



Sugarbeet Production Costs and Practices in Southcentral Idaho, 1978

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Sugarbeets have been among the top 5 Idaho farm crops in recent years when measured by farm receipts. The highest value crop, produced in 1973, returned more than \$100 million to farmers (Table 1). Acreage has fluctuated considerably in recent years because of price changes and farmers' expected income from alternate crops. Some acreage reduction in 1979 resulted from closing the Idaho Falls factory. Most sugarbeet production in the Upper Snake River Valley was discontinued with the closing of the Idaho Falls factory. Factories still operating in Idaho are located at Paul, Twin Falls and Nampa.

Benefits from the sugar industry are not limited to farmers. About 25 field workers and 9 or 10 factory laborers are needed for every 1,000 acres of sugarbeets.¹ However, this report deals only with costs and possible benefits to sugarbeet growers, not the total benefits to society.

This report is intended to provide useful information to sugarbeet growers and others concerning production costs, and to establish a cost base to be used in evaluating changes that would reduce harvesting and handling damage.

This cost study was done in connection with research on damage to sugarbeet roots that occurs during harvesting, handling and storage. The objective of that study was to estimate losses resulting from damage to the roots between harvesting and processing and then determine possible ways to reduce the damage.² Production costs could increase

somewhat by more careful harvesting and handling practices. However, net returns to growers may also increase by increasing the amount of marketable sugar extracted from the roots.

Information Sources

Production cost estimates are based on information from 28 sugarbeet growers in the Twin Falls factory district. Only growers with 40 acres or more of sugarbeets were included in the population from which the sample was drawn. Each grower in the sample was visited in late summer 1978 to obtain information on production costs and practices, and

Table 1. Acreage, production, price and value for sugarbeets in Idaho, 1960 to 1978.

Year	Acres harvested (1,000 acres)	Production (1,000 tons)	Average price	Total value (000)
1960	94.9	1,740	\$11.40	\$19,836
1961	117.9	2,272	11.30	25,764
1962	127.1	2,423	13.20	31,984
1963	145.6	3,212	11.80	37,902
1964	174.7	2,817	12.50	35,212
1965	156.7	2,818	13.00	36,634
1966	119.5	2,259	13.20	29,819
1967	146.9	2,912	13.30	38,730
1968	182.3	3,288	14.40	47,347
1969	185.6	3,373	14.50	48,909
1970	168.9	3,104	15.60	48,422
1971	163.8	3,197	16.00	51,152
1972	172.7	3,543	16.70	59,168
1973	144.3	2,921	34.80	101,651
1974	90.8	1,845	44.10	81,365
1975	158.3	2,942	24.90	73,256
1976	139.4	2,879	20.80	59,883
1977	105.8	2,074	25.50	52,887
1978	134.1	2,722		
1979	124.4			

¹Northwest Economic Associates. "Pacific Northwest Sugarbeet Feasibility Study: The Future of U. and I. Sugarbeet Factories." Vancouver, Washington, February, 1979

²Peterson, C. L., D. L. Parks, R. V. Withers and D. J. Traveller "Sugarbeet Injury: A Significant Factor in Loss of Sucrose." University of Idaho Current Information Series No. 410, October, 1977.

¹Final price not yet determined.

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again in December for harvesting costs and yield data.

These growers are located in Twin Falls, Jerome and Gooding counties. They harvested 4,211 acres of sugarbeets in 1978, an average of 150 acres per grower. Actual sugarbeet acreage ranged from 40 to 700 acres. Their average yield in 1978 was 21.3 tons per acre. The same growers averaged only 19.2 tons per acre in 1977 because of weather and disease problems that year.

Production Practices

Land Preparation. The survey showed that 75% of the sample farmers tilled land in the fall, and 11 of the 28 also applied fertilizer in the fall. Most fertilizers were applied in the spring, before or during planting. A limited amount of nitrogen was sidedressed on the growing crop or applied with sprinkler irrigation. Seedbed preparation was completed just before planting the crop.

Planting. These farmers planted sugarbeets between late March and April 28. Seven farms — 25% of the sample — had completed planting the crop by April 7. Another 25% planted from April 8 to 14, 36% between April 15 and 21, and the remaining 14% between April 22 and 28.

Chemical Applications. All but one of the farmers in the sample applied commercial fertilizers to their sugarbeets. One used heavy application of manure instead. They applied an average of 143 units of nitrogen and 125 units of P₂O₅ per acre. Some growers applied potash and a few applied limited amounts of minor elements.

Nearly all growers applied a pre-emergence weed control chemical and 4 growers applied additional weed control chemicals. About one-third of the growers applied sulfur later in the season as a control for powdery mildew.

Cultivation. All farmers in the sample cultivated their sugarbeets at least 3 times during the growing season and 2 of the 28 growers cultivated 5 times.

Thinning and Hoeing. Hand thinning was done by 75% of the growers. The other 25% used mechanical thinning devices. Hand hoeing and weeding was also done by 75% of the growers. A few growers had their sugarbeets hand weeded twice.

Irrigation. All sugarbeets grown in Idaho are irrigated. Sprinkler irrigation was used on 3,033 acres in the sample, and flood or gravity-flow irrigation on the other 1,178 acres. Gravity irrigation was more common in the older farming areas. Older areas also tended to have smaller fields and smaller acreages of sugarbeets per farm.

In the sprinkler irrigation farms, 64% of the acreage used wheel lines, 26% used hand-move lines and 12% used pivoting irrigation systems.

Harvesting and Hauling. Harvesting of sugarbeets began after October 1 and was completed in early November. Six of the 28 growers did not begin harvesting until after October 15. Many types and sizes of harvesters were used.

As beets were harvested, they were hauled by truck to the nearest beet dumping station where the beets were weighed, sampled and piled or loaded on railcars for transport to the factory. The average distance to the station from the field was 5 miles. Distances varied from less than 1 mile to more than 10 miles.

Use of Beet Tops. Only sugarbeet roots are sold for processing into sugar. The tops are left in the field to be fed to livestock or plowed into the soil. In this sample, 15 of the 28 growers plowed down the tops and the other 13 fed them into the field. Part of the fertilizer value is saved even when the tops are fed, as the livestock waste remains in the field. Problems associated with feeding result from the necessity of fencing the field or tending the animals in order to prevent damage to adjoining fields or to keep animals from straying onto roads used by vehicles.

The growers were asked to place a dollar value on the tops whether they were fed in the field or plowed in. Estimated values ranged from \$10 to more than \$50 per acre, with average of \$33 per acre for feed and \$25 per acre for tops plowed down. Four farmers did not estimate value of beet tops.

Planting Date and Yield. Beets planted the first week in April yielded about 2 tons per acre more than those planted during the last week (Table 2). While the differences were apparent, because of variation within the groups the differences were not statistically significant. Other factors which were not measured also affect yields, masking part of the planting date effect. No relationship could be identified between enterprise size and yield.

Economics Related to Enterprise Size. Production costs were variable between farms, ranging

Table 2. Relationship of planting date and yield of sugarbeets on sample farms.

Planting date	Number of farms	Average yields (tons/acre)
March 30 to April 7	7	22.8
April 8 to April 14	7	22.1
April 15 to April 21	10	21.7
April 22 to April 28	4	20.7

from about \$450 per acre up to \$700 per acre. Though not statistically significant, there was a tendency for the lower per acre costs to be associated with the larger acreages. Simple regression indicated a decrease in cost of 22 cents per acre as acreages increase up to 400 acres. In other words, a 40-acre sugarbeet enterprise cost about \$80 per acre more than a 400-acre enterprise. The correlation coefficient was very low because of the great variability resulting from differences in management, soils, irrigation and other factors.

Sugarbeet Production Costs

Sugarbeet production costs were estimated from data obtained in the survey. Production inputs for each farm were tabulated and a total cost was found excluding land, management and risk factors. No cost estimate was included for replanting beets. Sugarbeets are sometimes replanted when dry or cold weather at or soon after emergence of new plants reduces stands. Extra seed and planting costs would need to be added for those occasions. Also yield may be reduced with replanting because of the lateness of the seeding.

Production costs for the 28 farms ranged from about \$300 to \$550 per acre plus land, management and risk expenses. Assuming \$150 per acre rent, the range was \$450 to \$700 per acre. Averaging out the costs for each item in the budget gave a total of about \$530 per acre of sugarbeets, not including management and risk costs. This budget was based on average costs with the exception of thinning and hoeing costs. The \$530 figure assumes all thinning and hoeing is done by hand, when in reality only 75% of the acreage was handled in this fashion.

Table 3 gives the cost summary for sugarbeets. The average enterprise size was 150 acres and yield was about 21 tons per acre. Yields for the 28 farms varied from 14.5 to 28 tons per acre. With a cost of \$530 per acre and a 21-ton yield, the average cost per ton was \$25.23. Put another way, the farmer would need to receive \$25.23 per ton of beets to breakeven.

Table 3. Sugarbeet production costs, Twin Falls factory district, 1978.

Item	Fixed cost ¹	Variable cost	Total
Beet seed		\$ 14.32	\$ 14.32
Fertilizer		55.07	55.07
Chemicals		25.28	25.28
Hand thin		27.75	27.75
Hand hoe		20.75	20.75
Water and pumping cost		30.16	30.16
Ditches		4.75	4.75
Tractor	\$ 24.62	16.39	41.01
Trucks	18.75	16.49	35.24
Irrigation equipment	32.70		32.70
Harvest implements	24.86	4.88	29.74
Tillage and other imp.	11.33	4.16	15.49
Custom hire ²		18.65	18.65
Annual operating capital (.10 x \$160 x .5)		8.00	8.00
Labor cost (\$3.50 per hour)		22.49	22.49
Rent (land)	150.00		150.00
Total cost ³	\$262.26	\$269.14	\$531.40

¹Fixed cost includes depreciation, taxes, interest on the investment, insurance, some repairs, shelter cost and rent.

²Custom hire, except hand labor, was primarily hauling. Fertilizer was often applied by custom applicators but this is included with fertilizer cost. Some harvesting and planting was done by custom operators.

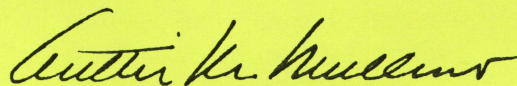
³No charges for risk and management were included in this budget.

A price of \$28 per ton would have returned \$58 per acre for management and risk [(\$28 x 21) - \$530]. Or at \$28 per ton a farmer would need to harvest about 19 tons per acre to pay all costs except risk and management. Whenever costs or prices change, new breakeven points apply.

This discussion does not consider the value of the tops as an income to the farmer. This value should be considered by the grower when evaluating his sugarbeet enterprise. It was not included here because the actual value of tops was not established and cost of using the tops was not determined.

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