

# Wheat Cost-Return Budget in South Central Kansas

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In most years, Kansas is the number one wheat producing state in the nation. The largest share of the state's total wheat production consistently is produced in the south central region of the state. While the vast majority of the wheat produced in south central Kansas is nonirrigated, the crop rotation and tillage system used does vary considerably between farmers within the region. Historically, wheat grown continuously for numerous consecutive years using conventional tillage has been a common practice in south central Kansas. However, between the increased planting flexibility allowed in the 1996 Federal Agricultural Improvement and Reform Act along with the increased adoption of technology allowing for less tillage, an increasing number of south central Kansas producers plant wheat in rotation with crops such as sorghum, corn, and soybeans.

Because both continuous wheat and rotation wheat cropping systems currently exist in south central Kansas, it must be that neither system is "best" in all situations. An advantage of continuous wheat is that it requires less management than a rotation involving numerous crops. With continuous wheat, labor requirements tend to be confined to several key times throughout the year (planting and harvest), which can be either an advantage or a disadvantage depending on the particular situation. Another characteristic of continuous wheat is that it typically is most successful using tillage (e.g., disk, V-blade, cultivation) because of weed and disease

problems that buildup in a no-till mono-crop environment. This also can be viewed as either an advantage or disadvantage. For producers that prefer not to use herbicides, a cropping system that relies on tillage is attractive. However, a potential disadvantage of a cropping system that relies heavily on tillage is that labor availability may be an issue. This is especially true for producers wanting to increase the size of their operation because labor availability is often a constraint.

Wheat produced in rotation with other crops can require slightly higher inputs costs compared to continuous wheat due to increased seeding and fertility rates. However, when comparing costs and returns from the two budgets (i.e., continuous and rotation wheat), it is necessary to account for the returns of the other crop(s) in the rotation.

It is important to recognize that both continuous wheat and wheat produced in rotation with other crops have their advantages and disadvantages. Ultimately, the cropping system individuals producers will choose will depend on their unique set of capital and management resources.

## Income Per Acre

Crop production costs per unit and net returns are highly dependent on yields. The following estimated budgets include three different yield levels, which are intended to represent expected yields for land of varying quality for a given level of

**Table 1A. Production Inputs — Rotation Wheat**

| Item                  | Yield Level (bu) |      |      |            |
|-----------------------|------------------|------|------|------------|
|                       | 35               | 45   | 55   |            |
| Seed, lbs             | 100              | 100  | 100  | \$0.08/lb  |
| Fertilizer:           |                  |      |      |            |
| N (anhydrous)         | 50               | 60   | 80   | \$0.16/lb  |
| N                     | 30               | 40   | 40   | \$0.23/lb  |
| P                     | 25               | 30   | 35   | \$0.21/lb  |
| K                     | 0                | 0    | 0    | \$0.14/lb  |
| Lime                  | 500              | 500  | 500  | \$0.01/lb  |
| Herbicide             |                  |      |      |            |
| Glean                 | 0.25             | 0.25 | 0.25 | \$16.00/oz |
| + Surfactant          | 1.0              | 1.0  | 1.0  | \$1.00/ac  |
| Insecticide/Fungicide |                  |      |      |            |
| Seedbox treatment     | 1.0              | 1.0  | 1.0  | \$1.00/ac  |

**Table 1B. Production Inputs — Continuous Wheat**

| Item                  | Yield Level (bu) |      |      |            |
|-----------------------|------------------|------|------|------------|
|                       | 35               | 45   | 55   |            |
| Seed, lbs             | 60               | 60   | 75   | \$0.08/lb  |
| Fertilizer:           |                  |      |      |            |
| N (anhydrous)         | 51               | 64   | 76   | \$0.16/lb  |
| N                     | 10               | 15   | 20   | \$0.23/lb  |
| P                     | 20               | 25   | 31   | \$0.21/lb  |
| K                     | 0                | 0    | 0    | \$0.14/lb  |
| Lime                  | 500              | 500  | 500  | \$0.01/lb  |
| Herbicide             |                  |      |      |            |
| Glean                 | 0.25             | 0.25 | 0.25 | \$16.00/oz |
| + Surfactant          | 1.0              | 1.0  | 1.0  | \$1.00/ac  |
| Insecticide/Fungicide |                  |      |      |            |
| Seedbox treatment     | 1.0              | 1.0  | 1.0  | \$1.00/ac  |

management. Yield levels are based on historical data from Kansas Agricultural Statistics and the South Central Kansas Farm Management Association and adjusting for trends over time. Comparing alternative expected yields can help producers analyze the profitability of crop enterprises on farmland tracts with varying yield potential. Land values and government payments have been adjusted for alternative yield levels in this budget. In customizing a budget to your farm, attention should be given to using land values representative of your farm's productive capacity as well as government payments specific to your land.

Price per bushel represents an expected harvest price in Hutchinson, Kan., accounting for government marketing

loan price support levels. Wheat producers in other areas of south central Kansas should use an expected price that is representative for their location. Typically, a reasonable forecast for price is to use the futures market adjusted by the historical basis for a particular location, where basis = cash price – futures price.

Crop insurance was not included as an input expense in this budget because yields reflect an average of all years (good and bad). If crop insurance is included as an input expense, then an expected value for indemnity payments should be included in the returns section. Historically, crop insurance indemnity payments have typically exceeded premiums due to government subsidies.

**Table 2A. Machinery and Land Resources — Rotation Wheat**

|                                         | <u>Yield Level (bu)</u> |       |       |            |
|-----------------------------------------|-------------------------|-------|-------|------------|
| ITEM                                    | 35                      | 45    | 55    |            |
| Tillage/Planting/Chemical Applications: |                         |       |       |            |
| Chisel                                  | 1                       | 1     | 1     | \$7.79/ac  |
| Disk                                    | 1                       | 1     | 1     | \$6.38/ac  |
| Field cultivate                         | 2                       | 2     | 2     | \$5.55/ac  |
| Drill                                   | 1                       | 1     | 1     | \$6.31/ac  |
| Anhydrous application                   | 1                       | 1     | 1     | \$6.29/ac  |
| Fertilizer application                  | 1                       | 1     | 1     | \$3.22/ac  |
| Herbicide application                   | 1                       | 1     | 1     | \$3.38/ac  |
| Insecticide / fungicide application     | 0                       | 0     | 0     | \$3.43/ac  |
| Harvest                                 |                         |       |       |            |
| Base charge                             | 1                       | 1     | 1     | \$13.64/ac |
| Extra charge for yields exceeding       | 21                      | 21    | 21    | \$0.134/bu |
| Hauling                                 | 35                      | 45    | 55    | \$0.132/bu |
| Non-machinery labor                     | 0.50                    | 0.50  | 0.50  | \$10.00/hr |
| Irrigation labor                        | 0.00                    | 0.00  | 0.00  | \$10.00/hr |
| Land value/acre                         | \$520                   | \$650 | \$780 | 6.00%      |
| Interest on capital                     |                         |       |       | 8.0%       |

**Table 2B. Machinery and Land Resources — Continuous Wheat**

|                                         | <u>Yield Level (bu)</u> |       |       |            |
|-----------------------------------------|-------------------------|-------|-------|------------|
| ITEM                                    | 35                      | 45    | 55    |            |
| Tillage/Planting/Chemical Applications: |                         |       |       |            |
| Chisel                                  | 1                       | 1     | 1     | \$7.79/ac  |
| Disk                                    | 1                       | 1     | 1     | \$6.38/ac  |
| Field cultivate                         | 2                       | 2     | 2     | \$5.55/ac  |
| Drill                                   | 1                       | 1     | 1     | \$6.31/ac  |
| Anhydrous application                   | 1                       | 1     | 1     | \$6.29/ac  |
| Fertilizer application                  | 1                       | 1     | 1     | \$3.22/ac  |
| Herbicide application                   | 1                       | 1     | 1     | \$3.38/ac  |
| Insecticide / fungicide application     | 0                       | 0     | 0     | \$3.43/ac  |
| Harvest                                 |                         |       |       |            |
| Base charge                             | 1                       | 1     | 1     | \$13.64/ac |
| Extra charge for yields exceeding       | 21                      | 21    | 21    | \$0.134/bu |
| Hauling                                 | 35                      | 45    | 55    | \$0.132/bu |
| Non-machinery labor                     | 0.50                    | 0.50  | 0.50  | \$10.00/hr |
| Irrigation labor                        | 0.00                    | 0.00  | 0.00  | \$10.00/hr |
| Land value/acre                         | \$520                   | \$650 | \$780 | 6.00%      |
| Interest on capital                     |                         |       |       | 8.0%       |

## Costs Per Acre

Production costs at the three production levels are shown on lines 1 through 13. Kansas Custom Rates for specific field operations are used to represent fuel and labor costs as well as machinery repair, depreciation, and interest expenses in these budgets. Tables 1A and 1B identify the typical seed, fertilizer, herbicide, and insecticide requirements (rate and cost/unit) for continuous wheat and rotation wheat cropping systems, respectively. Herbicide requirements include both pre-crop and in-crop treatments. Tables 2A and 2B outline the machinery and land resources used for wheat in these alternative cropping systems. Each tillage, planting, and harvest operation is identified. While there is an increase in the amount of no-till operations in south central Kansas, cropping systems that rely on tillage are still more prevalent. Thus, both budgets (continuous wheat and rotation wheat) involve some tillage.

## Other Wheat Production Management Resources

K-State Research and Extension has a number of resources available relating to wheat production and marketing. *The Kansas Wheat Production Handbook*, C-529, provides information on recommended wheat production practices. More information on wheat variety performance, insect, weed and disease management, market prospects, wheat residue and yield estimation, and other wheat production and marketing information can be obtained through K-State Research and Extension Offices or via the K-State Research and Extension Wheat website, [www.oznet.ksu.edu/wheatpage/agronomy.htm](http://www.oznet.ksu.edu/wheatpage/agronomy.htm).

### COST-RETURN PROJECTION — ROTATION WHEAT — SOUTH CENTRAL KANSAS

|                                             | Yield Level (bu) |           |           | Your Farm |
|---------------------------------------------|------------------|-----------|-----------|-----------|
|                                             | 35               | 45        | 55        |           |
| INCOME PER ACRE                             |                  |           |           |           |
| A. Yield per acre .....                     | 35               | 45        | 55        |           |
| B. Price per bushel .....                   | \$ 3.10          | \$ 3.10   | \$ 3.10   |           |
| C. Net government payment .....             | \$ 16.47         | \$ 17.90  | \$ 19.33  |           |
| D. Indemnity payments .....                 | \$               | \$        | \$        |           |
| E. Miscellaneous income .....               | \$               | \$        | \$        |           |
| F. Returns/acre ((A × B) + C + D + E) ..... | \$ 124.97        | \$ 157.40 | \$ 189.83 |           |
| COSTS PER ACRE                              |                  |           |           |           |
| 1. Seed .....                               | \$ 8.00          | \$ 8.00   | \$ 8.00   |           |
| 2. Herbicide .....                          | 5.00             | 5.00      | 5.00      |           |
| 3. Insecticide / Fungicide .....            | 1.00             | 1.00      | 1.00      |           |
| 4. Fertilizer and Lime .....                | 25.15            | 30.10     | 34.35     |           |
| 5. Crop Consulting .....                    |                  |           |           |           |
| 6. Crop Insurance .....                     |                  |           |           |           |
| 7. Drying .....                             |                  |           |           |           |
| 8. Miscellaneous .....                      | 5.75             | 5.75      | 5.75      |           |
| 9. Custom Hire / Machinery Expense .....    | 64.59            | 67.24     | 69.89     |           |
| 10. Non-machinery Labor .....               | 5.00             | 5.00      | 5.00      |           |
| 11. Irrigation                              |                  |           |           |           |
| a. Labor .....                              |                  |           |           |           |
| b. Fuel and Oil .....                       |                  |           |           |           |
| c. Repairs and Maintenance .....            |                  |           |           |           |
| d. Depreciation on Equipment and Well ..... |                  |           |           |           |
| e. Interest on Equipment .....              |                  |           |           |           |
| 12. Land Charge / Rent .....                | 31.20            | 39.00     | 46.80     |           |
| G. SUB TOTAL .....                          | \$ 145.69        | \$ 161.09 | \$ 175.79 |           |
| 13. Interest on 1/2 Nonland Costs .....     | 4.58             | 4.88      | 5.16      |           |
| H. TOTAL COSTS .....                        | \$ 150.26        | \$ 165.97 | \$ 180.95 |           |
| I. RETURNS OVER COSTS (F - H) .....         | \$ -25.29        | \$ -8.57  | \$ 8.89   |           |
| J. TOTAL COSTS/BUSHEL (H ÷ A) .....         | \$ 4.29          | \$ 3.69   | \$ 3.29   |           |
| K. RETURN TO ANNUAL COST (I + 13) ÷ G ..... | -14.22%          | -2.29%    | 7.99%     |           |

**COST-RETURN PROJECTION — CONTINUOUS WHEAT — SOUTH CENTRAL KANSAS**

|                                             | Yield Level (bu) |           |           | Your Farm |
|---------------------------------------------|------------------|-----------|-----------|-----------|
|                                             | 35               | 45        | 55        |           |
| INCOME PER ACRE                             |                  |           |           |           |
| A. Yield per acre .....                     | 35               | 45        | 55        |           |
| B. Price per bushel .....                   | \$ 3.10          | \$ 3.10   | \$ 3.10   |           |
| C. Net government payment .....             | \$ 16.47         | \$ 17.90  | \$ 19.33  |           |
| D. Indemnity payments .....                 | \$               | \$        | \$        |           |
| E. Miscellaneous income .....               | \$               | \$        | \$        |           |
| F. Returns/acre ((A × B) + C + D + E) ..... | \$ 124.97        | \$ 157.40 | \$ 189.83 |           |
| COSTS PER ACRE                              |                  |           |           |           |
| 1. Seed .....                               | \$ 4.80          | \$ 4.80   | \$ 6.00   |           |
| 2. Herbicide .....                          | 5.00             | 5.00      | 5.00      |           |
| 3. Insecticide / Fungicide .....            | 1.00             | 1.00      | 1.00      |           |
| 4. Fertilizer and Lime .....                | 19.66            | 23.94     | 28.27     |           |
| 5. Crop Consulting .....                    |                  |           |           |           |
| 6. Crop Insurance .....                     |                  |           |           |           |
| 7. Drying .....                             |                  |           |           |           |
| 8. Miscellaneous .....                      | 5.75             | 5.75      | 5.75      |           |
| 9. Custom Hire / Machinery Expense .....    | 64.59            | 67.24     | 69.89     |           |
| 10. Non-machinery Labor .....               | 5.00             | 5.00      | 5.00      |           |
| 11. Irrigation                              |                  |           |           |           |
| a. Labor .....                              |                  |           |           |           |
| b. Fuel and Oil .....                       |                  |           |           |           |
| c. Repairs and Maintenance .....            |                  |           |           |           |
| d. Depreciation on Equipment and Well ..... |                  |           |           |           |
| e. Interest on Equipment .....              |                  |           |           |           |
| 12. Land Charge / Rent .....                | 31.20            | 39.00     | 46.80     |           |
| G. SUB TOTAL .....                          | \$ 137.00        | \$ 151.73 | \$ 167.71 |           |
| 13. Interest on 1/2 Nonland Costs .....     | 4.23             | 4.51      | 4.84      |           |
| H. TOTAL COSTS .....                        | \$ 141.23        | \$ 156.24 | \$ 172.55 |           |
| I. RETURNS OVER COSTS (F - H) .....         | \$ -16.26        | \$ 1.17   | \$ 17.29  |           |
| J. TOTAL COSTS/BUSHEL (H ÷ A) .....         | \$ 4.04          | \$ 3.47   | \$ 3.14   |           |
| K. RETURN TO ANNUAL COST (I + 13) ÷ G ..... | -8.78%           | 3.74%     | 13.19%    |           |

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