbottom 10 miles north of Angleton. Objectives of the studies were to identify the most productive varieties and fertility rates for optimum production on well drained riverbottom soils in Southeast Texas. Yields for the second growing season (1985) are reported.

Procedure

The studies were seeded at 20 lb/A on October 11, 1983 on a Norwood silt loam. Experimental design was a randomized block with four replications. Florida 77 was used for the fertility study. On April 18, 1985 the variety test was fertilized with 60 lb/A of phosphorus and potassium and the fertility treatments were applied to the

KEYWORDS: Alfalfa/fertility/spring recovery.

TABLE 1. FORAGE PRODUCTION (LB D.M./A) OF ALFALFA VARIETIES DURING 1985 IN THE BRAZOS RIVERBOTTOM IN SOUTHEAST TEXAS

Variety	% Stand 18 Apr.	Harvest Date						1985 Total	1984	
		2 Apr.	7 May	25 June	30 July	3 Sept.	3 Oct.		Total	(Rank)
Armor	83	1,896	2,266	3,250	2,354	2,259	1,348	13,373	11,581	(11)
Florida 77	98	1,703	2,252	2,902	2,702	2,051	1,498	13,106	13,294	(3)
Weevlchek	85	1,778	2,322	3,255	2,308	2,016	1,363	12,966	11,711	(10)
Cimarron	88	1,821	2,349	3,128	2,685	1,686	1,243	12,912	13,520	(1)
Siriver	93	1,821	2,433	2,954	2,430	1,703	1,258	12,599	13,441	(2)
WL-318	80	1,789	2,308	2,919	2,321	1,808	1,333	12,476	11,768	(9)
Classic	75	1,821	2,196	2,867	2,425	1,808	1,348	12,465	11,519	(12)
Southern Special	95	1,660	2,332	2,902	2,228	1,964	1,333	12,407	12,810	(5)
Baron	90	1,681	2,224	2,832	2,211	1,755	1,228	11,931	13,160	(4)
Pioneer 555	88	1,681	2,252	2,885	2,264	1,633	1,168	11,883	11,859	(7)
Pioneer XAN21	93	1,552	2,141	2,763	2,226	1,773	1,303	11,757	11,395	(13)
Saranac AR	65	1,681	2,099	2,937	2,074	1,686	1,213	11,689	11,172	(15)
Hi-Phy	78	1,735	2,071	3,058	2,061	1,634	1,123	11,681	11,779	(8)
Vancor	73	1,746	2,210	2,937	1,750	1,755	1,198	11,596	11,246	(14)
Apollo	75	1,520	2,043	2,798	2,177	1,755	1,213	11,505	9,917	(16)
Raidor	70	1,767	1,531	2,850	2,325	1,668	1,178	11,320	11,913	(6)
LSD (.05)	13.2	298	345	498	421	370	222	1,820	3,687	

fertilizer study. Both studies were sprayed with malathion on March 7 for aphids and with Poast on August 17 for Johnsongrass control. Six harvests were made in 1985 from April 2 to October 3. A visual estimate of stand recovery the following spring was made on April 7, 1986.

Results and Discussion

Variety Test. Only small differences between alfalfa varieties continued to occur during the second year (Table 1). There were significant differences between some varieties but they were not consistent across harvest dates. The most productive varieties in 1985 were Armor, Florida 77, Weevlchek, and Cimarron. Only Florida 77, Cimarron, and Siriver ranked high in 1984 and 1985.

Percent stand recovery in spring 1986 is reported in Table 2. This factor is very critical since poor alfalfa persistence has been a major problem. All varieties had a stand decrease from the spring 85 rating reported in Table 1. Florida 77, Baron, Southern Special Siriver, and XAN 21 maintained the best stands by spring 1986. Vancor, Hi-phy, Classic, Raidor, and Saranac AR had less than a 50

percent stand which should significantly reduce yields in 1986.

Fertility Test. Alfalfa failed to show a significant response to fertilizer during 1985 (Table 3). The same was true in 1984. Soil analysis from a sample taken from the control plot in July 1985 showed all nutrients to be high or very high which coincides with the lack of response to fertilizer.

TABLE 2. STAND RECOVERY IN SPRING 1986

Rank	Cultivar	Stand	Rank	Cultivar	Stand
		%			%
1	Florida 77	90	9	Cimarron	58
2	Baron	85	10	Weevlchek	53
3	Southern Special	80	11	Armor	50
4	Siriver	78	12	Vancor	45
5	XAN 21	75	13	Hi-phy	43
6	Apollo	65	14	Classic	38
7	WL-318	63	15	Raidor	33
8	555	60	16	Saranac AR	30

TABLE 3. SECOND YEAR FORAGE PRODUCTION OF ALFALFA FERTILITY STUDY IN BRAZOS RIVERBOTTOM NEAR ANGLETON, 1985

Fertilizer rate	Harvest Date						Total
	2 Apr.	7 May	25 June	30 July	3 Sept.	3 Oct.	
0-0-0	1,587	2,265	2,650	2,434	2,414	1,533	12,483
0-45-0	1,651	2,343	2,833	2,536	2,115	1,640	13,117
0-90-0	1,733	2,252	3,025	2,542	1,915	1,431	12,898
0-0-60	1,587	2,370	2,648	2,694	2,124	1,478	12,901
0-0-120	1,644	2,162	2,954	2,373	2,228	1,542	12,902
0-45-60	1,637	2,155	2,541	2,544	2,016	1,402	12,295
0-45-120	1,654	2,252	2,943	2,478	2,278	1,542	13,146
0-90-60	1,705	2,431	2,956	2,686	2,339	1,557	13,673
0-90-120	1,639	2,319	2,587	2,615	1,921	1,629	12,710
0-90-120+B	1,561	2,393	3,013	2,640	2,281	1,598	13,491
0-90-120+Micro	1,723	2,354	3,031	2,591	2,227	1,675	13,600
0-90-120+B+Micro	1,599	2,141	2,970	2,456	2,284	1,487	12,936
LSD (.05)	302	409	730	451	586	241	1,361