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GRAIN SORGHUM PRODUCTION AND OUTLOOK IN THE HUMID U.S.

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Grain sorghum production has been up and down in the southern United States for a number of years. This is illustrated by Mississippi acreage from 1970 through 85 (Table 1). Recently acreage has mushroomed. In 1980 there was less than one-half (1/2) million acres in the southeastern states of Alabama, Arkansas, Georgia, Louisiana, Mississippi, South Carolina and Tennessee. By 1985 there was approximately 2.8 million acres (Table 2). Acreage-wise Arkansas led in total acreage with almost one (1) million acres. The smallest acreage was in South Carolina.

The largest percentage increase in acreage from 1980 to 1985 was in Louisiana, followed by Mississippi with the smallest percent increase in Georgia. The increases through the south are presented in Table 3.

There have been several proposed reasons for this increase. One is the need for a crop to rotate with soybeans. Soybean acreage in the south has mushroomed. Mississippi acreage peaked at 4.2 million acres but has decreased to about 2.6 million acres in 1985. Many of the other southern states have followed the same pattern as Mississippi; large rapid increases in soybean acreage. Why do we need a crop to rotate with soybeans? One reason is soybean cyst nematode. By 1984 virtually the entire state of Mississippi had some level of infestation of this pest. Races 3 and 4 were present in many counties. Other southern states have similar situations. Actually the infested area is much greater than the southern region. It has expanded into the lower midwest, particularly up the Mississippi River. When we rotate soybeans with a non-host crop populations are drastically reduced. Grain sorghum is a non-host crop.

Even when nematodes are not a problem the yield of soybeans is improved when grain sorghum is in crop rotation. Arkansas data reflects a seven (7) to eight (8) bushel increase in soybean yields in a rotation. Similar responses come from other rotations. Grain sorghum yields are also increased in the soybean-sorghum rotation.

Another reason given for increase in grain sorghum acreage is declining yields of soybeans. However, when we look at Mississippi data

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Table 1. Acres of Grain Sorghum Harvested in Mississippi* (Thousand Acres).

Year	Acres Harvested	Year	Acre Harvested
1970	116	1978	21
1971	150	1979	33
1972	33	1980	38
1973	30	1981	88
1974	38	1982	110
1975	38	1983	225
1976	41	1984	407
1977	24	1985	620

*Miss. Crop and Livestock Reporting Service

Table 2. Acres of Grain Sorghum Harvested In Seven (7) Southeastern States - 1980-1985.*

State	Year (Thousand Acres)					
	1980	1981	1982	1983	1984	1985
Alabama	34	58	68	100	180	230
Arkansas	203	298	263	320	590	920
Georgia	82	135	135	68	113	138
Louisiana	14	72	145	180	269	410
Mississippi	38	88	110	225	370	620
South Carolina	15	18	35	25	34	47
Tennessee	35	75	85	95	260	465
Total	352	744	841	1,013	1,816	2,830

*Miss. Crop and Livestock Reporting Service

Table 3. Increase in Grain Sorghum Acreages by States, 1980-1985.

State	Percentage (%)
Alabama	676
Arkansas	453
Georgia	168
Louisiana	2,928
Mississippi	1,632
South Carolina	313
Tennessee	1,329

this may not be a valid reason. Average yields are presented in Table 4. Since 1979 Mississippi soybean yields have fluctuated much more than in prior years. Much of this can be attributed to weather. Bean yields have really declined very little. The 1985 Mississippi average was 27 bushels per acre, just two bushels per acre under the record average of 29 bushels per acre in 1979. A more likely reason for the shift to grain sorghum is the declining profitability of soybeans. Cost of production has gone up while prices have slowly declined so that the profit potential in 1982 was $10 to $38 per acre compared to $63 to $102 per acre in 1981, Table 5.

Markets have improved throughout the area. Livestock and poultry producers have "discovered" grain sorghum. The use of local grain sorghum by swine producers and poultry producers has greatly improved the marketing in our area. Local grain elevators have also increased their handling of grain sorghum. Farmers have been able to increase acres cropped by adding grain sorghum to the soybean-cotton farm. Acreage can be increased 25 to 30% without any additional cost for labor and equipment because planting and harvesting does not compete with soybeans. This reduces overhead cost and improves cash flow.

We face some serious problems in grain sorghum production. One is disease. Grain sorghum varieties for the south have traditionally been those from western breeding programs that have performed rather well in testing programs in the South. Few varieties have been developed for the south. Three primary diseases are anthracnose, charcoal rot and a Fusarium complex that cause lower stalk rot, upper stalk rots and grain molds.

Rainfall is also a limiting factor and without irrigation consistent optimum yields are not possible. Only the coastal area averages enough summer rainfall to optimize yields without irrigation. Other areas will need irrigation 3 years out of 5 for optimum yields.

The potential for grain sorghum in the sought is great. With well adapted varieties and some supplemental irrigation the present two-plus million acres could well be six to seven million acres.

Table 4. Average Soybean Yields For Mississippi - 1970-1985.*

Year	Yield (Bu/A)	Year	Yield (Bu/A)
1970	22.5	1978	21.5
1971	21.5	1979	29.9
1972	19.5	1980	16.0
1973	22.0	1981	21.0
1974	19.5	1982	26.0
1975	22.5	1983	19.0
1976	22.0	1984	24.0
1977	21.5	1985	27.0

*Miss. Crop and Livestock Reporting Service

Table 5. Mississippi soybeans returns to land and managment, 1975-84, based on a 25 Bu/A yield.*

Year	Locations	
	Hill Area	Delta Area
1975	59.22	76.76
1976	20.91	44.76
1977	51.05	51.05
1978	23.71	53.92
1979	25.16	60.95
1980	34.21	80.76
1981	63.44	101.95
1982	10.16	38.26
1983	4.77	33.71
1984	29.82	72.70

*Miss. Extension Ag. Economics Budget Estimates