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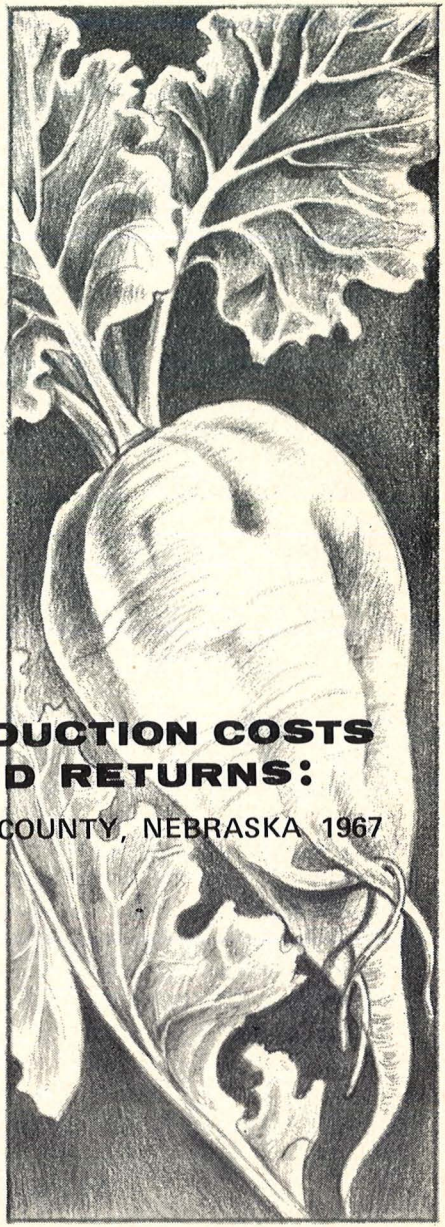

SUGAR BEET PRODUCTION COSTS AND RETURNS:

CASE STUDY IN SCOTTS BLUFF COUNTY, NEBRASKA 1967

Cooperative Extension Service, University of Nebraska
College of Agriculture and Home Economics,
and U.S. Department of Agriculture Cooperating
E. F. Frolik, Dean; J. L. Adams, Director

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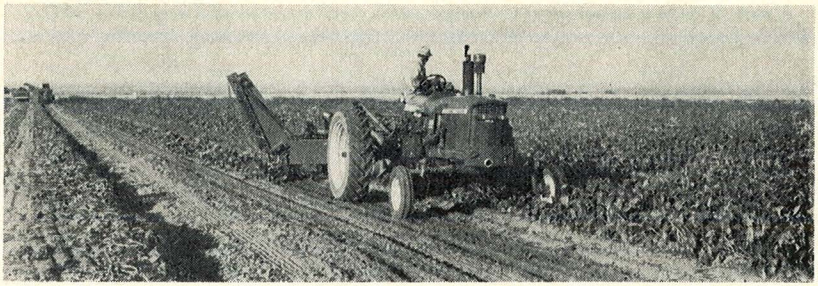
The cooperation of three outstanding sugarbeet growers in providing the cost and production input data from their operations in Scotts Bluff County is appreciated.



Windrowing tops with a top saver.

Sugarbeet Production Costs And Returns: Case Study In Scotts Bluff County, Nebraska, 1967

By

Clifford L. Ashburn[1] and James D. Greer[2]

VALUE OF SUGARBEET PRODUCTION

During the last 10 years, more than 60,000 acres of sugarbeets were harvested each year in Nebraska. The variation in the state average yield per harvested acre has been substantial during these 10 years, with a low of 12.9 tons per acre in 1962 and a high of 19.2 tons per acre in 1963 (Table 1). The 10-year average yield was 16.1 tons per acre; the 1966 average yield was 18.3 tons per acre.

The value of the 1966 sugarbeet crop was between $17 and $18 million. If all of the sugarbeet tops were harvested as wilted silage and fed to livestock, the value of feed from sugarbeet production would be approximately $4 million.

LEADING COUNTIES, 1967

More than 90% of the sugarbeets in Nebraska are grown in 9 of the 93 counties. Scotts Bluff County produces more than half of the total production for the state (Table 2).

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Table 1. Nebraska sugarbeet acreage, yield, production and value, 1955–1967.[a]

Year	Acres[b] planted	Acres harvested	Yield per harvested acre	Total production	Total value
	Thousand	Thousand	Tons	Thousand tons	Thousand dollars
1955	56.5	46.3	14.4	665	7,514
1956	58.9	56.1	15.1	848	10,939
1957	61.9	59.8	15.0	895	10,561
1958	64.8	61.1	14.8	902	11,185
1959	66.0	63.9	17.3	1,107	13,505
1960	69.3	68.7	17.8	1,226	15,815
1961	83.3	77.7	14.9	1,155	14,322
1962	87.1	72.7	12.9	940	12,314
1963	85.8	83.1	19.2	1,594	19,766
1964	89.6	86.2	16.3	1,407	18,150
1965	71.9	66.5	14.0	928	12,064
1966	69.2	65.2	18.5	1,205	16,388
1967	69.2[c]	62.8[c]	13.6[c]	854[c]	.....

[a] Nebraska Agricultural Statistics—Centennial Edition, State-Federal Division of Agricultural Statistics, Lincoln, Nebraska.
[b] Some of the abandoned acreage is planted to beans or corn.
[c] Preliminary

SUGARBEET CONTRACTS

Sugarbeets are produced under contract. In western Nebraska, the sugarbeet contracts are between individual growers and the processor —Great Western Sugar Co. These contracts are signed prior to planting the crop. The major provisions of the contract are:

1. Acres of sugarbeets to be grown and delivered.

2. Agreement on several production practices. (Included are the seed to be used and the price of seed, approval of seed bed preparation, timing of application of nitrogen fertilizer, and limitations on

Table 2. Acres harvested, yield and production of sugarbeets, leading counties, Nebraska, 1967.[a]

County	Acres harvested	Yield per harvested acre	Production
	Acres	Tons per acre	Tons
Scotts Bluff	31,450	14.5	455,370
Box Butte	9,570	11.1	106,230
Morrill	7,740	11.9	92,110
Keith	3,470	15.0	52,050
Sioux	2,070	14.4	29,810
Deuel	1,770	15.9	28,140
Lincoln	1,520	14.2	21,580
Chase	1,680	12.1	20,330

[a] Nebraska Agricultural Statistics, State-Federal Division of Agricultural Statistics, Lincoln, Nebraska. Preliminary Estimates.

Table 3. Price per ton of sugarbeets based on average percent sugar in the beets and average net returns per 100 pounds of sugar sold, western Nebraska, 1967 crop.

Average net return per 100 pounds of sugar sold	Average percent sugar in beets				
	18.5 Dol./Ton	17.5 Dol./Ton	16.5 Dol./Ton	15.5 Dol./Ton	14.5 Dol./Ton
$8.75	17.32	16.22	15.14	14.05	12.96
8.25	16.21	15.19	14.18	13.15	12.12
7.75	14.98	14.03	13.10	12.15	11.20

use of chemical pesticides, herbicides, insecticides and fungicides, as regulated by Federal laws).

3. Agreement on dates of harvesting and delivery, place of delivery and unloading procedures.

4. Agreement on cleanliness of sugarbeets to be delivered, minimum percentage sugar content, minimum purity of sugarbeets and procedure for taring samples.

5. Basis for determining the price per ton to be paid to the grower. (A schedule of price per ton of sugarbeets based on average percent of sugar in the beets and average net return per 100 pounds of sugar sold). The basis for determining the average net return per 100 pounds of sugar sold and the procedure for determining average percent sugar in the beets are included in the contract.

6. Timing of initial payment and subsequent payments to the grower.

7. Several other rights and privileges for the grower and the company.

SUGARBEET PAYMENTS

The price per ton of beets delivered by a grower is determined from the average percent sugar in the beets of the grower and the average net return per 100 pounds of sugar sold by the company. Table 3 shows the schedule of prices per ton paid to the grower for the 1967 crop.

Table 4 shows the average payments per ton received by growers in Nebraska for the years 1960 through 1968.

PRODUCTION OF SUGARBEETS

The amounts of labor, capital and management required to grow one acre of sugarbeets are large. No other major field crop produced in Nebraska demands as much labor, capital and management per acre as does sugarbeet production.[3] Operator labor and hired labor

[3] If potatoes are considered a major crop in Nebraska, it would be an exception.

Table 4. Average gross payments per ton for sugarbeets in western Nebraska, 1960–1968.

Crop	Great Western payments	Sugar Act basic payments	Total
		Dollars per ton	
1960	13.07	2.64	15.71
1961	12.60	2.45	15.05
1962	13.44	2.37	15.81
1963	12.80	2.28	15.08
1964	13.08	2.44	15.52
1965	13.02	2.34	15.36
1966	13.72	2.33	16.05
1967	12.07[a]	2.32[b]	17.00[c]
1968	.....	.....	17.70[c]

[a] Initial payment only; additional payments are usually made in the spring and a final payment in October of the following year as sales and net returns from sugar indicate. The initial payment was $1.04 per ton greater than the 1966 initial payment.
[b] Preliminary.
[c] Estimated.

(excluding contract labor) to produce one acre of sugarbeets commonly exceeds 20 hours per acre. The dollar investment, including value of land, machinery investment and cash costs in an acre of sugarbeets produced in Scotts Bluff County, often exceeds $800. The market value of land may be as high as $700 to $800 per acre; the machinery investment per acre of sugarbeets ranges from $100 to $150 per acre. In addition, the cash costs required annually may exceed $100 per acre. Sugarbeet growers in western Nebraska usually allocate more of their managerial efforts in producing one acre of sugarbeets than in one acre of any other crop on their farms.

Growers often earn greater net returns per acre from sugarbeets than from any other crop they produce. Because the profit potential from sugarbeet production is good, more sugarbeets would be produced in western Nebraska if there were fewer restrictions and limitations such as:

1. Government programs restricting sugarbeet acreage.[4]
2. High labor requirements.
3. High capital requirements.
4. High risk due to losses from wind, hail and freezing.
5. Necessity of crop rotation practices to minimize the incidence of diseases in sugarbeets.

Yield level is the most important determinant of the net returns per acre for sugarbeet production. Prices received have been high enough to earn good returns to management for those growers achieving better than average yields. Sugarbeet prices have been more

[4] Federal acreage controls on sugarbeets were not in effect for the 1968 sugarbeet crop and are not in effect for the 1969 crop.

stable than prices of most agricultural commodities. Costs of production have been increasing. Most of the increase in costs has been due to more expensive machinery, higher wages and greater use of chemicals. Although it is important for beet growers to control costs, greater returns are more likely to occur from intensifying management efforts in boosting yields than by cutting the costs of production.

The following combined production practices are the most important for obtaining top sugarbeet yields in western Nebraska:

1. Early planting.
2. Weed control
   a. Timeliness of thinning.
   b. Timeliness of mechanical cultivation.
   c. Herbicide use.
3. Disease and insect control.
4. Selection of fertilizer and the timing of its application to obtain high yields and maintain high levels of sugar content.
5. Timeliness of irrigation and intervals between irrigations based on the texture of the soil.
6. Crop rotation.

Although the above list does not include all management factors associated with profitable sugarbeet production, these production practices distinguish the producers of top yields from producers of average yields.

Many sugarbeet growers may be able to reduce their costs of production without any reduction in yield. The greatest economies from lowering costs are likely to be in the following three areas:

1. Quantity of fertilizer applied. Many growers who apply $35 to $40 of fertilizer per acre are not obtaining the yield response from it to justify such high levels of fertilizer expenditures.

2. Number of machinery operations. Growers commonly perform more than 12 machinery operations from the start of seedbed preparation through the harvest of sugarbeets. Many growers could eliminate several machine operations in seedbed preparation and cultivation without any reduction in yield. This would reduce machine costs, fuel costs and labor costs.

3. Harvesting costs. Because sugarbeet harvesting equipment is specialized and its initial cost is high, harvesting costs per acre are high. The costs of harvesting and hauling both the beets and chopped beet tops are more than half of all the machinery costs—even under efficient conditions of large machines used in combination with a large acreage of sugarbeets. The largest component of harvesting costs is the annual fixed cost of the equipment. When equipment is used on a small number of acres each year, the machinery fixed costs per acre are high.

For producers with small sugarbeet acreages, there are four possibilities for reducing harvesting costs:

1. **Custom hire.** This eliminates the large investment required for owning harvesting equipment. Also, custom hire permits the small grower considerable flexibility; if he chooses not to produce beets, he avoids all the fixed costs of harvesting machines. Because there is not a large amount of custom sugarbeet harvesting in western Nebraska, there may be some difficulties in obtaining a custom operator at the right time.

2. **Machine rent or lease.** This alternative is similar to custom hiring except the grower provides the power and labor for operating the machines.

3. **Cooperative or joint machinery ownership.** Under this alternative, two or more growers with small acreages jointly own one machine. Because the combined use of the machine is greater than the amount of machine use when each grower independently owns the machine, the fixed costs per acre under joint ownership are lower for both growers. Another version of cooperative effort would be for one grower to own the topper and the other grower to own the lifter which they exchange in harvesting both of the growers' acreages. Each grower reduces his investment and fixed costs per acre compared to the costs if each grower independently owns both machines. Because the costs of owning and operating a lifter are higher than the costs for a topper, the owner of the topper should make a small payment to the owner of the lifter if equity in sharing costs between the two parties is to be maintained.

4. **Do custom work.** Harvesting machinery, especially, might be used to do custom work or machines could be rented to other growers. The annual fixed costs of a machine are relatively constant with respect to the rate of annual use. An effective method of reducing fixed costs per acre is to use a machine on more acres. Renting the machine to others or providing custom services for others reduces the fixed costs per acre for all acres harvested.

PROCEDURE FOR ESTIMATING PRODUCTION COSTS

Information on costs of sugarbeet production in Nebraska is lacking. This study on a case basis is an attempt to fill this void.

The costs of sugarbeet production, presented here, were estimated from information supplied by three growers in Scotts Bluff County. The three growers are considered outstanding managers in the production of sugarbeets. The five-year average of sugarbeets was 20 tons per acre or more for each grower. Consequently, the sugarbeet returns for these growers are not representative of most sugarbeet growers in Nebraska.

Machinery, Power and Trucking Costs

The annual fixed costs of owning machinery include depreciation, interest on investment, taxes, insurance and shelter for the machinery. The annual fixed costs were estimated for each machine. The machinery fixed costs were allocated to the sugarbeet enterprise on the basis of the amount of machine use in the sugarbeet enterprise relative to the total use of each machine in all crop (and livestock) enterprises.

The variable costs of operating a machine include lubrication, fuel, repairs and labor. If a machine was rented or an operation was custom hired, the rental fee or custom charge was included under the category of variable costs.

The procedure for estimating annual fixed costs of each machine, tractor and truck was:

1. **Depreciation.** Each grower provided the purchase price for each machine, the estimated number of years he expected to use the machine, and the estimated trade-in allowance for the machine when he expected to trade for another machine. Annual depreciation was estimated to be the difference between purchase price and trade-in allowance divided by the estimated years of use.

2. **Interest on investment.** The interest rate charged for the investment in machinery was 6 percent. This rate is the assumed earnings from alternative non-farm, long-term investments. The average annual investment was half the sum of the purchase price and trade-in allowance. The average annual interest on investment was 6% times the average annual investment.

3. **Property taxes.** Average annual taxes were estimated by multiplying the mill rate by 35% of the average annual investment.

4. **Insurance.** The estimated cost of insurance was 35¢ per $100 of average annual investment.

5. **Shelter.** Annual housing cost for machinery was estimated at the rate of 10.5¢ per square foot of machinery space required.

Total annual fixed cost for any machine equals the sum of the above five items (depreciation, interest on investment, taxes, insurance and shelter). The total amount of annual use for each machine was estimated by each of the growers. For tractors, annual use was estimated in hours; for forage choppers, tons of forage chopped; and for trucks, tons of beets, beans, grain, forage and feed trucked. For all other machinery, the amount of annual use was estimated in acres.

Annual fixed costs were allocated to sugarbeets on the basis of use in the sugarbeet enterprise relative to total annual use for each machine. The fixed cost for tractor use per acre was estimated to be the fixed cost per hour in all uses times the hours of tractor use on one acre of sugarbeets. The fixed cost per acre for the forage chopper was determined by multiplying the fixed cost per ton of all forage chopped times the tons of beet tops harvested per acre.

Similarly the fixed cost for trucks per acre was estimated by multiplying trucking fixed costs per ton of all commodities hauled times the tons of beets and beet tops harvested per acre. For all other machines used in sugarbeet production, the machinery fixed cost per acre of sugarbeets was estimated to be the annual fixed cost of the machine divided by total acres of annual use.

The procedure for estimating variable costs for each machine was:

1. **Lubrication.** The lubrication costs for tractors were estimated at a rate of 10¢ per hour of use on small tractors up to a rate of 16¢ per hour for large tractors. For the other machines used in sugarbeet production, the estimate of lubrication costs ranged from 1¢ to 5¢ per acre.

2. **Repairs.** Each grower was asked to estimate the average annual expenditures on repairs for each machine. For those machines where knowledge of repair expenditures was lacking, estimates were based on rate of annual use of the machine relative to its purchase price and the mechanical complexity of the machine.

3. **Fuel.** Each grower estimated the rate of fuel consumption for each machinery operation. The net price (after federal and state gasoline taxes) for gasoline was estimated at 18¢ per gallon; for diesel fuel the price used was 15¢ per gallon.

4. **Labor.** Each grower estimated the time required per acre for performing each machinery operation. The hours of labor per acre times the wage rate (on an hourly basis) equals the labor cost per acre for each operation.

Labor Costs

Besides the operator's labor for field operations; the time required for servicing and adjusting equipment, irrigating, burning weeds in irrigation canals and laterals, opening fields for harvest, delivering production inputs to the farm, and supervising contract labor was charged as a cost at the rate of $2.50 per hour. The wage of $2.50 per hour for operator labor was considered a reasonable wage which could be earned by these operators in readily available alternative occupations. This wage rate does not imply, nor attempt to include, the cost of management for these operators.

Hired labor costs were estimated at the rate of $1.50 per hour.

Contract labor costs were the actual expenditures for contracted labor. This labor is used in thinning and weeding beets.

Chemical Costs

The fertilizer cost was the actual expenditure for fertilizer in 1966. Costs per acre for herbicides and insecticides were the average annual expenditures for these items during the 5 years—1962-1966.

Seed Costs

The seed cost was the actual expenditure in 1966.

Irrigation Costs

The farms of each of these Scotts Bluff County growers are in the Irrigation District. The price for irrigation water is determined by the authority of the District. In addition to this water charge, the estimated annual costs of a lateral ditcher, dams and siphon tubes were included.

Where sugarbeets are irrigated from deep wells, the costs of irrigation are usually higher than those costs presented. Pump irrigation costs depend upon the pumping depth; rate of flow; power used; and the fixed costs of the well, pump, motor and distribution system. To estimate these costs, see Extension Circular 64-733, University of Nebraska, "Pump Irrigation Cost Analysis."

Land Costs

The cost charged for land was estimated to be 6% of the estimated market value per acre. The real estate taxes on land were the actual amount of taxes paid in 1966.

Miscellaneous Costs

Included in miscellaneous costs are housing costs for contract labor, costs for the pickup truck and interest on cash inputs. Interest on cash inputs was estimated at the rate of 7% of annual cash expenditures for a period of 6 months.

COSTS OF PRODUCTION

The costs of sugarbeet production for three growers in Scotts Bluff County, based on the above procedures of estimation, are summarized in Table 5. Total costs per acre (excluding management costs) for sugarbeet production ranged from $204 to $254 per acre.

The differences in total costs per acre between the three growers are due to:

1. Differences in size of the sugarbeet acreage.
2. Differences in size of harvesting equipment.
3. Differences in production practices.

The difference between Grower 1 and Grower 2 in total costs per acre is not due to size of the sugarbeet operation nor to size of harvesting equipment. The higher cost for Grower 2 is, primarily, from more fertilizer applied per acre (about $17 more fertilizer per acre) than for Grower 1.

Table 5. Estimated costs per acre (excluding management costs) of sugarbeet production for three growers in Scotts Bluff County, Nebraska, 1966.

Cost items	Grower 1		Grower 2		Grower 3		Average of costs per acre	
	Dollars/Acre		Dollars/Acre		Dollars/Acre		Dollars/Acre	
1. Machinery, Power, and Trucking Costs (excluding labor)								
a. Preplant operations	$ 5.49		$ 5.81		$ 7.61		$ 6.30	
b. Planting and replanting operations	3.70		2.85		5.89		4.15	
c. Tillage operations	4.39		8.49		6.69		6.52	
d. Harvesting and hauling beets	29.12		24.63		31.07		28.27	
e. Harvesting and hauling beet tops	7.12	$49.82	9.58	$51.36	14.68	$65.94	10.46	$55.70
2. Irrigation		5.75		6.50		6.50		6.25
3. Fertilizer		13.25		30.00		31.59		24.94
4. Insecticide		1.50		.90		4.05		2.15
5. Herbicide		13.00		0		9.87		7.62
6. Seed		3.00		5.00		5.00		4.33
7. Labor								
a. Contract	$23.50		$35.00		$24.15		$27.55	
b. Hired ($1.50 per hour)	10.31 hrs. 15.47		10.17 hrs. 15.26		9.10 hrs. 13.65		9.85 hrs. 14.79	
c. Operator ($2.50 per hour)	11.10 hrs. 27.75	66.72	8.89 hrs. 22.22	72.48	15.26 hrs. 38.15	75.95	11.75 hrs. 29.37	71.71
8. Land								
a. Interest	$36.00		$39.00		$42.00		$39.00	
b. Real estate taxes	9.35	45.35	6.50	45.50	6.50	48.50	7.45	46.45
9. Miscellaneous		5.96		7.70		6.16		6.61
Total Costs Per Acre (excluding management costs)		$204.35		$219.44		$253.56		$225.76
Total Acres of Sugarbeets		85		65		20		

Grower 3 incurs the highest costs per acre because the number of acres in sugarbeets is low and the size of his harvesting equipment is small. Since Grower 3 has a low sugarbeet acreage and a low total farm acreage; the allocation of annual fixed costs for tractors, beet lifter, beet topper and forage chopper causes the machinery fixed costs per acre to be higher than for Growers 1 and 2. Grower 3 uses a 1-row lifter and a 2-row topper. Growers 1 and 2 both use 2-row lifters and 6-row toppers. Compared to Growers 1 and 2, it takes Grower 3 almost twice as much time to top and lift one acre of beets. Consequently, his labor cost for topping and lifting is twice that of Growers 1 and 2.

Another large difference in costs between the three growers is in the use of herbicides and contract labor. Grower 2 does not use herbicide. Grower 1 applied $13 of herbicide per acre and Grower 3 applied $9.87 of herbicide per acre. Offsetting the higher herbicide costs for Growers 1 and 3 are lower contract labor costs in thinning and weeding the sugarbeets. Consequently, the sum of the herbicide and contract labor costs for each of the three growers is similar.

	Grower 1	Grower 2	Grower 3
Herbicide cost per acre	**$13.00**	**0**	**$ 9.87**
Contract labor cost per acre	**23.50**	**$35.00**	**24.15**
Total cost of herbicide and contract labor per acre	**$36.50**	**$35.00**	**$34.02**

As mentioned previously, the number of acres and size of machinery strongly affect machinery operation costs per acre. Table 6 shows the costs of machinery operation including labor for each of the three growers.

Of the total costs of operating machinery and trucks, approximately one-third is labor, two-fifths is fixed costs and one-fourth is fuel, lubrication and repairs.

Operator and hired labor used in machinery operations ranged from 13 hours per acre to 17 hours per acre. Total operator and hired labor ranged from 19 hours per acre to 24 hours per acre. The division of labor use by tasks is shown in Table 7.

These costs of production have been estimated from case studies of three growers considered top farm managers. Their costs ranged from $204 to $254 per acre and averaged $226 per acre.

Although it is difficult to generalize from these cases the average cost of production for all growers in Scotts Bluff County, it is anticipated that the average cost per acre is between $210 and $240 per acre (if the same budgeting procedure is used as in this study).

The average land cost per acre will be lower for all growers than in this study. The average market value of land was estimated at $650

Table 6. Estimated costs per acre of machinery operation including hired and operator labor for three growers in Scotts Bluff County, Nebraska, 1966.

Operations	Hours of labor	Labor cost	Fixed costs	Variable costs (fuel, lub. & repairs)	Total costs of mach. operations
	Hr/Ac	Dol/Ac	Dol/Ac	Dol/Ac	Dol/Ac
Grower 1					
Preplant	3.90	6.80	2.94	2.55	12.29
Plant	.50	1.00	2.27	1.43	4.70
Tillage	3.35	6.70	2.34	2.05	11.09
Harvest & haul beets	5.00	8.75	18.68	10.44	37.87
Harvest & haul tops	1.20	2.20	4.53	2.59	9.32
Total	13.95	25.45	30.76	19.06	75.27
Grower 2					
Preplant	.93	1.87	3.37	2.44	7.68
Plant	.55	1.11	1.79	1.06	3.96
Tillage	3.35	6.70	4.82	3.67	15.19
Harvest & haul beets	5.00	8.50	15.45	9.18	33.13
Harvest & haul tops	3.00	5.50	6.05	3.53	15.08
Total	12.83	23.68	31.48	19.88	75.04
Grower 3					
Preplant	1.50	3.75	4.46	3.15	11.36
Plant	.55	1.38	3.74	2.15	7.27
Tillage	2.64	6.60	3.76	2.93	13.29
Harvest & haul beets	10.00	17.00	18.97	12.10	48.07
Harvest & haul tops	2.20	4.40	9.37	5.31	19.08
Total	16.89	33.13	40.30	25.64	99.07

per acre for these three growers. The average value of all irrigated land in the county is less. Offsetting the lower average land cost is anticipated higher machinery costs on the average. These three growers utilize machinery efficiently. The average acres of sugarbeets on farms growing beets is less than that for these three growers.[5] Con-

[5] In 1964, the number of sugarbeet acres per farm growing sugarbeets in Scotts Bluff County was 47 acres. See the 1964 Census of Agriculture.

Table 7. Estimated labor use per acre in sugarbeet production for three growers in Scotts Bluff County, Nebraska, 1966.

Labor task	Grower 1	Grower 2	Grower 3
	Hours/Acre	Hours/Acre	Hours/Acre
Machinery operation	13.95	12.83	16.89
Irrigation	3.00	3.00	3.00
Equipment adjustment	3.34	2.10	3.30
Miscellaneous	1.12	1.13	1.17
Total	21.41	19.06	24.36

sequently, the average machinery fixed costs per acre are probably higher. Fixed costs per acre of toppers and lifters used on less than 40 acres of sugarbeets are high.

NET RETURNS

Each of these three growers has averaged at least 20 tons per acre of sugarbeets for the last five years. Their payments averaged $15.56 per ton. Their gross return per acre from sugarbeets has averaged over $300 per acre per year.

Each grower has harvested an average of 11 tons per acre of wilted beet top silage. Its estimated value at the time it was placed in storage was $6 per ton. This is an additional return of $66 per acre.

Table 8 shows the returns per acre for sugarbeet production for these three growers.

These returns are higher than the average return for all sugarbeet growers in Scotts Bluff County. An estimate of returns per acre based on the average Scotts Bluff County yields and sugarbeet payments for 1963-1966 and the cost data from three growers is shown in Table 9.

Table 8. Average returns per acre from sugarbeet production for three growers in Scotts Bluff County, Nebraska, 1962–1966.

	Grower 1	Grower 2	Grower 3
Average beet yield (T/A)	20	20	21
Average (estimated) beet top yield (T/A)	11	11	11
Average beet payment ($/T)	15.56	15.56	15.56
Average value of beet top silage ($/T)	6.00	6.00	6.00
		Dollars per acre	
Returns:			
Sugarbeets	311.20	311.20	326.75
Value of beet top silage	66.00	66.00	66.00
Gross return	377.20	377.20	392.76
Total budgeted costs	204.35	219.44	253.56
Return over budgeted costs	172.85	157.76	139.20
Return to:			
(1) Management	172.85	157.76	139.20
(2) Management & operator labor[a]	200.60	179.98	177.35
(3) Management, operator labor and capital	245.95	228.90	231.87
Variable costs (including operator labor)	123.66	137.07	159.38
Return over variable costs	253.54	240.13	233.38
Return over variable costs excluding operator labor	281.29	262.35	271.53

[a] Return to management plus unpaid operator labor budgeted at $2.50 per hour.

Table 9. Estimated returns per acre at county average yield from sugarbeet production in Scotts Bluff County, Nebraska, 1963–1966 (based on average cost of three growers).

	1963	1964	1965	1966
Average county beet yield (T/A)	21.3	17.9	14.0	19.2
Average (estimated) beet top yield (T/A)	11.7	9.8	7.7	10.6
Average beet payment ($/T)	15.08	15.52	15.36	16.05
Average value of beet top silage ($/T)	6.00	6.00	6.00	6.00
		Dollars per acre		
Returns:				
Sugarbeets	321.20	277.81	215.04	308.16
Value of beet top silage	70.20	58.80	46.20	63.60
Gross return	391.40	336.61	261.24	371.76
Budgeted cost	225.76	225.76	225.76	225.76
Return to:				
(1) Management	165.64	110.85	35.48	146.00
(2) Management & operator labor	195.01	140.22	64.85	175.37
(3) Management, operator labor and capital	244.60	189.81	114.44	224.96
Variable costs (including operator labor)	140.04	140.04	140.04	140.04
Return over variable costs	251.36	196.57	121.20	231.72
Return over variable costs excluding operator labor	280.73	225.94	150.57	261.09

BREAK-EVEN POINTS

Table 10 shows the yield of sugarbeets necessary to cover total costs for various combinations of production costs per acre and prices of sugarbeets.

Table 10. Yield necessary to recover costs at various prices received for sugarbeets.

Production costs per acre	Break-even yield when price per ton of sugarbeets is:			
	$14.00	$15.00	$16.00	$17.00
	(tons/acre)			
$150	10.7	10.0	9.4	8.8
160	11.4	10.7	10.0	9.4
170	12.1	11.3	10.6	10.0
180	12.9	12.0	11.2	10.6
190	13.6	12.7	11.9	11.2
200	14.3	13.3	12.5	11.8
210	15.0	14.0	13.1	12.4
220	15.7	14.7	13.8	12.9
230	16.4	15.3	14.4	13.5
240	17.1	16.0	15.0	14.1
250	17.9	16.7	15.6	14.7

LANDLORD-TENANT SHARE

The most common lease for sugarbeets in Scotts Bluff County is the ¾–¼ crop share. The tenant receives ¾ of the sugarbeets; the landlord receives ¼. There are many different arrangements in sharing the beet tops. This is usually decided on the basis of the total farm lease and whether livestock are produced on the farm.

Under the common ¾–¼ crop share lease, the landlord provides the land, pays all real estate taxes and all of the water charge, pays ¼ of the fertilizer bill and may provide some management. The tenant provides all machinery and labor and some irrigation equipment, pays for all the herbicide, insecticide and seed, pays ¾ of the fertilizer and provides most of the management.

Table 11 shows the cost shares of landlord and tenant under a ¾–¼ crop share lease based on the average cost of three growers (all costs of harvesting and hauling the beet top silage have been charged to the tenant).

Table 11. Estimated cost shares per acre for a ¾–¼ crop share lease in sugarbeet production (based on average cost of three growers).

Cost	Tenant	Landlord	Total
		Dollars per acre	
1. Machinery, power & trucks	55.70	.....	55.70
2. Irrigation	1.55	4.70	6.25
3. Fertilizer	18.70	6.24	24.94
4. Insecticide & herbicide	9.77	.....	9.77
5. Seed	4.33	.....	4.33
6. Labor (contract, operator, hired)	71.71	.....	71.71
7. Land (taxes & interest)	.....	46.45	46.45
8. Miscellaneous	6.61	.....	6.61
Total costs (excluding management)	168.37	57.39	225.76
Share of total costs (percent)	74.6	25.4	100.0

Appendix Table 1. Estimated costs of individual items budgeted in sugarbeet production, Scotts Bluff County, Nebraska, 1966.[a]

	Range	Average for 3 growers
	Dol./Acre	Dol./Acre
Manure hauling	6.00–10.00	7.18
Disking	1.25– 3.50	2.45
Plow and pack	2.50– 4.50	3.03
Float	1.00– 1.25	1.11
Till and pack	1.50–2.50	1.69
Plant and incorporate	3.50– 6.00	4.26
Five cultivations	9.50–13.50	11.19
(Per cultivation)	(1.90– 2.70)	(2.24)
Contract labor	20.00–35.00	27.55
Six gravity irrigations (includes water charge, dams, tubes and labor)	10.00–12.00	10.75
(Per irrigation)	(1.67– 2.00)	(1.79)
Topping	5.50–10.00	7.28
Lifting (two-row)	12.00–20.00	15.15
Trucking beets	12.00–22.00	15.84
Chopping tops	6.00–11.00	7.88
Trucking tops	4.00– 8.00	5.78
Roughen the field	1.25– 2.25	1.76
Overhead labor (adjust equipment, supervise contract labor, etc.)	5.00– 8.00	5.87
Seed	3.00– 5.00	4.33
Insecticide	.50– 5.00	2.15
Herbicide	0–14.00	7.62
Fertilizer	10.00–35.00	24.94
Interest on land	30.00–45.00	39.00
Real estate taxes	5.00–10.00	7.45
Miscellaneous	5.00–10.00	6.61

[a] All labor based on a wage of $1.50 per hour.

Appendix Table 2. Average 1966 custom rates of selected machinery operations in sugarbeet production for Scotts Bluff County, Nebraska, 1966.[a]

Custom rate	Machinery Operation
Planting	$4.00 per acre
Topping	$ .75 per ton of beets
Lifting	$1.50 per ton of beets
Trucking sugarbeets	$ .86 per ton of beets
Chopping beet tops	$ .35 per ton of beets
Trucking chopped tops	$ .40 per ton of beets

[a] For custom rates of other machinery operations, see E.C. 67-806 Farm Custom Rates Paid In Nebraska—1966, by Douglas D. Duey and Robert D. Rawson, University of Nebraska College of Agriculture and Home Economics and U.S. Department of Agriculture Cooperating, Lincoln, Nebraska.

Appendix Table 3. Budgeted fixed costs of a 6-row topper and a 3-row lifter.

	6-row Topper	3-row Lifter
Purchase price	$4,000	$6,200
Estimated life (years)	8	8
Trade in value	$1,600	$2,400
Annual fixed costs		
Depreciation	$ 300	$ 475
Interest (6%)	168	258
Taxes	42	64
Insurance	11	17
Housing	15	15
Total	$ 536	$ 829
Fixed costs per acre		
20 acres per year	$26.80	$41.45
40 acres per year	13.40	20.72
60 acres per year	8.93	13.82
80 acres per year	6.70	10.36
100 acres per year	5.36	8.29

Appendix Table 4. Average costs to produce one acre of sugarbeets, Wyoming, 1966.

Type of input	Estimated cost per acre (35 growers in Big Horn Basin Area, Wyoming, 1966)	Estimated cost per acre (46 Growers in Goshen, Platte and Laramie Counties, Wyoming, 1966)
Yield expected per acre: 16 tons		
Pre-harvest cash costs		
Man hours	$ 20.27	$ 21.11
Tractor hours	7.60	8.86
Machinery hours	3.04	3.55
Pickup truck miles	1.28	1.28
Real estate taxes	2.66	2.66
Material inputs and custom work		
Seed	2.52	4.84
Irrigating water	4.26	8.53
Barnyard manure	16.21	18.23
Commercial fertilizer	30.53	20.91
Chemical weed and insect control	9.63	9.10
Thinning and weeding	28.00	27.40
Total pre-harvest cash costs	$126.00	$126.47
Harvest cash costs		
Man hours	$ 11.82	$ 15.20
Tractor hours	3.80	4.81
Machinery hours	3.80	4.81
Truck miles	2.63	2.43
Total cash harvest cost	$ 22.05	$ 27.25
Total cash cost (pre-harvest and harvest)	$148.05	$153.72
Miscellaneous cash costs[a]	$ 14.80	$ 15.37
Non-cash costs		
Pre-harvest & harvest tractors, machinery, and trucks	$ 23.28	$ 27.80
Interest on land investment	16.50[b]	16.54[b]
Total non-cash costs	$ 39.78	$ 44.34
TOTAL CASH AND NON-CASH COST	$202.63	$213.43

[a] Includes 4% interest on cash costs and 6% on cash costs for farm overhead.
[b] Interest on land investment estimated at 5% interest on an average investment of $330 per acre.
Source: Delwin M. Stevens, "Costs and Returns for Irrigated Crops in Wyoming," Experiment Bulletin 467, University of Wyoming, Laramie, March, 1967, p. 13.