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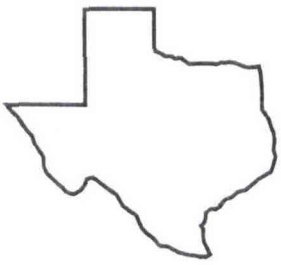
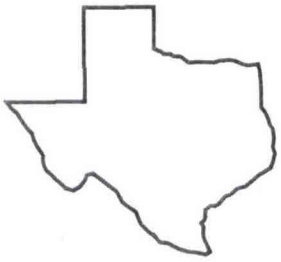
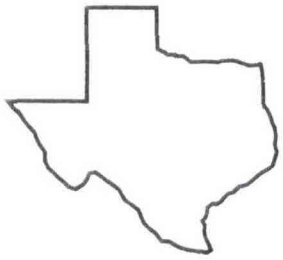
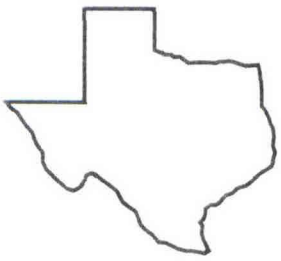




Overton Field Day Report - 1994





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ALFALFA RESPONSE TO SOIL SERIES AND APPLIED PHOSPHORUS

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Background. In spring of 1992, we limed 8 soils (Table 1) to decrease acidity and treated plots with 0, 50, 100, and 150 lb of P_2O_5/acre in three replications on 23 June 92. Each site was fertilized with 150 K_2O, 25 magnesium, 50 sulfur, 1 boron, 0.5 copper, and 0.5 lb zinc/acre on 25 June. Treatments were rotovated into the soil. All sites were relimed in August. Lime was incorporated. The blended fertilizer was reapplied to all plots 2 Oct. 92. Alfagraze alfalfa was seeded in 21-inch rows at 8.9 lb seed/acre in early Oct. 1992. Due to low rainfall following the initial seeding, all soils except Darco and Lilbert were replanted on 3 and 4 Nov. The blended fertilizer and phosphorus rates were reapplied to all sites after the first cutting in 1993. In Aug. 1993, 100 lb K_2O and 2 lb boron/ac were applied to each experiment.

Research Findings. The Lilbert, Cuthbert, and Bowie soils produced good yields (Table 2). Yield was not increased significantly by higher P rates on these soils. Soil P levels in check plots were 13, 29, and 17 ppm, respectively. Alfalfa responded significantly to increasing levels of applied P on the Keithville-Sawtown soil association and on the Darco soil. The Red Springs, Thenas, and Kirvin soils maintained alfalfa during the 86-day dry period, but yields were low. Alfalfa production on the Darco soil was less than 1 ton/acre at the highest rate of applied P.

Application. Preliminary data after one very dry season indicate that the Lilbert, Cuthbert, and Bowie soils are adapted for production of alfalfa. The Red Springs, Kirvin, and Darco series are droughty soils, and yields were lower. These studies will be continued to obtain more data in better rainfall years.

Table 1. Soil series extractable cation content and textural analysis in samples collected before experimental treatment.

	Extractable cations				Textural analysis			
Soil series	K	Ca	Mg	Na	Sand	Silt	Clay	Text. class
	----------ppm----------				----------%----------			
Lilbert	26	166	22	81	67.5	25.0	7.5	s loam
Cuthbert	64	377	49	81	64.5	18.3	17.2	s loam
Bowie	31	412	28	88	82.5	10.0	7.5	l sand
Keithville-Sawtown	31	325	23	83	74.5	19.0	6.5	l sand
Red Springs	109	679	73	78	57.3	12.7	30.0	s c loam
Thenas	97	352	46	80	80.5	12.0	7.5	l sand
Kirvin	92	1197	58	145	83.5	7.3	9.2	l sand
Darco	21	337	19	83	85.7	7.0	5.5	l sand

Table 2. Response of first year alfalfa and soil P levels to applied phosphorus by soil series in 1993. (Dry Matter)

Applied P_2O_5	Lilbert			Cuthbert		
	Yield	Soil P	pH	Yield	Soil P	pH
lb/ac	t/ac	ppm		t/ac	ppm	
0	2.50	13 b[1]	7.1	2.78	29 ab	6.9
50	2.95	18 ab	7.1	2.22	22 b	6.9
100	3.12	24 a	7.0	3.16	23 b	7.0
150	3.40	26 a	7.1	2.95	37 a	6.8
	N.S.		N.S.	N.S.		N.S.
R^2	0.71	0.71	0.68	0.76	0.68	0.29
C.V.	16.9	23.6	1.0	10.8	21.6	2.1
	Bowie			Keithville-Sawtown		
0	1.97	17	6.8	0.38 c	2 c	7.0
50	2.05	19	6.9	1.32 b	6 b	7.0
100	2.34	33	6.9	2.15 a	8 b	6.9
150	2.64	24	6.9	2.46 a	12 a	6.9
	N.S.	N.S.	N.S			N.S.
R^2	0.61	0.71	0.27	0.90	0.89	0.31
C.V.	16.2	36.0	1.6	24.9	24.7	1.7
	Red Springs			Thenas		
0	1.42	25	7.2	1.20	74	6.5 bc
50	1.63	22	7.1	1.22	75	6.4 c
100	1.45	38	7.1	1.37	85	6.7 a
150	1.32	35	6.9	0.81	86	6.7 ab
	N.S.	N.S.	N.S.	N.S.	N.S.	
R^2	0.58	0.29	0.30	0.44	0.51	0.83
C.V.	18.9	54.3	3.2	31.2	9.4	1.1
	Kirvin			Darco		
0	1.03	64	6.9	0.36 b	7 c	7.0
50	1.14	83	6.8	0.68 a	9 c	6.9
100	1.24	86	6.8	0.79 a	17 b	6.9
150	1.11	81	6.6	0.82 a	21 a	6.9
	N.S.	N.S.	N.S.			N.S.
R^2	0.74	0.12	0.36	0.74	0.96	0.53
C.V.	15.0	47.4	2.8	28.5	12.4	0.87

[1]Responses followed by the same letter are not significantly different statistically.