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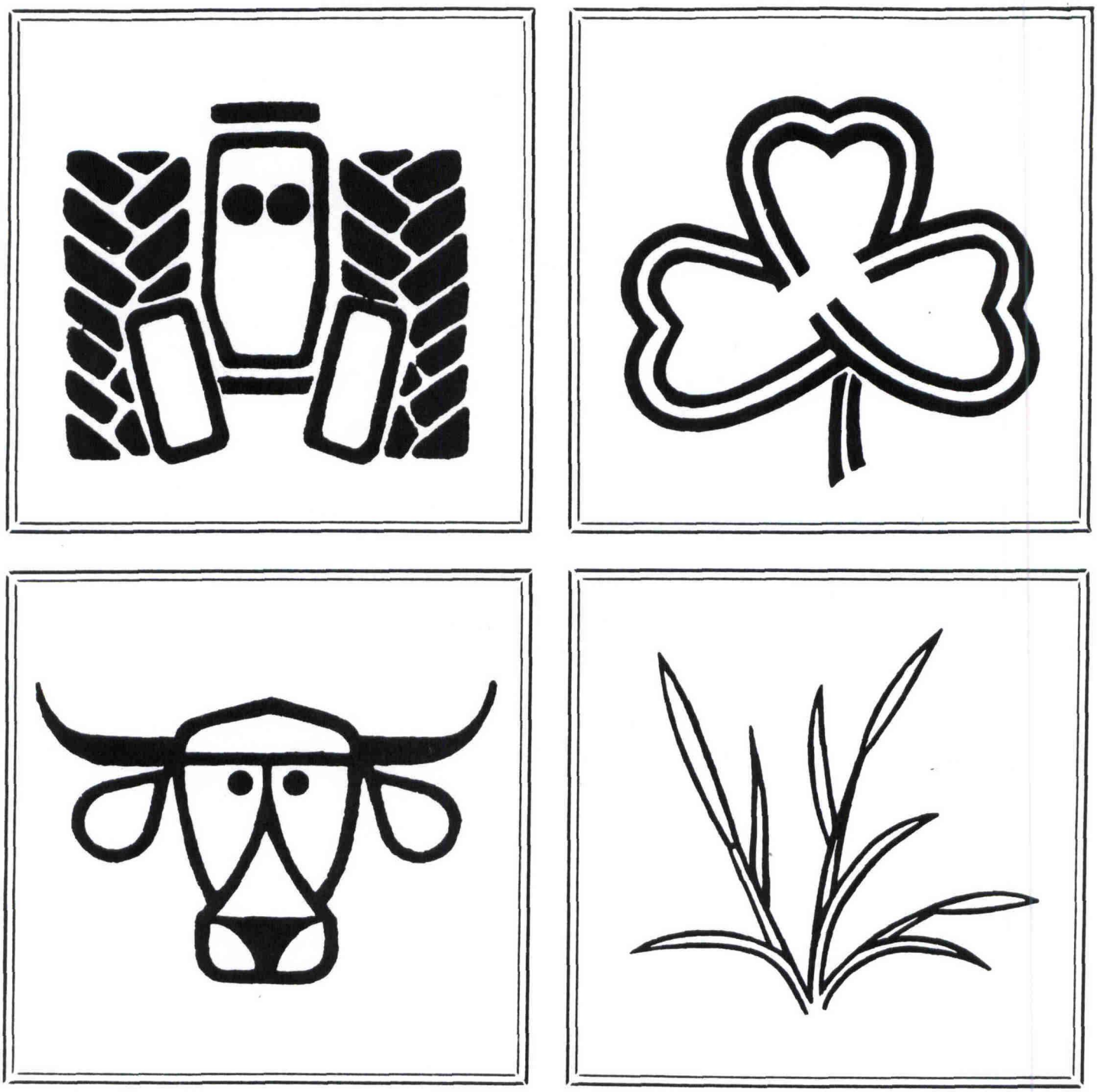

# Forage Research in Texas

# 1984

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# Performance of Native Warm-season Legumes

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## ABSTRACT

Species and varieties of eight genera of legumes native to Southern U. S. were evaluated for forage and seed production. Some of the varieties (Cunningham and K-8 Leucaena, Verano Stylo and Q-10042 Stylo) were introduced but all of the species are native. Following establishment in mid-June, some of the species had produced 1,000 to 1,500 pounds of dry matter per acre by September 1, and 100 to 225 pounds of seed per acre. Desmanthus, Rhynchosia, Dalea, Indigofera and Leucaena species were the highest yielding. Psoralea failed to survive and some sources of Leucaena retusa, Stylosanthes hamata, S. scabra and S. viscosa were low yielding.

## INTRODUCTION

Warm-season legumes are needed to grow in mixed stands with warm-season and native grasses to contribute nitrogen to the ecosystem, possibly improve protein content of the total forage, and contribute high quality seed to wildlife (gamebird) diets. Introduced tropical legumes generally lack cold tolerance for survival in most of Texas. Warm-season annual legumes such as hairy indigo and alyce clover germinate too late in the spring for the seedlings to compete with actively growing warm-season grasses. Thus, native species seem to offer the best potential of meeting the need for warm-season legumes.

## RESULTS

Yield data are shown in Table 1. While dry matter production was relatively low but, the plots were not established until June 13. Production in the range of 1,000 to 1,600 pounds in the 75-day period is acceptable in the presence of a relatively dry July and early August. Some entries of Dalea, Desmanthus, Indigofera, Leucaena, Rhynchosia, Stylosanthes exceeded 1,000 pounds per acre of dry matter production.

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KEY WORDS: Warm-season legumes/ Yield/ Seed production/ Adaptation

Sabine Illinois bundleflower was the highest yielding Desmanthus but Velvet bundleflower produced higher seed yields than Sabine. Velvet bundleflower makes prostrate growth and may be more resistant to defoliation than Illinois bundleflower.

Coast indigo has not been evaluated at this location previously. It made acceptable growth but matured little or no seed. Western indigo has performed well at locations further west and north but did not do well in this study.

The Leucaena species are native to Texas but leucocephala and pulverulenta apparently are winter hardy only in South Texas while retusa is hardy further north in the state. The Hawaii variety K-8 was the highest yielding. The native retusa sources developed very slowly. Retusa apparently is not very well adapted this far East (see Leucaena report).

Members of the genus Stylosanthes are found in Texas but not the species in this study. However, all the species in this study are found in Florida. Stylosanthes hamata 7838 is a native Florida fine stemmed type and was the highest yielding Stylosanthes in this study. Verano is an Australian variety and performed fairly satisfactorily. A previous study with Verano reported much higher yield but involved a longer growing season with irrigation. The highest yielding Stylosanthes scabra (Q-10042) also is an Australian variety.

Previously tested Stylosanthes species have not survived even relatively mild winters in Texas, and field seed germination from previous year shattered seed did not occur until about June 1. This test will determine whether native Stylosanthes species survive and/or volunteer earlier than the plant introductions.

The Desmanthus species and Rhynchosia texana were the only legumes producing significant amounts of seed. However, earlier establishment might result in better seed production.

This study indicates that silktop dalea, Velvet bundleflower, Coast indigo, Texas snoutbean and Stylosanthus hamata 7838, which had not been evaluated previously show promise for either forage production, seed production or both. Illinois bundleflower and least snoutbean, from earlier studies, produce acceptable yields of dry matter. Illinois bundleflower is also a good seed producer, but it loses vigor in the fall, often sheds its leaves, and may recover poorly in the spring. Illinois bundleflower has good seedling vigor and, because of high seed production, may reestablish stands from volunteer seedlings in the spring.

Table 1. Performance of Native and Introduced Warm-season Legumes, 1984

| Species | Common Name | Source | Sept. 1 DM lb/ac | Sept 14 Seed lb/ac |
|---|---|---|---|---|
| Dalea aurea | Silktop Dalea | PMT-4131 | 1002 | |
| Desmanthus illinoensis | Illinois bundleflower | Sabine(80-35) | 1233 | 100 |
| Desmanthus illinoensis | Illinois bundleflower | 80-20 | 774 | 49 |
| Desmanthus velutinus | Velvet bundleflower | 80-28 | 636 | 204 |
| Indigofera minita | Coast indigo | PMT-2528 | 1155 | |
| Indigofera minita | Coast indigo | PMT-2535 | 915 | 7 |
| Indigofera leptospala | Western indigo | PMT-1051 | 93 | 1 |
| Leucaena leucocephala | | K-8 | 1020 | |
| Leucaena leucocephala | | Cunningham | 328 | |
| Leucaena pulverulenta | Great leadtree | | 732 | |
| Leucaena pulverulenta | Great leadtree | AJO-3279 | 155 | |
| Leucaena retusa | Little leadtree | PMT-632 | 30 | |
| Leucaena retusa | Little leadtree | Balmorhea | 62 | |
| Psoralea tenifolia | Slimleaf scurfpea | PMT-2280 | 93 | |
| Psoralea tenifolia | Slimleaf scurfpea | PMT-4457 | 0 | |
| Psoralea sp. | Slimleaf scurfpea | T-4151 | 0 | |
| Rhynchosia minima | Least snoutbean | 80-73 | 1636 | 8 |
| Rhynchosia texana | Texas snoutbean | PMT-3100 | 1346 | 226 |
| Stylosanthes hamata | | Verano | 810 | 3 |
| Stylosanthes hamata | | 7303 | 221 | |
| Stylosanthes hamata | | 7731 | 208 | |
| Stylosanthes hamata | | 7742 | 107 | |
| Stylosanthes hamata | | 7838 | 1073 | |
| Stylosanthes viscosa | | Q-10042 | 604 | |
| Stylosanthes scabra | | 8250 | 87 | |
| Stylosanthes scabra | | 8292 | 156 | |