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## Forage and Grain Sorghum Double-cropped Following Harvest of Small Grain Silages

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### Summary

The attempt to increase total forage TDN per acre by double-cropping was only moderately successful in 1975 and 1976. Limiting factors were relatively poor stands and extremely dry summer growing seasons.

### Introduction

This study was conducted primarily to determine potential yield of a forage system when forage sorghum silage is double-cropped after small grain silage. The goal is to maximize the yield of forage TDN per acre and thereby increase profits when integrated with a beef enterprise. A grain sorghum variety was also included to determine if satisfactory yields might be obtained if grain were needed more than forage in the livestock operation. Minimum tillage was also compared with conventional seedbed preparation.

### Experimental Procedures

DeKalb C42y hybrid grain sorghum and Asgrow Titan E hybrid forage sorghum were used both years. Plots were 10 feet x 50 feet (four 30-inch rows) with 10 or 20 feet of the center 2 rows harvested for yield. Herbicides were used to control weeds and the plots were fertilized with 60 lbs per acre actual N in 1975 and 80 lbs per acre in 1976.

Two dates of planting were planned for 1975; three for 1976. Untimely rain in late May and early June allowed only a late planting in 1975 (June 20). In 1976, extremely dry weather after the June 2 planting caused us to abandon that planting. The second planting (June 21) was followed by heavy rains and only fair stands resulted. The third planting (July 2) was made after spring oats were harvested.

### Results and Discussion

Forage and grain yields are shown in Table 19.1. Yields of both were relatively low, but probably represent the low end of an expected range. Rainfall was extremely limited in both 1975 and 1976, and untimely late spring rainfall delayed planting and contributed to poor stands.

For any double-cropping system to be successful, operations must be timely. Minimum tillage equipment should allow more timely planting and

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thereby increase the percentage of successes. In this study, stands were generally erratic for both minimum and conventional tillage, contributing largely to the low yields. However, when the 10 to 15 tons per acre of forage sorghum silage is added to the 8 to 9 tons per acre of small grain silage harvested earlier (see Forage and Grain Yields of Barley, Wheat and Oats in this Progress Report), the yearly total is quite good for both 1975 and 1976. For comparison, average single crop yields in the 1975 and 1976 Hybrid Forage Sorghum Performance Tests on the same Agronomy Farm at Manhattan were 23.3 and 15.7 tons per acre.<sup>2</sup>

The second essential factor for double-cropping success is somewhat "normal" rainfall. We received virtually no precipitation from late June into August both years and present soil moisture conditions indicate a low probability of double-cropping success in 1977.

Table 19.1. Forage and grain sorghum yields for two tillage methods planted after barley, wheat or spring oats.

Preceding crop and harvest dates	Tillage method	Forage sorghum yield		Grain sorghum yield	
		Tons/acre @ 70% moisture	Tons/acre @ 70% moisture	Bu/acre @ 12.5% moisture	Bu/acre @ 12.5% moisture
		1975	1976	1975	1976
Wheat and barley silage, June 2	Conventional	16.2	8.3	47.7	25.8
	Buffalo-till	15.3	10.2	46.5	33.7
Spring oat silage, July 1	Conventional	--	14.3	--	20.9
	Buffalo-till	--	8.8	--	25.8

<sup>2</sup>Data supplied by Ted Walter, Department of Agronomy.