Farm Business Management Reports		EB1820
	# 1996 ESTIMATED COSTS AND RETURNS FOR PRODUCING SUGAR BEETS, COLUMBIA BASIN, WASHINGTON	
	Herbert Hinman Elvin Kulp	
		

NOTE

Enterprise costs and returns vary from one farm to the next and over time for any particular farm. Variability stems from differences in:

- Capital, labor, and management resources
- Type and size of machinery complement
- Cultural practices
- Size of farm and enterprise
- Crop yields
- Input prices
- Commodity prices

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as a general guide for sugar beets grown on modern, well-managed farms in the Columbia Basin. To avoid drawing unwarranted conclusions for any particular enterprise, you must closely examine the assumptions used. If they are not appropriate for the situation at hand, you should adjust the costs and/or returns.

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Herbert Hinman and Elvin Kulp[1]

INTRODUCTION

Sugar beets were commonly produced on more than 50,000 acres annually in the Columbia Basin until the U & I Sugar Company ceased sugar beet operations in the late 1970s. Today, sugar beets are making a comeback through the Columbia River Sugar Company and Holly Sugar Corporation. In 1994, 7,000 acres were produced with acreage increasing to 10,500 acres in 1995. These sugar beets were shipped by rail to Oregon and California processing plants. Construction of a processing facility is scheduled to begin in 1996 with completion scheduled for 1998. This factory will be the first new sugar beet processing plant built in the United States since 1975 and when completed will have the capacity to process beets produced from 25,000 acres annually and employ approximately 200 full- and part-time employees.

The sugar beet enterprise budgets presented in this publication are based on sugar beet crops produced in the Bureau of Reclamation Columbia Basin Project under both rill and center pivot irrigation. The project area is in the "big bend" of the Columbia River in south central Washington. Rainfall ranges from 6-10" annually; thus, crops depend on irrigation water pumped from behind the Grand Coulee Dam. Irrigation water availability, coupled with a growing season of 140-200 days, makes it possible to grow sugar beets throughout the Columbia Basin.

OBJECTIVES OF THE STUDY

The general objective of this study was to develop enterprise budgets for rill and center pivot irrigated sugar beets. The specific objectives were:

1. To identify sugar beet production practices representative of well-managed sugar beet enterprises grown under rill and center pivot irrigation in the Columbia Basin.

2. To provide estimates of capital requirements, production costs and returns.

3. To provide current and prospective producers with a procedure for analyzing the profitability of sugar beet production.

Producers, lenders, and others should find this information helpful in identifying enterprise strengths and weaknesses, planning production adjustments, estimating financial requirements and for numerous other business management decisions.

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[1]Extension Economist and Grant-Adams Area Extension Agent, respectively, Cooperative Extension, Washington State University, Pullman, Washington.

The resulting budgets are not intended to represent a particular farm in the Columbia Basin, due to variability in resources, costs, and returns between farms. Therefore, individual producers should use the blank spaces on the right-hand side of the budget tables to develop a budget representative of their own operation.

SOURCES OF INFORMATION

The primary information for this study was obtained from a group of Columbia Basin producers. These producers were considered representative of well-managed farms. Their production practices and requirements for labor, equipment, and supplies are the basis for the assumptions used in this study and represent what this group of producers consider to be the latest developments. Local farm suppliers provided price information on materials and other services commonly used by farmers. Machinery costs were based on current replacement costs and rates of annual use considered typical.

BUDGET ASSUMPTIONS

The following assumptions were made in developing the enterprise data:

1. The representative farm includes 2,000 acres, with 500 acres in sugar beet production.

2. The cash rent for rill irrigated land used to produce sugar beets is $150 per acre. The landowner furnishes the gravity flow irrigation system (excluding tubes and dams) and the operator pays the water charge of $30 per acre and annual repair costs of approximately $2.60 per acre.

3. The cash rent for center pivot land to produce sugar beets is $250 per acre. The landowner furnishes the center pivot system and the operator pays the irrigation charge of $30 per acre, the electrical charge of $30 per acre, and annual repair cost of approximately $10.00 per acre.

4. Annual yield for sugar beets is assumed to be 35 tons per acre. A price of $30 per ton was used to calculate per-acre profitability. This price is assumed “net” of all marketing and transportation costs necessary to ship the sugar beets to Oregon and California processing plants.

5. Cost of machine operator labor is $9.00 per hour. These costs include wages, social security, labor and industry payments, and fringe benefits.

6. The interest rate is 10%.

7. The acreage on which the sugar beets are grown is preceded by wheat.

DISCUSSION OF BUDGET INFORMATION

The budget information for each enterprise is reported in eight tables. A summary of the data in each table is presented below.

Tables 1 and 3: Schedule of Operations and Estimated Costs Per Acre

Tables 1 and 3 outline the schedule of field operations by month, the type of machinery and labor use, the hours of machine use per acre, and total production costs for center pivot and rill irrigation systems, respectively.

Production costs are divided into two categories: (1) fixed cost which includes machinery ownership, land costs, and management; (2) variable costs associated with operating machinery, hiring labor, and purchasing services and materials. Total cost is the sum of fixed and variable costs.

Machinery fixed costs include depreciation, interest on the investment, property taxes, and insurance. These costs are incurred whether or not a crop is grown and do not vary with the enterprise. Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times the per-hour fixed costs. The per-hour fixed costs, shown in Table 6, are determined by dividing the total annual fixed costs by the annual hours of machinery use over all enterprises for the representative farm. Fixed costs per acre for the machine shed and shop and shop tools were determined by dividing the total annual fixed cost by the number of acres.

Land fixed cost is equal to gross rental rates typical of the area. Much of the land used for production is rented. Although individual rental arrangements vary, in many situations the tenant pays a cash rent and the landowner pays the taxes.

An opportunity cost for management is reported in Tables 1 and 3. For management, a cost of 7% of gross receipts is used. This is representative of fees charged by farm management firms in the Columbia Basin and is an estimation of the value of an operator's management skills.

Variable costs depend directly on the number of crop acres and type of enterprise. These costs include labor, water, electricity, fuel, oil, repairs, fertilizer, chemicals, custom work, overhead (telephone, utilities, legal, accounting, organization dues, etc.), and interest on operating capital.

Tables 2 and 4: Itemized Costs Per Acre

Tables 2 and 4 are itemized lists of the costs in Tables 1 and 3. Most items are self-explanatory. However, "Tractor Interest" and "Machine Interest" warrant additional explanation. These costs represent opportunity cost (returns foregone by investing in the machinery and building complement rather than in some alternative) or interest paid to finance machinery and buildings. Total interest cost on these capital purchases is calculated on the average value of the machinery and buildings over their respective years of use. The 10% interest charge made against this "average" value represents the total interest cost.

Table 5: Machinery and Building Complement

Table 5 lists the type and number of machines used to produce sugar beets plus their replacement value, years of life before trade-in, salvage value, hours of annual use, annual repair costs, and fuel type (if applicable). The same information is provided for the machine shed and shop, and the shop tools, except the number of acres these assets support are specified instead of specifying annual hours of use.

Table 6: Per-Hour/Acre Machinery and Building Cost

Table 6 presents the estimated fixed and variable costs per hour of use for the machinery listed in Table 5. For the machine shop and shed and the shop tools, costs are calculated on a per-acre basis.

Equipment fixed costs include depreciation, interest on investment, property taxes, and insurance. Equipment prices are representative of what growers would currently pay to replace equipment. While this assumption may result in an overstatement of production costs currently experienced by producers, it indicates the enterprise's ability to generate the earnings needed to replace depreciable assets. Continuing increases in prices paid for replacement machinery and equipment due to inflation and improved technology mean that depreciation claimed on assets purchased before price advances understates the amount of capital currently required for asset replacement. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets on a replaceable cost basis. Note that interest on investment represents a 10% opportunity cost to the enterprise. These are earnings foregone by investing in the equipment complement rather than in the next best alternative investment. Equipment variable costs include equipment repair, fuel, and lubrication costs—costs that vary with the crop grown or the number of acres produced.

CONCLUDING NOTE

To use these budgets, you should fully comprehend the procedures and assumptions used in this study and interpret the results accordingly. The authors and producers who developed this material recognize that these budgets do not represent any one particular operation. They should be used only as a general guide to help derive budgets for individual operations. Moreover, this publication does not recommend production practices. Rather, it presents current technology used to produce sugar beets in the Columbia Basin. It should further be noted that the budget estimates do not include marketing costs or transportation costs necessary to ship the sugar beets to Oregon and California processing plants from the railhead. Prices used in this study are assumed "net" of these costs.

TABLE 1: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING SUGAR BEETS, FOLLOWING WHEAT, UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON.

						VARIABLE COST						
OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST
					$	$	$	$	$	$	$	$
DISC	200HP-WT W/18' DISC	FALL 1995	.10	.13	2.74	3.59	1.13	.00	.00	.43	5.15	7.89
PLOW	200HP-WT W/4BTM 18" PLOW	MAR 1996	.20	.25	5.75	7.69	2.25	.00	.00	.66	10.60	16.35
FERTILIZE	CUSTOM APPLIED	MAR 1996	.00	.00	.00	.00	.00	5.00	85.00	6.00	96.00	96.00
MAKE SEEDBED	200HP-WT W/16' SEEDBED MAKER	MAR 1996	.10	.13	3.45	3.34	1.13	.00	.00	.30	4.76	8.21
PLANT/INSECTICIDE	130HP-WT W/12R AIR PLANTER	MAR 1996	.11	.14	3.67	4.10	1.25	.00	52.50	3.86	61.71	65.37
HERBICIDE	130HP-WT W/12R BAND SPRAYER	MAR 1996	.07	.08	.77	1.32	.75	.00	24.48	1.77	28.32	29.09
IRRIGATION	CENTER PIVOT (W/LAND RENT)	SEA 1996	.00	.00	.00	.00	.00	60.00	10.00	3.50	73.50	73.50
IRRIGATION	LABOR AND PICKUP COST	SEA 1996	.00	.00	.00	.00	.00	25.00	.00	1.25	26.25	26.25
HERBICIDE	130HP-WT W/12R BAND SPRAYER	APR 1996	.07	.08	.76	1.32	.75	.00	9.36	.67	12.09	12.86
HERBICIDE	130HP-WT W/12R BAND SPRAYER	APR 1996	.07	.08	.76	1.32	.75	.00	11.70	.80	14.57	15.33
CULTIVATE	130HP-WT W/12R CULTIVATOR	APR 1996	.20	.25	2.64	3.97	2.25	.00	.00	.36	6.59	9.22
HERBICIDE	130HP-WT W/12R BAND SPRAYER	MAY 1996	.07	.08	.76	1.32	.75	.00	14.04	.81	16.91	17.68
CULTIVATE	130HP-WT W/12R CULTIVATOR	MAY 1996	.20	.25	2.64	3.97	2.25	.00	.00	.31	6.54	9.17
HERBICIDE	130HP-WT W/12R BAND SPRAYER	MAY 1996	.07	.08	.76	1.32	.75	.00	13.32	.77	16.16	16.92
HAND WEEDING	CONTRACTED	JUN 1996	.00	.00	.00	.00	.00	25.00	.00	1.04	26.04	26.04
RESERVOIR TILL	130HP-WT W/6R DAMMER/DIKER	JUN 1996	.13	.16	1.50	3.40	1.41	.00	.00	.20	5.01	6.51
INSECTICIDE[1]	AERIAL APPLIED	JUL 1996	.00	.00	.00	.00	.00	7.50	12.80	.68	20.98	20.98
SPOT SPRAY	MATERIALS & LABOR W/BACKPACK	JUL 1996	.00	.00	.00	.00	.00	3.00	.00	.10	3.10	3.10
DEFOLIATE	130HP-WT W/6R DEFOLIATOR	OCT 1996	.25	.31	7.34	11.22	2.81	.00	.00	.12	14.15	21.49
DIG	200HP-WT W/6R DIGGER	OCT 1996	.33	.42	15.22	16.29	3.75	.00	.00	.17	20.21	35.43
HAUL[2]	CONTRACTED	OCT 1996	.00	.00	.00	.00	.00	131.25	.00	1.09	132.34	132.34
MISC USE	3/4 TON PICKUP	ANN 1996	.20	.00	2.45	1.25	.00	.00	.00	.06	1.31	3.76
MISC USE	MACHINE SHOP AND SHED	ANN 1996	.00	.00	3.36	.00	.00	.00	.00	.00	.00	3.36
MISC USE	SHOP EQUIPMENT	ANN 1996	.00	.00	4.59	.00	.00	.00	.00	.00	.00	4.59
OVERHEAD	UTILITIES, ACCT., OFFICE, ETC.	ANN 1996	.00	.00	.00	.00	.00	30.11	.00	.00	30.11	30.11
MANAGEMENT	7% OF GROSS RETURNS	ANN 1996	.00	.00	73.50	.00	.00	.00	.00	.00	.00	73.50
LAND RENT	INCLUDES CENTER PIVOT SYSTEM	ANN 1996	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
TOTAL PER ACRE			2.15	2.44	382.65	65.42	21.97	286.86	233.20	24.95	632.40	1015.05

[1]A SECOND INSECTICIDE SPRAY MAY BE REQUIRED IN SEPTEMBER AT AN APPROXIMATE TOTAL COST OF $23.00 PER ACRE.

[2]ASSUMES A 20-MILE HAUL TO THE RAILHEAD AT $3.75 PER TON.

TABLE 2: ITEMIZED COSTS PER ACRE FOR PRODUCING SUGAR BEETS, FOLLOWING WHEAT, UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
VARIABLE COSTS		$		$	
FERTILIZER	ACRE	85.00	1.00	85.00	
BEET SEED	ACRE	32.00	1.00	32.00	
COUNTER	LB.	2.05	10.00	20.50	
NORTRON	0Z.	1.53	16.00	24.48	
BETA-MIX PROGRESS	OZ.	1.17	30.00	35.10	
POAST	OZ.	.96	12.00	11.52	
CROP OIL	PINT	1.20	1.50	1.80	
SPOT SPRAY	ACRE	3.00	1.00	3.00	
LORSBAN	PINT	6.40	2.00	12.80	
HAND WEEDING	ACRE	25.00	1.00	25.00	
CUSTOM FERTILIZE	ACRE	5.00	1.00	5.00	
CUSTOM AERIAL	ACRE	7.50	1.00	7.50	
CUSTOM HAUL	TON	3.75	35.00	131.25	
WATER CHARGE	ACRE	30.00	1.00	30.00	
ELECTRICITY CHARGE	ACRE	30.00	1.00	30.00	
IRRIGATION REPAIR	ACRE	10.00	1.00	10.00	
IRR LABOR & PICKUP	ACRE	25.00	1.00	25.00	
TRACTOR REPAIR	ACRE	20.41	1.00	20.41	
TRACTOR FUEL/LUBE	ACRE	20.20	1.00	20.20	
MACHINERY REPAIRS	ACRE	24.06	1.00	24.06	
MACHINE FUEL/LUBE	ACRE	.75	1.00	.75	
LABOR(TRAC/MACH)	ACRE	21.97	1.00	21.97	
INTEREST ON OP. CAP.	ACRE	24.95	1.00	24.95	
OVERHEAD	ACRE	30.11	1.00	30.11	
TOTAL VARIABLE COST				632.40	
FIXED COSTS		$		$	
TRACTOR DEPRECIATION	ACRE	10.75	1.00	10.75	
TRACTOR INTEREST	ACRE	13.43	1.00	13.43	
TRACTOR INSURANCE	ACRE	.81	1.00	.81	
TRACTOR TAXES	ACRE	2.42	1.00	2.42	
MACHINE DEPRECIATION[1]	ACRE	13.50	1.00	13.50	
MACHINE INTEREST[1]	ACRE	14.71	1.00	14.71	
MACHINE INSURANCE[1]	ACRE	.88	1.00	.88	
MACHINE TAXES[1]	ACRE	2.65	1.00	2.65	
MANAGEMENT	ACRE	73.50	1.00	73.50	
LAND RENT (CP)	ACRE	250.00	1.00	250.00	
TOTAL FIXED COST				382.65	
TOTAL COST				1015.05	

[1]INCLUDES MACHINE SHED AND SHOP.

TABLE 3: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING SUGAR BEETS, FOLLOWING WHEAT, UNDER RILL IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON.

						VARIABLE COST						
OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST
					$	$	$	$	$	$	$	$
DISC	200HP-WT W/18' DISC	FALL 1995	.10	.13	2.74	3.59	1.13	.00	.00	.43	5.15	7.89
PLOW	200HP-WT W/4BTM 18" PLOW	MAR 1996	.20	.25	5.75	7.69	2.25	.00	.00	.66	10.60	16.35
FERTILIZE	CUSTOM APPLIED	MAR 1996	.00	.00	.00	.00	.00	5.00	85.00	6.00	96.00	96.00
MAKE SEEDBED	200HP-WT W/16' SEEDBED MAKER	MAR 1996	.10	.13	3.45	3.34	1.13	.00	.00	.30	4.76	8.21
MARKOUT FIELD	130HP-WT W/13R MARKER	MAR 1996	.10	.13	.93	2.09	1.13	.00	.00	.21	3.43	4.36
PLANT/INSECTICID	130HP-WT W/12R AIR PLANTER	MAR 1996	.11	.14	3.67	4.10	1.25	.00	52.50	3.86	61.71	65.37
HERBICIDE	130HP-WT W/12R BAND SPRAYER	MAR 1996	.07	.08	.77	1.32	.75	.00	24.48	1.77	28.32	29.09
CULTIVATE	130HP-WT W/12R CULTIVATOR	APR 1996	.20	.25	2.64	3.97	2.25	.00	.00	.36	6.59	9.22
HERBICIDE	130HP-WT W/12R BAND SPRAYER	APR 1996	.07	.08	.76	1.32	.75	.00	9.36	.67	12.09	12.86
RIP HEADLAND	130HP-WT W/10' DISC	APR 1996	.02	.03	.22	.32	.23	.00	.00	.03	.57	.80
CORRUGATE HDLAND	130HP-WT W/10' HEADLANDER	APR 1996	.03	.03	.24	.39	.27	.00	.00	.04	.70	.94
IRRIGATE	LABOR,PKUP,REPAIR,WATER,TUBES	APR 1996	.00	.00	.00	.00	.00	18.75	.65	1.13	20.53	20.53
RIP HEADLAND	130HP-WT W/10'DISC	APR 1996	.02	.03	.22	.32	.23	.00	.00	.03	.57	.80
HERBICIDE	130HP-WT W/12R BAND SPRAYER	APR 1996	.07	.08	.76	1.32	.75	.00	11.70	.80	14.57	15.33
CULTIVATE	130HP-WT W/12R CULTIVATOR	APR 1996	.20	.25	2.64	3.97	2.25	.00	.00	.36	6.59	9.22
RIP HEADLAND	130HP-WT W/10' DISC	APR 1996	.02	.03	.22	.32	.23	.00	.00	.03	.57	.80
CORRUGATE HDLAND	130HP-WT W/10' HEADLANDER	APR 1996	.03	.03	.24	.39	.27	.00	.00	.04	.70	.94
IRRIGATE	LABOR,PKUP,REPAIR,WATER,TUBES	APR 1996	.00	.00	.00	.00	.00	18.75	.65	1.13	20.53	20.53
RIP HEADLAND	130HP-WT W/10' DISC	MAY 1996	.02	.03	.22	.32	.23	.00	.00	.03	.57	.79
HERBICIDE	130HP-WT W/12R BAND SPRAYER	MAY 1996	.07	.08	.76	1.32	.75	.00	14.04	.81	16.91	17.68
CULTIVATE	130HP-WT W/12R CULTIVATOR	MAY 1996	.20	.25	2.64	3.97	2.25	.00	.00	.31	6.54	9.17
HERBICIDE	130HP-WT W/12R BAND SPRAYER	MAY 1996	.07	.08	.76	1.32	.75	.00	13.32	.77	16.16	16.92
RIP HEADLAND	130HP-WT W/10' DISC	MAY 1996	.02	.03	.22	.32	.23	.00	.00	.03	.57	.79
CORRUGATE HDLAND	130HP-WT W/10' HEADLANDER	MAY 1996	.03	.03	.24	.39	.27	.00	.00	.03	.69	.93
IRRIGATE	LABOR,PKUP,REPAIR,WATER,TUBES	MAY 1996	.00	.00	.00	.00	.00	18.75	.65	.97	20.37	20.37
SPRAY HEADLAND	SMALL TRACTOR AND SPRAYER	JUN 1996	.00	.00	.00	.00	.00	.50	.41	.04	.94	.94
HAND WEEDING	CONTRACTED	JUN 1996	.00	.00	.00	.00	.00	25.00	.00	1.04	26.04	26.04
RIP HEADLAND	130HP-WT W/10' DISC	JUN 1996	.02	.03	.22	.32	.23	.00	.00	.02	.57	.79
CULTIVATE	130HP-WT W/12R CULTIVATOR	JUN 1996	.20	.25	2.64	3.97	2.25	.00	.00	.26	6.48	9.12
RIP HEADLAND	130HP-WT W/10' DISC	JUN 1996	.02	.03	.22	.32	.23	.00	.00	.02	.57	.79
CORRUGATE HDLAND	130HP-WT W/10' HEADLANDER	JUN 1996	.03	.03	.24	.39	.27	.00	.00	.03	.69	.92
IRRIGATE	LABR,PKUP,REPR,WATER,TUBES	JUN-SEP 1996	.00	.00	.00	.00	.00	18.75	.65	.81	20.21	20.21
INSECTICIDE[1]	AERIAL APPLIED	JUL 1996	.00	.00	.00	.00	.00	7.50	12.80	.68	20.98	20.98
SPOT SPRAY	MATERIALS & LABOR W/BACKPK	JUL-AUG 1996	.00	.00	.00	.00	.00	3.00	.00	.10	3.10	3.10
SPRAY HEADLAND	SMALL TRACTOR AND SPRAYER	AUG 1996	.00	.00	.00	.00	.00	.50	.41	.02	.93	.93
RIP HEADLAND	130HP-WT W/10' DISC	OCT 1996	.02	.03	.22	.32	.23	.00	.00	.00	.55	.77
DEFOLIATE	130HP-WT W/6R DEFOLIATOR	OCT-NOV 1996	.25	.31	7.34	11.22	2.81	.00	.00	.12	14.15	21.49
DIG	200HP-WT W/6R DIGGER	OCT-NOV 1996	.33	.42	15.22	16.29	3.75	.00	.00	.17	20.21	35.43
HAUL[2]	CONTRACTED	OCT-NOV 1996	.00	.00	.00	.00	.00	131.25	.00	1.09	132.34	132.34
MISC USE	3/4 TON PICKUP	ANN 1996	.20	.00	2.45	1.25	.00	.00	.00	.06	1.31	3.76
MISC USE	MACHINE SHOP AND SHED	ANN 1996	.00	.00	3.36	.00	.00	.00	.00	.00	.00	3.36
MISC USE	SHOP EQUIPMENT	ANN 1996	.00	.00	4.59	.00	.00	.00	.00	.00	.00	4.59
OVERHEAD	UTILITIES, ACCT., OFFICE, ETC.	ANN 1996	.00	.00	.00	.00	.00	30.24	.00	.00	30.24	30.24
MANAGEMENT	7% OF GROSS RETURNS	ANN 1996	.00	.00	73.50	.00	.00	.00	.00	.00	.00	73.50
LAND RENT	RILL IRRIGATION SYSTEM	ANN 1996	.00	.00	150.00	.00	.00	.00	.00	.00	.00	150.00
TOTAL PER ACRE			2.79	3.23	290.10	76.15	29.07	277.99	226.61	25.27	635.09	925.19

[1]A SECOND INSECTICIDE SPRAY MAY BE REQUIRED IN SEPTEMBER AT AN APPROXIMATE TOTAL COST OF $23.00 PER ACRE.

[2]ASSUMES A 20-MILE HAUL TO THE RAILHEAD AT $3.75 PER TON.

TABLE 4: ITEMIZED COST PER ACRE FOR PRODUCING SUGAR BEETS, FOLLOWING WHEAT, UNDER RILL IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
VARIABLE COSTS		$		$	
FERTILIZER	ACRE	85.00	1.00	85.00	
BEET SEED	ACRE	32.00	1.00	32.00	
COUNTER	LB.	2.05	10.00	20.50	
NORTRON	0Z.	1.53	16.00	24.48	
BETA-MIX PROGRESS	OZ.	1.17	30.00	35.10	
POAST	OZ.	.96	12.00	11.52	
CROP OIL	PINT	1.20	1.50	1.80	
ROUNDUP-RT	ACRE	40.55	.02	.82	
LORSBAN	PINT	6.40	2.00	12.80	
SPOT SPRAY	ACRE	3.00	1.00	3.00	
HAND WEEDING	ACRE	25.00	1.00	25.00	
WATER CHARGE	ACRE	30.00	1.00	30.00	
IRRIGATION REPAIR	ACRE	2.60	1.00	2.60	
IRR LABOR/PICKUP	ACRE	40.00	1.00	40.00	
IRR TUBES/DAMS	ACRE	5.00	1.00	5.00	
HDLD TRAC/SPRAY/LABOR	ACRE	.50	2.00	1.00	
CUSTOM FERTILIZE	ACRE	5.00	1.00	5.00	
CUSTOM AERIAL	ACRE	7.50	1.00	7.50	
CUSTOM HAUL	TON	3.75	35.00	131.25	
TRACTOR REPAIR	ACRE	26.00	1.00	26.00	
TRACTOR FUEL/LUBE	ACRE	23.50	1.00	23.50	
MACHINERY REPAIRS	ACRE	25.90	1.00	25.90	
MACHINE FUEL/LUBE	ACRE	.75	1.00	.75	
LABOR(TRAC/MACH)	ACRE	29.07	1.00	29.07	
INTEREST ON OP. CAP.	ACRE	25.27	1.00	25.27	
OVERHEAD	ACRE	30.24	1.00	30.24	
TOTAL VARIABLE COST				635.09	
FIXED COSTS		$		$	
TRACTOR DEPRECIATION	ACRE	12.15	1.00	12.15	
TRACTOR INTEREST	ACRE	16.23	1.00	16.23	
TRACTOR INSURANCE	ACRE	.97	1.00	.97	
TRACTOR TAXES	ACRE	2.92	1.00	2.92	
MACHINE DEPRECIATION[1]	ACRE	14.22	1.00	14.22	
MACHINE INTEREST[1]	ACRE	16.22	1.00	16.22	
MACHINE INSURANCE[1]	ACRE	.97	1.00	.97	
MACHINE TAXES[1]	ACRE	2.92	1.00	2.92	
MANAGEMENT	ACRE	73.50	1.00	73.50	
LAND RENT	ACRE	150.00	1.00	150.00	
TOTAL FIXED COST				290.10	
TOTAL COST				925.19	

[1]INCLUDES MACHINE SHED AND SHOP.

Table 5: Machinery and Building complement.

Description	Replacement Value	Years to Trade	Salvage Value	Annual Hours of Use	Annual Repair	Fuel Type[1]
	$		$		$	
200HP-WT 4WD	75,000	10	25,000	500	6,000	D
130HP-WT 2WD	25,000	10	15,000	500	4,000	D
3/4 Ton Pickup	25,000	5	12,000	400	1,000	G
18' Offset Disk	8,000	10	5,000	400	1,000	
4BTM 18" Plow	3,000	10	2,000	100	500	
16' Seedbed Maker	7,000	10	4,000	100	500	
13-Row Marker	1,500	10	1,000	125	500	
12-Row Air Planter	18,000	10	10,000	100	2,000	
12-Row Band	4,700	10	3,000	170	1,000	
6-Row Dammer Diker	5,000	10	3,000	160	1,000	
6-Row Defoliator	18,500	10	7,500	125	3,500	
12-Row Cultivator	8,000	10	5,000	200	1,000	
6-Row Digger	25,000	10	12,500	170	4,000	
10' Headlander	1,000	10	500	75	50	
10' Disc	2,500	10	1,500	100	100	
				Acres Covered		
Mach. Shed & Shop	60,000	20	-	2,000	-	
Shop Equipment	35,000	5	-	2,000	-	

[1] Fuel consumption depends on type of operation.

TABLE 6: PER HOUR/ACRE MACHINERY COSTS.

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
200HP-WT 4WD	75,000.00	10	500	10.00	10.00	.60	1.80	.00	22.40	12.00	18.40[1]	30.40	52.80
130HP-WT 2WD	25,000.00	10	500	2.00	4.00	.24	.72	.00	6.96	8.00	5.52[1]	13.52	20.48
18' OFFSET DISC	8,000.00	10	400	.75	1.63	.10	.29	.00	2.77	2.50	.00	2.50	5.27
4 BTM 18" PLOW	3,000.00	10	100	1.00	2.50	.15	.45	.00	4.10	5.00	.00	5.00	9.10
16'SEEDBED MAKER	7,000.00	10	100	3.00	5.50	.33	.99	.00	9.82	5.00	.00	5.00	14.82
13 ROW MARKER	1,500.00	10	125	.40	1.00	.06	.18	.00	1.64	4.00	.00	4.00	5.64
12 ROW AIR PLANTER	18,000.00	10	100	8.00	14.00	.84	2.52	.00	25.36	20.00	.00	20.00	45.36
12 ROW BAND SPRAYER	4,700.00	10	170	1.00	2.26	.14	.41	.00	3.81	5.88	.00	5.88	9.69
6 ROW DAMMER DIKER	5,000.00	10	160	1.25	2.50	.15	.45	.00	4.35	6.25	.00	6.25	10.60
6 ROW DEFOLIATOR	18,500.00	10	125	8.80	10.40	.62	1.87	.00	21.70	28.00	.00	28.00	49.70
12 ROW CULTIVATOR	8,000.00	10	200	1.50	3.25	.20	.59	.00	5.53	5.00	.00	5.00	10.53
6 ROW DIGGER	25,000.00	10	170	7.35	11.03	.66	1.99	.00	21.03	23.53	.00	23.53	44.56
10' HEADLANDER	1,000.00	10	75	.67	1.00	.06	.18	.00	1.91	.67	.00	.67	2.57
10' DISC	2,500.00	10	100	1.00	2.00	.12	.36	.00	3.48	1.00	.00	1.00	4.48
3/4 TON PICKUP	25,000.00	5	400	6.50	4.63	.28	.83	.00	12.24	2.50	3.74	6.24	18.47
				COST PER ACRE									
MACH. SHED & SHOP	60,000.00	20	-	1.50	1.50	.09	.27	.00	3.36	.00	.00	.00	3.36
SHOP EQUIPMENT	35,000.00	5	-	3.50	.88	.05	.16	.00	4.59	.00	.00	.00	4.59

[1]FUEL AND LUBE COST AT DIFFERENT CONSUMPTION RATES: 20 GAL/HR, $18.40; 15 GAL/HR, $13.80; 12 GAL/HR, $11.40; 8 GAL/HR, $7.36; 6 GAL/HR, $5.52; 5 GAL/HR, $4.60.

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is violation of law to disregard label directions . If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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