

# Center-Pivot-Irrigated Forage Sorghum Silage Cost-Return Budget in Western Kansas



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## Kansas State University Agricultural Experiment Station and Cooperative Extension Service

**Kevin C. Dhuyvetter**  
Agricultural Economist  
Farm Management

**Daniel M. O'Brien**  
Agricultural Economist  
Crop Marketing

**Lucas Haag**  
Crops and Soils, NW

**John Holman**  
Cropping Systems  
Agronomist

The information in this projected budget reflects expected income and costs based on typical production practices in the region. These values should be used as a guide, but individuals are encouraged to use their own values reflecting their specific land productive capabilities and farming system when looking at the potential costs and returns for their operations.

### 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 management. Yield levels are based on historical data from the Kansas Farm Management Association in the region, adjusting for trends over time. Cash rent for land has been adjusted for alternative yield levels in this budget. In customizing a budget to your farm, attention should be given to using land values (i.e., rents) that are representative of your farm's productive capacity and local farmland market conditions.

Output price represents an expected harvest price in the region. Typically a reasonable price forecast for most crops is to use the futures market adjusted by the historical basis

**Table 1. Production Inputs — Center-Pivot-Irrigated Forage Sorghum Silage**

| Item                 | Yield Level (tons/a) |      |      |              |
|----------------------|----------------------|------|------|--------------|
|                      | 19.1                 | 21.1 | 23.0 |              |
| Seed, 1,000/a*       | 140                  | 160  | 160  | \$0.25/1,000 |
| Fertilizer:          |                      |      |      |              |
| N (anhydrous)        | 338                  | 374  | 407  | \$0.39/lb    |
| N                    | 0                    | 0    | 0    | \$0.55/lb    |
| P                    | 107                  | 118  | 129  | \$0.52/lb    |
| K                    | 0                    | 0    | 0    | \$0.45/lb    |
| Lime                 | 0                    | 0    | 0    | \$0.015/lb   |
| Herbicide            |                      |      |      |              |
| Preemergence         | 1                    | 1    | 1    | \$23.06/a    |
| Irrigation water, in | 10                   | 14   | 18   | \$3.03/in    |

\* Concept and seed-applied insecticide

for a particular location, where basis equals cash price minus futures price. Silage prices are based on corresponding crop prices. See MF1013 for more detailed information on price forecasts.

Because the yields used in the budgets reflect average expected yields, there is no crop insurance indemnity pay-

**Table 2. Machinery and Land Resources — Center-Pivot-Irrigated Forage Sorghum Silage**

| Item                                    | Yield Level (tons/a) |          |          | Custom Rate   |
|-----------------------------------------|----------------------|----------|----------|---------------|
|                                         | 19.1                 | 21.1     | 23.0     |               |
| Tillage/Planting/Chemical Applications: |                      |          |          |               |
| Chisel                                  | 1                    | 1        | 1        | \$10.89/a     |
| Disk                                    | 1                    | 1        | 1        | \$10.39/a     |
| Field cultivate                         | 1                    | 1        | 1        | \$10.18/a     |
| Plant                                   | 1                    | 1        | 1        | \$15.78/a     |
| Anhydrous application                   | 1                    | 1        | 1        | \$12.47/a     |
| Fertilizer application                  | 0                    | 0        | 0        | \$6.25/a      |
| Herbicide application                   | 1                    | 1        | 1        | \$5.87/a      |
| Insecticide / fungicide application     | 0                    | 0        | 0        | \$5.92/a      |
| Harvest                                 |                      |          |          |               |
| Base charge                             | 1                    | 1        | 1        | \$0.00/a      |
| Extra charge for yields exceeding       | 0                    | 0        | 0        | \$8.35/ton    |
| Hauling                                 | 19.1                 | 21.1     | 23       | \$0.00/ton    |
| Non-machinery labor                     | 1.20                 | 1.20     | 1.20     | \$15.00/hr    |
| Irrigation labor                        | 0.50                 | 0.50     | 0.50     | \$15.00/hr    |
| Land charge/rent                        | \$87.00              | \$127.00 | \$167.00 |               |
| Interest on capital                     |                      |          |          | 6.5%          |
| Irrigation Equipment                    | Investment, \$/a     |          | Years    | Salvage value |
| Well, pump and gearhead value           | \$440.00             |          | 25       | 0%            |
| Power unit and meter                    | \$131.00             |          | 7        | 0%            |
| Irrigation system                       | \$575.00             |          | 25       | 25%           |

ment included in income. Crop insurance premiums will vary tremendously based on many factors (proven yield, coverage level, type of insurance policy). Crop insurance premiums included as costs reflect an expected net premium paid on average given the expected revenue.

### Costs Per Acre

Production costs at the three yield levels are shown on lines 1 through 13. Projected Kansas Custom Rates for

specific field operations are used to represent fuel and labor costs as well as machinery repair, depreciation, and interest expenses. Table 1 identifies seed, fertilizer, herbicide, and insecticide/fungicide costs. Fertilizer rates are based on removal with adjustments for local conditions. Table 1 also includes inches of irrigation water applied and pumping cost per inch. Table 2 outlines the machinery operations assumed, investment in irrigation equipment, non-machinery labor, and land cash rent.

## COST-RETURN PROJECTION — CENTER-PIVOT-IRRIGATED SORGHUM SILAGE

|                                             | Yield Level (tons/a) |            |            | Your Farm |
|---------------------------------------------|----------------------|------------|------------|-----------|
|                                             | 19.1                 | 21.1       | 23.0       |           |
| INCOME PER ACRE                             |                      |            |            |           |
| A. Yield per acre.....                      | 19.1                 | 21.1       | 23.0       |           |
| B. Price per ton .....                      | \$ 30.90             | \$ 30.90   | \$ 30.90   |           |
| C. Net government payment .....             | \$                   | \$         | \$         |           |
| D. Indemnity payments .....                 | \$                   | \$         | \$         |           |
| E. Miscellaneous income.....                | \$                   | \$         | \$         |           |
| F. Returns/acre ((A × B) + C + D + E) ..... | \$ 590.19            | \$ 651.99  | \$ 710.70  |           |
| COSTS PER ACRE                              |                      |            |            |           |
| 1. Seed .....                               | \$ 35.00             | \$ 40.00   | \$ 40.00   |           |
| 2. Herbicide .....                          | 23.06                | 23.06      | 23.06      |           |
| 3. Insecticide / Fungicide .....            |                      |            |            |           |
| 4. Fertilizer and Lime .....                | 187.46               | 207.22     | 225.81     |           |
| 5. Crop Consulting .....                    | 6.25                 | 6.25       | 6.25       |           |
| 6. Crop Insurance* .....                    | 7.07                 | 8.21       | 9.19       |           |
| 7. Drying .....                             |                      |            |            |           |
| 8. Miscellaneous.....                       | 10.00                | 10.00      | 10.00      |           |
| 9. Custom Hire / Machinery Expense.....     | 225.07               | 241.77     | 257.63     |           |
| 10. Non-machinery Labor .....               | 18.00                | 18.00      | 18.00      |           |
| 11. Irrigation                              |                      |            |            |           |
| a. Labor .....                              | 7.50                 | 7.50       | 7.50       |           |
| b. Fuel and Oil.....                        | 30.30                | 42.42      | 54.54      |           |
| c. Repairs and Maintenance .....            | 3.30                 | 4.62       | 5.94       |           |
| d. Depreciation on Equipment and Well.....  | 53.56                | 53.56      | 53.56      |           |
| e. Interest on Equipment and Well .....     | 41.92                | 41.92      | 41.92      |           |
| 12. Land Charge / Rent.....                 | 87.00                | 127.00     | 167.00     |           |
| G. SUB TOTAL .....                          | \$ 735.49            | \$ 831.52  | \$ 920.40  |           |
| 13. Interest on ½ Nonland Costs .....       | 17.97                | 19.79      | 21.38      |           |
| H. TOTAL COSTS .....                        | \$ 753.46            | \$ 851.32  | \$ 941.79  |           |
| I. RETURNS OVER COSTS (F - H) .....         | \$ -163.27           | \$ -199.33 | \$ -231.09 |           |
| J. TOTAL COSTS/TON (H ÷ A).....             | \$ 39.45             | \$ 40.35   | \$ 40.95   |           |
| K. RETURN TO ANNUAL COST (I + 13) ÷ G ..... | -19.76%              | -21.59%    | -22.78%    |           |

\* Reflects expected net premium paid.

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