

# Cotton in Kansas

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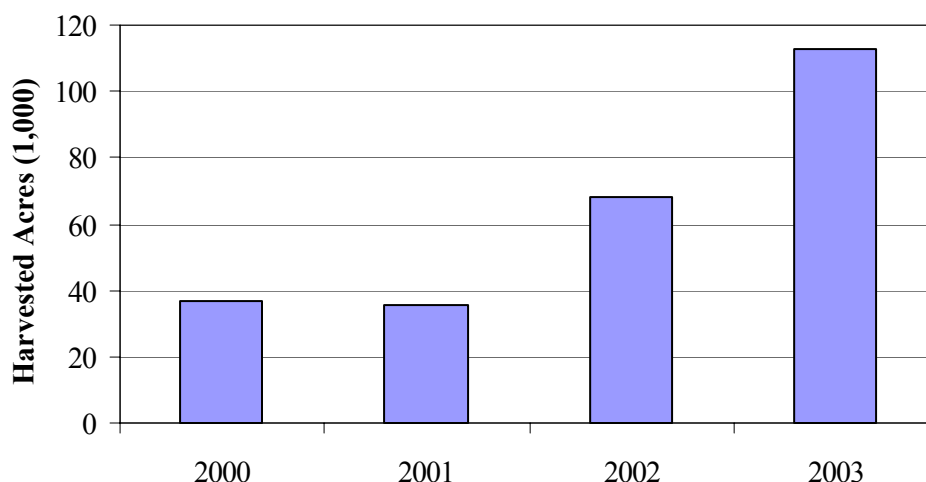
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## Cotton in Kansas

In recent years, interest in growing cotton has increased significantly among producers in southern Kansas. Favorable government programs, low pest pressure, and reduced fertilizer and water requirements combine to offer enhanced profit potential for this relatively new Kansas crop. This enhanced profit potential is demonstrated by the increase in cotton acreage in Kansas (Figure 1). Statewide, cotton acreage has increased from 37,000 acres in 2000 to 113,000 acres in 2003. Acreage is expected to continue to increase in 2004. Although there are profit opportunities for growing cotton in Kansas, there are risks as well.

**Figure 1**  
**Cotton Acres in Kansas**



### Can I grow cotton?

The ability to grow cotton in Kansas will be limited due to climactic conditions. Cotton is a perennial plant that is heat-unit sensitive. It requires approximately 1,800 to 2,100 growing degree units for a set boll to open. Once the plant reaches bloom stage, however, the response to heat units is less pronounced. Night temperatures and light intensity, for example, are critical factors in the plant reaching maturity. Fewer growing degree units during the growing season could result in little or no yield. Because of this requirement, cotton production will be primarily limited to the lower third of Kansas. Cotton growing degree units for selected counties in Kansas are available from the K-State Weather Data Library at [www.oznet.ksu.edu/wdl/](http://www.oznet.ksu.edu/wdl/).

Like other crops, cotton is also susceptible to premature freezes in the fall. An early freeze—before the crop is fully mature—could result in yield losses similar to those incurred from insufficient heat units during the year. This risk can sometimes be managed by the proper use of harvest aids.

One of the primary reasons for interest in cotton has been water use. The majority of cotton in Kansas is produced under irrigation. That is not to say that cotton requires more water than other crops. On the contrary, compared to corn, alfalfa, and soybeans, profitable cotton yields can be reached under irrigation with only about one-half to one-third of the water of these crops. As a result, producers are largely interested in growing cotton on land that has limited well capacity—where they may not be able to grow water-intensive crops. The water requirement for non-irrigated cotton is similar to that of other summer crops, meaning that cotton is not necessarily more drought tolerant than other crops.

### **Should I consider growing cotton?**

Undoubtedly, this is a question that should be considered on an individual basis. Assuming one is located in the cotton growing region of Kansas, management will be the key to profitability. Cotton is a crop that requires intensive management throughout the growing season. Efficient fertilization (not too little or too much), timely planting, effective weed and insect control, and proper use of harvest aids are critical to producing a profitable cotton crop. In conjunction with a level of management that may be higher than other crops, input costs may be higher as well. As previously mentioned, some of the input requirements for cotton (i.e. fertilizer and irrigation water) may be lower than alternative crops. However, other inputs, most notably herbicide, insecticide and machinery expenses may be significantly higher than other crops. Tables 1 shows costs and returns for cotton and 5 alternative non-irrigated crops in South Central Kansas. Table 2 shows costs and returns for cotton and 5 alternative irrigated crops in Southwest Kansas. (Additional crop budgets and crop decision-making tools are available at [www.agmanager.info/crops/](http://www.agmanager.info/crops/).) As these tables indicate, total production costs for cotton are as high or higher than comparable crops. Although total production costs are high, a significant portion of the costs (harvest aids and harvesting expense), occur at the end of the season. This is important in considering the cash flow requirements of crop alternatives.

Assuming average yields and prices, Table 1 indicates that returns for cotton are comparable to or higher than all crops except soybeans. A 10% increase in cotton yields would make it more profitable than all other crops considered. Under irrigation, cotton earns higher returns than all the other crops listed in Table 2.

When considering whether cotton is a viable alternative in a cropping system, one must consider many factors. Obviously, location is the most critical factor, not only in terms of having sufficient heat units, but in relation to fertilizer carryover and 2,4-D drift as well. Cotton requires approximately 1 lb of N per 10 lbs of lint yield. Excess nitrogen, whether applied or in the soil profile, can result in a less profitable cotton crop. Rank vegetative growth, reduced fruit set and delayed boll maturity are all symptoms of too much nitrogen. Deep profile (24") soil testing is recommended, especially after following high nitrogen input crops such as corn, high yielding soybeans or following a failed crop. Another major location related issue is herbicide drift, especially from 2,4-D. Cotton is very susceptible to damage from growth regulating herbicides such as 2,4-D.

Planting cotton in an area where 2,4-D use is common and without using proper precautions could result in serious to total yield losses as well as strained neighbor relationships.

Table 1. Cost-Return Budgets for South Central Kansas Non-irrigated Crops

|                | <b>Wheat</b> | <b>Sorghum</b> | <b>Corn</b> | <b>Cotton</b> | <b>Oil Sunf.</b> | <b>Soybean</b> |
|----------------|--------------|----------------|-------------|---------------|------------------|----------------|
| <b>INCOME</b>  |              |                |             |               |                  |                |
| Yield          | 45.0         | 80.0           | 90.0        | 400.0         | 15.0             | 27.0           |
| Price          | \$3.09       | 1.99           | 2.16        | 0.52          | 9.23             | 4.94           |
| Govt. Pmt      | \$19.82      | \$19.82        | \$19.82     | \$19.82       | \$19.82          | \$19.82        |
| Returns        | \$158.87     | \$179.02       | \$214.22    | \$225.82      | \$158.27         | \$153.20       |
| <b>COSTS</b>   |              |                |             |               |                  |                |
| Seed           | \$8.00       | \$8.07         | \$30.87     | \$18.20       | \$17.60          | \$21.60        |
| Herbicide      | 4.84         | 24.28          | 27.39       | 46.48         | 17.27            | 23.80          |
| Insecticide    | 1.00         | 0.00           | 1.00        | 11.00         | 13.97            | 0.00           |
| Fertilizer     | 35.10        | 32.88          | 36.77       | 19.65         | 26.28            | 10.52          |
| Misc.          | 5.75         | 5.75           | 5.75        | 5.75          | 5.75             | 5.75           |
| Mach. Exp.     | 69.49        | 64.76          | 70.54       | 75.08         | 48.05            | 40.54          |
| Non-mach Labor | 10.00        | 9.30           | 10.50       | 13.20         | 6.90             | 5.80           |
| Interest       | 5.37         | 5.80           | 7.31        | 7.57          | 5.43             | 4.32           |
| Total Costs    | \$139.54     | \$150.84       | \$190.13    | \$196.92      | \$141.24         | \$112.33       |
| Returns        | \$19.33      | \$28.18        | \$24.09     | \$28.90       | \$17.03          | \$40.87        |

Table 2. Cost-Return Budgets for Southwest Kansas Irrigated Crops

|                | <b>Alfalfa</b> | <b>Sorghum</b> | <b>Corn</b> | <b>Cotton</b> | <b>Oil Sunf.</b> | <b>Soybean</b> |
|----------------|----------------|----------------|-------------|---------------|------------------|----------------|
| <b>INCOME</b>  |                |                |             |               |                  |                |
| Yield          | 6.2            | 105.0          | 190.0       | 1,000.0       | 23.0             | 55.0           |
| Price          | \$75.33        | \$2.01         | \$2.27      | \$0.52        | \$10.06          | \$4.86         |
| Govt. Pmt      | \$40.60        | \$40.60        | \$40.60     | \$40.60       | \$40.60          | \$40.60        |
| Returns        | \$507.65       | \$251.65       | \$471.90    | \$555.60      | \$271.98         | \$307.90       |
| <b>COSTS</b>   |                |                |             |               |                  |                |
| Seed           | \$9.96         | \$8.65         | \$37.12     | \$18.20       | \$18.72          | \$24.00        |
| Herbicide      | 15.30          | 28.42          | 31.38       | 64.60         | 9.90             | 20.72          |
| Insecticide    | 8.38           | 2.64           | 38.62       | 11.00         | 13.97            | 0.00           |
| Fertilizer     | 23.46          | 35.86          | 70.26       | 26.90         | 32.66            | 11.04          |
| Consulting     | 6.50           | 6.25           | 6.50        | 6.00          | 6.50             | 6.25           |
| Misc.          | 10.00          | 10.00          | 10.00       | 10.00         | 10.00            | 10.00          |
| Mach. Exp.     | 160.98         | 80.72          | 90.30       | 145.86        | 68.79            | 62.81          |
| Non-mach Labor | 21.40          | 11.50          | 12.90       | 29.40         | 9.70             | 9.00           |
| Irrigation     | 126.85         | 110.95         | 126.85      | 88.69         | 98.23            | 117.31         |
| Interest       | 15.31          | 11.80          | 16.96       | 15.99         | 10.74            | 10.45          |
| Total Costs    | \$398.15       | \$306.78       | \$440.89    | \$416.64      | \$279.21         | \$271.57       |
| Returns        | \$109.50       | (\$55.13)      | \$31.01     | \$138.96      | (\$7.23)         | \$36.33        |

## **Where Do I Start?**

Before growing cotton, it is important that producers have a good understanding of the production practices necessary to grow a successful crop. Management of the cotton crop is necessary not only to ensure good yields, but to achieve a good price as well. Cotton prices are a function of world supply and demand fundamentals and quality characteristics. Improper management or weather-related problems can have a detrimental impact on both yield and price, thus reducing profit potential. New cotton producers must also be aware of the impact that planting a new crop may have on their crop share rental arrangements. Since equitable crop share arrangements are determined by the input contributions of the landlord and tenant, a change in costs, such as those associated with growing cotton, may necessitate a change in the crop share lease. Anyone interested in growing cotton should visit with current, experienced growers, K-State Research and Extension personnel, and crop consultants who have experience with cotton. In addition, interested producers should talk to the local gin operators to learn the details of the marketing process.