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DUAL PURPOSE WHEAT CROP IN A CATTLE SYSTEM FOR EAST TEXAS

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SUMMARY

Partial results on the potential of wheat for forage as well as grain for East Texas are given in this report. A 2-year study involving wheat for forage and grain has shown good potential as a profitable part of a grazing-grain system for East Texas. About 1½ tons dry matter of high quality forage can be produced by wheat from mid-November until mid-February. This has resulted in average daily gains from 0.5 to over 2 lbs per day depending on weather conditions and the type of animal being grazed. In 1981, 37 bu/wheat/acre was harvested off the wheat in addition to the forage.

OBJECTIVE

To determine the feasibility and profitability of a dual purpose wheat (grazing-grain) and ryegrass system. Further, to determine the seasonal forage supply from November through May. Lastly, to determine the grain yield potential of wheat which has been grazed through February 15th.

METHODS

This study was initiated in the fall of 1980 and has a 2-year duration. In regards to wheat, there were four harvest treatments and five wheat varieties. The treatments were as follows:

1. Wheat grazed from November to mid-February and then allowed to produce grain.
2. Wheat mechanically clipped from November to mid-February and then allowed to produce grain.
3. Wheat clipped out or until May.
4. Wheat not clipped or grazed and harvested for grain only.

In addition, a 34 acre field was planted to wheat for grazing and cattle weights were recorded at the beginning, and at monthly intervals

until mid-February when the cattle were removed and placed on a ryegrass pasture. The total amount of grain was measured to determine mean yields per acre.

The wheat varieties planted in each of the four treatments in 1980 were Coker 68-15, McNair 10-03, Tx-73-93, Tx-72-9 and Arthur 71. In 1981, two of these lines (Arthur 71 and Tx-72-9) were dropped from the study and were replaced by TAM-106 and Northrup King 812 in an effort to increase grain yields.

All wheat treatments were planted into a prepared seed bed. A preplant fertilizer application rate of 60 lbs/acre each of N P₂O₅ and K₂O was applied each year. Prior to the first year of the study, ag lime at a rate of 1½ ton/acre was applied. Wheat was topdressed with 100 lbs/N in October to all clipped and grazed plots, but not to the grain treatment. A 60 lb/N/A rate was applied to all wheat treatments in February.

Planting dates in 1980 were in late September, while in 1981 planting dates were in early September. Forage yields were taken with a flail-type harvester on the clipped plots. On the grazed plots, wire cages were employed to protect the forage and an estimate of yield was obtained by hand clipping an area within the caged area on a monthly basis. Cages were moved after each harvest.

RESULTS

Forage yields: The forage yields harvested from the wheat plots during 1980-81 were low (Table 1). This was the result of very dry growing conditions during the entire season. In addition, there was some damage caused by lesser corn stalk borer (during the fall) and greenbugs (in the spring). In making a comparison between varieties, there were three good forage yielding lines (Coker 68-15, McNair 10-03 and Tx-73-93) and two low yielding lines (Arthur 71 and Tx-72-9).

On the study clipped until February 16, very low yields were harvested. These yields would normally be much higher than this. Forage yields on the plots grazed until February 13 are higher compared to the clipped (not grazed) plots, however, this is thought to be the result of method of harvest rather than due to grazing. The results for 1981-82

(Table 2) indicate much higher forage yields resulted for all varieties. During both years, more forage was produced on the grazed plots than on the clipped only plots. This may indicate the scalping effect of the clipping treatments retards regrowth. The grazing pressure in this study left more vegetation which could promote more regrowth. Plant food nutrient recycling may also have influenced the yield differences between clipped vs grazed plots. Total season forage harvests or grain yields were not available for 1982 at the time this report was written.

Cattle gains: In the 1980-81 season, 37 heifers (average weight - 371 lbs) were turned onto the wheat on November 21. Three weigh periods of about 30 days each were taken and the calves were removed after 89 days. The average daily gain (ADG) for the 1st, 2nd and 3rd weigh periods were 0.29, 1.08 and 1.65 lbs, respectively, for a mean ADG of 1.06 for the entire period. The low ADG for the 1st period is the result of the calves becoming adjusted to the pasture situation. The 2nd and 3rd weigh period gains are more respectable and indicate a fairly good gain for January and February. The calves were made up of Angus and Brahman breeds for the most part. The actual total gain of 3,803 lbs of beef on the 34 acres resulted in a gain of about 112 lbs of beef per acre.

In 1981-82, tester animals were made up of 10 Brahman heifers, 15 Brangus heifers and 12 Simmental crossbred steers. Cattle were turned on the wheat on November 3rd with ample forage being available. The ADG for the three groups of cattle are shown in table 3.

The overall gain in beef was 5,060 lbs or an average of 150 lbs/acre for 1981-82. The gains in January were the result of a 10 inch snow fall which covered the pasture for several days.

In 1981, we harvested about 37 bu/acre wheat grain from the study. We expect a higher grain yield in 1982 than in 1981. The economics of this system need to be studied, but appear to have potential.

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Table 1. Forage yield of 5 wheat varieties mechanically clipped for entire growing season 1980-81.

Variety	Harvest date						Total yield
	Dec 12	Jan 23	Feb 16	Mar 13	Apr 7	May 7	
	lbs/ac of oven dry forage						
Coker 68-15	894	409	179	1711	920	613	4726
McNair 10-03	715	588	204	1607	741	919	4774
Arthur 71	486	0	102	1430	996	537	3551
Tx-72-9	460	128	102	1558	996	537	3781
Tx-73-93	843	460	154	1686	1124	716	4983
Mean	680	317	148	1598	955	664	4362
C.V.	19	51	37	12	9	23	
LSD (10% level)	169	206	70	237	105	191	
Mechanically clipped until Feb 16th (not grazed)							
Coker 68-15	639	358	205				1202
McNair 10-03	664	562	307				1533
Arthur 71	486	77	26				589
Tx-72-9	333	102	0				435
Tx-73-93	588	384	205				1177
Mean	542	297	148				987
C.V.	18	39	32				
LSD (10% level)	125	147	59				

Clipped after regrowth of grazed plots							
	Harvest date				Total yield		
	11/19/80	12/17/80	1/14/81	2/13/81			
	lbs/ac of oven dry forage						
Coker 68-15	1415	672	791	427	3305		
McNair 10-03	1247	1008	863	644	3762		
Arthur 71	1151	696	600	130	2577		
Tx-72-9	983	814	192	274	2263		
Tx-73-93	1223	624	408	728	2983		
Mean	1204	763	571	441			

Table 2. Forage yields of 5 wheat varieties mechanically clipped until mid-February versus regrowth of grazed plots in 1981-82.

Variety	Harvest date			Total yield	
	Dec 16	Jan 25	Feb 18		
----- Mechanically clipped until Feb 18, not grazed-----					
	lbs/ac of oven dry forage				
TAM 106	2324	1252	333	3909	
Coker 68-15	1839	1047	330	3216	
NK 812	1864	996	335	3195	
McNair 10-03	1788	970	330	3088	
Tx-73-93	1584	996	281	2861	
Mean	1879	1052	322	3253	
CV	46	20	16		
LSD	NS	NS	NS		
----- Clipped after regrowth of grazed plots -----					
	Nov 5	Dec 2	Jan 12	Feb 14	Total yield
TAM 106	577	1391	1343	408	3719
Coker 68-15	529	1415	1032	576	3552
NK 812	804	1391	1368	463	4026
McNair 10-03	493	1487	1547	557	4084
Tx-73-93	420	1463	1797	631	4311
Mean	565	1429	1417	527	3938

Table 3. Mean average daily gain for cattle on wheat forage in 1981-82 (lbs/da).

	(Nov 13-Dec 1)	(Dec 1-Jan 5)	(Jan 5-Jan 29)
Brahman heifer	1.3	1.3	0.2
Brangus heifers	1.2	1.3	0.9
Crossbred steers	3.9	2.3	0.7
Mean ADG	2.2	1.7	0.6