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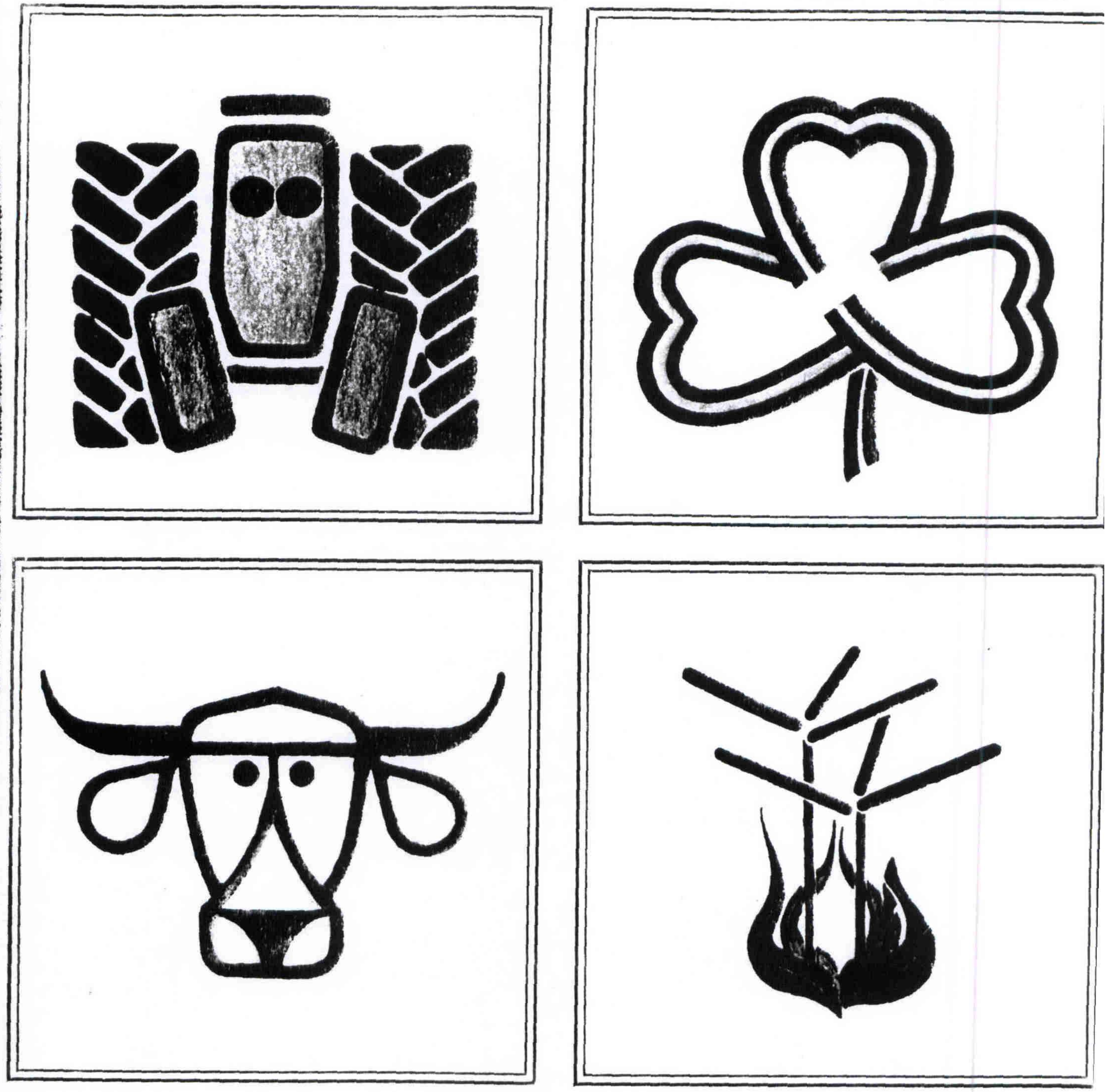

Forage Research in Texas

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BUFFELGRASS PERFORMANCE IN THE LOWER RIO GRANDE VALLEY

OBJECTIVE:

To evaluate selected buffelgrass lines for production under irrigated and non-irrigated conditions for South Texas.

PROCEDURE:

Seven buffelgrass lines and 3 buffel x birdwoodgrass hybrids were planted in a randomized block design with 4 replications at the Texas A&M University Agricultural Research and Extension Center at Weslaco. Tests were run under irrigated and non-irrigated conditions on a Harlingen clay loam. Plants were started in peat pots and transplanted to the field on April 29, 1977. Plots consisted of three 40-inch rows, 16-2/3 feet long, with 10 plants per row; the middle rows were harvested to determine dry matter yields. Fertilizer was applied as needed throughout each growing season. The non-irrigated plots received one irrigation after planting to insure good stands. Water was applied to irrigated plots as needed. Plots were harvested 4 times in 1977 (establishment year), 7 times in 1978 and six times in 1979 with a flail type small plot harvester.

Determination of crude protein was made on two harvest dates by Kjeldahl digestion and distillation. Samples were submitted to Dr. E. C. Holt for determination of *in vitro* dry matter digestibilities.

RESULTS AND DISCUSSION:

Dry matter yields of 7 lines of buffelgrass and 3 lines of buffel x birdwoodgrass hybrids grown under irrigation for 1977-1979 are shown in Table 1. Although few differences were found among entries during the first two years, all five of the newly improved hybrids (Nueces, Llano 18-35, 89, 71) had significantly higher yields than Common in 1979. The later yield advantage might be expected due to denser stands created by the rhizomatous growth habit of the improved buffel hybrids. Third year production was reflected in the three year average which showed the improved buffel hybrids to significantly yield more than Common. The 1967 release, Higgins, did not statistically differ from Common during the study period. Although Common had significantly more forage production than the buffel x birdwood hybrids during the establishment year, no statistical differences were found between Common and lines 101 and 1000 during the following two years or the three year average.

Dry matter yields of the buffel and buffel x birdwoodgrass lines grown under non-irrigated conditions are shown in Table 2. Although buffel 89 was the only entry to significantly yield more forage than Common when averaged over the 3 year period, Llano, Nueces and 89 showed significantly higher yields than Common in the third year (1979). This further supports that advantages of planting the new buffel hybrids may not be realized until the third year or after. When comparing yields averaged over three years, buffel 89 was the only entry to significantly yield more than Common. Because Common significantly produced more forage than the buffel x birdwoodgrass hybrids and virtually all buffel is presently utilized on lands with no irrigation, further improvement for yield in these types of hybrids is warranted.

Peak months of production were from April through October. An advantage of improved buffel hybrids over Common was their ability to recover more rapidly in the spring. The improved hybrids showed no advantage over Common for fall growth under non-irrigated conditions. However, Nueces had significantly higher yields than Common with irrigation in the fall of 1979. Non-irrigated plots showed a good response to moisture obtained in June and August 1978 and June, August and September 1979. The buffelgrass hybrids had a better response to moisture than the buffel x birdwoodgrass hybrids.

Percent crude protein averaged over two harvest dates was good for all entries (Table 3). No statistical differences for percent crude protein were found among entries when averaged over harvest dates. Nueces one of the highest yielding entries, ranked low in protein content while buffel x birdwood 101, one of the lower yielding entries had a high percent crude protein.

Percent digestible dry matter averaged over two harvest dates ranged from 57.5 to 62.1 for Llano and buffel x birdwood 101, respectively (Table 4). Statistical differences were not found among entries for digestibility when averaged over harvest dates; however, buffel 18-35 and buffel x birdwood 101 had significantly higher digestibilities than Common on the November 7, 1978 harvest date.

Table 1. Forage yields of buffel and buffel x birdwoodgrass hybrids under irrigation at Weslaco, Texas.

Entries	Yield/acre, pounds dry forage 1977	1978	1979	Average
Buffels				
Nueces	14,550	21,775	29,522	21,949
Llano	16,173	20,811	27,172	21,386
71	15,230	20,007	27,095	20,777
89	14,713	20,766	26,617	20,699
18-35	14,201	20,956	26,861	20,673
Higgins	12,150	19,264	25,341	18,918
Common	13,729	18,702	23,706	18,712
Buffel x Birdwood				
1000	10,861	18,174	23,644	17,893
101	11,087	18,294	23,648	17,676
37	10,729	16,411	19,013	15,384
LSD[1]	1,833	2,270	2,891	1,828
C.V.	9.5	8.0	7.9	6.5

[1]Least significant difference at the .05 level of probability.

Table 2. Forage yields of buffel and buffel x birdwoodgrass hybrids with no irrigation at Weslaco, Texas.

Entries	Yield/acre, pounds dry forage 1977	1978	1979	Average
Buffels				
89	11,979	13,789	16,112	13,960
Llano	10,916	13,224	15,280	13,140
Nueces	10,738	13,290	15,208	13,078
71	10,410	13,368	15,033	12,937
18-35	10,832	13,597	14,338	12,038
Common	9,836	12,992	13,288	12,038
Higgins	8,804	11,975	10,559	10,446
Buffel x Birdwood				
1000	7,226	10,988	12,581	10,265
101	6,890	10,233	10,930	9,351
37	6,081	9,810	10,734	8,874
LSD[1]	1,696	1,409	1,910	1,312
C.V.	12.5	7.9	9.8	7.7

[1]Least significant difference at the .05 level of probability.

Table 3. Protein content of buffel and buffel x birdwood grass hybrids at two harvest dates in 1978.

	% Crude Protein					
	Irrigated			Non-irrigated		
Entries	9/19	11/7	Average	9/19	11/7	Average
Buffels						
Nueces	7.5	8.2	7.7	11.2	8.3	9.8
Llano	8.0	9.0	8.5	13.0	7.4	10.2
18-35	6.7	9.5	8.1	12.3	8.1	10.2
89	7.5	9.8	8.6	11.9	8.5	10.2
71	9.7	9.6	9.6	11.8	8.7	10.3
Higgins	9.5	9.3	9.4	11.4	10.3	10.8
Common	7.7	9.2	8.5	12.1	9.5	10.8
Buffel x Birdwood						
1000	8.9	8.5	8.7	9.9	9.3	9.6
101	9.2	9.8	9.5	11.9	11.5	11.7
37	8.1	8.6	8.3	12.8	10.2	11.5

LSD[1] Least significant difference at the .05 level of probability.

Table 4. *In vitro* digestibility of buffel and buffel x birdwood grass hybrids at two harvest dates in 1978.

	In vitro dry matter digestibility (%)		
Entries	September 19	November 7	Average
Buffels			
18-35	59.4	61.2	60.3
Nueces	62.5	57.6	60.0
71	59.4	59.8	59.6
89	61.0	57.6	59.3
Higgins	60.4	57.2	58.8
Common	60.9	56.4	58.7
Llano	60.6	54.4	57.5
Buffel x Birdwood			
101	61.9	62.3	62.1
37	60.9	58.7	59.8
1000	58.1	58.3	58.2
L.S.D.[1]	NS	4.5	NS
C.V.	3.5	5.3	3.0

[1]Least significant differences at the .05 level of probability.