

HIGH COTTON PRICES SPUR MORE PLANTINGS

by *Gene D. Sullivan*

What is likely to provide the most dramatic change in Southeastern agriculture in 1977? Recent cotton prices give a clue. By the end of 1976, Southeastern farmers were receiving prices averaging nearly 25 percent above the year-ago level and 60 percent above the March 1975 low. Because that elevated price level continued into 1977, most observers expect increased cotton plantings.

This observation prompts the following questions: "What is the basis for such an expectation?" "Do cotton producers usually change production when prices vary?" "If so, by how much?" "Where have the changes occurred?" "Is the response worldwide?"

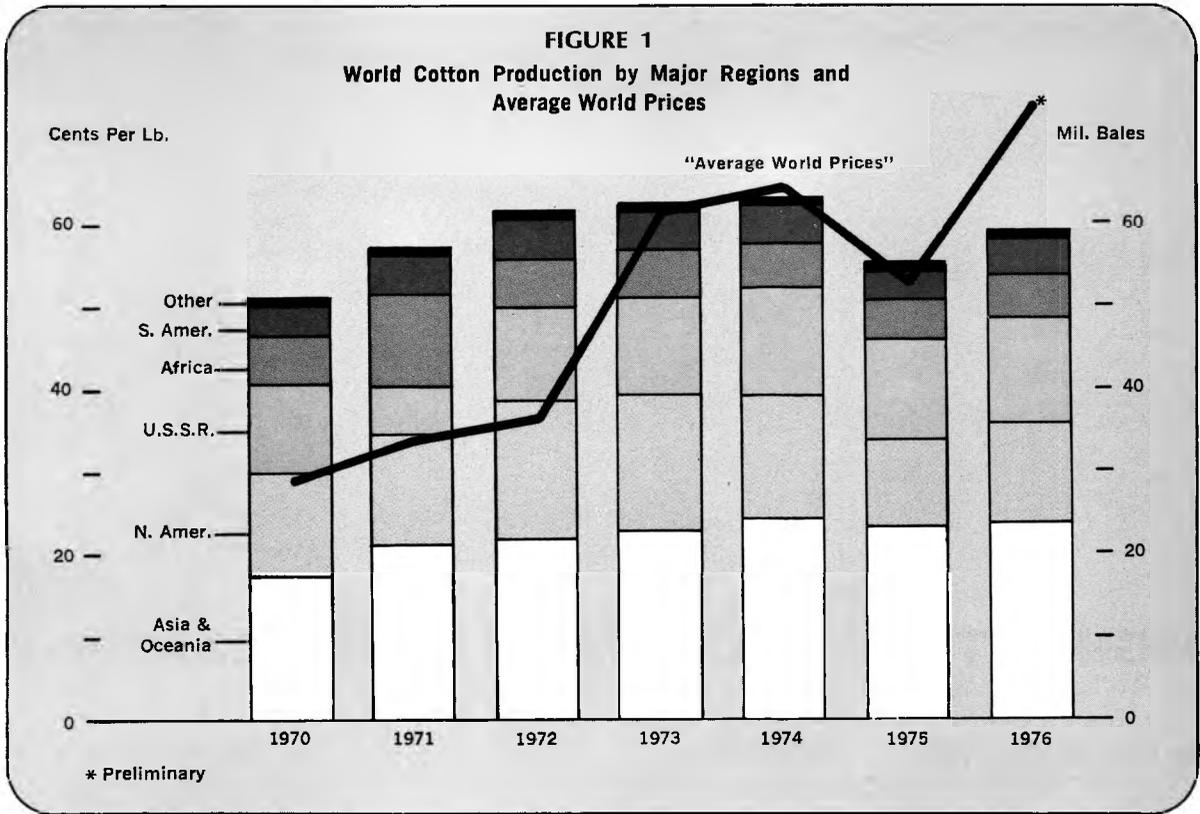
World Cotton Production. The answers can be found by examining past relationships between cotton production and prices on a worldwide basis. A loose relationship between price and the annual production level shows up in Figure 1, which illustrates world cotton production since 1970 and the average world price for this same period. Cotton production climbed as prices rose from 1970 until 1974, but production fell when the price dropped abruptly in 1975. Both moved up again, but not in proportion, in 1976.

U. S. Ranks Second. Though world production varied from year to year, the changes did not occur uniformly among cotton-growing countries. Of the six leading producers in the world, the United States accounted for a lion's share of production response to changing prices (see Figure 2). And, unless past behavioral patterns change drastically, U. S. growers are likely to determine the majority of change in 1977 world production.

Production-Price Relationship. What do prices tell us about how U. S. producers will respond in 1977? Planted acreage reflects more accurately the farmers' intended level of production than does harvested acreage. The latter often differs from plantings because of environmental factors that cause the abandonment of some acreage as the season progresses.¹

Planted acreage, at least since 1970, has evidently been more closely related to the annual price during the concurrent year than

¹The majority of the U. S. cotton crop is planted during April and May. When bad weather either delays planting or makes replanting necessary to obtain a sufficient stand, acreage is often shifted to shorter season crops to avoid the increased susceptibility to frost damage that accompanies a June planting date. May plantings usually have a chance to mature prior to the advent of frosts and freezes in late October.



to the prior year's price (see Figure 3). Admittedly, however, that relationship has not been close. An extremely sharp drop in planted acreage accompanied the abrupt downturn in price in 1975. Both price and acreage moved up again in 1976, although acreage did not reach its pre-1975 level.

First Quarter's Price Is Key. It seems logical that farmers would be most affected by prices received in some period prior to or during the planting season. A comparison of average prices received during each quarter of the year reveals that the price during the first quarter of the calendar year is most closely related to planted cotton acreage. Movements in first-quarter prices are also more closely related to changes in planted acreage than are changes in annual prices (see Figure 4). Thus, farmers still contemplating cotton plantings for 1977 are probably giving closest study to the prices of cotton in January, February and March.

Return Over Cost Influences Most. In spite of its popularity, price alone should not play a large role in affecting planting

decisions. Price rises mean nothing if costs have also risen an offsetting or even greater amount. Production costs have skyrocketed during recent years. The expected return above costs ought to be much more influential than prices on farmers' production decisions.

The relationship between planted acreage and anticipated net return per pound of cotton is shown in Figure 5. Here, net refers to the return over the average variable cost of producing cotton which includes items such as seed, fertilizer, chemicals and labor. The cost of land and other fixed items obviously would exist whether cotton or some alternative crop were produced. Such static costs can be ignored when making production decisions.

The close relationship between changes in anticipated net return and planted acreage is striking. Production costs vary widely, even from one farm to another within the same area, and there are high cost variations between the eastern and western shores of the continent. Yet, deducting an average production cost that must be atypical for many

FIGURE 2

Major Cotton-Producing Countries Production

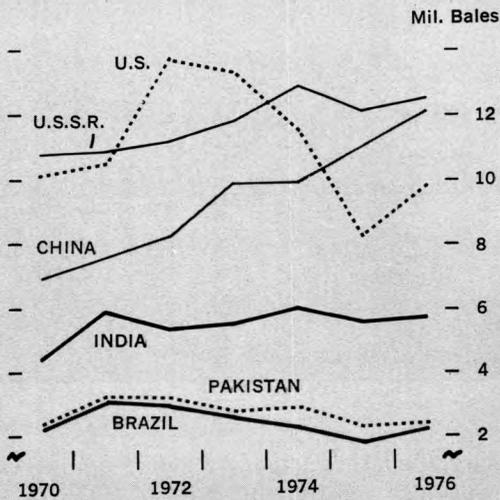
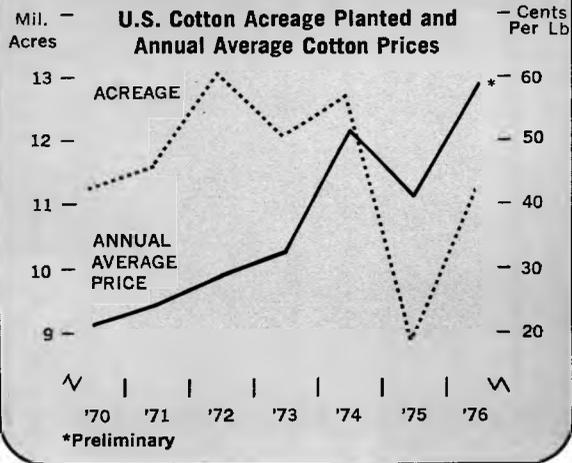


FIGURE 3

U.S. Cotton Acreage Planted and Annual Average Cotton Prices



producers from cotton prices still gives an anticipated net return that has a surprisingly strong correlation to the combined planting decisions of all cotton farmers. Each time this anticipated net return rose, planted acreage also expanded, as Figure 5 clearly demonstrates. Plantings fell each time the net declined.

Because cost is an average of such a wide range, it is incorrect to assume that all producers anticipated a loss in the years when the net was a negative number. Also, government payments to cotton producers, which were not included in these calculations, provided substantial returns to growers during the early portion of this period.

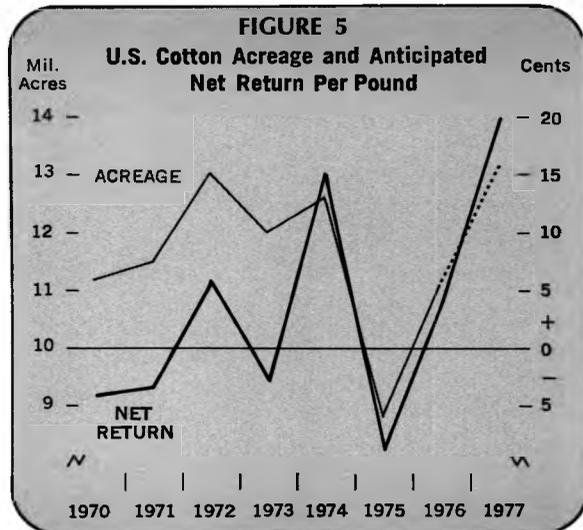
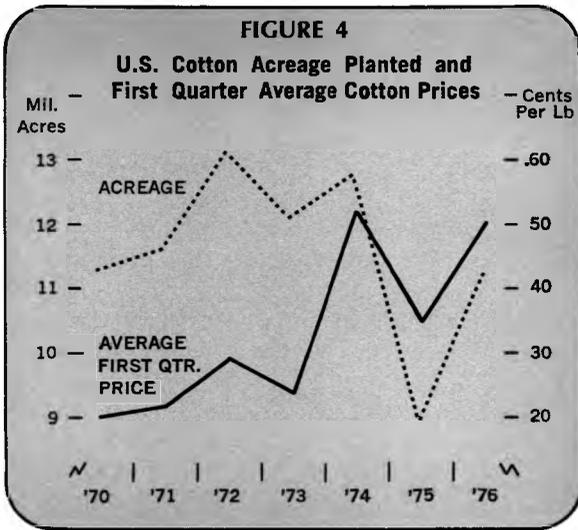
Anticipated Return Forecasts 1977 Acreage. If the observed relationship continues, what can we tell about 1977 cotton production? In December, farmers received an average of 63 cents per pound for cotton. Anticipated net return at that price would be about 19 cents per pound. Planted acreage would rise to about 13.0 million acres to match that level of return. Preliminary data show that farmers received an average price of 64 cents per pound during 1977's first quarter. The gain of one cent in projected net return would raise indicated plantings to about 13.1 million acres.

As definite as that projection seems, the final word on cotton production levels undoubtedly is influenced by still other factors. Weather conditions can alter planting decisions at the last minute. In addition, farmers can grow other crops, and prospective returns from those enterprises must also weigh on farmers' cotton planting decisions.²

Cotton vs. Alternative Crops. The appendix table compares projected returns from cotton with four alternative crops in the Southeast. Yields per acre are actual averages attained over the past three years in the six District states. Yields are multiplied by the most recent average prices received by farmers to obtain the anticipated gross return per acre for each crop. By subtracting variable costs per acre published either by the U. S. Department of Agriculture or other public sources, a rough indication of the anticipated net return is derived for each crop.

At the first quarter's average prices with yields as shown, cotton is the best alternative to soybean production in the Southeast. However, cotton farmers have experienced back-to-back weather problems that have sharply reduced yields in two of the past three years. The three-year average yield is probably below most growers' production expectations. With favorable weather in 1977, the average

²The survey of planting intentions released in January showed that farmers intended to plant 12.8 million acres of cotton in 1977. In the subsequent April survey, intentions were revised upward to 13.7 million acres. Nearly all of that revision occurred in states outside the Southeast. Planned acreages of cotton and other selected crops are shown in tabular form in the appendix following this article.



yield could easily increase by 100 pounds per acre, adding another \$66 to indicated returns. Cotton would then be a clearly superior alternative to the four other crops. Should cotton prices fall during planting time while soybean prices continued to rise, the advantage of soybeans would be strengthened; cotton acreage might be diverted to soybean production. An unfavorable planting season for cotton would accentuate the move to soybeans.

In either event, both cotton and soybeans are obviously superior alternatives to the average net calculated for corn, grain sorghum and rice. It seems reasonable to expect acreage might be drawn away from all three crops to expand both cotton and soybean production in the Southeast during 1977.

Economic Impacts. A large increase in planted cotton acreage will have a sizable impact throughout the cotton belt. The table on page 73 shows that cotton is a relatively expensive crop to produce; of the five crops shown, only rice has higher per acre variable costs. So, a 1.5 million-acre increase of cotton at variable costs of \$207 per acre would generate added cotton production spending of about \$310 million in 1977. That would not be entirely net gain, of course, because increased cotton acreage would reduce expenditures for producing other crops. But cotton requires many specialized inputs not utilized by other enterprises. To firms that supply inputs to the cotton in-

dustry, the larger acreage means a net increase in business. Figuring the share of the Sixth District states at one-fourth of the U. S. total, cotton production expenditures of District farmers should rise by about \$77 million this year.

The added gross income from cotton production would have another effect. Cotton is one of the more valuable crops grown on a large scale in the United States. An additional 1.5 million acres multiplied by 450 pounds, the most recent three-year average yield per acre for the U. S., amounts to 675 million pounds of added cotton expected in 1977. By rounding anticipated prices of growers to 65 cents per pound (a price that has frequently been available to growers who have contracted for future delivery), added revenue for the 1977 crop would be nearly \$440 million. However, if the price should decline to 50 cents during the harvest season and growers have not sold in advance, the added revenue would then be less than \$340 million. The one-fourth share for the District states would range from over \$110 million at high price to less than \$85 million at the lower 50-cents-per-pound price.

Summary. Relatively high cotton prices during the 1977 preplanting season virtually guarantee increased cotton plantings. Conservative estimates place the jump at nearly 1.5 million acres. Plantings could be substantially higher if soybean prices weaken

relative to cotton and if there is favorable weather during the cotton planting season. The anticipated increase would generate nearly \$310 million of additional expenditures in producing the 1977 crop. Much of that would be net gain in business for supply firms because cotton uses many specialized inputs and is more expensive to produce than most crops it is expected to replace. The added

revenue for farmers from increased production in 1977 at recent price levels could easily reach \$440 million. The economies of all areas sharing the 1977 increase in cotton production will feel a business upsurge. That impact will undoubtedly be magnified for lending agencies supplying financing all along the cotton production and marketing chain. ■

APPENDIX

**PROJECTED RETURNS OVER VARIABLE COSTS
FOR CROP FARMERS IN SIXTH DISTRICT STATES, 1977**

	3-Year Average Yield ¹	Farmers' Projected Price ²	Anticipated Gross Return ³	Variable Cost	Indicated "Net" Return ⁴
	(per acre)	(\$ per unit)	(\$/acre)	(\$/acre)	(\$/acre)
Cotton	420 lbs. lint	.66	277	207	70
Corn	55.3 bu.	2.52	139	122	17
Soybeans	22.6 bu.	7.23	163	81	82
Grain Sorghum	21.0 cwt.	3.51	74	83	-11
Rice	38.4 cwt.	6.81	262	231	31

¹Average of yields in District states 1974, 1975 and 1976.

²Average of prices received by District farmers in the first quarter of 1977.

³Projected price times 3-year average yield.

⁴The result of deducting only variable costs from anticipated gross return. Fixed costs are not deducted.

SUMMARY OF INTENDED PLANTING CHANGES, 1977

	Miss.	Tenn.	La.	Ga.	Fla.	Ala.	Total Sixth District States	United States
	1,000 Acres							
Cotton	-110	-95	30	30	2	0	-143	2,005
Rice	-45		-90				-135	-349
Soybeans	315	280	250	280	54	350	1,529	5,351
Sorghum	-10	-5	-12	-25		-15	-67	-2,139
Oats	10	-2	1	-50	0	5	-36	617
Rye & Barley		-2		15			13	1,637
Corn	35	10	0	0	69	20	134	-198
Total	195	186	179	250	125	360	1,295	6,924

Sources: **Prospective Plantings**, April 1977, and **Winter Wheat & Rye Seedings**, December 1976, Crop Reporting Board, SRS, USDA.

COTTON				
State	Area Planted			1977/1976 (Percent)
	1975	1976 (1,000 Acres)	Indicated 1977	
Alabama	400.0	480.0	480.0	100
Florida	4.0	7.4	9.0	122
Georgia	165.0	250.0	280.0	112
Louisiana	320.0	570.0	600.0	105
Mississippi	1,140.0	1,560.0	1,450.0	93
Tennessee	335.0	420.0	325.0	77
Total Sixth District States	2,364.0	3,287.4	3,144.0	95.6
Total U. S.	9,492.6	11,684.2	13,689.1	117.2
SOYBEANS				
Alabama	1,350	1,250	1,600	128
Florida	305	271	325	120
Georgia	1,290	970	1,250	129
Louisiana	2,000	2,150	2,400	112
Mississippi	3,230	3,335	3,650	109
Tennessee	1,950	1,920	2,200	115
Total Sixth District States	10,125	9,896	11,425	115.5
Total U. S.	54,732	50,327	55,678	110.6
CORN				
Alabama	750	880	900	102
Florida	464	571	640	112
Georgia	2,020	2,300	2,300	100
Louisiana	80	110	110	100
Mississippi	195	240	275	115
Tennessee	780	890	900	101
Total Sixth District States	4,289	4,991	5,125	102.7
Total U. S.	78,166	84,121	83,923	99.8
RICE				
Louisiana	660	570	480	84
Mississippi	175	145	100	69
Total Sixth District States	835	715	580	81.1
Total U. S.	2,818	2,510	2,161	86.1
GRAIN SORGHUM				
Alabama	80	80	65	81
Georgia	80	85	60	71
Louisiana	41	50	38	76
Mississippi	75	75	65	87
Tennessee	51	45	40	89
Total Sixth District States	327	335	268	80.0
Total U. S.	18,345	18,639	16,500	88.5

Source: Prospective Plantings, April 1977, Crop Reporting Board, SRS, USDA.