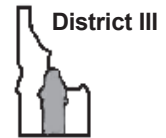


## Sugarbeets



Robert L. Smathers, C. Wilson Gray, Steven Hines, and Richard Garrard

### Background and Assumptions

Economic costs are used in the University of Idaho costs and returns estimates. All resources are valued based on market price or opportunity cost. Input prices are based on the U of I's annual survey of agricultural supply companies. Except for contract crops, the selling price is a 10-year average. The costs and returns estimate shown here is typical for growing sugarbeets in southcentral Idaho. Production practices most closely represent those in Cassia and Minidoka counties. Although production practices may be similar for individual farms, each has a unique set of resources with different levels of productivity, different production problems, and therefore different costs. Farm size, crop rotation, age and type of equipment, and quality of management are all crucial factors that influence costs.

#### The Model Farm

This costs and returns estimate models a 1,500-acre farm with 375 acres in sugarbeets, 225 acres in dry beans, 150 acres in corn, and 750 acres in grain. The farm uses center pivot irrigation and surface water delivered from an irrigation district. The district charges a flat fee per acre for water.

#### Tillage, Fertilization, Pest Control, and Irrigation

Beet acreage is plowed once and disked once in November. In spring, the ground is roller harrowed and planted. Three cultivations occur during the growing season for weed control. The beets are mechanically topped and lifted in October, then hauled to the processor. Dry fertilizer is custom applied in the fall. Additional nitrogen and micronutrients are applied through the sprinkler system in June and July. The farm operator performs weed control using cultivation, herbicides, and contract labor. Post-emergence herbicides are applied by the grower in April and May. A hand weeding is contracted out in June. Treatment for insects is accomplished at planting by banding and incorporating insecticides near the seed. Sugarbeets receive about 31 inches of water during the growing season using approximately 62 irrigations (pivot rotations): 2 inches in April, 2 inches in May, 4 inches in June, 8 inches in July, 9 inches in August, 5 inches in September, and 1 inch in October. Each irrigation generally applies .5 inch of water.

#### Resources: Machinery, Land, Labor, and Capital

Table 3 lists the tractors, trucks, and other equipment used for sugarbeets, along with their operating and ownership costs. All machinery except trucks is valued at 75 percent of new prices. This adjustment reduces the machinery repair operating cost, and the depreciation and interest ownership costs on equipment by 25 percent. Each truck's price includes the cost of a used truck and a new self-unloading bed.

The land charge is cash rent and covers the ownership costs (depreciation, interest, and insurance) on the irrigation system. A labor charge is made for all labor pertaining to field operations and includes a base rate plus overhead expenses. Custom charges account for those field operations that are contracted out. A management charge, 5 percent of gross returns, is included as an ownership cost.

Labor to operate machinery is valued at \$13.15 per hour, while irrigation and non-machine labor are valued at \$8.75 and \$7.70, respectively. The non-machine rate accounts for extra planting labor. Labor rates include a base wage plus a percentage for Social Security, Medicare, unemployment insurance, and other labor overhead expenses. Labor overhead amounts to 15 percent for non-machine labor, 25 percent for irrigation labor, and 30 percent for machinery labor.

Interest on operating capital is charged from the time an input is applied until the month of harvest and calculated at a nominal rate of 7.5 percent. Interest on intermediate term capital is calculated using a rate of 7.75 percent. A general overhead charge of 2.5 percent of ownership expenses is included to cover unallocated costs such as office expenses, legal and accounting fees, and utilities.

**Table 1. Costs And Returns Per Acre to Produce Sugarbeets  
SCI**

**EBB3-Su-05**

|   | Quantity<br>Per Acre | Unit | Price or<br>Cost/Unit | Value or<br>Cost/Acre | Your<br>Cost |
|---|----------------------|------|-----------------------|-----------------------|--------------|
| <b>Gross Returns</b>  |                      |      |                       |                       |              |
| Sugarbeets  | 25.00                | ton  | 39.00                 | 975.00                | _____        |
| Total Gross Returns For Sugarbeets                          |                      |      |                       | 975.00                | _____        |
| <b>Operating Costs</b>                                      |                      |      |                       |                       |              |
| Custom:   |                      |      |                       |                       |              |
| Custom Fertilize  | 1.00                 | acre | 5.70                  | 5.70                  | _____        |
| Consultant  | 1.00                 | acre | 14.50                 | 14.50                 | _____        |
| Hand Hoeing Beets   | 1.00                 | acre | 55.00                 | 55.00                 | _____        |
| Fertilizer:   |                      |      |                       |                       |              |
| Dry Nitrogen  | 50.00                | lb   | 0.39                  | 19.50                 | _____        |
| Dry P2O5  | 80.00                | lb   | 0.23                  | 18.40                 | _____        |
| K2O   | 90.00                | lb   | 0.22                  | 19.80                 | _____        |
| Sulfur  | 40.00                | lb   | 0.14                  | 5.60                  | _____        |
| Liquid Nitrogen   | 20.00                | lb   | 0.45                  | 9.00                  | _____        |
| Micronutrients  | 1.00                 | acre | 6.00                  | 6.00                  | _____        |
| Seed:   |                      |      |                       |                       |              |
| Beet Seed Pellet  | 0.50                 | unit | 88.00                 | 44.00                 | _____        |
| Pesticide:  |                      |      |                       |                       |              |
| Counter - CR  | 9.80                 | lb   | 2.35                  | 23.03                 | _____        |
| Progress  | 26.00                | oz   | 0.93                  | 24.18                 | _____        |
| Upbeet  | 0.51                 | oz   | 49.65                 | 25.32                 | _____        |
| Meth. seed oil  | 1.50                 | qt   | 3.60                  | 5.40                  | _____        |
| Stinger   | 2.66                 | oz   | 3.90                  | 10.37                 | _____        |
| Irrigation:   |                      |      |                       |                       |              |
| Irrigation Repairs  | 31.00                | acin | 0.55                  | 17.05                 | _____        |
| Irrigation Power  | 31.00                | acin | 1.39                  | 43.09                 | _____        |
| Labor (irrigation)  | 1.86                 | hr   | 8.75                  | 16.27                 | _____        |
| Water Assessment  | 1.00                 | acre | 30.20                 | 30.20                 | _____        |
| Other:  |                      |      |                       |                       |              |
| Crop Insurance  | 1.00                 | acre | 34.00                 | 34.00                 | _____        |
| Hauling Charge  | 25.00                | ton  | 0.70                  | 17.50                 | _____        |
| Labor (machine)   | 5.85                 | hrs  | 13.15                 | 76.96                 | _____        |
| Labor (non-machine)   | 2.60                 | hrs  | 7.70                  | 20.02                 | _____        |
| Fuel - Gas  | 4.02                 | gal  | 2.26                  | 9.09                  | _____        |
| Fuel - Diesel   | 21.33                | gal  | 2.07                  | 44.14                 | _____        |
| Lube  |                      |      |                       | 7.98                  | _____        |
| Machinery Repair  |                      |      |                       | 31.91                 | _____        |
| Interest on Operating Capital @ 7.50%                       |                      |      |                       | 23.45                 | _____        |
| Total Operating Costs per Acre                              |                      |      |                       | 657.48                | _____        |
| <b>Net Returns Above Operating Costs</b>                    |                      |      |                       | <b>317.52</b>         | _____        |
| <b>Cash Ownership Costs</b>                                 |                      |      |                       |                       |              |
| General Overhead  |                      |      |                       | 16.50                 | _____        |
| Land Rent   |                      |      |                       | 200.00                | _____        |
| Co-op Stock   |                      |      |                       | 42.00                 | _____        |
| Management Fee  |                      |      |                       | 49.00                 | _____        |
| Property Taxes (machinery)                                  |                      |      |                       | 0.00                  | _____        |
| Property Insurance  |                      |      |                       | 2.96                  | _____        |
| Total Cash Ownership Costs per Acre                         |                      |      |                       | 310.46                | _____        |
| <b>Non-Cash Ownership Costs (depreciation and interest)</b> |                      |      |                       |                       |              |
| Equipment   |                      |      |                       | 114.01                | _____        |
| Total Non-Cash Ownership Costs per Acre                     |                      |      |                       | 114.01                | _____        |
| <b>Total Costs per Acre</b>                                 |                      |      |                       | <b>1081.95</b>        | _____        |
| <b>Returns to Risk</b>                                      |                      |      |                       | <b>-106.95</b>        | _____        |

**Table 2. Monthly Summary of Cash Expenses per Acre**

**EBB3-Su-05**

|                                  | Nov<br>04    | Dec<br>04   | Jan<br>05   | Feb<br>05   | Mar<br>05     | Apr<br>05     | May<br>05    | Jun<br>05     | Jul<br>05    | Aug<br>05    | Sep<br>05    | Oct<br>05     | Total         |
|----------------------------------|--------------|-------------|-------------|-------------|---------------|---------------|--------------|---------------|--------------|--------------|--------------|---------------|---------------|
| <b>Preharvest:</b>               |              |             |             |             |               |               |              |               |              |              |              |               |               |
| Disk                             | 6.16         |             |             |             |               |               |              |               |              |              |              |               | 6.16          |
| Plow                             | 14.28        |             |             |             |               |               |              |               |              |              |              |               | 14.28         |
| Fertilize                        | 69.00        |             |             |             |               |               |              |               |              |              |              |               | 69.00         |
| Harrow                           |              |             |             |             |               | 6.90          |              |               |              |              |              |               | 6.90          |
| Plant                            |              |             |             |             |               | 79.85         |              |               |              |              |              |               | 79.85         |
| Ground Spray                     |              |             |             |             |               | 21.71         | 55.66        |               |              |              |              |               | 77.37         |
| Repairs                          |              |             |             |             |               | 17.05         |              |               |              |              |              |               | 17.05         |
| Irrigate                         |              |             |             |             |               | 3.83          | 3.83         | 18.16         | 19.82        | 17.23        | 9.57         | 1.91          | 74.37         |
| Crop Insurance                   |              |             |             |             |               | 34.00         |              |               |              |              |              |               | 34.00         |
| Assessments                      |              |             |             |             |               | 30.20         |              |               |              |              |              |               | 30.20         |
| Cultivate                        |              |             |             |             |               |               | 4.33         | 4.33          |              |              |              |               | 8.66          |
| Consultant                       |              |             |             |             |               |               |              | 14.50         |              |              |              |               | 14.50         |
| Hand Weed                        |              |             |             |             |               |               |              | 55.00         |              |              |              |               | 55.00         |
| Cultivate/basin                  |              |             |             |             |               |               |              |               | 6.81         |              |              |               | 6.81          |
| General Pickup Use               | 2.46         | 2.46        | 2.46        | 2.46        | 2.46          | 2.46          | 2.46         | 2.46          | 2.46         | 2.46         | 2.46         | 2.46          | 29.47         |
| <b>Total Preharvest Costs</b>    | <b>91.89</b> | <b>2.46</b> | <b>2.46</b> | <b>2.46</b> | <b>2.46</b>   | <b>195.99</b> | <b>66.27</b> | <b>94.45</b>  | <b>29.09</b> | <b>19.69</b> | <b>12.03</b> | <b>4.37</b>   | <b>523.61</b> |
| <b>Harvest:</b>                  |              |             |             |             |               |               |              |               |              |              |              |               |               |
| Top Beets                        |              |             |             |             |               |               |              |               |              |              |              | 10.23         | 10.23         |
| Dig                              |              |             |             |             |               |               |              |               |              |              |              | 38.09         | 38.09         |
| Crop Hauling                     |              |             |             |             |               |               |              |               |              |              |              | 44.59         | 44.59         |
| Hauling Assessment               |              |             |             |             |               |               |              |               |              |              |              | 17.50         | 17.50         |
| <b>Total Harvest Costs</b>       |              |             |             |             |               |               |              |               |              |              |              | <b>110.41</b> | <b>110.41</b> |
| Interest on Operating Capital    | 0.57         | 0.59        | 0.61        | 0.62        | 0.64          | 1.86          | 2.27         | 2.87          | 3.05         | 3.17         | 3.25         | 3.96          | 23.45         |
| <b>Operating Costs per Acre</b>  | <b>92.47</b> | <b>3.05</b> | <b>3.06</b> | <b>3.08</b> | <b>3.09</b>   | <b>197.85</b> | <b>68.55</b> | <b>97.31</b>  | <b>32.13</b> | <b>22.86</b> | <b>15.28</b> | <b>118.75</b> | <b>657.48</b> |
| <b>Cash Ownership</b>            |              |             |             |             |               |               |              |               |              |              |              |               |               |
| General Overhead                 | 1.38         | 1.38        | 1.38        | 1.38        | 1.38          | 1.38          | 1.38         | 1.38          | 1.38         | 1.38         | 1.38         | 1.38          | 16.50         |
| Land Rent                        |              |             |             |             | 200.00        |               |              |               |              |              |              |               | 200.00        |
| Co-op Stock                      |              |             |             |             |               |               |              |               |              |              |              | 42.00         | 42.00         |
| Management Fee                   | 4.08         | 4.08        | 4.08        | 4.08        | 4.08          | 4.08          | 4.08         | 4.08          | 4.08         | 4.08         | 4.08         | 4.08          | 49.00         |
| Property Insurance               |              |             |             |             |               | 2.96          |              |               |              |              |              |               | 2.96          |
| <b>Cash Ownership Costs</b>      | <b>5.46</b>  | <b>5.46</b> | <b>5.46</b> | <b>5.46</b> | <b>205.46</b> | <b>8.42</b>   | <b>5.46</b>  | <b>5.46</b>   | <b>5.46</b>  | <b>5.46</b>  | <b>5.46</b>  | <b>47.46</b>  | <b>310.46</b> |
| <b>Total Cash Costs per Acre</b> | <b>97.93</b> | <b>8.50</b> | <b>8.52</b> | <b>8.53</b> | <b>208.55</b> | <b>206.27</b> | <b>74.01</b> | <b>102.77</b> | <b>37.59</b> | <b>28.32</b> | <b>20.73</b> | <b>166.21</b> | <b>967.94</b> |

**Table 3. Machinery and Equipment Costs per Hour**

| Description        | Purchase Price | Years    |               | Hours Used | <-Non-Cash-> |           | <-----Cash-----> |       | <-----Operating-----> |             |             | Total Costs/Hr. |
|--------------------|----------------|----------|---------------|------------|--------------|-----------|------------------|-------|-----------------------|-------------|-------------|-----------------|
|                    |                | to Trade | Salvage Value |            | Ownership    | Cap. Rec. | Insur.           | Taxes | Repairs               | Fuel & Lube | Total Oper. |                 |
| 4-wheeler/tow tank | 6500           | 10       | 1920          | 350        | 1.77         | 0.05      | 0.00             | 0.11  | 3.40                  | 3.51        | 5.32        |                 |
| Band sprayer       | 3500           | 12       | 485           | 220        | 1.47         | 0.03      | 0.00             | 1.36  | 0.00                  | 1.36        | 2.87        |                 |
| Basin Tillage Tool | 25000          | 15       | 2400          | 100        | 20.98        | 0.52      | 0.00             | 4.13  | 0.00                  | 4.13        | 25.62       |                 |
| Beet Lifter -6 row | 81000          | 15       | 7777          | 140        | 48.40        | 1.19      | 0.00             | 14.07 | 0.00                  | 14.07       | 63.66       |                 |
| Beet Topper        | 26500          | 12       | 3670          | 75         | 32.97        | 0.76      | 0.00             | 4.94  | 0.00                  | 4.94        | 38.66       |                 |
| Cultivator- 12R SU | 15000          | 15       | 1440          | 73         | 17.29        | 0.43      | 0.00             | 2.18  | 0.00                  | 2.18        | 19.90       |                 |
| Moldboard Plow 5b  | 9700           | 15       | 931           | 150        | 5.40         | 0.13      | 0.00             | 3.40  | 0.00                  | 3.40        | 8.93        |                 |
| Pickup - Used 3/4t | 11000          | 8        | 3839          | 200        | 5.74         | 0.14      | 0.00             | 0.91  | 5.95                  | 6.86        | 12.74       |                 |
| Pickup 1 - 3/4 ton | 37000          | 8        | 12913         | 300        | 12.90        | 0.31      | 0.00             | 3.59  | 10.40                 | 13.99       | 27.20       |                 |
| Pickup 2 - 3/4 ton | 37000          | 8        | 12913         | 300        | 12.90        | 0.31      | 0.00             | 3.59  | 10.40                 | 13.99       | 27.20       |                 |
| Planter - 12R SU   | 37500          | 12       | 5194          | 65         | 53.57        | 1.23      | 0.00             | 5.78  | 0.00                  | 5.78        | 60.58       |                 |
| Roller-harrow -16' | 20000          | 15       | 1920          | 175        | 9.57         | 0.24      | 0.00             | 4.36  | 0.00                  | 4.36        | 14.17       |                 |
| Tandem Disk - 18'  | 22000          | 15       | 2112          | 130        | 14.13        | 0.35      | 0.00             | 4.06  | 0.00                  | 4.06        | 18.54       |                 |
| Tractor - 160hp    | 113000         | 15       | 21999         | 456        | 20.04        | 0.56      | 0.00             | 3.46  | 22.10                 | 25.56       | 46.15       |                 |
| Tractor - 185hp    | 121000         | 15       | 23557         | 650        | 15.04        | 0.42      | 0.00             | 5.07  | 25.56                 | 30.63       | 46.09       |                 |
| Tractor - 200hp    | 134000         | 15       | 26087         | 350        | 30.90        | 0.86      | 0.00             | 3.02  | 27.63                 | 30.65       | 62.41       |                 |
| Tractor 2 -200hp   | 134000         | 15       | 26087         | 350        | 30.97        | 0.86      | 0.00             | 3.02  | 27.63                 | 30.65       | 62.48       |                 |
| Truck 1 - 5 ton    | 55000          | 15       | 10708         | 400        | 11.11        | 0.31      | 0.00             | 7.35  | 11.90                 | 19.25       | 30.67       |                 |
| Truck 2 - 5 ton    | 55000          | 15       | 10708         | 400        | 11.11        | 0.31      | 0.00             | 7.35  | 1.59                  | 8.94        | 20.36       |                 |
| Truck 3 - 5 ton    | 55000          | 15       | 10708         | 400        | 11.11        | 0.31      | 0.00             | 7.35  | 1.59                  | 8.94        | 20.36       |                 |
| Truck 4 - 5 ton    | 55000          | 15       | 10708         | 400        | 11.11        | 0.31      | 0.00             | 7.35  | 1.59                  | 8.94        | 20.36       |                 |
| Truck 5 - 5 ton    | 55000          | 15       | 10708         | 400        | 11.11        | 0.31      | 0.00             | 7.35  | 1.59                  | 8.94        | 20.36       |                 |

Net Returns Per Acre Above Operating Costs For Sugarbeets  
Yield (ton/acre)

|       | 17.50 | 20.00 | 22.50 | 25.00 | 27.50 | 30.00 | 32.50 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 27.30 | -163  | -100  | -38   | 25    | 88    | 150   | 213   |
| 31.20 | -95   | -22   | 50    | 123   | 195   | 267   | 340   |
| 35.10 | -26   | 56    | 138   | 220   | 302   | 384   | 466   |
| 39.00 | 42    | 134   | 226   | 318   | 409   | 501   | 593   |
| 42.90 | 110   | 212   | 313   | 415   | 517   | 618   | 720   |
| 46.80 | 178   | 290   | 401   | 513   | 624   | 735   | 847   |
| 50.70 | 247   | 368   | 489   | 610   | 731   | 852   | 973   |

Net Returns Per Acre Above Cash Costs For Sugarbeets  
Yield (ton/acre)

|       | 17.50 | 20.00 | 22.50 | 25.00 | 27.50 | 30.00 | 32.50 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 27.30 | -473  | -411  | -348  | -285  | -223  | -160  | -98   |
| 31.20 | -405  | -333  | -260  | -188  | -116  | -43   | 29    |
| 35.10 | -337  | -255  | -173  | -90   | -8    | 74    | 156   |
| 39.00 | -268  | -177  | -85   | 7     | 99    | 191   | 283   |
| 42.90 | -200  | -99   | 3     | 105   | 206   | 308   | 409   |
| 46.80 | -132  | -21   | 91    | 202   | 313   | 425   | 536   |
| 50.70 | -64   | 57    | 178   | 300   | 421   | 542   | 663   |

Net Returns Per Acre Above Total Costs For Sugarbeets  
Yield (ton/acre)

|       | 17.50 | 20.00 | 22.50 | 25.00 | 27.50 | 30.00 | 32.50 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 27.30 | -582  | -521  | -460  | -399  | -338  | -277  | -216  |
| 31.20 | -514  | -443  | -373  | -302  | -231  | -160  | -89   |
| 35.10 | -445  | -365  | -285  | -204  | -124  | -43   | 37    |
| 39.00 | -377  | -287  | -197  | -107  | -17   | 74    | 164   |
| 42.90 | -309  | -209  | -109  | -9    | 91    | 191   | 291   |
| 46.80 | -241  | -131  | -22   | 88    | 198   | 308   | 418   |
| 50.70 | -172  | -53   | 66    | 186   | 305   | 425   | 544   |

The practices and chemicals specified here are based on survey information representative of typical operations. They are not recommendations. Because of constantly changing labels, laws, and regulations, the University of Idaho can assume no liability for the consequences of use of chemicals specified here. In all cases, read and follow the directions and precautionary statements on the specific pesticide product label. To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

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