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Alfalfa Variety and Fertility Trials on Brazos Riverbottom Soil

G. W. EVERS

Summary

Sixteen alfalfa cultivars were established October 11, 1983 in the Brazos riverbottom near Angleton. They will be evaluated for forage production and persistence for a 4-year period. During the first full growing season (1984) there was no significant difference between cultivars. Yields ranged from 5 to 6.75 tons of dry matter/acre (A). There was no significant forage production increase from phosphorus, potassium, sulfur, boron, molybdenum, or micronutrients in the fertility trial.

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 A. 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 A.

An alfalfa variety trial and fertilizer study were estab-

lished in the Brazos riverbottom 10 miles north of Angleton. The studies will be continued for 4 years to identify the most persistent cultivars, proper fertilizer requirements, and potential management problems.

Procedure

The studies were seeded at 20 lb/A on October 11, 1983 on a Norwood silt loam. Basagran and fusilade were each applied at 0.5 lb/A for broadleaf and grassy weed control, respectively. Experimental design was a randomized block with four replications. The variety trial was fertilized with 60 lb/A of phosphorus and potassium in March 1984. Florida 77 was used for the fertility study. All treatments except the micronutrient treatment were also applied in March. The micronutrients were applied as a spray on February 7 and June 28. Plots were harvested at a 4- to 5-week interval beginning March 21.

Results and Discussion

Variety Study. Forage production for the first growing season ranged from 5 to 6.75 tons of dry matter/A (Table 1) with no significant difference between cultivars at the 0.05 level. The largest yield difference occurred at the first harvest with Baron, Siriver, Cimarron, Southern Special, Hi-ply, and WL-318 being the most productive.

Fertility Study. Analysis of a soil sample collected in October 1983 showed all nutrients except nitrogen to be high or very high. Results from the first full growing season showed no significant yield increase from any of the fertilizer treatments (Table 2). The study will be continued for 3 years to determine if continuous harvesting will result in a response to fertilizer.

TABLE 1. FORAGE PRODUCTION OF ALFALFA VARIETIES IN BRAZOS RIVERBOTTOM NEAR ANGELTON, TEXAS 1984

VARIETY	29 MAR	7 MAY	12 JUNE	12 JULY	16 AUG	27 SEPT	27 NOV	TOTAL
	Pounds of Dry Matter/Acre							
Cimarron	3,168	2,280	2,473	1,496	1,588	1,212	1,304	13,520
Siriver	3,264	2,077	2,228	1,697	1,467	1,226	1,482	13,441
Florida 77	2,376	2,153	2,430	1,754	1,790	1,157	1,634	13,294
Baron	3,644	2,027	2,142	1,495	1,336	1,185	1,332	13,160
Southern Special	2,947	2,048	2,099	1,596	1,576	1,226	1,318	12,810
Raidor	2,281	2,076	2,386	1,265	1,321	1,047	1,537	11,913
555	2,272	1,966	2,344	1,567	1,374	1,061	1,277	11,859
Hi-ply	2,915	1,830	2,300	1,294	1,131	1,033	1,277	11,779
WL-318	2,638	2,034	2,114	1,409	1,140	1,143	1,290	11,768
Weevlchek	2,163	1,913	2,415	1,395	1,241	1,198	1,386	11,711
Armor	1,741	2,064	2,372	1,495	1,557	1,212	1,139	11,581
Classic	1,805	2,014	2,473	1,380	1,456	1,130	1,263	11,519
XAN21	2,250	1,903	2,013	1,510	1,190	1,144	1,386	11,395
Vancor	2,131	1,943	2,243	1,409	958	1,116	1,446	11,246
Saranac	1,941	1,792	2,185	1,366	1,303	1,157	1,428	11,172
Apollo	1,678	1,778	2,214	1,294	978	974	1,022	9,917
L.S.D.								
0.05	1,257	533	680	257	578	327	679	3,687

KEYWORDS: Alfalfa/hay production/fertility.

TABLE 2. FORAGE PRODUCTION OF FLORIDA 77 ALFALFA WITH VARIOUS FERTILIZER TREATMENTS IN THE BRAZOS RIVERBOTTOM NEAR ANGLETON, TEXAS

FERTILIZER TREATMENT	29 MAR	7 MAY	14 JUNE	12 JULY	16 AUG	27 SEPT	27 NOV	TOTAL
	Pounds of Dry Matter/Acre							
0-90-60	1,323	2,166	2,450	2,012	2,264	1,542	1,838	13,595
0-90-120 + A + Micro Nut.	1,225	2,077	2,426	2,039	2,163	1,656	1,933	13,519
0-90-0	1,342	2,076	2,289	1,970	2,137	1,545	1,687	13,046
0-0-120	1,211	1,999	2,376	1,818	2,277	1,628	1,725	13,304
0-45-120	1,212	2,028	2,339	1,942	2,191	1,604	1,682	12,998
0-90-120 + Mo	1,294	1,860	2,466	1,901	2,312	1,553	1,560	12,946
0-90-120 + B + Mo	1,253	2,011	2,481	1,777	2,134	1,596	1,676	12,928
0-45-0	1,199	1,999	2,300	1,860	2,137	1,615	1,731	12,841
0-90-120	1,172	1,957	2,281	1,970	2,087	1,564	1,760	12,791
50-90-120	1,171	2,046	2,244	1,832	2,197	1,498	1,783	12,771
0-90-120 + B	1,267	1,951	2,333	1,956	2,038	1,523	1,687	12,755
0-0-0	1,152	1,881	2,296	1,750	2,245	1,596	1,671	12,591
0-45-60	1,240	1,965	2,200	1,846	2,009	1,506	1,623	12,389
0-0-60	1,155	1,854	2,291	1,763	2,181	1,419	1,635	12,298
0-90-120 + B, Mo, S, Micro Nut.	1,227	1,783	2,203	1,653	2,045	1,578	1,707	12,196
L.S.D. 0.05	252	257	302	279	425	251	245	1,076