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A COMPARISON OF COST AND RETURN STATEMENTS FOR SUGAR BEETS

Ohio	1961
Ontario, Canada	1959-61
Michigan	1966
Maine	1963

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Potential growers of sugar beets in New York naturally want to know something about the profitability of this crop compared with others. They also want to know what they should expect in the way of costs and returns if they plant and harvest beets. Since sugar beets have not been grown commercially in this state for a long time local experience of farmers over a period of years is not available.

Sugar beets have been grown regularly in northwestern Ohio, southeastern Michigan and southern Ontario for many years. Statements have been published recently on grower costs and returns for sugar beets in each of these three areas. Maine, another eastern state which expects to produce sugar beets, recently published some estimates of expected costs and returns in that area.

All of these cost and returns statements have been developed separately using somewhat different methods. The data are based in differing degrees on farmers' records and experiences. The specific years for which the statements were prepared are all different. Despite these differences the statements still provide some basis for learning more about the economic structure of the sugar beet enterprise.

On the following pages a comparison is made between the four cost and returns statements. A brief summary of all four sets of cost figures is presented first. Then a more complete statement prepared from each of the four studies is presented together with a few explanatory comments about the procedures used. Attention should be directed to the similarities as well as the differences in these four reports.

Comparison of Costs in Four States

The basic structure of costs in growing a crop of sugar beets should be quite similar for farmers in the non-irrigated areas of the United States. Differences in charges for the use of land, amounts of fertilizer applied and specific practices followed of course will be evident. But the general pattern should be and is similar.

Table 1. SUMMARY OF COST AND RETURNS
STATEMENTS FOR SUGAR BEETS
Ohio, Ontario, Maine and Michigan, 1959-66

Description	Enterprise records		Projected costs and returns	
	Ohio ^{1/}	Ontario ^{2/}	Michigan ^{3/}	Maine ^{4/}
Year	1961	1959-61	1966	1963
Average yield	14 tons	15 tons	18 tons	15 tons
Number of records	74	279	(64)	--
<u>COST PER ACRE</u>				
Fertilizer	\$ 20	\$ 23	\$ 25	\$ 31
Seed	2	2	2	3
Spray materials	2	3	7	9
Land	20	18	31	15
Regular labor, preharvest	11	16	25	} 28
Special labor, blocking	20	} 54	14	
Custom work	--		} 44	} 20
Regular labor, harvesting	19	} 6		
Hauling beets	21		} 9	
Machinery, preharvest	5	} 16		
Tractor	8		} 6	
Other	--	1		6
Total	\$128	\$137	\$164	\$149
<u>RETURNS PER ACRE</u>				
Price per ton	\$ 12.50	\$ 12	\$ 12.85	\$ 15
Yield, tons	14	15	18	15
Total returns	\$175	\$180	\$231	\$225
<u>NET RETURN PER ACRE</u>				
	\$ 47	\$ 43	\$ 67	\$ 76

- ^{1/} Blosser, R. H., "Costs and Returns from Sugar Beets in Ohio", A. E. 334, Ohio Agricultural Experiment Station, July 1962, p. 2.
- ^{2/} Ontario Department of Agriculture, "Sugar Beet Cost Study", 1959, 1960, 1961, Report for Cooperating Growers, January 1963.
- ^{3/} Young, Robert A., "An Economic Study of the Eastern Beet Sugar Industry," PhD Thesis, Michigan State University, 1963.
- ^{4/} Pullen, W. E., "A Report on the Farm Production Feasibility of Sugar Beets in Aroostook County, Maine", Part II, Miscellaneous Report 110, Maine Agricultural Experiment Station, November 1963, pp. 79.

A summary of cost and returns statements developed in Ohio, Ontario, Michigan, and Maine are presented in table 1. The basic data from Ohio and Ontario were obtained primarily from farmers' records. The statements from Michigan and Maine are more nearly projections or estimates. The Michigan projections are based, however, on a combination of farmers' records and experimental data and have a solid foundation in tested information. Maine's projections are clearly based on experience in other states tempered by local agronomic and economic conditions.

Some of the similarities in the statements are important. The yield levels, actual and projected, center around 15 tons. These closely follow average yields in the eastern areas during the last five years. The somewhat higher yield for Michigan represents a projection for "above average management". The land and fertilizer expense together make up from 25-35 percent of production costs. Labor is a big item. The cost statements differ in the way this important item of cost is considered. At least 30 percent of production costs are represented by labor, regular and migrant. It is clear that labor makes up a higher proportion of production costs than is true for most other field crops. Sugar beets are labor intensive compared with corn, beans, or small grains.

On the returns side two factors are of great importance -- price and yield. Farmers received gross returns of about \$13 per ton until 1963. The Maine price for 1963 reflects price conditions in that unusual year. The Michigan projection for 1966 indicates a return to the earlier level of prices of about \$13 per ton. The level of yield obviously affects total returns and the net left after paying costs. A grower looking at his own situation should think about how high his yield must be at a minimum to cover costs.

Net returns were considered somewhat differently in the four studies. A part of overhead costs for the whole farm business were allocated to sugar beets in the Michigan study but were not considered directly in the Ohio and Ontario record summaries. The "net return" presented in table 1 merely reflects the difference between costs and returns as presented in the four reports. A more careful study of the individual statements from each state will help to interpret these "net returns".

The Ohio Statement

The Ohio study was based primarily on enterprise cost records obtained in 1961 from 74 farmers in northwestern Ohio. A set of special account books were kept by each of the cooperating farmers with the help of staff members of the Experiment Station.

Because of the range in farmers' experience three cost and returns statements were developed for average yields of 10, 14 and 18 tons per acre. All costs were based on 1961 production methods and prices.

Table 2. RECEIPTS, EXPENSES AND NET INCOME PER ACRE FOR DIFFERENT YIELDS OF SUGAR BEETS IN NORTHWESTERN OHIO, 1961

	Yield per acre		
	10 tons (20 farms)	14 tons (28 farms)	18 tons (26 farms)
Receipts ^{1/}	\$125.00	\$175.00	\$225.00
Expenses ^{2/}			
Unpaid family labor	9.85	10.85	11.85
Hoeing, blocking and thinning	20.30	19.75	17.80
Tractor power, fuel and oil	7.75	8.10	8.45
Machinery up to harvest	4.50	4.60	4.30
Harvesting	15.60	18.90	19.40
Hauling sugar beets to plant	15.25	21.55	31.80
Fertilizer	14.50	20.10	25.80
Manure	.50	.90	1.20
Lime	.45	.30	.30
Seed	1.65	1.80	1.50
Spray for weed control	.15	1.00	1.55
Land	18.00	20.00	20.00
Total	\$108.50	\$127.85	\$143.95
Profit	16.50	47.15	81.05
Cost Per Ton	10.85	9.13	8.00

^{1/} Based on \$12.50 a ton which was the average price from 1955-61
^{2/} For 74 farms for 1961

SOURCE: Blosser, R. H., "Costs and Returns from Sugar Beets in Ohio," A. E. 334, Ohio Agricultural Experiment Station, July 1962, p. 2.

In figuring costs some of the following assumptions were made. Labor (regular) was charged at \$1.50 per hour. Harvesting costs were based on actual custom charges paid by 40 percent of the growers. When a grower owned the equipment, costs were based on his own experience and amount of use. Hoeing, blocking and thinning were charged at the cash cost paid to hire these jobs done. Hauling beets to the plants averaged about \$1.50 per ton for growers with 10 and 14 ton yields. A higher rate of \$1.75 per ton for those with 18 ton yields was charged reflecting longer hauls to plant. About 60 percent of the farmers were using monogerm seed at the time of the study. No provision was made in this cost statement to cover a share of general farm overhead expenses such as telephone, accounting fees, general auto expense, and the like.

Ontario Statement

Farm records were obtained from relatively large samples of growers in Ontario in 1959 and 1960. A smaller group provided enterprise records in 1961. The only information provided in the published summary sheets are average cost information for each year. Variability in yields or costs from farm to farm within a given year is not presented. Additional information may become available when a final report is released by the Ontario Department of Agriculture.

One valuable contribution of this set of reports for three years is the opportunity to observe the kinds of differences in costs and returns which occur from year to year. In general costs per acre tend to be more stable than are gross returns. Both yields and prices change from year to year. As a result average net returns were quite different in 1959 and 1960. Even though yields were higher in 1959 than in 1960 the net return per acre was lower. The difference in price was the primary difference although costs were different as well.

The individual cost data must be considered as presented. No additional information was provided in the original publication. A great deal is lumped together in the custom work category. When compared with other states the total seems quite reasonable. As was true in the Ohio study no provision was made to directly pro-rate part of the farm's general overhead expense to sugar beets.

Table 3. SUGAR BEET COSTS AND RETURNS
Ontario, Canada, 1959-61

	1959	1960	1961
Number of records	128	119	32
Acres per record	17.4	15.9	17.5
Harvested yield per acre	14.7 tons	13.9 tons	17.1 tons
Value per ton	\$ 10.47	\$ 13.84	\$ 11.53
Value per acre	\$153	\$193	\$197
Measurable costs per acre	\$143	\$131	\$137
Returns to risk and management per acre	\$ 10	\$ 62	\$ 60

Average Measurable Costs Per Acre

	1959	1960	1961
Labor	\$ 19.18	\$ 15.15	\$ 15.62
Tractor	10.93	10.13	9.27
Machinery	10.10	10.15	9.80
Custom work ^{1/}	59.27	49.45	52.55
Seed	1.79	1.65	2.08
Fertilizer	23.22	21.85	24.57
Other materials	2.16	3.71	3.04
Use of land ^{2/}	15.94	18.31	19.63
Other	.70	.68	.92
Total	\$143.29	\$131.08	\$137.48

^{1/} Includes machinery rentals, custom operations, blocking, hoeing, harvesting by the acre, loading and trucking by the ton, and freight charges.

^{2/} Includes taxes, interest on land value, and/or rent.

SOURCE: Ontario Department of Agriculture, "Sugar Beet Cost Study," 1959, 1960, 1961, Report for Cooperating Growers, January 1963.

Michigan Statement

The projected cost data for sugar beets in 1966 were prepared as part of a major study of the eastern sugar beet industry by Young at Michigan State University. Farm records were obtained to provide information on "representative" farm situations where sugar beets are currently grown in Ohio and Michigan. Costs and returns were then projected for alternative crops that might be grown on these farms including sugar beets. Relatively high levels of production and management were assumed.

Table 4. PROJECTED COSTS AND RETURNS PER ACRE TO
SUGAR BEETS AND COMPETING CROPS
Michigan and Ohio Districts, 1966

(Sugar beets at 18 tons per acre)	
<u>Variable cash expenses:</u>	
Seed	\$ 1.50
Fertilizer	25.20
Spray materials	7.00
Machinery (pre-harvest)	2.49
Machinery (harvest)	6.45
Hauling (truck or wagon)	3.80
Beet labor	13.50
Other	<u>1.75</u>
	\$ 61.69
<u>Overhead costs:</u>	
Machinery (depreciation, etc.)	\$31.16
Miscellaneous (telephone, travel, etc.)	8.42
Real estate taxes	<u>5.75</u>
	45.33
Land charges at 5.5%	31.63
Labor charges at \$2.00/hour	<u>25.50</u>
Total charges	\$164.15
Gross income \$12.85/ton	\$231.30
Return to risk and management	\$ 67.15

SOURCE: Young, Robert A., "An Economic Study of the Eastern Beet Sugar Industry," PhD Thesis, Michigan State University, 1963.

Land charges (real estate taxes and charge for use of capital) amounted to \$37 per acre. Hauling costs were figured at \$1.50 for a distance of 10 miles or less from the plant and at a graduated rate for greater distances. A cost of \$2.25 was used for 20 miles and approximately \$3.00 per ton for 30 miles assuming seven ton loads. Physical inputs and prices used were carefully specified in Young's thesis. For example, the fertilization rate was 80 pounds of N, 120 pounds of P₂O₅ and 60 pounds of K₂O. The current recommendation of TCA and endothal was suggested for weed control.

Maine Statement

The Maine study indicates how a grower or others might go about estimating costs and returns using data from other sources. Pullen used published data from other states together with local recommendations considering soils and weather conditions. As a result fertilization levels are higher for the Aroostock County soils than in Ohio, Michigan or Ontario. Charges made for the use of land are lower than in the other three areas reflecting the value of alternative uses for it. The price listed for 1963 is not likely to be representative of succeeding years when world production levels return to more nearly normal levels.

Table 5. ESTIMATED COSTS IN GROWING AND HARVESTING SUGAR BEETS
Maine, 1963

Cost item	Practice	Cost per acre
<u>GROWING:</u>		
Seed	4# monogerm \$.69 per pound	\$ 2.76
Fertilizer	800# 12-12-12 at \$76.75 per ton	30.70
Weed control	Tillam-rate 4#/Acre (1-1/3# in. 1 ft. band on row)	6.05
Insecticide	2 qts. DDT - 25% emulsion	.84
Fungicide	2# M22	1.74
Labor	22.3 hours at \$1.25 per hour	27.88
Tractor	7.4 hours at \$1.30 per hour	9.62
Machinery	Exclusive of harvesting machinery	6.00
Land	Value \$150/acre - 6% int. + \$6 tax	15.00
Overhead	6% of other growing costs	5.66
Total		<u>\$106.25</u>
<u>HARVESTING:</u> ^{1/}		
Dig and scalp	Contract 2-row harvester - 15 ton per acre yield at \$1.35 per ton	20.25
Haul	Contract 15 ton per acre at \$1.50 per ton	22.50
Total		<u>42.75</u>
<u>ALL COSTS</u>		\$149.00
<u>GROSS RETURNS</u> ^{2/} 15 ton, \$15.00 per ton		225.00
<u>NET RETURNS:</u>		
Per acre		76.00
Per ton of sugar beets harvested		5.07
Per hour of labor (exclusive of harvesting labor)		3.41

^{1/} Costs analyzed for growing, harvesting and hauling sugar beets by R. H. Blosser; Ohio State University, 1962 and the sugar beet industry in California, Hills and Reed, Leaflet 121, 1960.

^{2/} Mr. Philip Jones, U. S. Beet Sugar Association, Washington D. C.; estimates \$15.00 per ton return to growers which includes a \$2.40 per ton Sugar Act subsidy payment. Sucrose content of sugar beets produced from field trials in 1963 was 18%. The price is based on the Standard Rocky Mountain Type Contract - which includes the growers' share of beet pulp and molasses by-products.

SOURCE: Pullen, W. E., "A Report on the Farm Production Feasibility of Sugar Beets in Aroostook County, Maine," Part II, Miscellaneous Report 110, Maine Agricultural Experiment Station, November 1963, pp. 79.