


<p>Farm Business Management Reports</p>		<p>EB1753</p>
	<p>1999 ESTIMATED COST AND RETURNS FOR PRODUCING ONIONS COLUMBIA BASIN, WASHINGTON</p>	
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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 onions 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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1999 ESTIMATED COST AND RETURNS
FOR PRODUCING ONIONS
COLUMBIA BASIN, WASHINGTON

Herbert Hinman and Gary Pelter¹

INTRODUCTION

In 1992, approximately 8,000 acres of onions were produced in the Columbia Basin. By 1998, the acreage of onions produced had risen to approximately 19,500. This publication presents 1999 projected cost and return information for representative Columbia Basin onion enterprises producing onions under rill irrigation, center pivot irrigation, and drip irrigation. The projected costs are those of producing onions including preharvest operations to delivering the onions to the storage shed. Costs for storage and marketing the onions are not included. The projected onion prices are those prices paid to the farmer minus storage and marketing costs. Producers, lenders, and others should find this information helpful in identifying enterprise strengths and weaknesses, planning production adjustments, estimating financial requirements, and resolving numerous other business management problems.

OBJECTIVES OF THE STUDY

The overall objective of this study was to develop enterprise budgets for onions grown under three different irrigation systems. The specific objectives were:

1. To identify production practices representative of well-managed onion enterprises using rill irrigation, center pivot irrigation and drip irrigation in the Columbia Basin.
2. To provide estimates of capital requirements, production costs (excluding storage), and returns.
3. To provide current and prospective producers with a procedure for analyzing the profitability of an onion enterprise.

While representative for the area studied, the resulting budgets will likely not be representative of any particular farm in the Columbia Basin. Therefore, individual producers should use the blank spaces on the right-hand side of the budget tables to develop a budget for 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

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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 purchase prices and rates of annual use considered typical.

BUDGET ASSUMPTIONS

The following assumptions were made in developing the enterprise data:

1. The representative farms include 950 irrigated acres, with 125 acres in onion production.
2. The cash rent for rill irrigated land used to produce onions is \$300 per acre. The landlord furnishes the gravity flow irrigation system (excluding tubes and dams) and the operator pays the irrigation charge of \$50 per acre per year and annual repair costs of \$4 per acre.

The cash rent for center pivot irrigated land used to produce onions is \$400 per acre. The landlord furnishes the center pivot irrigation system and the operator pays the water charge of \$35 per acre per year, electricity cost of \$40 per acre² (pumping out of wells), and annual repair costs of \$15 per acre.

The cash rent for drip irrigated land used to produce onions is \$300 per acre. The landlord provides the water to the field. The tenant furnishes the irrigation pump, filters, valves, etc., at an initial investment cost of \$600 per acre. The irrigation system has a 10-year life. In addition, the irrigation system requires new drip tubes every year at a cost of \$200 per acre. The water charge is \$50 per acre, the electrical charge is \$10 per acre², and the annual repair cost is \$100 per acre.

3. Annual yield for onions grown under rill irrigation is assumed to range from 24 to 40 tons per acre (an average of 32 is used for the attached tables).

Annual yield for onions grown under center pivot irrigation is assumed to range from 24 to 40 tons per acre (an average of 35 is used for the attached tables).

Annual yield for onions grown under drip irrigation is assumed to range from 24 to 56 tons per acre (an average of 45 is used for the attached tables).

4. The onion price received by the producer ranges from \$70 to \$100 per ton per acre (an average price of \$80 was used for the attached tables).
5. Cost of labor is \$9.00 per hour for seasonal labor and \$15.00 per hour for full-time labor. These costs include social security, labor and industry payments, and fringe benefits.
6. The interest rate is 8%.

²Electrical costs are typical for producers in Grant County, Washington.

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

DISCUSSION OF BUDGET INFORMATION

Budget information for onions grown under rill irrigation, center pivot irrigation, and drip irrigation are presented in Appendixes A, B, and C, respectively. Each irrigated onion enterprise is reported in eight tables. A summary of the data in each table is presented below.

Tables 1A, 1B, and 1C: Schedule of Operations and Estimated Costs Per Acre

Table 1 outlines 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.

Production costs are divided into two categories: (1) fixed costs which include 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, insurance, and housing costs. 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 cost. The per-hour fixed costs, shown in Table 8, are determined by dividing the total annual fixed cost by the annual hours of machinery use over all enterprises for the representative farm. Fixed cost per acre for the machine shed and shop, shop tools, irrigation tubes and dams, irrigation pumps, and fuel tanks, was 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. For an individual producer owning the land on which the onions are produced, the land fixed cost represent an opportunity cost.

An opportunity cost for management is reported in Table 1. 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 estimate 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 fuel, oil, repairs, fertilizer, chemicals, custom work, overhead (telephone, utilities, legal, accounting, organization dues, etc.), and interest on operating capital. Both operator labor and hired labor are included as a variable cost.

Tables 2A, 2B, and 2C: Materials and Services Used by Operation

Table 1 reports under the "Service" column and "Materials" column the dollar amounts spent on services and materials used with the different operations. Table 2 lists, by operation, the specific types and quantities of services and materials used in this study along with their respective prices.

Tables 3A, 3B, and 3C: Itemized Costs Per Acre

Table 3 is an itemized list of the costs in Table 1. 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 8% interest charge made against this "average" value represents the total interest cost.

Tables 4A, 4B, and 4C: Break-Even Selling Price Per Ton

Table 4 shows break-even selling prices for different levels of enterprise costs. The first break-even price is the price needed to cover total variable costs--those costs that occur only if the crop is produced. If the price received does not equal or exceed the variable cost break-even price, the crop becomes uneconomical to produce, even in the short run, because the added costs of production are greater than the added returns.

The second break-even price is the price required to cover total cash costs, assuming no interest on machinery or building loans is being paid. If other cash costs exist on your farm, you must identify and include these costs in the cash cost break-even calculation. Furthermore, since a cash cost has been attributed to all labor and to land rent, you may wish to subtract the noncash costs for operator/family labor along with rent for land that is owned and substitute ownership cash costs before calculating the price needed to cover total cash costs.

The third break-even price is the price needed to cover total cash costs, plus depreciation on machinery and buildings. You must realize this price to stay in business over the long run.

The fourth break-even price is the price you must receive to recover total costs including cash costs, depreciation, operator labor and management, and opportunity costs for investments in machinery and buildings. Failure to receive this price means the owner-operator will not realize a return on his/her management, labor, and capital contributions equivalent to what could be earned in an alternative use. Realizing a price above the break-even level means that in addition to covering all costs, you earn a premium (profit) for the risk assumed in producing the crop.

Tables 5A, 5B, and 5C: Summary of Receipts, Costs, and Profitability Per Acre

Receipts, costs, and various measures of profitability for the onion enterprise are summarized in Table 5. The assumed onion price represents an estimate as to what 1999 prices

may be to the producer, minus storage and marketing cost, and is by no means a "predicted" price. Since profitability greatly depends on the onion price received, you should recalculate profitability using your predicted price when using these tables.

The first profit measure is returns over variable costs and land rent, which was calculated by subtracting total variable costs and land rent from total receipts. The second profit measure, returns to management and risk, was calculated by subtracting the machinery fixed expenses from returns over variable cost. This is the return you earn for management and risk after accounting for all costs including labor contributed to producing the crop.

Tables 6A, 6B, and 6C: Returns to Management and Risk at Various Price and Yield Levels

Table 6 presents the returns to management and risk as calculated in Table 5, at different price and yield combinations.

Tables 7A, 7B, and 7C: Machinery and Building Complement

Table 7 lists the type and number of machines used to produce onions plus, on a per-unit basis, their replacement value, years of life before trade-in, salvage value, hours of annual use, annual repair cost, fuel type (if applicable), and gallons of fuel used per hour. The same information is provided for the irrigation tubes and dams, machine shop and shed, shop tools, fuel tanks, and irrigation pumps, except the number of acres these assets support are specified in place of annual hours of use.

Tables 8A, 8B, and 8C: Hourly and Per Acre Machinery and Building Costs

Table 8 presents the estimated fixed and variable costs per hour of use for the machinery listed in Table 7. For the irrigation tubes and dams, machine shop and shed, shop tools, fuel tanks, and irrigation pumps, 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 an 8% 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 organized this data recognize that these budgets do not represent any one particular operation. They should be used 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 onions in the Columbia Basin. It should further be noted that the resulting figures in these budget estimates do not include storage and marketing costs.

APPENDIX A

BUDGET TABLES

PRODUCING ONIONS UNDER

RILL IRRIGATION

TABLE 1A: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER RILL IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST						TOTAL VARIABLE COST	TOTAL COST
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	\$
SHRED STUBBLE	140HP-WT, 15' SHREDDER	FALL	1998	.50	.55	12.48	7.44	8.25	.00	.00	1.15	16.84	29.33
DISC/PACK	140HP-WT, 14' DISC/15' PACKER	FALL	1998	.20	.22	5.49	2.55	3.30	.00	.00	.43	6.28	11.78
CORRUGATE	85HP-WT, 6-ROW CORRUGATOR	FALL	1998	.20	.22	2.22	1.10	3.30	.00	.00	.32	4.72	6.95
MAKE HEADLAND	85HP-WT, HEADLANDER	FALL	1998	.05	.06	.54	.32	.49	.00	.00	.06	.88	1.42
MAKE DRAIN	140HP-WT, 8' BLADE	FALL	1998	.05	.06	1.25	.45	.49	.00	.00	.07	1.02	2.27
IRRIGATE	IRRIGATOR LABOR, TUBES & DAMS	SEA	1999	.00	8.00	2.60	.00	120.00	50.00	4.00	6.96	180.96	183.56
DISC/PACK	140HP-WT, 14' DISC/15' PACKER	FALL	1998	.20	.22	5.49	2.55	3.30	.00	.00	.43	6.28	11.78
SOIL TEST	CUSTOM HIRED	FALL	1998	.00	.00	.00	.00	.00	3.00	.00	.22	3.22	3.22
FUMIGATE FIELD	CUSTOM APPLIED	FALL	1998	.00	.00	.00	.00	.00	40.00	132.75	12.67	185.42	185.42
EROSION CONTROL	THROUGH WATER W/FISH FEEDER	SEA	1999	.00	.00	2.10	.00	.00	.00	22.50	.90	23.40	25.50
FERTILIZE	CUSTOM APPLIED	MAR	1999	.00	.00	.00	.00	.00	6.00	82.00	4.11	92.11	92.11
PLOW/PACK	140HP-WT, 4BTM PLOW/7' PACKER	MAR	1999	.40	.44	9.55	5.05	6.60	.00	.00	.54	12.19	21.74
ROUGH IN SEEDBED	140HP-WT, SEEDBED MAKER	MAR	1999	.33	.37	11.23	5.47	5.50	.00	.00	.51	11.48	22.71
REFINE SEEDBED	140HP-WT, SEEDBED MAKER	MAR	1999	.33	.37	11.23	5.47	5.50	.00	.00	.51	11.48	22.71
MARK SEEDBED	140HP-WT, 6-ROW CORRUGATOR	MAR	1999	.20	.22	2.22	1.10	3.30	.00	.00	.21	4.60	6.83
PLT/INSECT/CORRU	85HP-WT, 6-ROW PREC. PLT/CORR.	MAR	1999	.50	.60	18.47	9.57	9.00	.00	194.75	9.96	223.28	241.74
APPLY HERBICIDE	AERIAL APPLICATION	MAR	1999	.00	.00	.00	.00	.00	8.00	114.40	5.71	128.11	128.11
MAKE HEADLAND	85HP-WT, HEADLANDER	MAR	1999	.05	.06	.54	.32	.49	.00	.00	.04	.86	1.39
MAKE DRAIN	140HP-WT, 8' BLADE	MAR	1999	.05	.06	1.26	.45	.49	.00	.00	.04	.99	2.24
PRE-EMERGE HERB.	AERIAL APPLICATION	APR	1999	.00	.00	.00	.00	.00	7.50	15.56	.92	23.98	23.98
CULT/CORRUGATE	85HP-WT, 6-ROW CULTIVATOR	APR	1999	.50	.55	7.11	3.92	8.25	.00	.00	.49	12.65	19.76
POST-EMER HB(2X)	CUSTOM GROUND APPLICATION	MAY	1999	.00	.00	.00	.00	.00	15.00	30.52	1.52	47.04	47.04
CULT/CORRUGATE	85HP-WT, 6-ROW CULTIVATOR	MAY	1999	.50	.55	7.11	3.92	8.25	.00	.00	.41	12.57	19.68
APPLY INSECT.	AERIAL APPLICATION	MAY	1999	.00	.00	.00	.00	.00	7.50	12.13	.65	20.29	20.29
WEED FIELD	HAND LABOR	JUN	1999	.00	.00	.00	.00	.00	75.00	.00	2.00	77.00	77.00
SIDE DRESS FERT	85HP-WT, RENTED APPLICATOR	JUN	1999	.25	.30	2.49	1.29	4.50	2.50	25.00	.89	34.18	36.67
CULT/CORR/HERB	85HP-WT, 6-ROW CULT/SPRAYER	JUN	1999	.50	.55	8.63	4.42	8.25	.00	6.55	.51	19.73	28.36
APPLY INSECT/FUNG	AERIAL APPLICATION	JUN	1999	.00	.00	.00	.00	.00	7.50	51.23	1.57	60.30	60.30
WEED FIELD	HAND LABOR	JUL	1999	.00	.00	.00	.00	.00	75.00	.00	1.50	76.50	76.50
APPLY HERBICIDE	AERIAL APPLICATION	JUL	1999	.00	.00	.00	.00	.00	7.50	28.86	.73	37.08	37.08
APPLY INSECT/FUNG	AERIAL APPLICATION	JUL	1999	.00	.00	.00	.00	.00	7.50	19.33	.54	27.37	27.37
APPLY INSECT/FUNG	AERIAL APPLICATION	AUG	1999	.00	.00	.00	.00	.00	7.50	28.73	.48	36.71	36.71
SPROUT INHB/FUNG	AERIAL APPLICATION	AUG	1999	.00	.00	.00	.00	.00	7.50	39.00	.62	47.12	47.12
KNOCK IN HD&TAIL	140HP-WT, 8' BLADE	SEP	1999	.05	.06	1.25	.45	.82	.00	.00	.01	1.28	2.54
ROLL ONIONS	85HP-WT, ROLL TOOL	SEP	1999	.13	.14	2.53	.98	2.06	.00	.00	.02	3.06	5.59
LIFT ONIONS	85HP-WT, 4-BED ONION LIFTER	SEP	1999	.43	.47	10.47	6.50	7.07	.00	.00	.09	13.66	24.13
WINDROW	85HP-WT, WINDROWER	SEP	1999	.50	.55	12.21	3.52	8.25	.00	.00	.08	11.85	24.06
HARVEST ONIONS	CUSTOM HARVEST	SEP	1999	.00	.00	.00	.00	.00	176.00	.00	1.17	177.17	177.17
HAUL ONIONS	CUSTOM HAULING	SEP	1999	.00	.00	.00	.00	.00	184.00	.00	1.23	185.23	185.23

TABLE 1A: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER RILL IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999. (CONTINUED)

		VARIABLE COST											
OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST
						\$	\$	\$	\$	\$	\$	\$	\$
MISC. USE	MANAGER'S PICKUP	ANN	1999	.75	.82	6.43	3.05	12.37	.00	.00	.62	16.04	22.47
MISC. USE	LABOR'S PICKUP	ANN	1999	.75	.82	4.06	6.60	12.37	.00	.00	.76	19.73	23.79
MISC. USE	SERVICE TRUCK	ANN	1999	.20	.00	1.37	1.29	.00	.00	.00	.05	1.34	2.71
MISC. USE	MACHINE SHED & SHOP	ANN	1999	.00	.00	4.49	.00	.00	.00	.00	.00	.00	4.49
MISC. USE	SHOP TOOLS	ANN	1999	.00	.00	2.50	.00	.00	.00	.00	.00	.00	2.50
MISC. USE	TANKS AND CONTAINMENTS	ANN	1999	.00	.00	1.61	.00	.00	.00	.00	.00	.00	1.61
LAND COST	LAND RENT	ANN	1999	.00	.00	300.00	.00	.00	.00	.00	.00	.00	300.00
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN	1999	.00	.00	.00	.00	.00	93.80	.00	.00	93.80	93.80
MANAGEMENT	7% OF GROSS RETURN	ANN	1999	.00	.00	179.20	.00	.00	.00	.00	.00	.00	179.20
TOTAL PER ACRE				7.62	16.25	638.11	77.79	242.23	780.80	807.32	61.68	1969.82	2607.93

Table 2A: Materials and Services Used by Operation for Producing Onions Under Rill Irrigation.

Operation		Material and/or Service
Soil Test	Fall	Custom hired @ \$3.00/acre
Fumigate Field	Fall	Custom fumigation @ \$40.00/acre 37.5 gals. of metham sodium @ \$3.54/gal.
Irrigate	Season	Water charge @ \$50.00/acre Irrigation repair @ \$4.00/acre
Erosion Control	Season	6.0 lbs. of polyacrylamide (PAM) @ \$3.75/lb.
Fertilize	March	Custom applied @ \$6.00/acre Pre-plant fertilizer @ \$82.00/acre
Plant/Insecticide/ Corrugate	March	6.5 lbs. of Lorsban 15G @ \$2.27/lb. Onion seed @ \$180.00/acre
Apply Herbicide	March	Aerial application @ \$8.00/acre 8.0 lbs. of Dacthal @ \$14.30/lb.
Apply Pre-Emergent Herbicide	March	Aerial application @ \$7.50/acre 1.5 pints of glyphosphate @ \$10.19/pint 0.1 pint of surfactant @ \$2.75/pint
Apply Post-Emergent Herbicide (2X)	May	Ground application @ \$7.50/acre, per application 10 ounces of Goal 2XL, per application @ \$.89/ounce 12 ounces of Buctril, per application @ \$.53/ounce
Apply Insecticide	May	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 0.1 pint of surfactant @ \$2.75/pint
Weed Field	June	Contracted hand labor @ \$75.00/acre
Side Dress Fertilizer	June	Rented fertilizer applicator @ \$2.50/acre Side-dress fertilizer @ \$25.00/acre
Cultivate/Corrugate/ Herbicide	June	1.5 pints of Prowl @ \$4.37/pint
Apply Insecticide/ Fungicide	June	Aerial application @ \$7.50/acre 4.0 pints of Vydate @ \$8.59/pint 2.0 pints of chlorothalonil @ \$8.30/pint 0.1 pint of surfactant @ \$2.75/pint

Table 2A: Materials and Services Used by Operation for Producing Onions Under Rill Irrigation.
(continued)

Operation		Material and/or Service
Weed Field	July	Contracted hand labor @ \$75.00/acre
Apply Herbicide	July	Aerial application @ \$7.50/acre 1.5 pints of Fusilade @ \$18.87/pint 0.2 pint of surfactant @ \$2.75/pint
Apply Insecticide/ Fungicide	July	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 2.0 lbs. of mancozeb @ \$3.60/lb. 0.1 pint of surfactant @ \$2.75/pint
Apply Insecticide/ Fungicide	August	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 2.0 pints of chlorothalonil @ \$8.30/pint 0.1 pint of surfactant @ \$2.75/pint
Apply Sprout Inhibitor/ Fungicide	August	Aerial application @ \$7.50/acre 10.6 pints of maleic hydrazide @ \$3.00/pint 2.0 lbs. of mancozeb @ \$3.60/lb.
Harvest Onions	September	Custom harvest of 32 tons @ \$5.50/ton
Haul Onions	September	Custom haul of 32 tons @ \$5.75/ton
Overhead	Annual	5% of variable cost

TABLE 3A: ITEMIZED COST PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER RILL IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999.

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
SOIL TEST	ACRE	3.00	1.00	3.00	_____
CUSTOM FUMIGATION	ACRE	40.00	1.00	40.00	_____
METHAM SODIUM	GAL.	3.54	37.50	132.75	_____
CUSTOM FERTILIZE	ACRE	6.00	1.00	6.00	_____
PRE-PLANT FERTILIZER	ACRE	82.00	1.00	82.00	_____
ONION SEED	ACRE	180.00	1.00	180.00	_____
LORSBAN 15G	LB.	2.27	6.50	14.76	_____
DACTHAL	LB.	14.30	8.00	114.40	_____
GLYPHOSPHATE	PINT	10.19	1.50	15.28	_____
SURFACTANT	PINT	2.75	.70	1.93	_____
GOAL	OZ.	.89	20.00	17.80	_____
BUCTRIL	OZ.	.53	24.00	12.72	_____
WARRIOR	OZ.	3.12	3.80	11.86	_____
VYDATE	PINT	8.59	4.00	34.36	_____
CHLOROTHALONIL	PINT	8.30	4.00	33.20	_____
SIDE DRESS FERTILIZER	ACRE	25.00	1.00	25.00	_____
PROWL	PINT	4.37	1.50	6.55	_____
WARRIOR	OZ.	3.12	7.60	23.71	_____
MANCOZEB	LB.	3.60	4.00	14.40	_____
SURFACTANT	PINT	2.75	.10	.28	_____
CUSTOM AERIAL	ACRE	7.50	1.00	7.50	_____
FUSILADE	PINT	18.87	1.50	28.31	_____
MALEIC HYDRAZIDE	PINT	3.00	10.60	31.80	_____
POLYACRYLAMIDE (PAM)	LB.	3.75	6.00	22.50	_____
CUSTOM AERIAL	ACRE	8.00	1.00	8.00	_____
CUSTOM AERIAL	ACRE	7.50	7.00	52.50	_____
CUSTOM HERBICIDE	ACRE	7.50	2.00	15.00	_____
CONTRACT WEEDING	ACRE	75.00	2.00	150.00	_____
RENTED FERT APPLIC	ACRE	2.50	1.00	2.50	_____
CUSTOM HARVEST	TON	5.50	32.00	176.00	_____
CUSTOM HAUL	TON	5.75	32.00	184.00	_____
SEASONAL LABOR	HOURL	9.00	.22	1.96	_____
FULL TIME LABOR	HOURL	15.00	16.02	240.26	_____
WATER CHARGE	ACRE	50.00	1.00	50.00	_____
IRRIGATION REPAIR	ACRE	4.00	1.00	4.00	_____
TRACTOR REPAIR	ACRE	21.04	1.00	21.04	_____
TRACTOR FUEL/LUBE	ACRE	16.00	1.00	16.00	_____
MACHINERY REPAIRS	ACRE	35.23	1.00	35.23	_____
MACHINE FUEL/LUBE	ACRE	5.80	1.00	5.50	_____
OVERHEAD	ACRE	93.80	1.00	93.80	_____
INTEREST ON OP. CAP.	ACRE	61.68	1.00	61.68	_____
TOTAL VARIABLE COST				1969.82	_____

FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	32.99	1.00	32.99	_____
TRACTOR INTEREST	ACRE	32.91	1.00	32.91	_____
TRACTOR INSURANCE	ACRE	2.47	1.00	2.47	_____
TRACTOR TAXES	ACRE	7.40	1.00	7.40	_____
MACHINE DEPRECIATION*	ACRE	44.88	1.00	44.88	_____
MACHINE INTEREST*	ACRE	29.43	1.00	29.43	_____
MACHINE INSURANCE*	ACRE	2.21	1.00	2.21	_____
MACHINE TAXES*	ACRE	6.62	1.00	6.62	_____
LAND RENT	ACRE	300.00	1.00	300.00	_____
MANAGEMENT	ACRE	179.20	1.00	179.20	_____
TOTAL FIXED COST				638.11	_____

TOTAL COST				2607.93	_____

*INCLUDES BUILDINGS AND FUEL TANKS/CONTAINMENT

TABLE 4A: BREAK-EVEN SELLING PRICE PER TON OF ONIONS PRODUCED UNDER RILL IRRIGATION IN THE COLUMBIA BASIN.

	COST PER ACRE	YOUR FARM	BREAK-EVEN PRICE (\$/TON)	YOUR FARM
	\$	\$	(32 TONS)	\$
1. TOTAL VARIABLE COST	1,969.82		61.56	
PLUS: TRACTOR & MACH/BUILD INSURANCE	4.68			
TRACTOR & MACH/BUILD TAXES	14.02			
LAND RENT	300.00			
2. TOTAL CASH COSTS	2,288.52		71.52	
PLUS: TRACTOR & MACH/BUILD DEPRECIATION	77.87			
3. TOTAL CASH COST & DEPRECIATION	2,366.39		73.95	
PLUS: TRACTOR & MACH/BUILD INTEREST	62.34			
MANAGEMENT*	182.81			
4. TOTAL COST	2,611.54		81.61	

*7% OF GROSS RECEIPTS (32 TONS X \$81.61 X .07). MANAGEMENT CHARGE IN TABLE 3A CALCULATED USING A PRICE OF \$80/TON.

TABLE 5A: SUMMARY OF RECEIPTS, COSTS, AND PROFITABILITY PER ACRE FOR ONIONS PRODUCED UNDER RILL IRRIGATION IN THE COLUMBIA BASIN.

	PRICE/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
GROSS RECEIPTS ONIONS	\$80.00	32 TONS	\$2,560.00	
1. TOTAL RECEIPTS			\$2,560.00	
LESS: TOTAL VARIABLE COST			\$1,969.82	
LAND RENT			\$ 300.00	
2. RETURNS OVER VARIABLE COST AND LAND RENT			\$ 290.18	
LESS: TRACTOR & MACH/BUILD FIXED COST			\$ 158.91	
3. NET RETURNS TO MANAGEMENT AND RISK			\$ 131.27	

TABLE 6A: RETURNS TO MANAGEMENT AND RISK AT VARIOUS PRICE AND YIELD LEVELS FOR PRODUCING ONIONS UNDER RILL IRRIGATION IN THE COLUMBIA BASIN.

YIELD PRICE/TON	24 TONS	28 TONS	32 TONS	36 TONS	40 TONS
\$	\$	\$	\$	\$	\$
70	-654	-421	-189	44	276
75	-534	-281	- 29	224	476
80	-414	-141	131	404	676
85	-294	- 1	291	584	876
90	-174	139	451	764	1,076
95	- 54	279	611	944	1,276
100	66	419	771	1,124	1,476

TABLE 7A: MACHINERY AND BUILDING COMPLEMENT FOR PRODUCING ONIONS UNDER RILL IRRIGATION.

DESCRIPTION	REPLACE- MENT VALUE	YEARS TO TRADE	SALVAGE VALUE	ANNUAL HOURS OF USE	ANNUAL REPAIR	FUEL TYPE*	GAL. PER HOUR
	\$		\$		\$		
140 HP WHEEL TRACTOR (USED)	55,000	10	25,000	400	2,000	D	4
85 HP WHEEL TRACTOR (USED)	30,200	10	12,000	400	1,100	D	3
MANAGER'S PICKUP	25,000	4	10,000	650	1,000	G	2
LABOR'S PICKUP (USED)	10,000	8	2,000	300	1,500	G	3
SERVICE TRUCK (USED)	6,000	8	500	150	400	G	3
4-BOTTOM PLOW	8,500	10	1,700	250	1,000		
15' SHREDDER	12,000	7	2,400	300	2,000		
14' OFFSET DISC	13,000	10	2,600	250	950		
15' PACKER	3,800	10	760	250	185		
7' PACKER	2,000	10	400	250	100		
PRECISION PLANTER W/GRANULAR APPLICATOR	22,000	12	4,400	110	1,500		
SEEDBED MAKER	15,000	15	3,000	110	900		
6-ROW CULTIVATOR	5,500	15	1,000	150	400		
6-ROW CORRUGATOR	1,500	15	300	150	50		
HEADLANDER	2,000	15	400	300	400		
8' BLADE	3,500	20	700	50	40		
ROLL TOOL	1,500	20	300	15	40		
ONION LIFTER, 4-BED	5,000	15	1,000	40	400		
WINDROWER	10,000	15	2,000	80	150		
SPRAY BOOM, TANK & PUMP	1,000	10	0	50	50		
				<u>ACRES COVERED</u>			
IRRIGATION TUBES	8	5	0	1	0		
IRRIGATION DAMS	2	2	0	1	0		
FISH FEEDER	250	5	0	30	0		
MACHINE SHED & SHOP	50,000	30	0	950	0		
SHOP TOOLS	20,000	15	0	950	0		
FUEL TANKS/CONTAINMENT	15,000	20	0	950	0		

* PRICE OF DIESEL = \$0.70/GAL.
PRICE OF GASOLINE = \$1.10/GAL.

TABLE 8A: HOURLY AND PER ACRE MACHINERY AND BUILDING COSTS; RILL IRRIGATION.

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC- IATION	INTER- EST	INSUR- ANCE	TAXES	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
140HP-WT (USED)	55,000.00	10	400	7.50	8.00	.60	1.80	17.90	5.00	3.22	8.22	26.12
200HP-WT	100,000.00	20	300	13.33	16.00	1.20	3.60	34.13	6.00	4.03	10.02	44.16
85HP-WT (USED)	30,000.00	10	400	4.50	4.20	.32	.95	9.96	2.75	2.41	5.16	15.13
MANAGER'S PICKUP	25,000.00	4	650	5.77	2.15	.16	.48	8.57	1.54	2.53	4.07	12.64
LABOR'S PICKUP	10,000.00	8	300	3.33	1.60	.12	.36	5.41	5.00	3.80	8.80	14.21
SERVICE TRUCK	6,000.00	8	150	4.58	1.73	.13	.39	6.84	2.67	3.80	6.46	13.30
15' SHREDDER	12,000.00	7	300	4.57	1.92	.14	.43	7.07	6.67	.00	6.67	13.73
14' OFFSET DISC	13,000.00	10	250	4.16	2.50	.19	.56	7.40	3.80	.00	3.80	11.20
15' PACKER	3,800.00	10	250	1.22	.73	.05	.16	2.16	.74	.00	.74	2.90
6-ROW CORRUGATOR	1,500.00	15	150	.53	.48	.04	.11	1.16	.33	.00	.33	1.49
4BTM PLOW	8,500.00	10	250	2.72	1.63	.12	.37	4.84	4.00	.00	4.00	8.84
7' PACKER	2,000.00	10	250	.64	.38	.03	.09	1.14	.40	.00	.40	1.54
SEEDBED MAKER	15,000.00	15	110	7.27	6.55	.49	1.47	15.78	8.18	.00	8.18	23.96
PREC PLT W/GR APPL	22,000.00	12	110	13.33	9.60	.72	2.16	25.81	13.64	.00	13.64	39.45
HEADLANDER	2,000.00	15	300	.36	.32	.02	.07	.77	1.33	.00	1.33	2.10
8' BLADE	3,500.00	20	50	2.80	3.36	.25	.76	7.17	.80	.00	.80	7.97
6-ROW CULTIVATOR	5,500.00	15	150	2.00	1.73	.13	.39	4.25	2.67	.00	2.67	6.92
ROLL TOOL	1,500.00	20	15	4.00	4.80	.36	1.08	10.24	2.67	.00	2.67	12.91
ONION LIFT, 4 BED	5,000.00	15	40	6.67	6.00	.45	1.35	14.47	10.00	.00	10.00	24.47
WINDROWER	10,000.00	15	80	6.67	6.00	.45	1.35	14.47	1.88	.00	1.88	16.34
SPRAYER	1,000.00	10	50	2.00	.80	.06	.18	3.04	1.00	.00	1.00	4.04
MACH SHED & SHOP	50,000.00	30	-	1.75	2.11	.16	.47	4.49	.00	.00	.00	4.49
SHOP TOOLS	20,000.00	15	-	1.40	.84	.06	.19	2.50	.00	.00	.00	2.50
FUEL TANKS/CONTAIN.	15,000.00	20	-	.79	.63	.05	.14	1.61	.00	.00	.00	1.61
FISH FEEDER	250.00	5	-	1.67	.33	.03	.08	2.10	.00	.00	.00	2.10
IRRIGATION TUBES	8.00	5	-	1.60	.00	.00	.00	1.60	.00	.00	.00	1.60
IRRIGATION DAMS	2.00	2	-	1.00	.00	.00	.00	1.00	.00	.00	.00	1.00

APPENDIX B

BUDGET TABLES

PRODUCING ONIONS UNDER

CENTER PIVOT IRRIGATION

TABLE 1B: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST						TOTAL VARIABLE COST	TOTAL COST
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
SHRED STUBBLE	140HP-WT, 15' SHREDDER	AUG	1998	.50	.55	12.48	7.44	8.25	.00	.00	1.15	16.84	29.33
RIP	200HP-WT, 15' RIPPER	AUG	1998	.25	.28	10.82	4.29	4.12	.00	.00	.62	9.03	19.86
SOIL TEST	CUSTOM HIRED	AUG	1998	.00	.00	.00	.00	.00	3.00	.00	.22	3.22	3.22
PLANT COVER CROP	PLANT WHEAT BY AERIAL APPLICA.	AUG	1998	.00	.00	.00	.00	.00	6.50	12.00	1.36	19.86	19.86
FUMIGATE FIELD	CENTER PIVOT IRRIGATION SYS.	FALL	1998	.00	.00	.00	.00	.00	10.00	132.75	10.47	153.22	153.22
FERT/STRIP TILL	200HP-WT, 12' STRIP ROTOVATOR	MAR	1999	.25	.30	11.27	6.67	4.50	.00	20.00	1.45	32.63	43.90
PLANT/INSECTICID	85HP-WT, 6-ROW PRECISION PLANT	MAR	1999	.50	.60	17.89	9.40	9.00	.00	194.75	9.95	223.10	240.99
APPLY HERBICIDE	AERIAL APPLICATION	MAR	1999	.00	.00	.00	.00	.00	8.00	114.40	5.71	128.11	128.11
IRRIGATE	CENTER PIVOT IRRIGATION SYSTEM	SEA	1999	.00	1.00	.00	.00	15.00	75.00	15.00	4.20	109.20	109.20
FERTIGATE	CENTER PIVOT IRRIGATION SYSTEM	SEA	1999	.00	.00	.00	.00	.00	.00	85.00	3.40	88.40	88.40
PRE-EMERGE HERB.	AERIAL APPLICATION	APR	1999	.00	.00	.00	.00	.00	7.50	15.56	.92	23.98	23.98
CULTIVATE	85HP-WT, 6-ROW CULTIVATOR	MAY	1999	.50	.55	7.11	3.92	8.25	.00	.00	.41	12.57	19.68
POST-EMER HB(2X)	CENTER PIVOT IRRIGATION SYSTEM	MAY	1999	.00	.00	.00	.00	.00	.00	30.52	1.02	31.54	31.54
APPLY INSECTICID	AERIAL APPLICATION	MAY	1999	.00	.00	.00	.00	.00	7.50	12.13	.65	20.29	20.29
APPLY FUNG (10X)	CENTER PIVOT IRRIGATION	JUN-AUG	1999	.00	.00	.00	.00	.00	.00	61.20	1.22	62.42	62.42
WEED FIELD	CONTRACTED HAND LABOR	JUN	1999	.00	.00	.00	.00	.00	75.00	.00	2.00	77.00	77.00
CULTIVATE	85HP-WT, 6-ROW CULTIVATOR	JUN	1999	.50	.55	7.11	3.92	8.25	.00	.00	.32	12.49	19.60
APPLY INSECTICID	AERIAL APPLICATION	JUN	1999	.00	.00	.00	.00	.00	7.50	34.63	1.12	43.26	43.26
HERBIGATE	CENTER PIVOT IRRIGATION SYSTEM	JUN	1999	.00	.00	.00	.00	.00	.00	6.55	.17	6.73	6.73
WEED FIELD	CONTRACTED HAND LABOR	JUL	1999	.00	.00	.00	.00	.00	75.00	.00	1.50	76.50	76.50
APPLY HERBICIDE	AERIAL APPLICATION	JUL	1999	.00	.00	.00	.00	.00	7.50	28.86	.73	37.08	37.08
APPLY INSECTICID	AERIAL APPLICATION	JUL	1999	.00	.00	.00	.00	.00	7.50	12.13	.39	20.02	20.02
APPLY INSECTICID	AERIAL APPLICATION	AUG	1999	.00	.00	.00	.00	.00	7.50	12.13	.26	19.89	19.89
SPROUT INHIBITOR	AERIAL APPLICATION	AUG	1999	.00	.00	.00	.00	.00	7.50	31.80	.52	39.82	39.82
ROLL ONIONS	85HP-WT, ROLL TOOL	SEP	1999	.13	.14	2.53	.98	2.06	.00	.00	.02	3.06	5.59
LIFT ONIONS	85HP-WT, 4-BED ONION LIFTER	SEP	1999	.43	.47	10.47	6.50	7.07	.00	.00	.09	13.66	24.13
WINDROW	85HP-WT, WINDROWER	SEP	1999	.50	.55	12.21	3.52	8.25	.00	.00	.08	11.85	24.06
HARVEST ONIONS	CUSTOM HARVEST	SEP	1999	.00	.00	.00	.00	.00	192.50	.00	1.28	193.78	193.78
HAUL ONIONS	CUSTOM HAULING	SEP	1999	.00	.00	.00	.00	.00	201.25	.00	1.34	202.59	202.59
MISC. USE	MANAGER'S PICKUP	ANN	1999	.75	.82	6.43	3.05	12.37	.00	.00	.62	16.04	22.47
MISC. USE	LABOR'S PICKUP	ANN	1999	.75	.82	4.06	6.60	12.37	.00	.00	.76	19.73	23.79
MISC. USE	SERVICE TRUCK	ANN	1999	.20	.00	1.37	1.29	.00	.00	.00	.05	1.34	2.71
MISC. USE	MACHINE SHED & SHOP	ANN	1999	.00	.00	4.49	.00	.00	.00	.00	.00	.00	4.49
MISC. USE	SHOP TOOLS	ANN	1999	.00	.00	2.50	.00	.00	.00	.00	.00	.00	2.50
MISC. USE	FUEL TANKS/CONTAINMENT	ANN	1999	.00	.00	1.61	.00	.00	.00	.00	.00	.00	1.61
LAND COST	LAND RENT	ANN	1999	.00	.00	400.00	.00	.00	.00	.00	.00	.00	400.00
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN	1999	.00	.00	.00	.00	.00	86.46	.00	.00	86.46	86.46
MANAGEMENT	7% OF GROSS RETURN	ANN	1999	.00	.00	196.00	.00	.00	.00	.00	.00	.00	196.00
TOTAL PER ACRE				5.25	6.63	708.33	57.58	99.51	785.21	819.42	54.02	1815.74	2524.07

Table 2B: Materials and Services Used by Operation for Producing Onions Under Center Pivot Irrigation.

Operation		Material and/or Service
Soil Test	August	Custom hired @ \$3.00/acre
Plant Wheat	August	Aerial application @ \$6.50/acre Wheat seed @ \$12.00/acre
Fumigate Field	Fall	Custom fumigation @ \$10.00/acre 37.5 gals. of metham sodium @ \$3.54/gal.
Fertilize/Strip Till	March	Pre-plant fertilizer @ \$20.00/acre
Plant/Insecticide	March	6.5 lbs. of Lorsban 15G @ \$2.27/lb. Onion seed @ \$180.00/acre
Apply Herbicide	March	Aerial application @ \$8.00/acre 8.0 lbs. of Dacthal @ \$14.30/lb.
Apply Pre-Emergent Herbicide	April	Aerial application @ \$7.50/acre 1.5 pints of glyphosphate @ \$10.19/pint 0.1 pint of surfactant @ \$2.75/pint
Irrigate	Season	Water charge @ \$35.00/acre Electricity @ \$40.00/acre ³ Irrigation repair @ \$15.00/acre
Fertigate	Season	Fertilizer @ \$85.00/acre
Apply Post-Emergent Herbicide (2X)	May	10 ounces of Goal 2XL @ \$.89/ounce, ea. time 12 ounces of Buctril @ \$.53/ounce, ea. time
Apply Insecticide	May	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 0.1 pint of surfactant @ \$2.75/pint
Apply Fungicide (10X)	June - August	2.0 qts. of copper fungicide, per application @ \$3.06/quart
Weed Field	June	Contracted hand labor @ \$75.00/acre

³Electrical costs are typical for producers in Grant County, Washington.

Table 2B: Materials and Services Used by Operation for Producing Onions Under Center Pivot Irrigation. (continued)

Operation		Material and/or Service
Apply Insecticide	June	Aerial application @ \$7.50/acre 4.0 pints of Vydate @ \$8.59/pint 0.1 pint of surfactant @ \$2.75/pint
Herbigate	June	1.5 pints of Prowl @ \$4.37/pint
Weed Field	July	Contracted hand labor @ \$75.00/acre
Apply Herbicide	July	Aerial application @ \$7.50/acre 1.5 pints of Fusilade @ \$18.87/pint 0.2 pint of surfactant @ \$2.75/pint
Apply Insecticide	July	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 0.1 pint of surfactant @ \$2.75/pint
Apply Insecticide	August	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 0.1 pint of surfactant @ \$2.75/pint
Apply Sprout Inhibitor	August	Aerial application @ \$7.50/acre 10.6 pints of maleic hydrazide @ \$3.00/pint
Harvest Onions	September	Custom harvest of 35 tons @ \$5.50/ton
Haul Onions	September	Custom haul of 35 tons @ \$5.75/ton
Overhead	Annual	5% of variable cost

TABLE 3B: ITEMIZED COST PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999.

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
VARIABLE COSTS		\$		\$	
SOIL TEST	ACRE	3.00	1.00	3.00	_____
CUSTOM FUMIGATE	ACRE	10.00	1.00	10.00	_____
METHAM SODIUM	GAL.	3.54	37.50	132.75	_____
CUSTOM AERIAL	ACRE	6.50	1.00	6.50	_____
WHEAT SEED	ACRE	12.00	1.00	12.00	_____
LORSBAN 15G	LB.	2.27	6.50	14.76	_____
ONION SEED	ACRE	180.00	1.00	180.00	_____
PRE-PLANT FERTILIZER	ACRE	20.00	1.00	20.00	_____
FERTILIZER	ACRE	85.00	1.00	85.00	_____
CUSTOM AERIAL	ACRE	8.00	1.00	8.00	_____
DACTHAL	LB.	14.30	8.00	114.40	_____
CUSTOM AERIAL	ACRE	7.50	7.00	52.50	_____
GLYPHOSPHATE	PINT	10.19	1.50	15.28	_____
SURFACTANT	PINT	2.75	.70	1.92	_____
GOAL	OZ.	.89	20.00	17.80	_____
BUCTRIL	OZ.	.53	24.00	12.72	_____
WARRIOR	OZ.	3.12	11.40	35.57	_____
PROWL	PINT	4.37	1.50	6.55	_____
VYDATE	PINT	8.59	4.00	34.36	_____
FUSILADE	PINT	18.87	1.50	28.31	_____
COPPER FUNGICIDE	QT.	3.06	20.00	61.20	_____
MALEIC HYDRAZIDE	PINT	3.00	10.60	31.80	_____
CUSTOM HAUL	TON	5.75	35.00	201.25	_____
CUSTOM HARVEST	TON	5.50	35.00	192.50	_____
LABOR (TRAC/MACH)	HOUR	15.00	6.63	99.51	_____
CONTRACT WEEDING	ACRE	75.00	2.00	150.00	_____
WATER CHARGE	ACRE	35.00	1.00	35.00	_____
ELECTRICITY	ACRE	40.00	1.00	40.00	_____
IRRIGATION REPAIR	ACRE	15.00	1.00	15.00	_____
TRACTOR REPAIR	ACRE	12.52	1.00	12.52	_____
TRACTOR FUEL/LUBE	ACRE	9.79	1.00	9.79	_____
MACHINERY REPAIRS	ACRE	29.76	1.00	29.76	_____
MACHINE FUEL/LUBE	ACRE	5.50	1.00	5.50	_____
OVERHEAD	ACRE	86.46	1.00	86.46	_____
INTEREST ON OP. CAP.	ACRE	54.02	1.00	54.02	_____
TOTAL VARIABLE COST				1815.75	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	21.91	1.00	21.91	_____
TRACTOR INTEREST	ACRE	22.72	1.00	22.72	_____
TRACTOR INSURANCE	ACRE	1.70	1.00	1.70	_____
TRACTOR TAXES	ACRE	5.11	1.00	5.11	_____
MACHINE DEPRECIATION*	ACRE	32.02	1.00	32.02	_____
MACHINE INTEREST*	ACRE	22.20	1.00	22.20	_____
MACHINE INSURANCE*	ACRE	1.67	1.00	1.67	_____
MACHINE TAXES*	ACRE	5.00	1.00	5.00	_____
LAND RENT	ACRE	400.00	1.00	400.00	_____
MANAGEMENT	ACRE	196.00	1.00	196.00	_____
TOTAL FIXED COST				708.33	_____
TOTAL COST				2524.08	_____

*INCLUDES BUILDINGS AND FUEL TANKS/CONTAINMENT.

TABLE 4B: BREAK-EVEN SELLING PRICE PER TON OF ONIONS PRODUCED UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN.

	COST PER ACRE	YOUR FARM	BREAK-EVEN PRICE (\$/TON) (35 TONS)	YOUR FARM
	\$	\$		\$
1. TOTAL VARIABLE COST	1,815.75		51.88	
PLUS: TRACTOR & MACH/BUILD INSURANCE	3.37			
TRACTOR & MACH/BUILD TAXES	10.11			
LAND RENT	400.00			
2. TOTAL CASH COSTS	2,229.23		63.69	
PLUS: TRACTOR & MACH/BUILD DEPRECIATION	53.93			
3. TOTAL CASH COST & DEPRECIATION	2,283.16		65.23	
PLUS: TRACTOR & MACH/BUILD INTEREST	44.92			
MANAGEMENT*	175.22			
4. TOTAL COST	2,503.30		71.52	

*7% OF GROSS RECEIPTS (35 TONS X \$71.52 X .07). MANAGEMENT CHARGE IN TABLE 3B CALCULATED USING A PRICE OF \$80/TON.

TABLE 5B: SUMMARY OF RECEIPTS, COSTS, AND PROFITABILITY PER ACRE FOR ONIONS PRODUCED UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN.

	PRICE/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
GROSS RECEIPTS ONIONS	\$80.00	35 TONS	\$2,800.00	
1. TOTAL RECEIPTS			\$2,800.00	
LESS: TOTAL VARIABLE COST			\$1,815.75	
LAND RENT			\$ 400.00	
2. RETURNS OVER VARIABLE COST AND LAND RENT			\$ 584.25	
LESS: TRACTOR & MACH/BUILD FIXED COST			\$ 112.33	
3. NET RETURNS TO MANAGEMENT AND RISK			\$ 471.92	
4.				

TABLE 6B: RETURNS TO MANAGEMENT AND RISK AT VARIOUS PRICE AND YIELD LEVELS FOR PRODUCING ONIONS UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN.

YIELD PRICE/TON	24 TONS	28 TONS	32 TONS	36 TONS	40 TONS
\$	\$	\$	\$	\$	\$
70	-517	-285	- 52	180	412
75	-397	-145	108	360	612
80	-277	- 5	268	540	812
85	-157	135	428	720	1,012
90	- 37	275	588	900	1,212
95	83	415	748	1,080	1,412
100	203	555	908	1,260	1,612

TABLE 7B: MACHINERY AND BUILDING COMPLEMENT FOR PRODUCING ONIONS UNDER CENTER PIVOT IRRIGATION.

DESCRIPTION	REPLACE- MENT VALUE	YEARS TO TRADE	SALVAGE VALUE	ANNUAL HOURS OF USE	ANNUAL REPAIR	FUEL TYPE*	GAL. PER HOUR
	\$		\$		\$		
200 HP WHEEL TRACTOR	100,000	20	20,000	300	1,800	D	4
140 HP WHEEL TRACTOR (USED)	55,000	10	25,000	400	2,000	D	4
85 HP WHEEL TRACTOR (USED)	30,200	10	12,000	400	1,100	D	3
MANAGER'S PICKUP	25,000	4	10,000	650	1,000	G	2
LABOR'S PICKUP (USED)	10,000	8	2,000	300	1,500	G	3
SERVICE TRUCK (USED)	6,000	8	500	150	400	G	3
15' SHREDDER	12,000	7	2,400	300	2,000		
15' RIPPER	4,500	10	900	70	500		
12' STRIP ROTOVATOR	14,000	15	1,400	150	2,500		
PRECISION PLANTER W/GRANULAR APPLICATOR	22,000	12	4,400	110	1,500		
6-ROW CULTIVATOR	5,500	15	1,000	150	400		
ROLL TOOL	1,500	20	300	15	40		
ONION LIFTER, 4-BED	5,000	15	1,000	40	400		
WINDROWER	10,000	15	2,000	80	150		
				<u>ACRES COVERED</u>			
MACHINE SHED & SHOP	50,000	30	0	950	0		
SHOP TOOLS	20,000	15	0	950	0		
FUEL TANKS/CONTAINMENT	15,000	20	0	950	0		

* PRICE OF DIESEL = \$0.70/GAL.
 PRICE OF GASOLINE = \$1.10/GAL.

TABLE 8B: HOURLY AND PER ACRE MACHINERY AND BUILDING COSTS, CENTER PIVOT IRRIGATION.

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC- IATION	INTER- EST	INSUR- ANCE	TAXES	TOTAL		FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
								FIXED COST	REPAIR			
	\$							-----COST PER HOUR-----				
140HP-WT (USED)	55,000.00	10	400	7.50	8.00	.60	1.80	17.90	5.00	3.22	8.22	26.12
200HP-WT	100,000.00	20	300	13.33	16.00	1.20	3.60	34.13	6.00	4.03	10.02	44.16
85HP-WT (USED)	30,000.00	10	400	4.50	4.20	.32	.95	9.96	2.75	2.41	5.16	15.13
15' SHREDDER	12,000.00	7	300	4.57	1.92	.14	.43	7.07	6.67	.00	6.67	13.73
14' OFFSET DISC	13,000.00	10	250	4.16	2.50	.19	.56	7.40	3.80	.00	3.80	11.20
15' PACKER	3,800.00	10	250	1.22	.73	.05	.16	2.16	.74	.00	.74	2.90
6-ROW CORRUGATOR	1,500.00	15	150	.53	.48	.04	.11	1.16	.33	.00	.33	1.49
4BTM PLOW	8,500.00	10	250	2.72	1.63	.12	.37	4.84	4.00	.00	4.00	8.84
7' PACKER	2,000.00	10	250	.64	.38	.03	.09	1.14	.40	.00	.40	1.54
SEEDBED MAKER	15,000.00	15	110	7.27	6.55	.49	1.47	15.78	8.18	.00	8.18	23.96
PREC PLT W/GR APPL	22,000.00	12	110	13.33	9.60	.72	2.16	25.81	13.64	.00	13.64	39.45
HEADLANDER	2,000.00	15	300	.36	.32	.02	.07	.77	1.33	.00	1.33	2.10
8' BLADE	3,500.00	20	50	2.80	3.36	.25	.76	7.17	.80	.00	.80	7.97
6-ROW CULTIVATOR	5,500.00	15	150	2.00	1.73	.13	.39	4.25	2.67	.00	2.67	6.92
ROLL TOOL	1,500.00	20	15	4.00	4.80	.36	1.08	10.24	2.67	.00	2.67	12.91
ONION LIFT, 4 BED	5,000.00	15	40	6.67	6.00	.45	1.35	14.47	10.00	.00	10.00	24.47
WINDROWER	10,000.00	15	80	6.67	6.00	.45	1.35	14.47	1.88	.00	1.88	16.34
MANAGER'S PICKUP	25,000.00	4	650	5.77	2.15	.16	.48	8.57	1.54	2.53	4.07	12.64
LABOR'S PICKUP	10,000.00	8	300	3.33	1.60	.12	.36	5.41	5.00	3.80	8.80	14.21
SERVICE TRUCK	6,000.00	8	150	4.58	1.73	.13	.39	6.84	2.67	3.80	6.46	13.30
FISH FEEDER	250.00	5	30	1.67	.33	.03	.08	2.10	.00	.00	.00	2.10
15' RIPPER	4,500.00	10	70	5.14	3.09	.23	.69	9.15	7.14	.00	7.14	16.30
12' STRIP ROTOVATOR	14,000.00	15	150	5.60	4.11	.31	.92	10.94	16.67	.00	16.67	27.61
								-----COST PER ACRE-----				
MACH SHED & SHOP	50,000.00	30	-	1.75	2.11	.16	.47	4.49	.00	.00	.00	4.49
SHOP TOOLS	20,000.00	15	-	1.40	.84	.06	.19	2.50	.00	.00	.00	2.50
FUEL TANKS/CONTAIN.	15,000.00	20	-	.79	.63	.05	.14	1.61	.00	.00	.00	1.61
IRRIGATION TUBES	8.00	5	-	1.60	.00	.00	.00	1.60	.00	.00	.00	1.60
IRRIGATION DAMS	2.00	2	-	1.00	.00	.00	.00	1.00	.00	.00	.00	1.00

APPENDIX C

BUDGET TABLES

PRODUCING ONIONS UNDER

DRIP IRRIGATION

TABLE 1C: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER DRIP IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST						TOTAL VARIABLE COST	TOTAL COST
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
SHRED STUBBLE	140HP-WT, 15' SHREDDER	FALL	1998	.50	.55	12.48	7.44	8.25	.00	.00	1.15	16.84	29.33
DISC/PACK	140HP-WT, 14' DISC/15' PACKER	FALL	1998	.20	.22	5.49	2.55	3.30	.00	.00	.43	6.28	11.78
CORRUGATE	85HP-WT, 6-ROW CORRUGATOR	FALL	1998	.20	.22	2.22	1.10	3.30	.00	.00	.32	4.72	6.95
MAKE HEADLAND	85HP-WT, HEADLANDER	FALL	1998	.05	.06	.54	.32	.49	.00	.00	.06	.88	1.42
MAKE DRAIN	140HP-WT, 8' BLADE	FALL	1998	.05	.06	1.25	.45	.49	.00	.00	.07	1.02	2.27
RILL IRRIGATE	IRRIGATOR LABOR, TUBES & DAMS	FALL	1998	.00	.80	.26	.00	12.00	5.00	.40	1.28	18.68	18.94
DISC/PACK	140HP-WT, 14' DISC/15' PACKER	FALL	1998	.20	.22	5.49	2.55	3.30	.00	.00	.43	6.28	11.78
SOIL TEST	CUSTOM HIRED	FALL	1998	.00	.00	.00	.00	.00	3.00	.00	.22	3.22	3.22
FUMIGATE FIELD	CUSTOM APPLIED	FALL	1998	.00	.00	.00	.00	.00	40.00	132.75	12.67	185.42	185.42
FERTILIZE	CUSTOM APPLIED	MAR	1999	.00	.00	.00	.00	.00	6.00	65.80	3.35	75.15	75.15
PLOW/PACK	140HP-WT, 4BTM PLOW/7' PACKER	MAR	1999	.40	.44	9.55	5.05	6.60	.00	.00	.54	12.19	21.74
ROUGH IN SEEDBED	140HP-WT, SEEDBED MAKER	MAR	1999	.33	.37	11.23	5.47	5.50	.00	.00	.51	11.48	22.71
REFINE SEEDBED	140HP-WT, SEEDBED MAKER	MAR	1999	.33	.37	11.23	5.47	5.50	.00	.00	.51	11.48	22.71
LAY TAPE	85HP-WT, TAPE INJECTOR	MAR	1999	.50	1.10	10.24	3.30	13.20	.00	200.00	10.10	226.60	236.84
PLANT/INSECT.	85HP-WT, 6-ROW PRECISION PLANT	MAR	1999	.50	.60	17.89	9.40	9.00	.00	194.75	9.95	223.10	240.99
APPLY HERBICIDE	AERIAL APPLICATION	MAR	1999	.00	.00	.00	.00	.00	8.00	114.40	5.71	128.11	128.11
IRRIG ASSEMBLY	85HP-WT, LAY FLAT MACHINE	MAR	1999	.17	1.28	3.03	1.05	12.65	.00	.00	.64	14.33	17.36
IRRIGATE	DRIP IRRIGATION	SEA	1999	.00	2.00	91.20	100.00	24.00	55.00	.00	7.16	186.16	277.36
PRE-EMERGE HERB.	AERIAL APPLICATION	APR	1999	.00	.00	.00	.00	.00	7.50	15.56	.92	23.98	23.98
FERTIGATE	DRIP IRRIGATION SYSTEM	SEA	1999	.00	.00	.00	.00	.00	.00	308.20	12.33	320.53	320.53
POST-EMER HB(2X)	CUSTOM GROUND APPLICATION	MAY	1999	.00	.00	.00	.00	.00	15.00	30.52	1.52	47.04	47.04
APPLY INSECT.	AERIAL APPLICATION	MAY	1999	.00	.00	.00	.00	.00	7.50	12.13	.65	20.29	20.29
WEED FIELD	CONTRACT HAND LABOR	JUN	1999	.00	.00	.00	.00	.00	75.00	.00	2.00	77.00	77.00
APPLY HERBICIDE	AERIAL APPLICATION	JUN	1999	.00	.00	.00	.00	.00	7.50	6.55	.37	14.43	14.43
APPLY INSCT/FUNG	AERIAL APPLICATION	JUN	1999	.00	.00	.00	.00	.00	7.50	51.23	1.57	60.30	60.30
WEED FIELD	CONTRACT HAND LABOR	JUL	1999	.00	.00	.00	.00	.00	75.00	.00	1.50	76.50	76.50
APPLY HERBICIDE	AERIAL APPLICATION	JUL	1999	.00	.00	.00	.00	.00	7.50	28.86	.73	37.08	37.08
APPLY INSCT/FUNG	AERIAL APPLICATION	JUL	1999	.00	.00	.00	.00	.00	7.50	19.33	.54	27.37	27.37
APPLY INSCT/FUNG	AERIAL APPLICATION	AUG	1999	.00	.00	.00	.00	.00	7.50	28.73	.48	36.71	36.71
SPROUT INHB/FUNG	AERIAL APPLICATION	AUG	1999	.00	.00	.00	.00	.00	7.50	39.00	.62	47.12	47.12
LAY FLAT RETRIEV	85HP-WT, LAY FLAT MACHINE	SEP	1999	.17	.55	3.03	1.05	6.04	.00	.00	.05	7.13	10.16
TAPE REM/ROLL ON	85HP-WT, ROLL & TAPE REM TOOL	SEP	1999	.50	1.65	14.85	3.75	18.15	.00	.00	.15	22.05	36.89
TAPE DISPOSAL	PER ACRE COST	SEP	1999	.00	.00	.00	.00	.00	10.00	.00	.07	10.07	10.07
LIFT ONIONS	85HP-WT, 4-BED ONION LIFTER	SEP	1999	.43	.47	10.47	6.50	7.07	.00	.00	.09	13.66	24.13
WINDROW	85HP-WT, WINDROWER	SEP	1999	.50	.55	12.21	3.52	8.25	.00	.00	.08	11.85	24.06
HARVEST ONIONS	CUSTOM HARVEST	SEP	1999	.00	.00	.00	.00	.00	247.50	.00	1.65	249.15	249.15
HAUL ONIONS	CUSTOM HAULING	SEP	1999	.00	.00	.00	.00	.00	258.75	.00	1.73	260.48	260.48

TABLE 1C: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER DRIP IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999. (CONTINUED)

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE MATER.	INTER.			
						\$	\$	\$	\$	\$	\$	\$	
MISC. USE	MANAGER'S PICKUP	ANN	1999	.75	.82	6.43	3.05	12.37	.00	.00	.62	16.04	22.47
MISC. USE	LABOR'S PICKUP	ANN	1999	.75	.82	4.06	6.60	12.37	.00	.00	.76	19.73	23.79
MISC. USE	SERVICE TRUCK	ANN	1999	.20	.00	1.37	1.29	.00	.00	.00	.05	1.34	2.71
MISC. USE	MACHINE SHED & SHOP	ANN	1999	.00	.00	4.49	.00	.00	.00	.00	.00	.00	4.49
MISC. USE	SHOP TOOLS	ANN	1999	.00	.00	2.50	.00	.00	.00	.00	.00	.00	2.50
MISC. USE	FUEL TANKS/CONTANMENT	ANN	1999	.00	.00	1.61	.00	.00	.00	.00	.00	.00	1.61
LAND COST	LAND RENT	ANN	1999	.00	.00	300.00	.00	.00	.00	.00	.00	.00	300.00
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN	1999	.00	.00	.00	.00	.00	126.59	.00	.00	126.59	126.59
MANAGEMENT	7% OF GROSS RETURN	ANN	1999	.00	.00	252.00	.00	.00	.00	.00	.00	.00	252.00
TOTAL PER ACRE				6.73	13.15	795.13	169.91	171.84	984.84	1248.22	83.57	2658.38	3453.51

Table 2C: Materials and Services Used by Operation for Producing Onions Under Drip Irrigation.

Operation		Material and/or Service
Rill Irrigate	Fall	Water charge @ \$5.00/acre Irrigation repair @ \$0.40/acre
Soil Test	Fall	Custom hired @ \$3.00/acre
Fumigate Field	Fall	Custom fumigation @ \$40.00/acre 37.5 gals. of metham sodium @ \$3.54/gal.
Fertilize	March	Custom applied @ \$6.00/acre Pre-plant fertilizer @ \$65.80/acre
Lay Tape	March	Drip tape @ \$200.00/acre
Plant/Insecticide	March	6.5 lbs. of Lorsban 15G @ \$2.27/lb. Onion seed @ \$180.00/acre
Apply Herbicide	March	Aerial application @ \$8.00/acre 8.0 lbs. of Dacthal @ \$14.30/lb.
Irrigate	Season	Water charge @ \$45.00/acre Electrical charge @ \$10.00/acre ⁴
Apply Pre-Emergent Herbicide	March	Aerial application @ \$7.50/acre 1.5 pints of glyphosphate @ \$10.19/pint 0.1 pint of surfactant @ \$2.75/pint
Fertigate	Season	Fertilizer @ \$298.00/acre Drip line cleaner @ \$10.00/acre
Apply Post-Emergent Herbicide (2X)	May	Ground application @ \$7.50/acre, per application 10 ounces of Goal 2XL, per application @ \$.89/ounce 12 ounces of Buctril, per application @ \$.53/ounce
Apply Insecticide	May	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 0.1 pint of surfactant @ \$2.75/pint
Weed Field	June	Contracted hand labor @ \$75.00/acre

⁴Electrical costs are typical for producers in Grant County, Washington.

Table 2C: Materials and Services Used by Operation for Producing Onions Under Drip Irrigation. (continued)

Operation		Material and/or Service
Apply Herbicide	June	Aerial application @ \$7.50/acre 1.5 pints of Prowl @ \$4.37/pint
Apply Insecticide/ Fungicide	June	Aerial application @ \$7.50/acre 4.0 pints of Vydate @ \$8.59/pint 2.0 pints of chlorothalonil @ \$8.30/pint 0.1 pint of surfactant @ \$2.75/pint
Weed Field	July	Contracted hand labor @ \$75.00/acre
Apply Herbicide	July	Aerial application @ \$7.50/acre 1.5 pints of Fusilade @ \$18.87/pint 0.2 pint of surfactant @ \$2.75/pint
Apply Insecticide/ Fungicide	July	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 2.0 lbs. of mancozeb @ \$3.60/lb. 0.1 pint of surfactant @ \$2.75/pint
Apply Insecticide/ Fungicide	August	Aerial application @ \$7.50/acre 3.8 ounces of Warrior @ \$3.12/ounce 2.0 pints of chlorothalonil @ \$8.30/pint 0.1 pint of surfactant @ \$2.75/pint
Apply Sprout Inhibitor/ Fungicide	August	Aerial application @ \$7.50/acre 10.6 pints of maleichydrazide @ \$3.00/pint 2.0 lbs. of mancozeb @ \$3.60/lb.
Tape Disposal	September	Tape disposal @ \$10.00/acre
Harvest Onions	September	Custom harvest of 45 tons @ \$5.50/ton
Haul Onions	September	Custom haul of 45 tons @ \$5.75/ton
Overhead	Annual	5% of variable cost

TABLE 3C: ITEMIZED COST PER ACRE FOR PRODUCING ONIONS, FOLLOWING WHEAT, UNDER DRIP IRRIGATION IN THE COLUMBIA BASIN, WASHINGTON, 1999.

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
SOIL TEST	ACRE	3.00	1.00	3.00	_____
CUSTOM FUMIGATION	ACRE	40.00	1.00	40.00	_____
METHAM SODIUM	GAL.	3.54	37.50	132.75	_____
ONION SEED	ACRE	180.00	1.00	180.00	_____
CUSTOM FERTILIZE	ACRE	6.00	1.00	6.00	_____
PRE-PLANT FERTILIZER	ACRE	65.80	1.00	65.80	_____
CUSTOM AERIAL	ACRE	8.00	1.00	8.00	_____
DACTHAL	LB.	14.30	8.00	114.40	_____
CUSTOM AERIAL	ACRE	7.50	8.00	60.00	_____
LORSBAN 15G	LB.	2.27	6.50	14.76	_____
GLYPHOSPHATE	PINT	10.19	1.50	15.28	_____
SURFACTANT	PINT	2.75	.70	1.92	_____
WARRIOR	OZ.	3.12	11.40	35.57	_____
PROWL	PINT	4.37	1.50	6.55	_____
VYDATE	PINT	8.59	4.00	34.36	_____
CHLOROTHALONIL	PINT	8.30	4.00	33.20	_____
MANCOZEB	LB.	3.60	4.00	14.40	_____
FUSILADE	PINT	18.87	1.50	28.31	_____
MALEIC HYDRAZIDE	PINT	3.00	10.60	31.80	_____
CUSTOM HERBICIDE	ACRE	7.50	2.00	15.00	_____
GOAL	OZ.	.89	20.00	17.80	_____
BUCTRIL	OZ.	.53	24.00	12.72	_____
TAPE DISPOSAL	ACRE	10.00	1.00	10.00	_____
CUSTOM HARVEST	TON	5.50	45.00	247.50	_____
CUSTOM HAUL	TON	5.75	45.00	258.75	_____
CONTRACT WEEDING	ACRE	75.00	2.00	150.00	_____
SEASONAL LABOR	HOURL	9.00	4.23	38.07	_____
LABOR (TRAC/MACH)	HOURL	15.00	8.92	133.81	_____
DRIP TAPE	ACRE	200.00	1.00	200.00	_____
DRIP LINE CLEANER	ACRE	10.00	1.00	10.00	_____
FERTILIZER	ACRE	298.20	1.00	298.20	_____
WATER CHARGE	ACRE	50.00	1.00	50.00	_____
ELECTRICAL CHARGE	ACRE	10.00	1.00	10.00	_____
IRRIGATION REPAIR	ACRE	100.40	1.00	100.40	_____
TRACTOR REPAIR	ACRE	18.37	1.00	18.37	_____
TRACTOR FUEL/LUBE	ACRE	13.77	1.00	13.77	_____
MACHINERY REPAIRS	ACRE	32.27	1.00	32.27	_____
MACHINE FUEL/LUBE	ACRE	5.50	1.00	5.50	_____
OVERHEAD	ACRE	126.59	1.00	126.59	_____
INTEREST ON OP. CAP.	ACRE	83.57	1.00	83.57	_____

TOTAL VARIABLE COST				2658.38	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	28.68	1.00	28.68	_____
TRACTOR INTEREST	ACRE	28.79	1.00	28.79	_____
TRACTOR INSURANCE	ACRE	2.16	1.00	2.16	_____
TRACTOR TAXES	ACRE	6.48	1.00	6.48	_____
MACHINE DEPRECIATION*	ACRE	106.34	1.00	106.34	_____
MACHINE INTEREST*	ACRE	54.37	1.00	54.37	_____
MACHINE INSURANCE*	ACRE	4.08	1.00	4.08	_____
MACHINE TAXES*	ACRE	12.23	1.00	12.23	_____
LAND RENT	ACRE	300.00	1.00	300.00	_____
MANAGEMENT	ACRE	252.00	1.00	252.00	_____

TOTAL FIXED COST				795.13	_____
TOTAL COST				3453.51	_____

*INCLUDES BUILDINGS, IRRIGATION SYSTEM AND FUEL TANKS/CONTAINMENT.

TABLE 4C: BREAK-EVEN SELLING PRICE PER TON OF ONIONS PRODUCED UNDER DRIP IRRIGATION IN THE COLUMBIA BASIN.

	COST PER ACRE	YOUR FARM	BREAK-EVEN PRICE (\$/TON) (45 TONS)	YOUR FARM
	\$	\$		\$
1. TOTAL VARIABLE COST	2,658.38		59.08	
PLUS: TRACTOR & MACH/BUILD INSURANCE	6.24			
TRACTOR & MACH/BUILD TAXES	18.71			
LAND RENT	300.00			
2. TOTAL CASH COSTS	2,983.33		66.30	
PLUS: TRACTOR & MACH/BUILD DEPRECIATION	135.02			
3. TOTAL CASH COST & DEPRECIATION	3,118.35		69.30	
PLUS: TRACTOR & MACH/BUILD INTEREST	83.16			
MANAGEMENT*	240.98			
4. TOTAL COST	3,442.49		76.50	

*7% OF GROSS RECEIPTS (45 TONS X \$76.50 X .07). MANAGEMENT CHARGE IN TABLE 3C CALCULATED USING A PRICE OF \$80/TON.

TABLE 5C: SUMMARY OF RECEIPTS, COSTS, AND PROFITABILITY PER ACRE FOR ONIONS PRODUCED UNDER DRIP IRRIGATION IN THE COLUMBIA BASIN.

	PRICE/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
GROSS RECEIPTS ONIONS	\$80.00	45 TONS	\$3,600.00	
1. TOTAL RECEIPTS			\$3,600.00	
LESS: TOTAL VARIABLE COST			\$2,658.38	
LAND RENT			\$ 300.00	
2. RETURNS OVER VARIABLE COST AND LAND RENT			\$ 641.62	
LESS: TRACTOR & MACH/BUILD FIXED COST			\$ 243.13	
3. NET RETURNS TO MANAGEMENT AND RISK			\$ 398.49	

TABLE 6C: RETURNS TO MANAGEMENT AND RISK AT VARIOUS PRICE AND YIELD LEVELS FOR PRODUCING ONIONS UNDER DRIP IRRIGATION IN THE COLUMBIA BASIN.

YIELD PRICE/TON	24 TONS	28 TONS	32 TONS	36 TONS	40 TONS	44 TONS	48 TONS	52 TONS	56 TONS
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
70	-1,272	-1039	-807	-574	-342	-110	123	355	588
75	-1,152	- 899	-647	-394	-142	110	363	615	868
80	-1,032	- 759	-487	-214	58	330	603	875	1,148
85	- 912	- 619	-327	- 34	258	550	843	1,135	1,428
90	- 792	- 479	-167	146	458	770	1,083	1,395	1,708
95	- 672	- 339	- 7	326	658	990	1,323	1,655	1,988
100	- 552	- 199	153	506	858	1,210	1,563	1,915	2,268

TABLE 7C: MACHINERY AND BUILDING COMPLEMENT FOR PRODUCING ONIONS UNDER DRIP IRRIGATION.

DESCRIPTION	REPLACE- MENT VALUE	YEARS TO TRADE	SALVAGE VALUE	ANNUAL HOURS OF USE	ANNUAL REPAIR	FUEL TYPE*	GAL. PER HOUR
	\$		\$		\$		
140 HP WHEEL TRACTOR (USED)	55,000	10	25,000	400	2,000	D	4
85 HP WHEEL TRACTOR (USED)	30,200	10	12,000	400	1,100	D	3
MANAGER'S PICKUP	25,000	4	10,000	650	1,000	G	2
LABOR'S PICKUP (USED)	10,000	8	2,000	300	1,500	G	3
SERVICE TRUCK (USED)	6,000	8	500	150	400	G	3
4-BOTTOM PLOW	8,500	10	1,700	250	1,000		
15' SHREDDER	12,000	7	2,400	300	2,000		
14' OFFSET DISC	13,000	10	2,600	250	950		
15' PACKER	3,800	10	760	250	185		
7' PACKER	2,000	10	400	250	100		
PRECISION PLANTER W/GRANULAR APPLICATOR	22,000	12	4,400	110	1,500		
SEEDBED MAKER	15,000	15	3,000	110	900		
6-ROW CULTIVATOR	5,500	15	1,000	150	400		
6-ROW CORRUGATOR	1,500	15	300	150	50		
HEADLANDER	2,000	15	400	300	400		
8' BLADE	3,500	20	700	50	40		
ROLL TOOL	1,500	20	300	60	40		
ONION LIFTER, 4-BED	5,000	15	1,000	40	400		
WINDROWER	10,000	15	2,000	80	150		
SPRAY BOOM, TANK & PUMP	1,000	10	0	50	50		
TAPE INJECTOR	5,000	10	500	70	100		
LAY FLAT MACHINE	2,500	10	250	45	50		
TAPE REMOVAL MACHINE	7,000	10	700	60	100		
				ACRES COVERED			
IRRIGATION TUBES	8	5	0	1	0		
IRRIGATION DAMS	2	2	0	1	0		
IRRIG PUMP, FILTERS, ETC.	600	10	0	1	100		
MACHINE SHED & SHOP	50,000	30	0	950	0		
SHOP TOOLS	20,000	15	0	950	0		
FUEL TANKS/CONTAINMENT	15,000	20	0	950	0		

* PRICE OF DIESEL = \$0.70/GAL.
PRICE OF GASOLINE = \$1.10/GAL.

TABLE 8C: HOURLY AND PER ACRE MACHINERY, BUILDING AND IRRIGATION COSTS; DRIP IRRIGATION.

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC- IATION	INTER- EST	INSUR- ANCE	TAXES	COST PER HOUR			TOTAL COST	
								TOTAL FIXED COST	FUEL AND LUBE	TOTAL VARIABLE COST		
	\$							-----COST PER HOUR-----				
140HP-WT (USED)	55,000.00	10	400	7.50	8.00	.60	1.80	17.90	5.00	3.22	8.22	26.12
200HP-WT	100,000.00	20	300	13.33	16.00	1.20	3.60	34.13	6.00	4.03	10.02	44.16
85HP-WT (USED)	30,000.00	10	400	4.50	4.20	.32	.95	9.96	2.75	2.41	5.16	15.13
MANAGER'S PICKUP	25,000.00	4	650	5.77	2.15	.16	.48	8.57	1.54	2.53	4.07	12.64
LABOR'S PICKUP	10,000.00	8	300	3.33	1.60	.12	.36	5.41	5.00	3.80	8.80	14.21
SERVICE TRUCK	6,000.00	8	150	4.58	1.73	.13	.39	6.84	2.67	3.80	6.46	13.30
15' SHREDDER	12,000.00	7	300	4.57	1.92	.14	.43	7.07	6.67	.00	6.67	13.73
14' OFFSET DISC	13,000.00	10	250	4.16	2.50	.19	.56	7.40	3.80	.00	3.80	11.20
15' PACKER	3,800.00	10	250	1.22	.73	.05	.16	2.16	.74	.00	.74	2.90
6-ROW CORRUGATOR	1,500.00	15	150	.53	.48	.04	.11	1.16	.33	.00	.33	1.49
4BTM PLOW	8,500.00	10	250	2.72	1.63	.12	.37	4.84	4.00	.00	4.00	8.84
7' PACKER	2,000.00	10	250	.64	.38	.03	.09	1.14	.40	.00	.40	1.54
SEEDBED MAKER	15,000.00	15	110	7.27	6.55	.49	1.47	15.78	8.18	.00	8.18	23.96
PREC PLT W/GR APPL	22,000.00	12	110	13.33	9.60	.72	2.16	25.81	13.64	.00	13.64	39.45
HEADLANDER	2,000.00	15	300	.36	.32	.02	.07	.77	1.33	.00	1.33	2.10
8' BLADE	3,500.00	20	50	2.80	3.36	.25	.76	7.17	.80	.00	.80	7.97
6-ROW CULTIVATOR	5,500.00	15	150	2.00	1.73	.13	.39	4.25	2.67	.00	2.67	6.92
ROLL TOOL	1,500.00	20	60	1.00	1.20	.09	.27	2.56	.67	.00	.67	3.23
ONION LIFT, 4 BED	5,000.00	15	40	6.67	6.00	.45	1.35	14.47	10.00	.00	10.00	24.47
WINDROWER	10,000.00	15	80	6.67	6.00	.45	1.35	14.47	1.88	.00	1.88	16.34
TAPE INJECTOR	5,000.00	10	70	6.43	3.14	.24	.71	10.51	1.43	.00	1.43	11.94
LAY FLAT MACHINE	2,500.00	10	45	5.00	2.44	.18	.55	8.18	1.11	.00	1.11	9.29
TAPE REMOVAL MACH	7,000.00	10	60	10.50	5.13	.39	1.16	17.17	1.67	.00	1.67	18.84
								-----COST PER ACRE-----				
IRRIGATION TUBES	8.00	5	-	1.60	.00	.00	.00	1.60	.00	.00	.00	1.60
IRRIGATION DAMS	2.00	2	-	1.00	.00	.00	.00	1.00	.00	.00	.00	1.00
IRR PUMP, FILTERS	600.00	10	-	60.00	24.00	1.80	5.40	91.20	100.00	.00	100.00	191.20
MACH SHED & SHOP	50,000.00	30	-	1.75	2.11	.16	.47	4.49	.00	.00	.00	4.49
SHOP TOOLS	20,000.00	15	-	1.40	.84	.06	.19	2.50	.00	.00	.00	2.50
FUEL TANKS/CONTAIN.	15,000.00	20	-	.79	.63	.05	.14	1.61	.00	.00	.00	1.61

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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