

Farm Business  
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1996 Estimated Costs  
and Returns for  
Producing Sugar Beets,  
Columbia Basin,  
Washington

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**1996 ESTIMATED COSTS AND RETURNS  
FOR PRODUCING SUGAR BEETS,  
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### NOTE

Enterprise costs and returns vary from one farm to the next and over time for any particular farm. Variability stems from differences in:

- Capital, labor, and management resources
- Type and size of machinery complement
- Cultural practices
- Size of farm and enterprise
- Crop yields
- Input prices
- Commodity prices

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as a general guide for sugar beets grown on modern, well-managed farms in the Columbia Basin. To avoid drawing unwarranted conclusions for any particular enterprise, you must closely examine the assumptions used. If they are not appropriate for the situation at hand, you should adjust the costs and/or returns.

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# 1996 ESTIMATED COSTS AND RETURNS FOR PRODUCING SUGAR BEETS, COLUMBIA BASIN, WASHINGTON

Herbert Hinman and Elvin Kulp<sup>1</sup>

## INTRODUCTION

Sugar beets were commonly produced on more than 50,000 acres annually in the Columbia Basin until the U & I Sugar Company ceased sugar beet operations in the late 1970s. Today, sugar beets are making a comeback through the Columbia River Sugar Company and Holly Sugar Corporation. In 1994, 7,000 acres were produced with acreage increasing to 10,500 acres in 1995. These sugar beets were shipped by rail to Oregon and California processing plants. Construction of a processing facility is scheduled to begin in 1996 with completion scheduled for 1998. This factory will be the first new sugar beet processing plant built in the United States since 1975 and when completed will have the capacity to process beets produced from 25,000 acres annually and employ approximately 200 full- and part-time employees.

The sugar beet enterprise budgets presented in this publication are based on sugar beet crops produced in the Bureau of Reclamation Columbia Basin Project under both rill and center pivot irrigation. The project area is in the "big bend" of the Columbia River in south central Washington. Rainfall ranges from 6-10" annually; thus, crops depend on irrigation water pumped from behind the Grand Coulee Dam. Irrigation water availability, coupled with a growing season of 140-200 days, makes it possible to grow sugar beets throughout the Columbia Basin.

## OBJECTIVES OF THE STUDY

The general objective of this study was to develop enterprise budgets for rill and center pivot irrigated sugar beets. The specific objectives were:

1. To identify sugar beet production practices representative of well-managed sugar beet enterprises grown under rill and center pivot irrigation in the Columbia Basin.
2. To provide estimates of capital requirements, production costs and returns.
3. To provide current and prospective producers with a procedure for analyzing the profitability of sugar beet production.

Producers, lenders, and others should find this information helpful in identifying enterprise strengths and weaknesses, planning production adjustments, estimating financial requirements and for numerous other business management decisions.

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The resulting budgets are not intended to represent a particular farm in the Columbia Basin, due to variability in resources, costs, and returns between farms. Therefore, individual producers should use the blank spaces on the right-hand side of the budget tables to develop a budget representative of their own operation.

### **SOURCES OF INFORMATION**

The primary information for this study was obtained from a group of Columbia Basin producers. These producers were considered representative of well-managed farms. Their production practices and requirements for labor, equipment, and supplies are the basis for the assumptions used in this study and represent what this group of producers consider to be the latest developments. Local farm suppliers provided price information on materials and other services commonly used by farmers. Machinery costs were based on current replacement costs and rates of annual use considered typical.

### **BUDGET ASSUMPTIONS**

The following assumptions were made in developing the enterprise data:

1. The representative farm includes 2,000 acres, with 500 acres in sugar beet production.
2. The cash rent for rill irrigated land used to produce sugar beets is \$150 per acre. The landowner furnishes the gravity flow irrigation system (excluding tubes and dams) and the operator pays the water charge of \$30 per acre and annual repair costs of approximately \$2.60 per acre.
3. The cash rent for center pivot land to produce sugar beets is \$250 per acre. The landowner furnishes the center pivot system and the operator pays the irrigation charge of \$30 per acre, the electrical charge of \$30 per acre, and annual repair cost of approximately \$10.00 per acre.
4. Annual yield for sugar beets is assumed to be 35 tons per acre. A price of \$30 per ton was used to calculate per-acre profitability. This price is assumed "net" of all marketing and transportation costs necessary to ship the sugar beets to Oregon and California processing plants.
5. Cost of machine operator labor is \$9.00 per hour. These costs include wages, social security, labor and industry payments, and fringe benefits.
6. The interest rate is 10%.
7. The acreage on which the sugar beets are grown is preceded by wheat.

## **DISCUSSION OF BUDGET INFORMATION**

The budget information for each enterprise is reported in eight tables. A summary of the data in each table is presented below.

### **Tables 1 and 7: Schedule of Operations and Estimated Costs Per Acre**

Tables 1 and 7 outline the schedule of field operations by month, the type of machinery and labor use, the hours of machine use per acre, and total production costs for center pivot and rill irrigation systems, respectively.

Production costs are divided into two categories: (1) fixed cost which includes machinery ownership, land costs, and management; (2) variable costs associated with operating machinery, hiring labor, and purchasing services and materials. Total cost is the sum of fixed and variable costs.

Machinery fixed costs include depreciation, interest on the investment, property taxes, and insurance. These costs are incurred whether or not a crop is grown and do not vary with the enterprise. Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times the per-hour fixed costs. The per-hour fixed costs, shown in Table 14, are determined by dividing the total annual fixed costs by the annual hours of machinery use over all enterprises for the representative farm. Fixed costs per acre for the machine shed and shop and shop tools were determined by dividing the total annual fixed cost by the number of acres.

Land fixed cost is equal to gross rental rates typical of the area. Much of the land used for production is rented. Although individual rental arrangements vary, in many situations the tenant pays a cash rent and the landowner pays the taxes.

An opportunity cost for management is reported in Tables 1 and 7. For management, a cost of 7% of gross receipts is used. This is representative of fees charged by farm management firms in the Columbia Basin and is an estimation of the value of an operator's management skills.

Variable costs depend directly on the number of crop acres and type of enterprise. These costs include labor, water, electricity, fuel, oil, repairs, fertilizer, chemicals, custom work, overhead (telephone, utilities, legal, accounting, organization dues, etc.), and interest on operating capital.

### **Tables 2 and 8: Materials and Services Used by Operation**

Tables 1 and 7 report under the "Service" column and "Materials" column the dollar amounts spent on services and materials used with the different operations. Tables 2 and 8 list, by operation, the specific types and quantities of services and materials used in this study along with their respective 1996 prices.

### Tables 3 and 9: Itemized Costs Per Acre

Tables 3 and 9 are itemized lists of the costs in Tables 1 and 7. Most items are self-explanatory. However, "Tractor Interest" and "Machine Interest" warrant additional explanation. These costs represent opportunity cost (returns foregone by investing in the machinery and building complement rather than in some alternative) or interest paid to finance machinery and buildings. Total interest cost on these capital purchases is calculated on the average value of the machinery and buildings over their respective years of use. The 10% interest charge made against this "average" value represents the total interest cost.

### Tables 4 and 10: Break-Even Selling Price Per Ton

Tables 4 and 10 show the break-even selling prices for different levels of enterprise costs. The first break-even price is the price needed to cover total variable costs--those costs that occur only if the crop is produced. If the price received per ton does not exceed the variable cost per ton, the crop becomes uneconomical to produce, even in the short run, because the added costs of production are greater than the added returns.

The second break-even price is the price required to cover total cash costs, assuming no interest on machinery or building loans is being paid. If other cash costs exist on your farm, you must identify and include these costs in the cash cost break-even calculation. Furthermore, since a cash cost has been attributed to all labor and to land rent, you may wish to subtract the non-cash costs for operator/family labor along with rent for land that is owned and substitute ownership cash costs before calculating the price needed to cover total cash costs.

The third break-even price is the price needed to cover total cash costs, plus depreciation on machinery and buildings. You must realize this price to stay in business over the long run.

The fourth break-even price is the price you must receive to recover total costs including cash costs, depreciation, operator labor and management, and opportunity costs for investments in machinery and buildings. Failure to receive this price means the owner-operator will not realize a return on his/her management, labor, and capital contributions equivalent to what could be earned in an alternative use. Realizing a price above the break-even level means that in addition to covering all costs, you earn a premium (profit) for the risk assumed in producing the crop.

### Tables 5 and 11: Summary of Receipts, Costs, and Profitability Per Acre

Receipts, costs, and various measures of profitability for the sugar beet enterprises are summarized in Tables 5 and 11. The assumed sugar beet price represents an estimate as to what 1996 prices may be and is by no means a "predicted" price. Since profitability greatly depends on price received, you should recalculate profitability using your predicted price when using these tables.

The first profit measure is returns over variable costs and land rent, which was calculated by subtracting total variable costs and land rent from total receipts. The second profit measure, returns to management and risk, was calculated by subtracting the machinery fixed expenses from returns over variable cost. This is the return you earn for management and risk after accounting for all costs including labor contributed to producing the crop.



### Tables 6 and 12: Returns to Management and Risk at Various Price and Yield Levels

Tables 6 and 12 present the returns to management and risk, as calculated in Tables 5 and 11, at different price and yield combinations.

### Table 13: Machinery and Building Complement

Table 13 lists the type and number of machines used to produce sugar beets plus their replacement value, years of life before trade-in, salvage value, hours of annual use, annual repair costs, and fuel type (if applicable). The same information is provided for the machine shed and shop, and the shop tools, except the number of acres these assets support are specified instead of specifying annual hours of use.

### Table 14: Per-Hour/Acre Machinery and Building Cost

Table 14 presents the estimated fixed and variable costs per hour of use for the machinery listed in Table 13. For the machine shop and shed and the shop tools, costs are calculated on a per-acre basis.

Equipment fixed costs include depreciation, interest on investment, property taxes, and insurance. Equipment prices are representative of what growers would currently pay to replace equipment. While this assumption may result in an overstatement of production costs currently experienced by producers, it indicates the enterprise's ability to generate the earnings needed to replace depreciable assets. Continuing increases in prices paid for replacement machinery and equipment due to inflation and improved technology mean that depreciation claimed on assets purchased before price advances understates the amount of capital currently required for asset replacement. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets on a replaceable cost basis. Note that interest on investment represents a 10% opportunity cost to the enterprise. These are earnings foregone by investing in the equipment complement rather than in the next best alternative investment. Equipment variable costs include equipment repair, fuel, and lubrication costs—costs that vary with the crop grown or the number of acres produced.

### CONCLUDING NOTE

To use these budgets, you should fully comprehend the procedures and assumptions used in this study and interpret the results accordingly. The authors and producers who developed this material recognize that these budgets do not represent any one particular operation. They should be used only as a general guide to help derive budgets for individual operations. Moreover, this publication does not recommend production practices. Rather, it presents current technology used to produce sugar beets in the Columbia Basin. It should further be noted that the budget estimates do not include marketing costs or transportation costs necessary to ship the sugar beets to Oregon and California processing plants from the railhead. Prices used in this study are assumed "net" of these costs.

TABLE 1: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING SUGAR BEETS, FOLLOWING WHEAT, UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON.

| OPERATION                | TOOLING                        | MTH  | YEAR | MACH HOURS | LABOR HOURS | TOTAL FIXED COST | VARIABLE COST         |            |         |               |       | TOTAL VARIABLE COST | TOTAL COST |
|--------------------------|--------------------------------|------|------|------------|-------------|------------------|-----------------------|------------|---------|---------------|-------|---------------------|------------|
|                          |                                |      |      |            |             |                  | FUEL, LUBE, & REPAIRS | MACH LABOR | SERVICE | MATER. INTER. |       |                     |            |
|                          |                                |      |      |            |             |                  | \$                    | \$         | \$      | \$            | \$    | \$                  | \$         |
| DISC                     | 200HP-WT W/18' DISC            | FALL | 1995 | .10        | .13         | 2.74             | 3.59                  | 1.13       | .00     | .00           | .43   | 5.15                | 7.89       |
| PLOW                     | 200HP-WT W/48TM 18" PLOW       | MAR  | 1996 | .20        | .25         | 5.75             | 7.69                  | 2.25       | .00     | .00           | .66   | 10.60               | 16.35      |
| FERTILIZE                | CUSTOM APPLIED                 | MAR  | 1996 | .00        | .00         | .00              | .00                   | .00        | 5.00    | 85.00         | 6.00  | 96.00               | 96.00      |
| MAKE SEEDBED             | 200HP-WT W/16' SEEDBED MAKER   | MAR  | 1996 | .10        | .13         | 3.45             | 3.34                  | 1.13       | .00     | .00           | .30   | 4.76                | 8.21       |
| PLANT/INSECTICID         | 130HP-WT W/12R AIR PLANTER     | MAR  | 1996 | .11        | .14         | 3.67             | 4.10                  | 1.25       | .00     | 52.50         | 3.86  | 61.71               | 65.37      |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER    | MAR  | 1996 | .07        | .08         | .77              | 1.32                  | .75        | .00     | 24.48         | 1.77  | 28.32               | 29.09      |
| IRRIGATION               | CENTER PIVOT (W/LAND RENT)     | SEA  | 1996 | .00        | .00         | .00              | .00                   | .00        | 60.00   | 10.00         | 3.50  | 73.50               | 73.50      |
| IRRIGATION               | LABOR AND PICKUP COST          | SEA  | 1996 | .00        | .00         | .00              | .00                   | .00        | 25.00   | .00           | 1.25  | 26.25               | 26.25      |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER    | APR  | 1996 | .07        | .08         | .76              | 1.32                  | .75        | .00     | 9.36          | .67   | 12.09               | 12.86      |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER    | APR  | 1996 | .07        | .08         | .76              | 1.32                  | .75        | .00     | 11.70         | .80   | 14.57               | 15.33      |
| CULTIVATE                | 130HP-WT W/12R CULTIVATOR      | APR  | 1996 | .20        | .25         | 2.64             | 3.97                  | 2.25       | .00     | .00           | .36   | 6.59                | 9.22       |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER    | MAY  | 1996 | .07        | .08         | .76              | 1.32                  | .75        | .00     | 14.04         | .81   | 16.91               | 17.68      |
| CULTIVATE                | 130HP-WT W/12R CULTIVATOR      | MAY  | 1996 | .20        | .25         | 2.64             | 3.97                  | 2.25       | .00     | .00           | .31   | 6.54                | 9.17       |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER    | MAY  | 1996 | .07        | .08         | .76              | 1.32                  | .75        | .00     | 13.32         | .77   | 16.16               | 16.92      |
| HAND WEEDING             | CONTRACTED                     | JUN  | 1996 | .00        | .00         | .00              | .00                   | .00        | 25.00   | .00           | 1.04  | 26.04               | 26.04      |
| RESERVOIR TILL           | 130HP-WT W/6R DAMMER/DIKER     | JUN  | 1996 | .13        | .16         | 1.50             | 3.40                  | 1.41       | .00     | .00           | .20   | 5.01                | 6.51       |
| INSECTICIDE <sup>1</sup> | AERIAL APPLIED                 | JUL  | 1996 | .00        | .00         | .00              | .00                   | .00        | 7.50    | 12.80         | .68   | 20.98               | 20.98      |
| SPOT SPRAY               | MATERIALS & LABOR W/BACKPACK   | JUL  | 1996 | .00        | .00         | .00              | .00                   | .00        | 3.00    | .00           | .10   | 3.10                | 3.10       |
| DEFOLIATE                | 130HP-WT W/6R DEFOLIATOR       | OCT  | 1996 | .25        | .31         | 7.34             | 11.22                 | 2.81       | .00     | .00           | .12   | 14.15               | 21.49      |
| DIG                      | 200HP-WT W/6R DIGGER           | OCT  | 1996 | .33        | .42         | 15.22            | 16.29                 | 3.75       | .00     | .00           | .17   | 20.21               | 35.43      |
| HAUL <sup>2</sup>        | CONTRACTED                     | OCT  | 1996 | .00        | .00         | .00              | .00                   | .00        | 131.25  | .00           | 1.09  | 132.34              | 132.34     |
| MISC USE                 | 3/4 TON PICKUP                 | ANN  | 1996 | .20        | .00         | 2.45             | 1.25                  | .00        | .00     | .00           | .06   | 1.31                | 3.76       |
| MISC USE                 | MACHINE SHOP AND SHED          | ANN  | 1996 | .00        | .00         | 3.36             | .00                   | .00        | .00     | .00           | .00   | .00                 | 3.36       |
| MISC USE                 | SHOP EQUIPMENT                 | ANN  | 1996 | .00        | .00         | 4.59             | .00                   | .00        | .00     | .00           | .00   | .00                 | 4.59       |
| OVERHEAD                 | UTILITIES, ACCT., OFFICE, ETC. | ANN  | 1996 | .00        | .00         | .00              | .00                   | .00        | 30.11   | .00           | .00   | 30.11               | 30.11      |
| MANAGEMENT               | 7% OF GROSS RETURNS            | ANN  | 1996 | .00        | .00         | 73.50            | .00                   | .00        | .00     | .00           | .00   | .00                 | 73.50      |
| LAND RENT                | INCLUDES CENTER PIVOT SYSTEM   | ANN  | 1996 | .00        | .00         | 250.00           | .00                   | .00        | .00     | .00           | .00   | .00                 | 250.00     |
| TOTAL PER ACRE           |                                |      |      | 2.15       | 2.44        | 382.65           | 65.42                 | 21.97      | 286.86  | 233.20        | 24.95 | 632.40              | 1015.05    |

<sup>1</sup>A SECOND INSECTICIDE SPRAY MAY BE REQUIRED IN SEPTEMBER AT AN APPROXIMATE TOTAL COST OF \$23.00 PER ACRE.

<sup>2</sup>ASSUMES A 20-MILE HAUL TO THE RAILHEAD AT \$3.75 PER TON.

**Table 2: Material and Services Used Per Acre to Produce Sugar Beets Under Center Pivot Irrigation in the Columbia Basin.**

| <b>Operation</b>  | <b>Month</b> | <b>Materials and/or Service</b>                                                            |
|-------------------|--------------|--------------------------------------------------------------------------------------------|
| Fertilize         | March        | Custom applied @ \$5.00/acre<br>Fertilizer cost @ \$85.00/acre                             |
| Plant/Insecticide | March        | Beet seed cost @ \$32.00/acre<br>10 lbs. of Counter @ \$2.05/lb.                           |
| Herbicide         | March        | 16 ozs. of Nortron @ \$1.53/oz.                                                            |
| Irrigation        | Season       | Water charge @ \$30.00/acre<br>Electricity charge @ \$30.00/acre<br>Repairs @ \$10.00/acre |
| Irrigation        | Season       | Labor and pickup cost @ \$25.00/acre                                                       |
| Herbicide         | April        | 8 ozs. of Beta-mix Progress @ \$1.17/oz.                                                   |
| Herbicide         | April        | 10 ozs. of Beta-mix Progress @ \$1.17/oz.                                                  |
| Herbicide         | May          | 12 ozs. of Beta-mix Progress @ \$1.17/oz.                                                  |
| Herbicide         | May          | 12 ozs. of Poast @ \$0.96/oz.<br>1.5 pints of crop oil @ \$1.20/pint                       |
| Hand Weeding      | June         | Contracted @ \$25.00/acre                                                                  |
| Insecticide       | July         | Aerial applied @ \$7.50/acre<br>2 pints of Lorsban @ \$6.40/pint                           |
| Spot Spray        | July-August  | Materials and labor @ \$3.00/acre                                                          |
| Haul              | Oct.-Nov.    | 35 tons contracted @ \$3.75/ton                                                            |
| Overhead          | Annual       | 5% of variable cost                                                                        |

TABLE 3: ITEMIZED COSTS PER ACRE FOR PRODUCING SUGAR BEETS,  
FOLLOWING WHEAT, UNDER CENTER PIVOT IRRIGATION IN  
THE COLUMBIA BASIN, WASHINGTON.

|                                   |      | PRICE OR       |          | VALUE OR       | YOUR  |
|-----------------------------------|------|----------------|----------|----------------|-------|
|                                   |      | UNIT COST/UNIT | QUANTITY | COST           | FARM  |
| <b>VARIABLE COSTS</b>             |      |                |          |                |       |
|                                   |      | \$             |          | \$             |       |
| FERTILIZER                        | ACRE | 85.00          | 1.00     | 85.00          | _____ |
| BET SEED                          | ACRE | 32.00          | 1.00     | 32.00          | _____ |
| COUNTER                           | LB.  | 2.05           | 10.00    | 20.50          | _____ |
| NORTROM                           | OZ.  | 1.53           | 16.00    | 24.48          | _____ |
| BETA-MIX PROGRESS                 | OZ.  | 1.17           | 30.00    | 35.10          | _____ |
| POAST                             | OZ.  | .96            | 12.00    | 11.52          | _____ |
| CROP OIL                          | PINT | 1.20           | 1.50     | 1.80           | _____ |
| SPOT SPRAY                        | ACRE | 3.00           | 1.00     | 3.00           | _____ |
| LORSBAN                           | PINT | 6.40           | 2.00     | 12.80          | _____ |
| HAND WEEDING                      | ACRE | 25.00          | 1.00     | 25.00          | _____ |
| CUSTOM FERTILIZE                  | ACRE | 5.00           | 1.00     | 5.00           | _____ |
| CUSTOM AERIAL                     | ACRE | 7.50           | 1.00     | 7.50           | _____ |
| CUSTOM HAUL                       | TON  | 3.75           | 35.00    | 131.25         | _____ |
| WATER CHARGE                      | ACRE | 30.00          | 1.00     | 30.00          | _____ |
| ELECTRICITY CHARGE                | ACRE | 30.00          | 1.00     | 30.00          | _____ |
| IRRIGATION REPAIR                 | ACRE | 10.00          | 1.00     | 10.00          | _____ |
| IRR LABOR & PICKUP                | ACRE | 25.00          | 1.00     | 25.00          | _____ |
| TRACTOR REPAIR                    | ACRE | 20.41          | 1.00     | 20.41          | _____ |
| TRACTOR FUEL/LUBE                 | ACRE | 20.20          | 1.00     | 20.20          | _____ |
| MACHINERY REPAIRS                 | ACRE | 24.06          | 1.00     | 24.06          | _____ |
| MACHINE FUEL/LUBE                 | ACRE | .75            | 1.00     | .75            | _____ |
| LABOR(TRAC/MACH)                  | ACRE | 21.97          | 1.00     | 21.97          | _____ |
| INTEREST ON OP. CAP.              | ACRE | 24.95          | 1.00     | 24.95          | _____ |
| OVERHEAD                          | ACRE | 30.11          | 1.00     | 30.11          | _____ |
| <b>TOTAL VARIABLE COST</b>        |      |                |          | <b>632.40</b>  | _____ |
| <b>FIXED COSTS</b>                |      |                |          |                |       |
|                                   |      | \$             |          | \$             |       |
| TRACTOR DEPRECIATION              | ACRE | 10.75          | 1.00     | 10.75          | _____ |
| TRACTOR INTEREST                  | ACRE | 13.43          | 1.00     | 13.43          | _____ |
| TRACTOR INSURANCE                 | ACRE | .81            | 1.00     | .81            | _____ |
| TRACTOR TAXES                     | ACRE | 2.42           | 1.00     | 2.42           | _____ |
| MACHINE DEPRECIATION <sup>1</sup> | ACRE | 13.50          | 1.00     | 13.50          | _____ |
| MACHINE INTEREST <sup>1</sup>     | ACRE | 14.71          | 1.00     | 14.71          | _____ |
| MACHINE INSURANCE <sup>1</sup>    | ACRE | .88            | 1.00     | .88            | _____ |
| MACHINE TAXES <sup>1</sup>        | ACRE | 2.65           | 1.00     | 2.65           | _____ |
| MANAGEMENT                        | ACRE | 73.50          | 1.00     | 73.50          | _____ |
| LAND RENT (CP)                    | ACRE | 250.00         | 1.00     | 250.00         | _____ |
| <b>TOTAL FIXED COST</b>           |      |                |          | <b>382.65</b>  | _____ |
| <b>TOTAL COST</b>                 |      |                |          | <b>1015.05</b> | _____ |

<sup>1</sup>INCLUDES MACHINE SHED AND SHOP.

**TABLE 4: Break-Even Selling Price Per Ton of Sugar Beets Produced Under Center Pivot Irrigation in the Columbia Basin.**

|                                         | Cost Per<br>Acre | Your<br>Farm | Break-Even<br>Price (\$/Ton) | Your<br>Farm |
|-----------------------------------------|------------------|--------------|------------------------------|--------------|
|                                         | \$               | \$           | (35 Tons)                    | \$           |
| 1. Total Variable Cost                  | 632.40           | _____        | 18.07                        | _____        |
| Plus: Tractor & Mach/Build Insurance    | 1.69             | _____        |                              |              |
| Tractor & Mach/Build Taxes              | 5.07             | _____        |                              |              |
| Land Rent                               | 250.00           | _____        |                              |              |
| 2. Total Cash Costs                     | 889.16           | _____        | 25.40                        | _____        |
| Plus: Tractor & Mach/Build Depreciation | 24.25            | _____        |                              |              |
| 3. Total Cash Cost & Depreciation       | 913.41           | _____        | 26.10                        | _____        |
| Plus: Tractor & Mach/Build Interest     | 28.14            | _____        |                              |              |
| Management*                             | 73.50            | _____        |                              |              |
| 4. Total Cost                           | 1,015.05         | _____        | 29.00                        | _____        |

\*7% of gross receipts (35 Tons X \$30.00 X .07).

TABLE 5: Summary of Receipts, Costs, and Profitability Per Acre for Sugar Beets Produced Under Center Pivot Irrigation in the Columbia Basin.

|                                             | Price/Unit | Quantity | Value<br>or Cost | Your<br>Farm |
|---------------------------------------------|------------|----------|------------------|--------------|
| Gross Receipts                              | \$30.00    | 35 Tons  | \$1,050.00       | _____        |
| Sugar Beets                                 |            |          |                  |              |
| 1. Total Receipts                           |            |          | \$1,050.00       | _____        |
| Less: Total Variable Cost                   |            |          | 632.40           | _____        |
| Land Rent                                   |            |          | 250.00           | _____        |
| 2. Returns Over Variable Cost and Land Rent |            |          | 167.60           | _____        |
| Less: Tractor & Mach/Build Fixed Cost       |            |          | 59.15            | _____        |
| 3. Net Returns to Management and Risk       |            |          | 108.45           | _____        |

TABLE 6: Returns to Management and Risk at Various Price and Yield Levels for Sugar Beets Produced Under Center Pivot Irrigation in the Columbia Basin.

| Price \ Yield | 30<br>Tons | 35<br>Tons | 40<br>Tons |
|---------------|------------|------------|------------|
| \$            | \$         | \$         | \$         |
| 25            | -171.86    | -66.55     | 38.76      |
| 30            | -21.86     | 108.45     | 238.76     |
| 35            | 128.14     | 283.45     | 438.76     |

<sup>1</sup>Costs that vary with yield are hauling and overhead.

TABLE 7: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING SUGAR BEETS, FOLLOWING WHEAT, UNDER RILL IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON.

| OPERATION                | TOOLING                           | MTH YEAR     | MACH HOURS | LABOR HOURS | VARIABLE COST    |                       |            |         |               |      | TOTAL VARIABLE COST | TOTAL COST |
|--------------------------|-----------------------------------|--------------|------------|-------------|------------------|-----------------------|------------|---------|---------------|------|---------------------|------------|
|                          |                                   |              |            |             | TOTAL FIXED COST | FUEL, LUBE, & REPAIRS | MACH LABOR | SERVICE | MATER. INTER. |      |                     |            |
|                          |                                   |              |            |             | \$               | \$                    | \$         | \$      | \$            | \$   | \$                  | \$         |
| DISC                     | 200HP-WT W/18' DISC               | FALL 1995    | .10        | .13         | 2.74             | 3.59                  | 1.13       | .00     | .00           | .43  | 5.15                | 7.89       |
| PLOW                     | 200HP-WT W/4BTM 18" PLOW          | MAR 1996     | .20        | .25         | 5.75             | 7.69                  | 2.25       | .00     | .00           | .66  | 10.60               | 16.35      |
| FERTILIZE                | CUSTOM APPLIED                    | MAR 1996     | .00        | .00         | .00              | .00                   | .00        | 5.00    | 85.00         | 6.00 | 96.00               | 96.00      |
| MAKE SEEDBED             | 200HP-WT W/16' SEEDBED MAKER      | MAR 1996     | .10        | .13         | 3.45             | 3.34                  | 1.13       | .00     | .00           | .30  | 4.76                | 8.21       |
| MARKOUT FIELD            | 130HP-WT W/13R MARKER             | MAR 1996     | .10        | .13         | .93              | 2.09                  | 1.13       | .00     | .00           | .21  | 3.43                | 4.36       |
| PLANT/INSECTICID         | 130HP-WT W/12R AIR PLANTER        | MAR 1996     | .11        | .14         | 3.67             | 4.10                  | 1.25       | .00     | 52.50         | 3.86 | 61.71               | 65.37      |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER       | MAR 1996     | .07        | .08         | .77              | 1.32                  | .75        | .00     | 24.48         | 1.77 | 28.32               | 29.09      |
| CULTIVATE                | 130HP-WT W/12R CULTIVATOR         | APR 1996     | .20        | .25         | 2.64             | 3.97                  | 2.25       | .00     | .00           | .36  | 6.59                | 9.22       |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER       | APR 1996     | .07        | .08         | .76              | 1.32                  | .75        | .00     | 9.36          | .67  | 12.09               | 12.86      |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | APR 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .03  | .57                 | .80        |
| CORRUGATE HDLAND         | 130HP-WT W/10' HEADLANDER         | APR 1996     | .03        | .03         | .24              | .39                   | .27        | .00     | .00           | .04  | .70                 | .94        |
| IRRIGATE                 | LABOR, PKUP, REPAIR, WATER, TUBES | APR 1996     | .00        | .00         | .00              | .00                   | .00        | 18.75   | .65           | 1.13 | 20.53               | 20.53      |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | APR 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .03  | .57                 | .80        |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER       | APR 1996     | .07        | .08         | .76              | 1.32                  | .75        | .00     | 11.70         | .80  | 14.57               | 15.33      |
| CULTIVATE                | 130HP-WT W/12R CULTIVATOR         | APR 1996     | .20        | .25         | 2.64             | 3.97                  | 2.25       | .00     | .00           | .36  | 6.59                | 9.22       |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | APR 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .03  | .57                 | .80        |
| CORRUGATE HDLAND         | 130HP-WT W/10' HEADLANDER         | APR 1996     | .03        | .03         | .24              | .39                   | .27        | .00     | .00           | .04  | .70                 | .94        |
| IRRIGATE                 | LABOR, PKUP, REPAIR, WATER, TUBES | APR 1996     | .00        | .00         | .00              | .00                   | .00        | 18.75   | .65           | 1.13 | 20.53               | 20.53      |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | MAY 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .03  | .57                 | .79        |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER       | MAY 1996     | .07        | .08         | .76              | 1.32                  | .75        | .00     | 14.04         | .81  | 16.91               | 17.68      |
| CULTIVATE                | 130HP-WT W/12R CULTIVATOR         | MAY 1996     | .20        | .25         | 2.64             | 3.97                  | 2.25       | .00     | .00           | .31  | 6.54                | 9.17       |
| HERBICIDE                | 130HP-WT W/12R BAND SPRAYER       | MAY 1996     | .07        | .08         | .76              | 1.32                  | .75        | .00     | 13.32         | .77  | 16.16               | 16.92      |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | MAY 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .03  | .57                 | .79        |
| CORRUGATE HDLAND         | 130HP-WT W/10' HEADLANDER         | MAY 1996     | .03        | .03         | .24              | .39                   | .27        | .00     | .00           | .03  | .69                 | .93        |
| IRRIGATE                 | LABOR, PKUP, REPAIR, WATER, TUBES | MAY 1996     | .00        | .00         | .00              | .00                   | .00        | 18.75   | .65           | .97  | 20.37               | 20.37      |
| SPRAY HEADLAND           | SMALL TRACTOR AND SPRAYER         | JUN 1996     | .00        | .00         | .00              | .00                   | .00        | .50     | .41           | .04  | .94                 | .94        |
| HAND WEEDING             | CONTRACTED                        | JUN 1996     | .00        | .00         | .00              | .00                   | .00        | 25.00   | .00           | 1.04 | 26.04               | 26.04      |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | JUN 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .02  | .57                 | .79        |
| CULTIVATE                | 130HP-WT W/12R CULTIVATOR         | JUN 1996     | .20        | .25         | 2.64             | 3.97                  | 2.25       | .00     | .00           | .26  | 6.48                | 9.12       |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | JUN 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .02  | .57                 | .79        |
| CORRUGATE HDLAND         | 130HP-WT W/10' HEADLANDER         | JUN 1996     | .03        | .03         | .24              | .39                   | .27        | .00     | .00           | .03  | .69                 | .92        |
| IRRIGATE                 | LABR, PKUP, REPR, WATER, TUBES    | JUN-SEP 1996 | .00        | .00         | .00              | .00                   | .00        | 18.75   | .65           | .81  | 20.21               | 20.21      |
| INSECTICIDE <sup>1</sup> | AERIAL APPLIED                    | JUL 1996     | .00        | .00         | .00              | .00                   | .00        | 7.50    | 12.80         | .68  | 20.98               | 20.98      |
| SPOT SPRAY               | MATERIALS & LABOR W/BACKPK        | JUL-AUG 1996 | .00        | .00         | .00              | .00                   | .00        | 3.00    | .00           | .10  | 3.10                | 3.10       |
| SPRAY HEADLAND           | SMALL TRACTOR AND SPRAYER         | AUG 1996     | .00        | .00         | .00              | .00                   | .00        | .50     | .41           | .02  | .93                 | .93        |
| RIP HEADLAND             | 130HP-WT W/10' DISC               | OCT 1996     | .02        | .03         | .22              | .32                   | .23        | .00     | .00           | .00  | .55                 | .77        |
| DEFOLIATE                | 130HP-WT W/6R DEFOLIATOR          | OCT-NOV 1996 | .25        | .31         | 7.34             | 11.22                 | 2.81       | .00     | .00           | .12  | 14.15               | 21.49      |
| DIG                      | 200HP-WT W/6R DIGGER              | OCT-NOV 1996 | .33        | .42         | 15.22            | 16.29                 | 3.75       | .00     | .00           | .17  | 20.21               | 35.43      |
| HAUL <sup>2</sup>        | CONTRACTED                        | OCT-NOV 1996 | .00        | .00         | .00              | .00                   | .00        | 131.25  | .00           | 1.09 | 132.34              | 132.34     |

TABLE 7: CONTINUED.

| OPERATION      | TOOLING                        | MTH YEAR | MACH HOURS | LABOR HOURS | VARIABLE COST    |                       |            |                |        |       | TOTAL VARIABLE COST | TOTAL COST |
|----------------|--------------------------------|----------|------------|-------------|------------------|-----------------------|------------|----------------|--------|-------|---------------------|------------|
|                |                                |          |            |             | TOTAL FIXED COST | FUEL, LUBE, & REPAIRS | MACH LABOR | SERVICE MATER. | INTER. |       |                     |            |
|                |                                |          |            |             | \$               | \$                    | \$         | \$             | \$     | \$    | \$                  | \$         |
| MISC USE       | 3/4 TON PICKUP                 | ANN 1996 | .20        | .00         | 2.45             | 1.25                  | .00        | .00            | .00    | .06   | 1.31                | 3.76       |
| MISC USE       | MACHINE SHOP AND SHED          | ANN 1996 | .00        | .00         | 3.36             | .00                   | .00        | .00            | .00    | .00   | .00                 | 3.36       |
| MISC USE       | SHOP EQUIPMENT                 | ANN 1996 | .00        | .00         | 4.59             | .00                   | .00        | .00            | .00    | .00   | .00                 | 4.59       |
| OVERHEAD       | UTILITIES, ACCT., OFFICE, ETC. | ANN 1996 | .00        | .00         | .00              | .00                   | .00        | 30.24          | .00    | .00   | 30.24               | 30.24      |
| MANAGEMENT     | 7% OF GROSS RETURNS            | ANN 1996 | .00        | .00         | 73.50            | .00                   | .00        | .00            | .00    | .00   | .00                 | 73.50      |
| LAND RENT      | RILL IRRIGATION SYSTEM         | ANN 1996 | .00        | .00         | 150.00           | .00                   | .00        | .00            | .00    | .00   | .00                 | 150.00     |
| TOTAL PER ACRE |                                |          | 2.79       | 3.23        | 290.10           | 76.15                 | 29.07      | 277.99         | 226.61 | 25.27 | 635.09              | 925.19     |

<sup>1</sup>A SECOND INSECTICIDE SPRAY MAY BE REQUIRED IN SEPTEMBER AT AN APPROXIMATE TOTAL COST OF \$23.00 PER ACRE.

<sup>2</sup>ASSUMES A 20-MILE HAUL TO THE RAILHEAD AT \$3.75 PER TON.



Table 8: Materials and Services Used Per Acre to Produce Sugar Beets Under Rill Irrigation in the Columbia Basin.

| Operation         | Month          | Materials and/or Service                                                                                                           |
|-------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------|
| Fertilize         | March          | Custom applied @ \$5.00/acre<br>Fertilizer cost @ \$85.00/acre                                                                     |
| Plant/Insecticide | March          | Beet seed cost @ \$32.00/acre<br>10 lbs. of counter @ \$2.05/lb.                                                                   |
| Spray             | March          | 16 ozs. of Nortron @ \$1.53/oz.                                                                                                    |
| Spray             | April          | 8 ozs. of Beta-mix Progress @ \$1.17/oz.                                                                                           |
| Irrigate          | April          | Labor & pickup cost @ \$10.00/acre<br>Prorated water charge @ \$7.50/acre<br>Repair cost @ \$0.65/acre<br>Tubes/dams @ \$1.25/acre |
| Spray             | April          | 10 ozs. of Beta-mix Progress @ \$1.17/oz.                                                                                          |
| Irrigate          | April          | Labor & pickup cost @ \$10.00/acre<br>Prorated water charge @ \$7.50/acre<br>Repair cost @ \$0.65/acre<br>Tubes/dams @ \$1.25/acre |
| Spray             | May            | 12 ozs. of Beta-mix Progress @ \$1.17/oz.                                                                                          |
| Spray             | May            | 12 ozs. of Poast @ \$0.96/oz.<br>1.5 pints of crop oil @ \$0.70/pint                                                               |
| Irrigate          | May            | Labor & pickup cost @ \$10.00/acre<br>Prorated water charge @ \$7.50/acre<br>Repair cost @ \$0.65/acre<br>Tubes/dams @ \$1.25/acre |
| Spray Headland    | June           | 0.01 gal. of Roundup-RT @ \$40.55/gal.<br>Labor, tractor & sprayer cost @ \$0.50/acre                                              |
| Hand Weeding      | June           | Contracted @ \$25.00/acre                                                                                                          |
| Irrigate          | June-September | Labor & pickup cost @ \$10.00/acre<br>Prorated water charge @ \$7.50/acre<br>Repair cost @ \$0.65/acre<br>Tubes/dams @ \$1.25/acre |
| Spray             | July           | Aerial applied @ \$7.50/acre<br>2 pints of Lorsban @ \$6.40/pint                                                                   |

Table 8: Continued.

| Operation      | Month       | Materials and/or Service                                                              |
|----------------|-------------|---------------------------------------------------------------------------------------|
| Spot Spray     | July-August | Materials and labor @ \$3.00/acre                                                     |
| Spray Headland | August      | 0.01 gal. of Roundup-RT @ \$40.55/gal.<br>Labor, tractor & sprayer cost @ \$0.50/acre |
| Haul           | Oct.-Nov.   | 35 tons contracted @ \$3.75/ton                                                       |
| Overhead       | Annual      | 5% of variable cost                                                                   |

TABLE 9: ITEMIZED COST PER ACRE FOR PRODUCING SUGAR BEETS,  
FOLLOWING WHEAT, UNDER RILL IRRIGATION IN THE COLUMBIA  
BASIN, WASHINGTON.

|                                   |      | PRICE OR<br>UNIT COST/UNIT | QUANTITY | VALUE OR<br>COST | YOUR<br>FARM |
|-----------------------------------|------|----------------------------|----------|------------------|--------------|
| <b>VARIABLE COSTS</b>             |      |                            |          |                  |              |
|                                   |      | \$                         |          | \$               |              |
| FERTILIZER                        | ACRE | 85.00                      | 1.00     | 85.00            | _____        |
| BEET SEED                         | ACRE | 32.00                      | 1.00     | 32.00            | _____        |
| COUNTER                           | LB.  | 2.05                       | 10.00    | 20.50            | _____        |
| NORTON                            | OZ.  | 1.53                       | 16.00    | 24.48            | _____        |
| BETA-MIX PROGRESS                 | OZ.  | 1.17                       | 30.00    | 35.10            | _____        |
| POAST                             | OZ.  | .96                        | 12.00    | 11.52            | _____        |
| CROP OIL                          | PINT | 1.20                       | 1.50     | 1.80             | _____        |
| ROUNDUP-RT                        | ACRE | 40.55                      | .02      | .82              | _____        |
| LORSBAN                           | PINT | 6.40                       | 2.00     | 12.80            | _____        |
| SPOT SPRAY                        | ACRE | 3.00                       | 1.00     | 3.00             | _____        |
| HAND WEEDING                      | ACRE | 25.00                      | 1.00     | 25.00            | _____        |
| WATER CHARGE                      | ACRE | 30.00                      | 1.00     | 30.00            | _____        |
| IRRIGATION REPAIR                 | ACRE | 2.60                       | 1.00     | 2.60             | _____        |
| IRR LABOR/PICKUP                  | ACRE | 40.00                      | 1.00     | 40.00            | _____        |
| IRR TUBES/DAMS                    | ACRE | 5.00                       | 1.00     | 5.00             | _____        |
| HDLD TRAC/SPRAY/LABOR             | ACRE | .50                        | 2.00     | 1.00             | _____        |
| CUSTOM FERTILIZE                  | ACRE | 5.00                       | 1.00     | 5.00             | _____        |
| CUSTOM AERIAL                     | ACRE | 7.50                       | 1.00     | 7.50             | _____        |
| CUSTOM HAUL                       | TON  | 3.75                       | 35.00    | 131.25           | _____        |
| TRACTOR REPAIR                    | ACRE | 26.00                      | 1.00     | 26.00            | _____        |
| TRACTOR FUEL/LUBE                 | ACRE | 23.50                      | 1.00     | 23.50            | _____        |
| MACHINERY REPAIRS                 | ACRE | 25.90                      | 1.00     | 25.90            | _____        |
| MACHINE FUEL/LUBE                 | ACRE | .75                        | 1.00     | .75              | _____        |
| LABOR(TRAC/MACH)                  | ACRE | 29.07                      | 1.00     | 29.07            | _____        |
| INTEREST ON OP. CAP.              | ACRE | 25.27                      | 1.00     | 25.27            | _____        |
| OVERHEAD                          | ACRE | 30.24                      | 1.00     | 30.24            | _____        |
| <b>TOTAL VARIABLE COST</b>        |      |                            |          | <b>635.09</b>    | _____        |
| <b>FIXED COSTS</b>                |      |                            |          |                  |              |
|                                   |      | \$                         |          | \$               |              |
| TRACTOR DEPRECIATION              | ACRE | 12.15                      | 1.00     | 12.15            | _____        |
| TRACTOR INTEREST                  | ACRE | 16.23                      | 1.00     | 16.23            | _____        |
| TRACTOR INSURANCE                 | ACRE | .97                        | 1.00     | .97              | _____        |
| TRACTOR TAXES                     | ACRE | 2.92                       | 1.00     | 2.92             | _____        |
| MACHINE DEPRECIATION <sup>1</sup> | ACRE | 14.22                      | 1.00     | 14.22            | _____        |
| MACHINE INTEREST <sup>1</sup>     | ACRE | 16.22                      | 1.00     | 16.22            | _____        |
| MACHINE INSURANCE <sup>1</sup>    | ACRE | .97                        | 1.00     | .97              | _____        |
| MACHINE TAXES <sup>1</sup>        | ACRE | 2.92                       | 1.00     | 2.92             | _____        |
| MANAGEMENT                        | ACRE | 73.50                      | 1.00     | 73.50            | _____        |
| LAND RENT                         | ACRE | 150.00                     | 1.00     | 150.00           | _____        |
| <b>TOTAL FIXED COST</b>           |      |                            |          | <b>290.10</b>    | _____        |
| <b>TOTAL COST</b>                 |      |                            |          | <b>925.19</b>    | _____        |

<sup>1</sup>INCLUDES MACHINE SHED AND SHOP.

**TABLE 10: Break-Even Selling Price Per Ton of Sugar Beets Produced Under Rill Irrigation in the Columbia Basin.**

|                                         | Cost Per<br>Acre | Your<br>Farm | Break-Even<br>Price (\$/Ton) | Your<br>Farm |
|-----------------------------------------|------------------|--------------|------------------------------|--------------|
|                                         | \$               | \$           | (35 Tons)                    | \$           |
| 1. Total Variable Cost                  | 635.09           | _____        | 18.14                        | _____        |
| Plus: Tractor & Mach/Build Insurance    | 1.94             | _____        |                              |              |
| Tractor & Mach/Build Taxes              | 5.84             | _____        |                              |              |
| Land Rent                               | 150.00           | _____        |                              |              |
| 2. Total Cash Costs                     | 792.87           | _____        | 22.65                        | _____        |
| Plus: Tractor & Mach/Build Depreciation | 26.37            | _____        |                              |              |
| 3. Total Cash Cost & Depreciation       | 819.24           | _____        | 23.41                        | _____        |
| Plus: Tractor & Mach/Build Interest     | 32.45            | _____        |                              |              |
| Management*                             | 73.50            | _____        |                              |              |
| 4. Total Cost                           | 925.19           | _____        | 26.43                        | _____        |

\*7% of gross receipts (35 tons X \$30.00 X .07).

TABLE 11: Summary of Receipts, Costs and Profitability Per Acre for Sugar Beets Produced Under Rill Irrigation in the Columbia Basin.

|                                             | Price/Unit | Quantity | Value or Cost | Your Farm |
|---------------------------------------------|------------|----------|---------------|-----------|
| Gross Receipts                              | \$30.00    | 35 Tons  | \$1,050.00    | _____     |
| Sugar Beets                                 |            |          |               |           |
| 1. Total Receipts                           |            |          | \$1,050.00    | _____     |
| Less: Total Variable Cost                   |            |          | 635.09        | _____     |
| Land Rent                                   |            |          | 150.00        | _____     |
| 2. Returns Over Variable Cost and Land Rent |            |          | 264.91        | _____     |
| Less: Tractor & Mach/Build Fixed Cost       |            |          | 66.60         | _____     |
| 3. Net Returns to Management and Risk       |            |          | 198.31        | _____     |

TABLE 12: Returns to Management and Risk at Various Price and Yield Levels for Sugar Beets Produced Under Rill Irrigation in the Columbia Basin.

| Price \ Yield | 30 Tons | 35 Tons | 40 Tons |
|---------------|---------|---------|---------|
| \$            | \$      | \$      | \$      |
| 25            | -82.00  | 23.31   | 128.62  |
| 30            | 68.00   | 198.31  | 328.62  |
| 35            | 218.00  | 373.31  | 528.62  |

<sup>2</sup>Costs that vary with yield are hauling and overhead.

Table 13: Machinery Complement.

| Description         | Replacement Value | Years to Trade | Salvage Value | Annual Hours of Use  | Annual Repair | Fuel Type <sup>1</sup> |
|---------------------|-------------------|----------------|---------------|----------------------|---------------|------------------------|
|                     | \$                |                | \$            |                      | \$            |                        |
| 200HP-WT 4WD        | 75,000            | 10             | 25,000        | 500                  | 6,000         | D                      |
| 130HP-WT 2WD        | 25,000            | 10             | 15,000        | 500                  | 4,000         | D                      |
| 3/4 Ton Pickup      | 25,000            | 5              | 12,000        | 400                  | 1,000         | G                      |
| 18' Offset Disk     | 8,000             | 10             | 5,000         | 400                  | 1,000         |                        |
| 4BTM 18" Plow       | 3,000             | 10             | 2,000         | 100                  | 500           |                        |
| 16' Seedbed Maker   | 7,000             | 10             | 4,000         | 100                  | 500           |                        |
| 13-Row Marker       | 1,500             | 10             | 1,000         | 125                  | 500           |                        |
| 12-Row Air Planter  | 18,000            | 10             | 10,000        | 100                  | 2,000         |                        |
| 12-Row Band Sprayer | 4,700             | 10             | 3,000         | 170                  | 1,000         |                        |
| 6-Row Dammer Diker  | 5,000             | 10             | 3,000         | 160                  | 1,000         |                        |
| 6-Row Defoliator    | 18,500            | 10             | 7,500         | 125                  | 3,500         |                        |
| 12-Row Cultivator   | 8,000             | 10             | 5,000         | 200                  | 1,000         |                        |
| 6-Row Digger        | 25,000            | 10             | 12,500        | 170                  | 4,000         |                        |
| 10' Headlander      | 1,000             | 10             | 500           | 75                   | 50            |                        |
| 10' Disc            | 2,500             | 10             | 1,500         | 100                  | 100           |                        |
|                     |                   |                |               | <u>Acres Covered</u> |               |                        |
| Mach. Shed & Shop   | 60,000            | 20             | -             | 2,000                | -             |                        |
| Shop Equipment      | 35,000            | 5              | -             | 2,000                | -             |                        |

<sup>1</sup> Fuel consumption depends on type of operation.

TABLE 14: HOURLY MACHINERY COSTS.

| MACHINERY           | PURCHASE PRICE | YEARS TO TRADE | ANNUAL HOURS | DEPREC- IATION | INTER- EST | INSUR- ANCE | TAXES | HOUSING | TOTAL FIXED COST        | REPAIR | FUEL AND LUBE      | TOTAL VARIABLE COST | TOTAL COST |
|---------------------|----------------|----------------|--------------|----------------|------------|-------------|-------|---------|-------------------------|--------|--------------------|---------------------|------------|
|                     | \$             |                |              |                |            |             |       |         |                         |        |                    |                     |            |
|                     |                |                |              |                |            |             |       |         | -----COST PER HOUR----- |        |                    |                     |            |
| 200HP-WT 4WD        | 75,000.00      | 10             | 500          | 10.00          | 10.00      | .60         | 1.80  | .00     | 22.40                   | 12.00  | 18.40 <sup>1</sup> | 30.40               | 52.80      |
| 130HP-WT 2WD        | 25,000.00      | 10             | 500          | 2.00           | 4.00       | .24         | .72   | .00     | 6.96                    | 8.00   | 5.52 <sup>1</sup>  | 13.52               | 20.48      |
| 18' OFFSET DISC     | 8,000.00       | 10             | 400          | .75            | 1.63       | .10         | .29   | .00     | 2.77                    | 2.50   | .00                | 2.50                | 5.27       |
| 4 BTM 18" PLOW      | 3,000.00       | 10             | 100          | 1.00           | 2.50       | .15         | .45   | .00     | 4.10                    | 5.00   | .00                | 5.00                | 9.10       |
| 16' SEEDBED MAKER   | 7,000.00       | 10             | 100          | 3.00           | 5.50       | .33         | .99   | .00     | 9.82                    | 5.00   | .00                | 5.00                | 14.82      |
| 13 ROW MARKER       | 1,500.00       | 10             | 125          | .40            | 1.00       | .06         | .18   | .00     | 1.64                    | 4.00   | .00                | 4.00                | 5.64       |
| 12 ROW AIR PLANTER  | 18,000.00      | 10             | 100          | 8.00           | 14.00      | .84         | 2.52  | .00     | 25.36                   | 20.00  | .00                | 20.00               | 45.36      |
| 12 ROW BAND SPRAYER | 4,700.00       | 10             | 170          | 1.00           | 2.26       | .14         | .41   | .00     | 3.81                    | 5.88   | .00                | 5.88                | 9.69       |
| 6 ROW DAMMER DIKER  | 5,000.00       | 10             | 160          | 1.25           | 2.50       | .15         | .45   | .00     | 4.35                    | 6.25   | .00                | 6.25                | 10.60      |
| 6 ROW DEFOLIATOR    | 18,500.00      | 10             | 125          | 8.80           | 10.40      | .62         | 1.87  | .00     | 21.70                   | 28.00  | .00                | 28.00               | 49.70      |
| 12 ROW CULTIVATOR   | 8,000.00       | 10             | 200          | 1.50           | 3.25       | .20         | .59   | .00     | 5.53                    | 5.00   | .00                | 5.00                | 10.53      |
| 6 ROW DIGGER        | 25,000.00      | 10             | 170          | 7.35           | 11.03      | .66         | 1.99  | .00     | 21.03                   | 23.53  | .00                | 23.53               | 44.56      |
| 10' HEADLANDER      | 1,000.00       | 10             | 75           | .67            | 1.00       | .06         | .18   | .00     | 1.91                    | .67    | .00                | .67                 | 2.57       |
| 10' DISC            | 2,500.00       | 10             | 100          | 1.00           | 2.00       | .12         | .36   | .00     | 3.48                    | 1.00   | .00                | 1.00                | 4.48       |
| 3/4 TON PICKUP      | 25,000.00      | 5              | 400          | 6.50           | 4.63       | .28         | .83   | .00     | 12.24                   | 2.50   | 3.74               | 6.24                | 18.47      |
|                     |                |                |              |                |            |             |       |         | -----COST PER ACRE----- |        |                    |                     |            |
| MACH. SHED & SHOP   | 60,000.00      | 20             | -            | 1.50           | 1.50       | .09         | .27   | .00     | 3.36                    | .00    | .00                | .00                 | 3.36       |
| SHOP EQUIPMENT      | 35,000.00      | 5              | -            | 3.50           | .88        | .05         | .16   | .00     | 4.59                    | .00    | .00                | .00                 | 4.59       |

<sup>1</sup>FUEL AND LUBE COST AT DIFFERENT CONSUMPTION RATES: 20 GAL/HR, \$18.40; 15 GAL/HR, \$13.80; 12 GAL/HR, \$11.40; 8 GAL/HR, \$7.36; 6 GAL/HR, \$5.52; 5 GAL/HR, \$4.60.

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