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# 1987 Sugarbeet Production Costs On Idaho and Eastern Oregon Farms

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Sugarbeets have been grown on Idaho and eastern Oregon farms since 1903. The 1987 crop was harvested from 162,000 acres in Idaho and nearly 14,000 acres in Oregon for a total of 176,000 acres in the two states. Total production was 4.7 million tons with a farm value of about $180 million. Processing added an estimated $120 million of value to the beets for a total of $300 million.

The sugarbeet crop produces high cash receipts per acre but also requires a large investment in fixed and variable costs. Farmers spend over $500 an acre for labor, fertilizer, chemicals and other operating costs. Ownership costs add another $300 to $500. Millions of dollars are spent in areas where sugar factories are located for labor, power and other expenses associated with processing and marketing sugar and related products. Thus, the sugarbeet industry is of considerable economic importance to local communities where processing occurs, as well as to the farmers who produce sugarbeets.

Farm receipts from sugarbeets have recently ranked third among Idaho crops, following potatoes and wheat. Idaho ranks third among the states in sugarbeet production, exceeded only by Minnesota and California.

This publication reports average production costs for sugarbeets in southern Idaho and eastern Oregon. In fall 1987, the Department of Agricultural Economics and Rural Sociology at the University of Idaho conducted a cost of production study at the request of the Idaho and Oregon sugarbeet growers associations. They needed reliable cost data for various reasons including policy concerns and planning and management decisions. The Nyssa-Nampa Beet Growers' Association, the Idaho Sugarbeet Growers' Association and the Elwyhee Sugarbeet Growers provided funding for data collection and processing.

## Source of Data

From a grower's list provided by The Amalgamated Sugar Company, a sample was extracted by the Idaho Agricultural Statistics Service. The sample was stratified by sugarbeet acreage so that all sizes of enterprise would be represented. A higher percentage of larger acreages was drawn so that each acre had an equal chance of being included in the sample. The sugarbeet producing region of Idaho and Oregon was divided into two areas which were designated east and west. The eastern area included Idaho's Magic Valley and part of the upper Snake River Valley, and consisted of farmers whose beets were delivered to the Paul and Twin Falls sugar factories. The western area extended from the western boundaries of Gooding and Twin Falls counties in Idaho to and including Malheur County in Oregon. Fig. 1 shows the counties included in each district.

A sample of 201 farms was drawn from the 1,400 farms that were identified as producing sugarbeets in the two states. Table 1 gives the sample breakdown by size groups. Of the 201 farms drawn, usable records were obtained from 151 farm operators, or 75 percent of the sample. These were evenly distributed over the size groups. Of the remaining 50 operators, 36 declined to provide information and the rest were unable to provide enough information for analysis.

The two areas studied were similar in many respects but also had some noticeable differences. The western re-

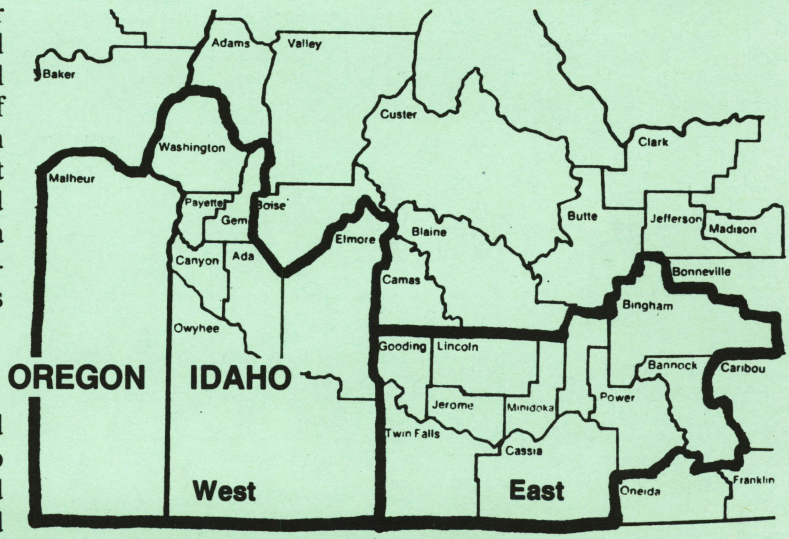


**Fig. 1. Counties producing sugarbeets, Idaho and Oregon.**

gion had a somewhat longer growing season, resulting in higher yields per acre (Table 2). Price received per ton was about $2 higher in the eastern area, reflecting a higher sugar content in the beets.

Sugarbeets in both areas were grown entirely on irrigated land and in rotation with other crops common to the region.

## Cost of Producing Sugarbeets

Farm operators in the sample were interviewed to obtain data for estimating sugarbeet production costs. An enumerator contacted the operator, set up an appointment and conducted an interview in which information was provided from farm records and from memory. Farm records ranged from complete, detailed records of farm operations to a bare minimum kept only for tax purposes.

## Variable Costs

Information on variable inputs such as seed, fertilizer, chemicals, hired labor, custom hiring and contract labor were fairly straightforward, and most farm operators had what appeared to be reliable information. Variation in types and quantities of seed, fertilizer and chemicals made quantification difficult, so most costs were aggregated by dollar amount rather than physical units of each input.

Fertilizer use was broken down by units of nitrogen, phosphorus and potassium. Average amounts of these nutrients used are summarized below:

| | Pounds actual | | |
|---|---|---|---|
| | Nitrogen | $P_2O_5$ | $K_2O$ |
| West | 200 | 100 | 43 |
| East | 130 | 87 | 8 |

Many farmers also used one or more trace elements such as iron, boron and copper, and a few used sulfur. A wide variety of chemicals was used for weed, insect and disease control.

Hired labor costs were obtained from the operator. Hired labor included wages paid plus perquisites, Social Security and employment insurance paid by the employer. Contract labor was recorded separately and was paid primarily for hand thinning, hoe trimming and weeding beets. Irrigation labor was included in either hired labor or unpaid family labor, depending on how it was reported by the operator.

Estimating the amount and value of operator and unpaid family labor to allocate to sugarbeets was challenging. Hours worked on the farm were estimated, and then the proportion used for beets was extracted. Respondents were asked to put a price on operator and unpaid labor. Many were reluctant to do so, and the values that were given varied widely. For these reasons, unpaid labor was assigned a value of $6 per hour, an amount assumed to be what the operator would have paid if hired labor had been used instead of unpaid labor.

Irrigation water was obtained from irrigation districts, wells and directly from streams. The irrigation cost figure includes payments to irrigation districts and pumping costs for obtaining water and pressurizing irrigation systems. The cost of ownership, maintenance and operation of sprinkler systems was included with machinery costs.

Typically, growers harvest beets and haul them to the factory or to the nearest beet station operated by the processor. Adjustments are made to allow for differences in farm location and the way the beets were hauled to the factory. The processor charges the grower extra if beets are hauled by the company for more than specified distances. On the other hand, if a grower hauls beets to the factory, the processor pays a hauling allowance to the grower. In this analysis, the freight charge was included as a cost while the haul allowance was identified as a negative cost or a reimbursement to the grower for extra hauling provided.

Interest on operating costs incurred by the grower was calculated. This was an 11 percent charge starting from when the expense was incurred and continuing until the first payment was received from the processor.

Miscellaneous charges were various items such as dues, utilities, vehicle license, accounting and office supplies, farm magazines and other items.

Machine costs and expenses were difficult to determine because of the many types of machines of various ages and conditions. Each machine was identified and the annual expenses were calculated. This expense was multiplied by the percentage that this machine was used on the sugarbeet enterprise. Machine expenses included depreciation, interest on the investment, taxes, insurance, shelter, fuel and lubrication and repairs.

**Table 1. Number of farms in sample and completed questionnaires by sugarbeet acreage and by area, Idaho and Oregon, 1987 crop.**

| Size | Sample | Completed questionnaire | Percent completed | Completed by area | |
|---|---|---|---|---|---|
| (acres) | | | (%) | (East) | (West) |
| 1 to 99 | 80 | 59 | 74 | 35 | 24 |
| 100 to 299 | 80 | 57 | 71 | 36 | 21 |
| 300 to 499 | 20 | 16 | 80 | 11 | 5 |
| 500 or more | 21 | 19 | 90 | 11 | 8 |
| Totals | 201 | 151 | 75 | 93 | 58 |

**Table 2. Comparison of production of sugarbeets and price per ton by area, 1987 (151 farms).**

| Item | Eastern area | Western area |
|---|---|---|
| Number of farms | 93 | 58 |
| Average acres of beets per farm | 219 | 195 |
| Average yield per acre (tons) | 24.1 | 30.5 |
| Average price received per ton | $39.42 | $37.62 |
| Average receipts per acre | $950.00 | $1,147.00 |

## Fixed Cost

Depreciation was estimated after adjusting machinery cost for inflation. A price index[1] was used to adjust the value to 1987. Straight line depreciation was calculated on the adjusted value. Interest was estimated using the average value of the asset and a 9 percent interest rate.

[1]The index used was the USDA index of machinery and tractor prices reported in the *Agricultural Prices, Annual Summary* and adjusted to 1987 = 100.

Taxes and housing costs were calculated using the Idaho tax rate and, for housing, rates developed by the American Society of Agricultural Engineers.

Insurance expenses paid by the operator for the farming operation were obtained on the questionnaire. This included insurance on farm assets as well as liability insurance for the farm. The percentage allocated to sugarbeets was estimated by finding the proportion of total farm receipts attributed to beets. If the farm sold $40,000 worth of sugarbeets and gross farm receipts for the year were $100,000, then 40 percent of the gross receipts came from sugarbeets and 40 percent of insurance costs were charged to beets.

Real estate tax was the amount reported by the operator for land producing sugarbeets. This was an ad valorem tax which fluctuated with the land productivity and its income potential.

Net rent was used to represent the cost of the land input and was estimated by subtracting landlord expenses from total rent paid for the land. Both share and cash leases were common with about an equal number of leases in each category. Landlord expenses for cash rent usually included water cost, real estate taxes and sometimes insurance or maintenance costs. With share leases, the landlord paid the expenses listed for cash leases plus a share of the operating expenses in most cases. Landlord expenses, plus net rent, were added to tenant expenses to get the total production cost figures on rented land.

Net rent was the contribution from land only and was used to represent the value of land on owner-operator land as well as leased land. This seemed to be valid as 59 percent of the land in farms studied was rented and only 41 percent was owned by the operator. Net rent averaged $113 per acre in the east and $143 per acre in the western area.

Production costs for producing sugarbeets are shown in Tables 3 and 4. All costs except a management charge and return to risk carried by the owner of the assets are included. Operator and unpaid labor and interest on the investment by the asset owners are included. Note that

**Table 3. Sugarbeet budget: Southcentral and Eastern Idaho, 1987 (per acre).**

| | | | |
|---|---|---|---|
| **Value of crop:** | | | |
| 24.1 tons @ $39.42 | | | $950.02 |
| **Variable costs:** | | | |
| Seed | | 25.73 | |
| Fertilizer | | 63.55 | |
| Chemicals | | 47.67 | |
| Irrigation water | | 57.64 | |
| Labor (hired) | | 64.15 | |
| Perquisites | 6.38 | | |
| Employee insurance | 2.04 | | |
| Social Security tax | 3.72 | | |
| Wages | 52.01 | | |
| Labor (unpaid @ $6 per hour) | | 55.80 | |
| Labor (contract) | | 61.92 | |
| Machine cost | | 131.98 | |
| Fuel and repairs | 97.07 | | |
| Leased equipment | 8.95 | | |
| Custom | 25.96 | | |
| Freight charge[1] | | 5.07 | |
| Haul allowance[1] | | -1.86 | |
| Interest on operating cost (@ 11 percent) | | 21.28 | |
| Miscellaneous | | 22.80 | |
| Dues | 3.14 | | |
| Utilities | 5.22 | | |
| License | 2.54 | | |
| Office supplies | 0.47 | | |
| Accounting | 1.98 | | |
| Other | 9.45 | | |
| **Total variable costs:** | | | $555.73 |
| **Fixed costs:** | | | |
| Machine cost (Depreciation and interest) | | 139.48 | |
| Insurance | | 9.39 | |
| Real estate tax | | 8.05 | |
| Net rent (Rent minus landlord expense) | | 112.78 | |
| **Total fixed cost:** | | | $269.70 |
| **Total cost:** | | | $825.43 |
| **Return to risk and management:** | | | $124.59 |

[1]This is the average freight charge by the processor for hauling beets to the factory. The haul allowance is an amount that the processor refunds to the grower who hauls beets to the factory, thus saving the processor handling expenses.

**Table 4. Sugarbeet budget: Western Idaho and Eastern Oregon, 1987 (per acre).**

| | | | |
|---|---|---|---|
| **Value of crop:** | | | |
| 30.5 tons @ $37.62 | | | $1,147.41 |
| **Variable costs:** | | | |
| Seed | | 30.74 | |
| Fertilizer | | 101.56 | |
| Chemicals | | 67.47 | |
| Irrigation water (includes power and water) | | 50.34 | |
| Labor (hired) | | 72.70 | |
| Perquisites | 5.00 | | |
| Employee insurance | 7.70 | | |
| Social Security tax | 4.07 | | |
| Wages | 55.93 | | |
| Labor (unpaid @ $6 per hour) | | 56.58 | |
| Labor (contract) | | 71.31 | |
| Machine cost | | 147.55 | |
| Fuel and repairs | 81.00 | | |
| Leased equipment | 7.96 | | |
| Custom | 58.59 | | |
| Freight charge[1] | | 3.21 | |
| Haul allowance[1] | | -4.58 | |
| Interest on operating cost (@ 11 percent) | | 24.02 | |
| Miscellaneous | | 35.44 | |
| Dues | 2.44 | | |
| Utilities | 8.33 | | |
| License fees | 1.53 | | |
| Office supplies | 1.25 | | |
| Accounting | 4.04 | | |
| Other | 17.85 | | |
| **Total variable costs:** | | | $656.34 |
| **Fixed costs:** | | | |
| Machine cost (depreciation, interest, etc.) | | 99.39 | |
| Insurance | | 8.65 | |
| Real estate tax | | 11.57 | |
| Net rent (Rent minus landlord expense) | | 142.67 | |
| **Total fixed costs:** | | | $262.28 |
| **Total cost:** | | | $918.62 |
| **Return to risk and management:** | | | $228.79 |

[1]This is the average freight charge by the processor for hauling beets to the factory. The haul allowance is an amount that the processor refunds to the grower who hauls beets to the factory, thus saving the processor handling expenses.

expenses, production and returns are estimated for the 1987 sugarbeet crop. Changes in yield, prices or sugar extraction rates will change the net returns to the enterprise. A summary of sugarbeet acreages, production, prices and value is given in Table 5. These are averages for all sugarbeets grown in Idaho and do not represent any particular area. Oregon figures are not included in Table 5.


## Acknowledgments

Thanks to the farm operators who provided information upon which this report is based. The author also acknowledges and expresses appreciation to The Amalgamated Sugar Company for a grower list and to Rich Turner, Gary Schneider, Ron Foster, Clark Seavert and Bob Smathers for assistance with the survey and analysis. The Idaho Agricultural Statistical Service helped with the sample, the questionnaire and data collection.


**Table 5. Sugarbeets: Acreage, yield, production, price and value, Idaho, 1940-88.**

| Year | Acres planted | Acres harvested | Yield per acre | Production | Season avg. price | Value of production |
|---|---|---|---|---|---|---|
| | ---------- (1,000 acres) ---------- | | (tons) | (1,000 tons) | ($ per ton) | ($1,000) |
| 1940 | 75.0 | 71.0 | 16.1 | 1,141 | 5.07 | 5,785 |
| 1941 | 62.0 | 60.0 | 13.7 | 823 | 6.57 | 5,407 |
| 1942 | 82.0 | 78.0 | 13.8 | 1,076 | 7.04 | 7,575 |
| 1943 | 49.0 | 42.0 | 15.5 | 651 | 8.14 | 5,299 |
| 1944 | 50.0 | 43.0 | 14.4 | 618 | 10.30 | 6,365 |
| 1945 | 58.0 | 53.0 | 15.3 | 809 | 9.90 | 8,009 |
| 1946 | 92.0 | 76.0 | 16.8 | 1,274 | 11.50 | 14,651 |
| 1947 | 116.0 | 102.0 | 17.3 | 1,761 | 11.90 | 20,956 |
| 1948 | 92.0 | 80.0 | 15.4 | 1,233 | 10.30 | 12,700 |
| 1949 | 67.0 | 60.0 | 17.8 | 1,067 | 10.20 | 10,883 |
| 1950 | 97.0 | 87.0 | 17.3 | 1,508 | 10.80 | 16,286 |
| 1951 | 71.0 | 66.0 | 18.6 | 1,227 | 11.40 | 13,988 |
| 1952 | 63.4 | 56.5 | 18.6 | 1,052 | 12.00 | 12,624 |
| 1953 | 82.5 | 75.2 | 19.4 | 1,459 | 11.30 | 16,487 |
| 1954 | 93.4 | 89.1 | 17.6 | 1,569 | 11.40 | 17,887 |
| 1955 | 79.6 | 76.6 | 18.7 | 1,433 | 11.30 | 16,193 |
| 1956 | 81.3 | 74.7 | 20.8 | 1,551 | 11.40 | 17,681 |
| 1957 | 90.9 | 88.0 | 20.2 | 1,777 | 11.40 | 20,258 |
| 1958 | 90.0 | 87.0 | 21.9 | 1,902 | 11.60 | 22,063 |
| 1959 | 92.0 | 87.6 | 21.5 | 1,886 | 11.70 | 22,066 |
| 1960 | 97.6 | 94.9 | 18.3 | 1,740 | 11.40 | 19,836 |
| 1961 | 125.1 | 117.9 | 19.3 | 2,272 | 11.30 | 25,674 |
| 1962 | 131.0 | 127.1 | 19.1 | 2,423 | 13.20 | 31,984 |
| 1963 | 149.7 | 145.6 | 22.1 | 3,212 | 11.80 | 37,902 |
| 1964 | 183.3 | 174.7 | 16.1 | 2,817 | 12.50 | 35,212 |
| 1965 | 159.7 | 156.7 | 18.0 | 2,818 | 13.00 | 36,634 |
| 1966 | 140.3 | 119.5 | 18.9 | 2,259 | 13.20 | 29,819 |
| 1967 | 157.8 | 146.9 | 19.8 | 2,912 | 13.30 | 38,730 |
| 1968 | 196.3 | 182.3 | 18.0 | 3,288 | 14.40 | 47,347 |
| 1969 | 207.5 | 185.6 | 18.2 | 3,373 | 14.50 | 48,909 |
| 1970 | 175.1 | 168.9 | 18.4 | 3,104 | 15.60 | 48,422 |
| 1971 | 171.7 | 163.8 | 19.5 | 3,197 | 16.00 | 51,152 |
| 1972 | 184.3 | 172.7 | 20.5 | 3,543 | 16.70 | 59,168 |
| 1973 | 154.9 | 144.3 | 20.2 | 2,921 | 34.80 | 101,651 |
| 1974 | 93.5 | 90.8 | 20.3 | 1,845 | 44.10 | 81,365 |
| 1975 | 168.7 | 158.3 | 18.6 | 2,942 | 24.90 | 73,256 |
| 1976 | 145.6 | 139.4 | 20.7 | 2,879 | 20.80 | 59,883 |
| 1977 | 115.4 | 107.4 | 19.5 | 2,094 | 25.50 | 53,397 |
| 1978 | 134.6 | 132.3 | 20.9 | 2,765 | 27.70 | 76,591 |
| 1979 | 131.3 | 125.9 | 22.4 | 2,820 | 37.60 | 106,032 |
| 1980 | 139.4 | 137.9 | 23.9 | 3,296 | 46.20 | 152,275 |
| 1981 | 147.6 | 144.4 | 26.0 | 3,754 | 32.50 | 122,005 |
| 1982 | 139.0 | 136.0 | 23.4 | 3,182 | 37.20 | 118,370 |
| 1983 | 145.0 | 143.0 | 24.4 | 3,487 | 40.50 | 141,224 |
| 1984 | 145.0 | 144.0 | 23.0 | 3,312 | 37.10 | 122,875 |
| 1985 | 153.0 | 152.0 | 23.0 | 3,496 | 36.60 | 127,954 |
| 1986 | 161.0 | 160.0 | 25.7 | 4,112 | 36.40 | 149,667 |
| 1987 | 163.0 | 162.0 | 26.1 | 4,277 | 38.70 | 165,520 |
| 1988 | 168.0 | 166.0 | 24.5 | 4,067 | NA | NA |

Idaho Agricultural Statistical Service, "Idaho Agricultural Statistics, 1988." Boise, Idaho. Fall 1988.


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