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**SUGAR BEETS
COSTS & RETURNS
COLUMBIA BASIN**

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SUGAR BEETS
ESTIMATED PER ACRE COSTS AND RETURNS
COLUMBIA BASIN, WASHINGTON
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The Columbia Basin produces approximately one-half the sugar beets grown in Washington. The average yield is one of the highest in the nation. Beets are a major crop in the area because of the income per acre from beet production. Sugar beets are usually grown under a contract. Columbia Basin contracts averaged 42 acres per grower in 1966.

<u>Year</u>	<u>Acres*</u>	<u>Average Yield</u>	<u>Income Per Ton**</u>	<u>Annual Income***</u>
1962	29,396	25.8	\$ 14.53	\$ 11,019,796
1963	30,302	27.3	13.93	11,523,517
1964	31,651	23.3	14.16	10,442,551
1965	32,269	24.9	14.53	11,698,932

* Data from U.S. Bureau of Reclamation annual crop reports

** Includes factory and sugar program payments

*** Does not include value of beet tops

Objective Of This Enterprise Study

This study was conducted to provide information for Columbia Basin farmers interested in sugar beet production and for those extending credit to sugar beet producers. The tables illustrate the expected income and returns per acre when 40 acres of sugar beets are grown on a 200-acre irrigated farm.

PRECAUTIONS

Many changes are being made in sugar beet production and marketing practices which affect the growers' net return. Each grower should carefully consider the following:

1. Growers are paid according to sugar content of their beets.
2. What effect does your fertilizer and irrigation practices have on the yield and sugar content of your beets?
3. How will you utilize the beet tops?
4. Can you mechanically and chemically weed and thin your beets to reduce labor costs?
5. Should you own harvest machinery or employ custom harvesters?

^{1/} Extension Farm Management Specialist, Prosser, and Grant County Extension Agent, Ephrata, respectively.

Method of Obtaining Costs and Returns

The data were compiled from information obtained separately from several sugar beet growers in the area. The figures shown are not averages, but represent the best judgment of the growers. A producer should use the information only as a basic guide until more factual data is available from his operation. Space is provided on each table so a producer can make the changes needed to fit his situation.

TABLE 1 - COST AND RETURN SUMMARY

Returns: The three sources of income from sugar beet production are: (1) sale of beets to the processor; (2) federal payments according to the National Sugar Act; and (3) utilization of beet tops.

Until 1966 growers were paid for beets on the basis of the average sugar content of all beets in the state. They are now paid according to sugar content in their own beets.

The common method of utilizing beet tops is pasturing by livestock before plowing. This practice recovers as much as one-half the tops with the remainder being incorporated into the soil. The value of the tops for livestock feed was reduced by the costs due to handling the livestock.

Growing and Harvest: Maximum sugar yield results from a high tonnage of roots with a high percentage of sugar in the root. The best yields are obtained from a good plant population and proper control of plant nutrients, soil moisture, weeds, diseases and insects. The fertilizer level should be abundant enough to give the plants a fast start in the spring and early closure of the leaf canopy, but allow the crop to begin maturity by mid-September. A high level of nitrogen in the plants at harvest usually results in reduced sugar content.

Hand thinning and weeding are common in the area. However, mechanical thinning as well as mechanical and chemical weed control is increasing because of rising labor costs, the shortage of qualified labor and the availability of effective chemicals.

Cash Overhead: A charge of 5 percent of the CASH COSTS was included as GENERAL OVERHEAD to cover such expenses as utilities, insurance, social security, travel, office, assessments, etc. Since a charge was made for real estate TAXES and INTEREST ON INVESTMENT in land, no charge was made for RENT. Those renting land should adjust their costs accordingly.

Non-Cash Costs: Details of the amount charged as INVESTMENT OVERHEAD are shown in TABLE 2. It consists of DEPRECIATION and INTEREST ON INVESTMENT for equipment and buildings and interest on land investment. Charges for operators labor are a non-cash expense; hired labor is a cash expense.

Return for Operator's Labor and Management: Since the non-cash charge for OPERATOR'S LABOR (\$21.58) is included in TOTAL COSTS, it is deducted when determining RETURN FOR OPERATOR'S LABOR AND MANAGEMENT.

TABLE 2 - CAPITAL INVESTMENT

Included is a list of equipment normally used for sugar beet production. Most of the equipment is also used for other crops, so only a portion of their annual depreciation and interest on investment is charged against the beets. Also shown are the cash costs per hour of use for the various items.

TABLE 3 - MONTHLY CASH FLOW

The calendar of cash expenses and income is particularly useful for budgeting and credit purposes. Income is spread over several months; some income is from beets produced the previous year.

TABLE 4 - COSTS PER ACRE AND PER TON AT VARIOUS YIELDS

The principle factors affecting yield and income are early establishment of a good stand, control of wind erosion, proper thinning, weed and insect control, proper fertilizer and irrigation practices, and utilization of beet tops. The growers indicated that variations in total sugar produced per acre are mainly due to the operators managerial ability and timeliness of operation. Thus, the pre-harvest costs were determined to be the same regardless of yield.

The NON CASH and TOTAL COSTS include a charge for OPERATOR'S LABOR

TABLE 5 - OPERATOR'S RETURN AT VARIOUS YIELDS AND PRICES

From the final table growers can estimate their income at various yields and prices. The returns indicated assume that one-half the beet tops are salvaged for livestock feed. Farmers that plow down all their beet tops should adjust the information accordingly.

TABLE 1

SUGAR BEETS
PER ACRE COSTS AND RETURNS
COLUMBIA BASIN, WASHINGTON
(1966)

	Hours Per Acre	Labor \$	Machinery Fuel and Repair \$	Materials & Other \$	Total \$	Your Estimate \$
RETURNS						
28 tons @ \$14.53					406.84	
Tops, 2.1 ton @ \$15.00 for livestock feed ^{1/}					31.50	
Tops, plowed down					10.00	
TOTAL RETURNS					448.34	
Pre Plant						
Plow	.8	1.40	1.44		2.84	
Disc, harrow, 2x	.4	.70	.55		1.25	
Float	.2	.35	.38		.73	
Weed control, chemical				10.00*	10.00	
Ditch cleaning, repair	.1	.18	.16		.34	
Plant						
Seeding, 3 lbs.	.33	.58	.57	3.00	4.15	
Fertilizer (200 N, 100 P ₂ O ₅ 50 K ₂ O, 3Zn, 2B) ^{2/}				42.00*	42.00	
Insecticide, preplant ^{3/}				8.40*	8.40	
Growing						
Thinning and weeding				24.00*	24.00	
Hoeing, 2x				26.00*	26.00	
Fertilizer, sidedress						
Cultivate, corrugate, 4x	3.5	6.12	6.30		12.42	
Irrigation, 15x	7.0	12.25			12.25	
Insect control						
Harvest						
Top and dig (\$1.50/ton)				42.00*	42.00	
Hauling (\$1.25/ton) ^{4/}				35.00*	35.00	
Cash Overhead^{4/}						
Taxes (land, bldg., equip.)				7.00	7.00	
Rent						
Water				12.00	12.00	
General overhead (5% of cash costs)				11.00	11.00	
Int. on oper. capital (9 months @ 6%)				10.00	10.00	
TOTAL CASH COSTS			9.40	230.40	239.80	
Operator's Labor		21.58			21.58	
Investment Overhead						
Depreciation				12.02	12.02	
Interest on investment (5%)				29.49	29.49	
TOTAL NON CASH COSTS		21.58		41.51	63.09	
TOTAL COSTS PER ACRE		21.58	9.40	271.91	302.89	
NET RETURN FOR OPERATOR'S LABOR & MANAGEMENT^{1/}					145.45	

Based on 40 acres of sugar beets on 200-acre farm

* These operations usually hired.

^{1/} Estimate 150 pounds of tops per ton of beets are available for salvage by livestock; the remaining tops are incorporated into the soil.

^{2/} Consult your county agent for local recommendations on specific cultural practices.

^{3/} Preplant insecticide applied with fertilizer. ^{4/} Rounded to nearest dollar.

TABLE - 2

CAPITAL INVESTMENT^{1/}

ITEM	PURCHASE PRICE	SALVAGE VALUE	AVERAGE VALUE	% DUE TO BEETS	AMOUNT DUE TO BEETS	METHOD OF DEPREC. ^{2/}	ANNUAL COSTS		CASH COSTS		
							DEPREC.	INTEREST 5%	FUEL	REPAIRS	TOTAL
Tractor	\$ 9,000	\$ 2,000	\$ 5,500	20	\$ 1,100	5 SL	\$ 220.00	\$ 55.00	\$.52	\$.98	\$ 1.50
Plow	1,400	200	800	20	160	5 SL	32.00	8.00		.30	.30
Disc	1,300	150	725	20	145	5 SL	29.00	7.25		.35	.35
Harrow	200	25	102	20	20	7 SL	2.85	1.00		.03	.03
Float	100	0	50	50	25	5 SL	5.00	1.25		.02	.02
Ditcher	250	50	150	20	30	8 SL	3.75	1.50		.05	.05
Cultivating	500	50	275	33	89	10 SL	8.90	4.45		.28	.28
Planter	750	75	412	50	206	10 SL	20.60	10.30		.22	.22
Pickup	2,600	500	1,550	25	387	10 SL	38.70	19.35	.03*	.02*	.05*
Truck	4,600	750	2,675	30	802	10 SL	80.20	40.10	.05*	.04*	.09*
Shop Equip.	2,000	0	1,000	25	250	10 SL	25.00	12.50			
Buildings	3,000	0	1,500	25	375	25 SL	15.00	18.75			
Land, 40 acres			20,000	100	20,000			1,000.00			
TOTAL YOUR FARM			34,739		23,589		481.00	1,179.45			
PER ACRE YOUR FARM					589.72		12.02	29.49			

* Cost per mile

^{1/}Based on 40 acres of sugar beets on 200 acre farm^{2/}Straight line method of depreciation used; the number (5) indicates years of expected use.

TABLE - 3
MONTHLY CASH FLOW

OPERATION	TOTAL	J	F	M	A	M	J	J	A	S	O	N	D
<u>Pre Plant and Plant</u>													
Ditch cleaning, repair	.16		.16										
Plow	1.44	.50	.94										
Disc, harrow	.55	.25	.30										
Float	.38	.19	.19										
Weed control, chemical	10.00		10.00										
Fertilizer	42.00	42.00											
Planting	3.57	.25	3.32										
Insecticide, preplant	8.40		8.40										
<u>Growing</u>													
Thinning, weeding	24.00				12.00	12.00							
Cultivate, corrugate	6.30					1.50	1.50	1.65	1.65				
Hoing	26.00					13.00	13.00						
Irrigate													
Fertilizer, sidedress													
Insect control													
<u>Harvest</u>													
Top and dig	42.00										20.00	22.00	
Haul	35.00										17.00	18.00	
<u>Cash Overhead</u>													
Taxes	7.00				7.00								
Water	12.00				10.00			2.00					
General Overhead	11.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.50	1.50	
Int. on Oper. Cap.	10.00												10.00
TOTAL CASH COSTS	239.80 ^{1/}	44.19	24.31	1.00	30.00	27.50	15.50	4.65	2.65		38.50	41.50	10.00
YOUR CASH COSTS													
CASH INCOME	406.84	63.00 ^{2/}			14.00 ^{2/}			10.00 ^{2/}			25.84 ^{2/}	94.00	200.00
YOUR CASH INCOME													
NET CASH	167.04	18.81	-5.50	-6.50	-22.50	-50.00	-65.50	-60.15	-62.80	-62.80	-75.46	-22.96	167.04
YOUR NET CASH													

^{1/} Does not include charge for operator's labor^{2/} Income from sugar beets produced the previous year

TABLE 4

COST PER ACRE AND PER TON
AT VARIOUS YIELDS

COST PER ACRE	YIELD, TONS PER ACRE					Your Estimate
	20	24	26	28	30	
Cultural Costs	122.80	122.80	122.80	122.80	122.80	
Harvest Costs (digging and hauling)	55.00	66.00	71.50	77.00	82.50	
Cash Overhead	38.00	39.00	40.00	40.00	40.00	
TOTAL CASH COSTS PER ACRE	215.80	227.80	233.30	239.80	245.30	
Depreciation on Bldgs., equipment	12.02	12.02	12.02	12.02	12.02	
Interest on Investment	29.49	29.49	29.49	29.49	29.49	
Operator's Labor	21.58	21.58	21.58	21.58	21.58	
NON-CASH COSTS PER ACRE	63.09	63.09	63.09	63.09	63.09	
TOTAL COSTS PER ACRE^{1/}	278.89	290.89	296.39	302.89	308.39	
TOTAL COSTS PER TON	13.94	12.12	11.40	10.82	10.28	

^{1/} Includes non-cash cost of operator's labor

TABLE 5

OPERATOR'S RETURN PER ACRE
AT VARIOUS YIELDS AND PRICES^{1/}

PRICE PER TON	TONS PER ACRE					Your Estimate
	20	24	26	28	30	
12.50	3.61	47.11	67.86	88.61	110.36	
13.00	13.61	59.11	80.86	102.61	125.36	
13.50	23.61	71.11	93.86	116.61	140.36	
14.00	33.61	83.11	106.86	130.61	155.36	
14.50	43.61	95.11	119.86	144.61	170.36	
15.00	53.61	107.11	132.86	158.61	185.36	
15.50	63.61	119.11	145.86	172.61	200.36	

^{1/} Income based on 150 pounds of beet tops per ton salvaged by livestock, valued at \$15.00 per ton; also \$10.00 per acre value for tops plowed down.