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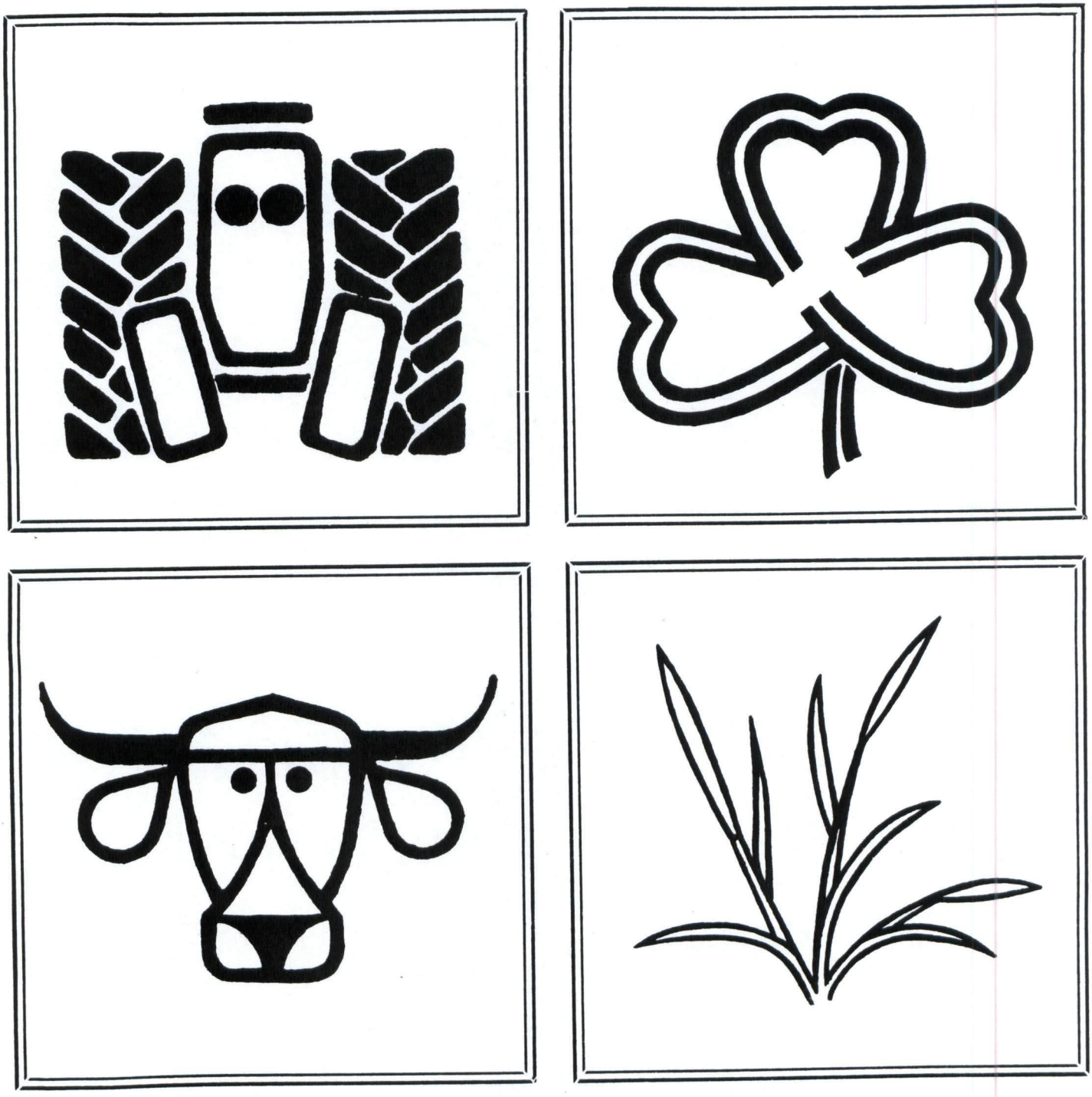

Forage Research in Texas

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Subterranean Clover Herbicide Tolerance

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SUMMARY

None of the herbicides evaluated resulted in significant increases in subterranean clover stands or yields. This was primarily due to the wide range of weed species present on the test site. Kerb, 2,4-DB, Chiptox, CGA-82725, and Rhonox provided limited weed control with no harmful effects to the clover. Balan and .5 lb/ac of Treflan provided good weed control but caused a slight reduction in clover stand and yield. Asulox, Dual, Eptam, and .75 lb/ac of Treflan significantly reduced clover growth while Princep and Surflan killed the clover. A combination of herbicides will be necessary for effective weed control in clover if a wide range of weed species are present.

Introduction

Grassy and broadleaf weeds can be a problem in growing pure stands of forage legumes, especially in research plots. Late summer and early fall weeds compete for moisture and light which reduces early forage production and nitrogen fixation. Because of the low income reputation of pastures, there are few herbicides cleared for use on forage legumes. Most of the available forage legume herbicides were developed for alfalfa, birdsfoot trefoil, and other legumes grown in the northern United States. This study was conducted to evaluate available herbicides on subterranean clover, a cool season annual clover adapted to the southern U.S.

Procedure

The study was conducted on a Lake Charles clay at the Angleton Station. Plot size was 6 x 15 ft. with four replications in a randomized block design. Mt. Barker subterranean clover was seeded at 12 lb Pure Live Seed/ac on September 24. Preemergence incorporated herbicides were applied the day before planting and incorporated with a rototiller mounted on a small garden tractor. Preemergence herbicides were applied immediately after planting and postemergence herbicides applied 5 weeks after planting on October 27. All herbicides were applied in 16.5 gallons water/acre at 30 psi. The clover stand on each plot was scored on November 23. All plots were cut at a 1.5 inch height on March 3, March 25, and May 5 with a flail mower. Percent clover in each plot was estimated visually immediately before each harvest. Weed species present on the study site were swinecress, henbit, common purslane, junglerice, broadleaf signalgrass, and nutsedge.

Results and Discussion

Clover stands in general were very poor because of inadequate moisture

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in the fall. Seed were planted in dry soil and no rain fell until 2 weeks after planting. The best stands were on the 2,4-DB, Kerb, Chiptox, control, and CGA-82725 (Table 1). Princep and Surflan eliminated subterranean clover completely and only a few plants survived the Dual and Eptam treatments.

Low forage yields on even the best treatments were due to the poor stands. None of the herbicide treatments resulted in significantly higher yields than the control. The weed population consisted of a wide range of broadleaf and grassy weeds. All herbicides tested controlled at least one of the weed species, but not all. Henbit and nutsedge were the most difficult to control. Balan, Dual, Eptam, Princep, Surflan, and Treflan provided the best weed control by controlling the widest number of weed species. Only Eptam provided satisfactory nutsedge control. Balan and the .5 lb rate of Treflan caused some reduction in clover stand and production, but it was not significant. The other herbicides which provided good weed control were also phytotoxic to the clover. Under better moisture conditions some of the herbicides may have been more effective in controlling weeds.

The proper herbicide to use in clovers will depend on the weed species present. Since some of the herbicides are preplant or preemergence, knowledge of potential weeds on a particular site is necessary. If a wide range of weed species are present, a combination of herbicides would be best. Of the weed species present in this study, only nutsedge would be difficult to control without some harm to the clover. However nutsedge is not a problem in winter or spring because of its susceptibility to frost.

Table 1. Effect of herbicides on the fall stand and total forage production of subterranean clover.

Herbicide	Rate	Stand score* Nov. 23	Harvest dates			Total
			Mar. 3	Mar. 25	May 5	
	lb A.I./ac		lb/ac			
2,4-DB	1.0	2.75**a	867 ab	980 a-c	1557 a	3404 a
Kerb	1.0	3.00 a	722 a-c	1209 a	1273 ab	3204 ab
Chiptox	.35	3.00 a	798 ab	1190 a	1205 a-c	3193 ab
Control	-	3.25 a	712 a-c	1022 ab	1410 ab	3144 ab
CGA-82725	.38	3.25 a	908 a	1192 a	1000 a-e	3100 ab
Treflan	.5	2.25 ab	741 a-c	848 b-d	1324 ab	2913 ab
Rhonox	.35	2.75 a	770 ab	1226 a	681 c-e	2677 a-c
Balan	1.0	2.25 ab	920 a	750 b-e	977 a-e	2647 a-c
Furloe IPC	4.0	1.50 bc	601 a-c	928 a-c	959 b-e	2488 b-d
Treflan	.75	1.00 cd	543 b-d	625 de	876 b-e	2044 c-e
Asulox	1.5	1.50 bc	252 de	604 de	1122 a-d	1978 c-e
Eptam	1.5	.25 d	514 b-d	722 c-e	600 de	1836 de
Dual	2.0	.25 d	406 cd	527 e	512 e	1445 ef
Eptam	2.0	--	--	--	913 b-e	913 f
Princep	1.0	--	--	--	--	--
Surflan	2.0	--	--	--	--	--

*Stand score 0=no stand, 1-some plants, 2=poor stand, 3=fair stand, 4=good stand and 5=excellent stand.
**Values within a column followed by the same letter are not significantly different at the .05 level, Duncan's Multiple Range Test.