


<p>Farm Business Management Reports</p>		<p>EB1664</p>
	<p>1997 ENTERPRISE BUDGETS CARROT SEED, RADISH SEED, AND ONION SEED 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 vegetable seed enterprises on a modern, well-managed Columbia Basin farm. 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 make adjustments in the costs and/or returns.

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1997 ENTERPRISE BUDGETS
CARROT SEED, RADISH SEED, AND ONION SEED
COLUMBIA BASIN, WASHINGTON

Herbert Hinman and Gary Pelter¹

INTRODUCTION

In 1996, 1,500 acres of carrot seed, 2,900 acres of radish seed, and 400 acres of onion seed were produced under contract in the Columbia Basin. This publication presents 1997 projected cost and return information for representative Columbia Basin carrot, radish, and onion seed enterprises. Producers, lenders, and others should find this information helpful in identifying enterprise strengths and weaknesses, planning production adjustments, estimating financial requirements, and in resolving numerous other business management problems.

OBJECTIVES OF THE STUDY

The overall objective of this study was to develop 1997 enterprise budgets for carrot seed, radish seed, and onion seed. The specific objectives were:

- 1) to identify production practices representative of well-managed carrot seed, radish seed, and onion seed enterprises grown under rill irrigation in the Columbia Basin;
- 2) to provide estimates of capital requirements, production costs, and returns; and
- 3) to provide current and prospective producers with a procedure for analyzing the profitability of carrot seed, radish seed, and onion seed enterprises.

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 purchase prices and rates of annual use considered typical.

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BUDGET ASSUMPTIONS

The following assumptions were made in developing the enterprise data:

1. The representative farm includes 500 acres, with 40 acres in open pollinated carrot seed production and/or 20 acres in radish seed production and/or 10 acres of hybrid onion seed production.
2. The cash rental rate for rill irrigated land used to produce vegetable seed is \$150 per acre. The landlord furnishes the irrigation system (excluding tubes and dams) and the operator pays the irrigation charge of \$40 per acre per year along with annual repairs amounting to about \$6 per acre per year.
3. Carrots are planted in the late summer and, therefore, seed yields may be highly variable due to winter kill. From 1992 through 1996, average yields for carrot seed produced within the Columbia Basin ranged from 839 to 1,825 pounds per acre. For this study, the average 1992-1996 yield of 1,163 pounds of cleaned seed² contracted for \$1.25 per pound was used to calculate per-acre profitability and per-pound break-even prices.
4. Radishes are planted in the spring and, therefore, seed yields normally are not as variable as for carrot seed production. From 1992 through 1996, average yields for radish seed produced within the Columbia Basin ranged from 980 to 1,148 pounds per acre. For this study, the average 1992-1996 yield of 1,058 pounds of cleaned seed² contracted for \$1.00 per pound was used to calculate per-acre profitability and per-pound break-even prices.
5. Onions take two years to produce seed and, thus, seed yields may be variable due to winter kill. From 1992 through 1996, average yields for onion seed produced within the Columbia Basin ranged from 75 to 363 pounds per acre. For this study, the average 1992-1996 yield of 242 pounds of cleaned seed² contracted for \$14 per pound was used to calculate per-acre profitability and per-pound break-even prices.
6. The seed crop must meet certain germination standards (generally 85% of the seed crop must be proven to potentially germinate) before the processor pays the

²Washington State University Cooperative Extension Acreage and Yields Surveys.

producer for his/her seed. If the seed crop does not meet this standard, the producer is likely to receive none or only a fraction of the returns he/she would otherwise receive for the crop. In this study, it was assumed that carrot seed crops fail their germination test an average of once in every six years, onion seed crops fail their germination test one in ten years (one out of five crops), and radish seed so rarely fail a germination test that it is not considered as a probability.

7. The acreage on which the vegetable seed is grown is preceded by wheat.
8. The interest rate for both operating and capital loans is 10%.

DISCUSSION OF BUDGET INFORMATION

Budget information for each enterprise is reported in a series of eight tables. A summary of the information in each table is presented below.

Tables 4A-4D: Schedule of Operations and Costs Per Acre

Table 4 outlines the schedule of field operations by month, the type of machinery and labor use, 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; and (2) variable costs which are 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 10, 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 was determined by dividing the total annual fixed cost by the number of acres.

Land fixed cost is equal to the cash rent 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 Table 4. For management, a cost of 7% of expected gross receipts is used. This is representative of management fees charged by farm management firms in the Columbia Basin and is an estimation of the value of an operator's management skills.

In the second year of the onion seed budget, Table 4D, an interest charge of 10% on the first year of onion seed production costs is included as a fixed cost.

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 also included as a variable cost.

Tables 5A-5D: Materials and Services Used by Operation

Table 5 lists, by operation, the specific types and quantities of services and materials used per acre along with their respective prices.

Tables 6A-6D: Itemized Cost Per Acre

Table 6 is an itemized summary of the costs presented by field operations in Table 4. Most items are self-explanatory. However, "Tractor Interest" and "Mach/Build 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. The cost is calculated on the average annual value of the machinery which equals

$$[(\text{purchase price} + \text{salvage value})/2] \times 10\% \text{ interest.}$$

Table 7: Machinery and Building Complement

Table 7 identifies the machine and building complement used to derive machine and building costs. It includes the type of machines and buildings used on the representative farm, their current replacement value (new or used), years of use before trade-in, salvage value at trade-in, annual repair cost, and annual hours of use or acres covered.

Table 8: Machinery and Building Costs

The data in Table 7 are used to estimate the per-hour (and sometimes per-acre) fixed and variable costs appearing in Table 8. Machinery and building fixed costs include depreciation and interest on investment, property taxes, and insurance; these are costs that do not vary with crop grown or number of acres produced. Replacement costs are used for all machinery and buildings. While this assumption may result in an overstatement of production costs currently experienced by producers, it provides an indication of the enterprise's ability to generate the earnings needed to replace depreciable assets. Continuing increases in the prices paid for machinery and buildings 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. Note that interest on investment represents an 10% opportunity cost to the enterprise. These are earnings foregone by investing money in the machinery and buildings rather than the next best alternative. This may also represent the interest paid on funds borrowed to purchase machinery and buildings.

Machinery variable costs include machine repair, fuel, and lubrication--costs that vary with the crop grown or the number of acres produced.

Table 9: Input Prices

The prices used for fuel, fertilizer, chemicals, seed, custom services, and other inputs are listed in Table 9.

SUMMARY OF RESULTS

The results of this study place the variable cost of growing carrot seed, assuming that germination failures do not exist, at \$825 per acre, the fixed cost at \$394 per acre, bringing the total cost to \$1,219 per acre. If it is assumed that the crop fails to meet germination standards once in every six years and that the producer loses all production costs in that year, the total cost per production year (5 out of six years) is increased to \$1,442 per acre.

Since carrots are planted in the late summer, winter damage may cause yields to vary widely. Table 1 is a summary of the break-even price the producer must receive at different production levels to cover all costs including his/her labor, management, and return on equity investment.

Table 1: Break-even Prices for Carrot Seed Production at Different Production Levels.

	<u>Production Levels</u>				
	800 lbs.	1000 lbs.	1200 lbs.	1400 lbs.	1600 lbs.
	\$/lb.	\$/lb.	\$/lb.	\$/lb.	\$/lb.
Annual cost:	1.52	1.22	1.02	.87	.76
Annual cost plus allowance for germination failure:	1.80	1.44	1.20	1.03	.90

The results of this study place the variable cost of growing radish seed at \$664 per acre, the fixed cost at \$321 per acre, bringing the total cost to \$985 per acre. Since radish seed rarely fails to meet germination standards, no allowance was taken for germination failure in determining production costs.

Since radishes are planted in the spring, yields for radish seed typically vary much less widely than that for carrot seed. Table 2 is a summary of the break-even price the producer must receive at different production levels to cover all costs including his/her labor, management, and return on equity investment.

Table 2: Break-even Prices for Radish Seed Production at Different Production Levels.

	<u>Production Levels</u>				
	950 lbs.	1000 lbs.	1050 lbs.	1100 lbs.	1150 lbs.
	\$/lb.	\$/lb.	\$/lb.	\$/lb.	\$/lb.
Annual cost:	1.04	.99	.94	.90	.86

The results of this study place the two-year variable cost of growing onion seed, assuming that failure to meet germination standards do not exist, at \$2,384 per acre, the fixed cost at \$848 per acre bringing the total two-year cost to \$3,232 per acre. If it is assumed that the crop fails to meet germination standards once in every ten years and that the producer loses all production costs for the two-year production period, the total cost per two-year production period is increased to \$3,981 per acre.

Since onions are a two-year crop, winter damage may cause wide yield variations. Table 3 is a summary of the break-even price the producer must receive at different production levels to cover all costs including his/her labor, management, and return on equity investment.

Table 3: Break-even Prices for Onion Seed Production at Different Production Levels.

	<u>Production Levels</u>				
	150 lbs.	200 lbs.	250 lbs.	300 lbs.	350 lbs.
	\$/lb.	\$/lb.	\$/lb.	\$/lb.	\$/lb.
2-year cost:	21.55	16.16	12.93	10.78	9.24
2-year cost plus allowance for germination failure:	26.54	19.91	15.93	13.27	11.38

These results were discussed with a number of producers in the Columbia Basin. The general comment was that the budgets are representative of their costs. During times in which returns do not cover total costs, they remain in business by postponing equipment replacement and by accepting a lower return for their labor, management, and equity.

Users of these budgets should understand the procedures and assumptions used in this study and interpret the results accordingly. It was recognized by the producers and authors that these budgets do not represent any one particular operation. Therefore, you should use these budgets only as a general guide to help derive budgets for your own particular operation. Moreover, this publication is not intended as a guide to recommended production practices. Rather, it represents current production practices and technology used in the area.

TABLE 4A: 1997 SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING OPEN POLLINATED CARROT SEED IN THE COLUMBIA BASIN UNDER RILL IRRIGATION.

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.			
					\$	\$	\$	\$	\$	\$	\$	\$	
BEAT STUBBLE	130HP-WT, 15' BEATER	AUG 1996	.25	.28	6.75	3.54	3.30	.00	.00	.63	7.47	14.22	
DISC & PACK (2X)	130HP-WT, 14' OFFSET DISC/PACK	AUG 1996	.50	.55	13.79	9.68	6.60	.00	.00	1.49	17.77	31.56	
CORRUGATE	80HP-WT, 6 ROW CULTIVATOR	AUG 1996	.20	.22	3.00	2.71	2.64	.00	.00	.49	5.85	8.84	
HEADLAND	80HP-WT, HEADLANDER	AUG 1996	.08	.08	1.05	.76	.99	.00	.00	.16	1.91	2.96	
PREPLT IRRIGATE	RILL IRRIGATION	AUG 1996	.00	1.00	.57	.00	12.00	6.67	1.00	1.80	21.47	22.04	
DISC & PACK	130HP-WT, 14' OFFSET DISC&PACK	AUG 1996	.25	.28	6.89	4.84	3.30	.00	.00	.75	8.89	15.78	
PLOW & PACK	150HP-WT, 4-18 PLOW, 6' PACKER	AUG 1996	.40	.44	13.68	11.04	5.28	.00	.00	1.50	17.81	31.50	
FERTILIZE	CUSTOM APPLIED	AUG 1996	.00	.00	.00	.00	.00	6.00	50.55	5.18	61.73	61.73	
HERB&INCORPORATE	130HP-WT, DISC, SPRAYER, PACK	AUG 1996	.25	.50	9.26	4.52	6.00	.00	4.67	1.39	16.58	25.84	
HAUL WATER/MATER	NURSE TRUCK	AUG 1996	.02	.04	.50	.17	.48	.00	.00	.06	.71	1.21	
PLT & CORRUGATE	80HP-WT, 6 ROW PLANTER	AUG 1996	.50	1.00	11.86	10.08	12.00	.00	4.50	2.44	29.02	40.88	
HEADLAND	80HP-WT, HEADLANDER	AUG 1996	.08	.08	1.05	.76	.99	.00	.00	.16	1.91	2.96	
IRRIGATE (3X)	RILL IRRIGATION	AUG-OCT 1996	.00	1.50	1.72	.00	18.00	20.00	3.00	3.76	44.76	46.47	
EROSION CONTROL	W/IRRIGATION	SEP 1996	.00	.03	.00	.00	.30	.00	4.25	.42	4.97	4.97	
HERBICIDE	80HP-WT, HYDRAULIC SPRAYER	SEP 1996	.20	.40	2.80	2.16	4.80	.00	21.00	2.56	30.53	33.33	
HAUL WATER/MATER	NURSE TRUCK	SEP 1996	.02	.04	.50	.17	.48	.00	.00	.06	.71	1.21	
LAYBY CULTIVATE	80HP-WT, 6 ROW CULTIVATOR	OCT 1996	.50	.55	7.49	6.79	6.60	.00	.00	1.12	14.50	22.00	
ROLL	80HP-WT 15' PACKER	MAR 1997	.22	.24	2.66	2.39	2.90	.00	.00	.22	5.51	8.18	
POWER HARROW	80HP-WT, 6 ROW POWER HARROW	MAR 1997	.67	.73	9.17	6.95	8.76	.00	.00	.65	16.36	25.54	
THIN CARROTS	CUSTOM HIRED	APR 1997	.00	.00	.00	.00	.00	25.00	.00	.83	25.83	25.83	
CULT, CORR, FERT	80HP-WT, 6R CULT, LIQ FERT APPL	APR 1997	.50	.65	7.49	6.79	7.80	.00	35.00	1.65	51.24	58.73	
HEADLAND	80HP-WT, HEADLANDER	MAY 1997	.08	.08	1.05	.76	.99	.00	.00	.04	1.79	2.84	
IRRIGATE (5X)	RILL IRRIGATION	SEA 1997	.00	2.50	2.86	.00	30.00	33.33	5.00	3.42	71.75	74.61	
EROSION CTL (2X)	W/IRRIGATION	SEA 1997	.00	.05	.00	.00	.60	.00	8.50	.46	9.56	9.56	
WEEDING	HAND LABOR	MAY 1997	.00	.00	.00	.00	.00	35.00	.00	.88	35.88	35.88	
CULT, CORR&HERB*	80HP-WT, 6 ROW CULT, SPRAYER	MAY 1997	.50	1.00	9.81	7.41	12.00	.00	21.00	1.01	41.42	51.23	
HAUL WATER/MATER	NURSE TRUCK	MAY 1997	.02	.04	.50	.17	.48	.00	.00	.02	.67	1.17	
HDLAND WEED CONT	80 HP-WT, 11' ROTOVAT, SPRAYER	MAY 1997	.08	.15	1.85	1.57	1.80	.00	.86	.11	4.33	6.18	
HEADLAND	80HP-WT, HEADLANDER	JUN 1997	.08	.08	1.05	.76	.99	.00	.00	.03	1.77	2.82	
INSECT CONTROL	AERIAL APPLIED	JUN 1997	.00	.00	.00	.00	.00	8.00	29.22	.62	37.84	37.84	
INSECT CONTROL	AERIAL APPLIED	JUL 1997	.00	.00	.00	.00	.00	8.00	4.67	.11	12.78	12.78	
INSECT CONTROL	AERIAL APPLIED	AUG 1997	.00	.00	.00	.00	.00	8.00	16.05	.00	24.05	24.05	
WINDROW	CUSTOM HIRED	AUG 1997	.00	.00	.00	.00	.00	30.00	.00	.00	30.00	30.00	
COMBINE	CUSTOM HIRED	AUG 1997	.00	.00	.00	.00	.00	85.00	.00	.00	85.00	85.00	
HAUL	CUSTOM HIRED	AUG 1997	.00	.00	.00	.00	.00	15.00	.00	.00	15.00	15.00	
MISC. USE	PICKUP	ANN 1997	1.00	.00	7.44	5.76	.00	.00	.00	.29	6.05	13.49	
MISC. USE	NURSE TRUCK	ANN 1997	.05	.10	1.24	.43	1.20	.00	.00	.08	1.71	2.95	
BUILDINGS	MACHINE SHED & SHOP	ANN 1997	.00	.00	7.07	1.00	.00	.00	.00	.05	1.05	8.12	
MISC. USE	SHOP TOOLS	ANN 1997	.00	.00	8.97	1.00	.00	.00	.00	.05	1.05	10.02	
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN 1997	.00	.00	.00	.00	.00	57.54	.00	.00	57.54	57.54	
LAND COST	LAND RENT	ANN 1997	.00	.00	150.00	.00	.00	.00	.00	.00	.00	150.00	
MANAGEMENT	7% OF GROSS RETURNS	ANN 1997	.00	.00	101.76	.00	.00	.00	.00	.00	.00	101.76	
TOTAL PER ACRE			6.43	12.61	393.86	92.20	151.28	337.54	209.27	34.47	824.77	1218.63	

*WITH A SEVERE WEED POPULATION, CAPAROL (\$6.62/PT) MAY BE APPLIED IN ADDITION TO LINURON @ 1 TO 2 PINTS/ACRE.

Table 5A: Materials and Services Used by Operation for
Producing Open Pollinated Carrot Seed

Operation		Material and/or Service
Preplant Irrigate	August	Irrigation charge @ \$6.67/acre Irrigation maintenance @ \$1.00/acre
Fertilize	August	Custom applied @ \$6.00/acre 50 lbs. of nitrogen (dry) @ 34¢/lb. 60 lbs. of phosphorous @ 25¢/lb. 60 lbs. of potash @ 14¢/lb. 20 lbs. of sulfur @ 10¢/lb. 5 lbs. of zinc @ \$1.05/lb. 1 lb. of boron @ \$2.90/lb.
Herbicide & Incorporate	August	1.0 pint of trifluralin @ \$4.67/pint
Plant & Corrugate	August	1.5 lbs. of carrot seed @ \$3.00/lb.
Irrigate (3X)	Aug.-Oct.	Irrigation charge @ \$20.00/acre Irrigation maintenance @ \$3.00/acre
Erosion Control	September	1 lb. of polyacrylamide @ \$4.25/lb.
Herbicide	September	1.5 lbs. of linuron @ \$14.00/lb.
Thin carrots	April	Custom hired @ \$25.00/acre
Cultivate, Corrugate, & Fertilize	April	100 lbs. of nitrogen (liq.) @ 35¢/lb.
Irrigate (5X)	Season	Irrigation charge @ \$33.33/acre Irrigation maintenance @ \$5.00/acre
Erosion Control (2X)	Season	2 lb. of polyacrylamide @ \$4.25/lb.
Cultivate, Corrugate, & Herbicide	May	1.5 lbs. of linuron @ \$14.00/lb.
Headland Weed Control	May	0.025 gal. of Eptam @ \$34.25/gal.
Insect Control	June	Aerially applied @ \$8.00/acre 6.4 ounces of Capture @ \$4.53/ounce .1 pint of spreader @ \$2.28/pint

Table 5A: Continued.

Operation		Material and/or Service
Insect Control	July	Aerially applied @ \$8.00/acre 1 pint of dimethoate @ \$4.67/pint
Insect Control	August	Aerially applied @ \$8.00/acre 1.3 lbs. of Orthene @ \$12.35/lb.
Windrow	August	Custom hired @ \$30.00/acre
Combine	August	Custom hired @ \$85.00/acre
Haul	August	Custom hired @ \$15.00/acre
Overhead	Annual	7.5% of variable cost

TABLE 6A: 1997 ITEMIZED COST PER ACRE FOR PRODUCING OPEN
 POLLINATED CARROT SEED IN THE COLUMBIA BASIN UNDER RILL
 IRRIGATION.

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

VARIABLE COSTS		\$		\$	
CARROT SEED	LB.	3.00	1.50	4.50	_____
NITROGEN (DRY)	LB.	.34	50.00	17.00	_____
NITROGEN (LIQ)	LB.	.35	100.00	35.00	_____
PHOSPHOROUS	LB.	.25	60.00	15.00	_____
POTASH	LB.	.14	60.00	8.40	_____
ZINC	LB.	1.05	5.00	5.25	_____
SULFUR	LB.	.10	20.00	2.00	_____
BORON	LB.	2.90	1.00	2.90	_____
CUSTOM FERT SPREADER	ACRE	6.00	1.00	6.00	_____
TRIFLURALIN	PINT	4.67	1.00	4.67	_____
LINURON	LB.	14.00	3.00	42.00	_____
EPTAM	GAL.	34.25	.03	.86	_____
ORTHENE	LB.	12.35	1.30	16.05	_____
CAPTURE	OZ.	4.53	6.40	28.99	_____
SPREADER	PT.	2.28	.10	.23	_____
DIMETHOATE	PINT	4.67	1.00	4.67	_____
CUSTOM AERIAL	ACRE	8.00	3.00	24.00	_____
POLYACRYLAMIDE	LB.	4.25	3.00	12.75	_____
IRRIGATION CHG. '96	ACRE	40.00	.67	26.67	_____
IRRIG. MAINTEN. '96	ACRE	6.00	.67	4.00	_____
IRRIGATION CHG. '97	ACRE	40.00	.83	33.33	_____
IRRIG. MAINTEN. '97	ACRE	6.00	.83	5.00	_____
CUSTOM WINDROW	ACRE	30.00	1.00	30.00	_____
CUSTOM COMBINE	ACRE	85.00	1.00	85.00	_____
CUSTOM HAULING	ACRE	15.00	1.00	15.00	_____
TRACTOR REPAIR	ACRE	28.54	1.00	28.54	_____
TRACTOR FUEL/LUBE	ACRE	30.33	1.00	30.33	_____
MACH/BUILD REPAIRS	ACRE	30.22	1.00	30.22	_____
MACHINE FUEL/LUBE	ACRE	3.12	1.00	3.12	_____
LABOR (TRAC/MACH/IRR)	HOUR	12.00	12.61	151.28	_____
THINNING LABOR	ACRE	25.00	1.00	25.00	_____
WEEDING LABOR	HOUR	7.00	5.00	35.00	_____
INTEREST ON OP. CAP.	ACRE	34.47	1.00	34.47	_____
OVERHEAD	ACRE	57.50	1.00	57.50	_____

TOTAL VARIABLE COST				824.77	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	27.42	1.00	27.42	_____
TRACTOR INTEREST	ACRE	30.84	1.00	30.84	_____
TRACTOR INSURANCE	ACRE	1.85	1.00	1.85	_____
TRACTOR TAXES	ACRE	5.55	1.00	5.55	_____
MACH/BUILD DEP.	ACRE	37.51	1.00	37.51	_____
MACH/BUILD INTEREST	ACRE	31.39	1.00	31.39	_____
MACH/BUILD INSURANCE	ACRE	1.88	1.00	1.88	_____
MACH/BUILD TAXES	ACRE	5.65	1.00	5.65	_____
LAND RENT	ACRE	150.00	1.00	150.00	_____
MANAGEMENT CHARGE*	ACRE	101.76	1.00	101.76	_____

TOTAL FIXED COST				393.86	_____

TOTAL COST				1218.63	_____

*7% OF EXPECTED GROSS RETURNS (1163 LBS. X \$1.25 X .07).

TABLE 4B: 1997 SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING RADISH SEED IN THE COLUMBIA BASIN UNDER RILL IRRIGATION.

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.		
						\$	\$	\$	\$	\$	\$	\$	\$
DISC & PACK (2X)	130HP-WT, 14' OFFSET DISC&PACK	SEP	1996	.50	.55	15.95	9.54	6.60	.00	.00	.13	16.27	32.22
PLOW & PACK	150HP-WT, 4-18 PLOW, 6' PACKER	MAR	1997	.40	.44	13.68	11.04	5.28	.00	.00	.95	17.27	30.95
FERT/HERB/INSECT	CUSTOM APPLIED	MAR	1997	.00	.00	.00	.00	.00	6.00	113.99	7.00	126.98	126.98
INCORP CHEMICALS	130HP-WT, 14' OFFSET DISC&PACK	MAR	1997	.25	.28	7.98	4.77	3.30	.00	.00	.47	8.54	16.52
PLANT&CORRUGATE	80HP-WT, 6 ROW PLANTER	MAR	1997	.50	1.00	11.86	10.08	12.00	.00	4.00	1.52	27.60	39.47
HEADLAND	80HP-WT, HEADLANDER	MAR	1997	.08	.08	1.05	.76	.99	.00	.00	.10	1.85	2.90
IRRIGATE (10X)	RILL IRRIGATION	SEA	1997	.00	5.00	3.43	.00	60.00	40.00	6.00	5.30	111.30	114.73
EROSION CTL (3X)	W/IRRIGATION	SEA	1997	.00	.08	.00	.00	.90	.00	12.75	.68	14.33	14.33
CULT & CORRUGATE	80HP-WT, 6 ROW CULTIVATOR	APR	1997	.50	.55	7.49	6.79	6.60	.00	.00	.67	14.06	21.55
INSECT CONTROL	CUSTOM AERIAL	APR	1997	.00	.00	.00	.00	.00	8.00	16.81	1.24	26.05	26.05
CULT,INSECT&FERT	80HP-WT,6R CULT,INS APP,FT APP	MAY	1997	.33	.66	7.20	5.60	7.92	.00	42.50	2.33	58.36	65.55
HAUL WATER/MATER	NURSE TRUCK	MAY	1997	.02	.04	.50	.17	.48	.00	.00	.03	.68	1.18
INSECT CONTROL	CUSTOM AERIAL	MAY	1997	.00	.00	.00	.00	.00	8.00	16.81	1.03	25.84	25.84
HEADLAND WD CTL	80HP-WT, 11' ROTOVAT, SPRAYER	MAY	1997	.08	.15	1.85	1.57	1.80	.00	.86	.18	4.40	6.25
HEADLAND	80HP-WT, HEADLANDER	MAY	1997	.08	.08	1.05	.76	.99	.00	.00	.07	1.82	2.87
INSECT CONTROL	CUSTOM AERIAL	JUL	1997	.00	.00	.00	.00	.00	8.00	12.00	.50	20.50	20.50
WINDROW	CUSTOM HIRED	AUG	1997	.00	.00	.00	.00	.00	30.00	.00	.50	30.50	30.50
COMBINE	CUSTOM HIRED	AUG	1997	.00	.00	.00	.00	.00	85.00	.00	1.42	86.42	86.42
HAUL	CUSTOM HIRED	AUG	1997	.00	.00	.00	.00	.00	15.00	.00	.25	15.25	15.25
MISC. USE	PICKUP	ANN	1997	1.00	.00	7.44	5.76	.00	.00	.00	.29	6.05	13.49
MISC. USE	NURSE TRUCK	ANN	1997	.05	.10	1.24	.43	1.20	.00	.00	.08	1.71	2.95
BUILDINGS	MACHINE SHED & SHOP	ANN	1997	.00	.00	7.07	1.00	.00	.00	.00	.05	1.05	8.12
MISC. USE	SHOP TOOLS	ANN	1997	.00	.00	8.97	1.00	.00	.00	.00	.05	1.05	10.02
OVERHEAD	LEGAL, UTILITIES, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	46.34	.00	.00	46.34	46.34
MANAGEMENT	7% OF GROSS RETURNS	ANN	1997	.00	.00	74.06	.00	.00	.00	.00	.00	.00	74.06
LAND COST	LAND RENT	ANN	1997	.00	.00	150.00	.00	.00	.00	.00	.00	.00	150.00
TOTAL PER ACRE				3.77	9.00	320.83	59.26	108.06	246.34	225.71	24.85	664.22	985.05

NOTE: APPROXIMATELY 2 OUT OF 5 YEARS, 2 POUNDS PER ACRE OF RIDOMIL GOLD-COPPER IS AERIALY APPLIED ON THE CROP FOR WHITE RUST CONTROL AT A TOTAL COST OF \$35.42 PER ACRE.

Table 5B: Materials and Services Used by Operation for
Producing Radish Seed

Operation		Material and/or Service
Fertilize/ Herbicide/ Insecticide	March	Custom applied @ \$6.00/acre 140.0 lbs. of nitrogen (dry) @ 34¢/lb. 80.0 lbs. of phosphorous @ 25¢/lb. 80.0 lbs. of potash @ 14¢/lb. 25.0 lbs. of sulfur @ 10¢/lb. 5.0 lbs. of zinc @ \$1.05/lb. 1.0 lb. of boron @ \$2.90/lb. 0.5 pints of trifluralin @ \$4.67/pint 1.5 pints of Dual II @ \$10.00/pint 4.0 lbs. of Diazinon 14G @\$1.80/lb.
Plant & Corrugate	March	4.0 lbs. of radish seed @ \$1.00/lb.
Irrigate (10X)	Season	Irrigation charge @ \$40.00/acre Irrigation maintenance @ \$6.00/acre
Erosion Control (3X)	Season	3.0 lbs. of polyacrylamide @ \$4.25/lb.
Insect Control	April	Aerially applied @ \$8.00/acre 7.0 oz. of Asana @ \$1.33/oz. 1.0 qt. of Sevin XLR @ \$7.50/qt.
Cultivate/ Insecticide/ Fertilize	May	60.0 lbs. of nitrogen (liq.) @ 35¢/lb. 1.0 qt. of DiSystem @ \$21.50/qt.
Insect Control	May	Aerially applied @ \$8.00/acre 7.0 oz. of Asana @ \$1.33/oz. 1.0 qt. of Sevin XLR @ \$7.50/qt.
Headland Weed Control	May	0.025 gal. of Eptam @ \$34.25/gal.
Insect Control	July	Aerially applied @ \$8.00/acre 1.0 qt. of malathion @ \$7.00/qt. Foliar fertilizer @ \$5.00/acre
Windrow	August	Custom hired @ \$30.00/acre
Combine	August	Custom hired @ \$85.00/acre
Haul	August	Custom hired @ \$15.00/acre
Overhead	Annual	7.5% of variable cost

TABLE 6B: 1997 ITEMIZED COST PER ACRE FOR PRODUCING RADISH SEED
IN THE COLUMBIA BASIN UNDER RILL IRRIGATION.

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

VARIABLE COSTS		\$		\$	
RADISH SEED	LB.	1.00	4.00	4.00	_____
NITROGEN (DRY)	LB.	.34	140.00	47.60	_____
NITROGEN (LIQ)	LB.	.35	60.00	21.00	_____
PHOSPHOROUS	LB.	.25	80.00	20.00	_____
POTASH	LB.	.14	80.00	11.20	_____
SULFUR	LB.	.10	25.00	2.50	_____
ZINC	LB.	1.05	5.00	5.25	_____
BORON	LB.	2.90	1.00	2.90	_____
CUSTOM FERT SPREADER	ACRE	6.00	1.00	6.00	_____
TRIFLURALIN	PINT	4.67	.50	2.33	_____
DUAL II	PINT	10.00	1.50	15.00	_____
DIAZINON 14G	LB.	1.80	4.00	7.20	_____
ASANA	OZ.	1.33	14.00	18.62	_____
SEVIN XLR	QT.	7.50	2.00	15.00	_____
DISYSTON	QT.	21.50	1.00	21.50	_____
EPTAM	GAL.	34.25	.03	.86	_____
MALATHION	QT.	7.00	1.00	7.00	_____
FOLIAR FERTILIZER	ACRE	5.00	1.00	5.00	_____
CUSTOM AERIAL	ACRE	8.00	3.00	24.00	_____
CUSTOM WINDROW	ACRE	30.00	1.00	30.00	_____
CUSTOM COMBINE	ACRE	85.00	1.00	85.00	_____
CUSTOM HAULING	ACRE	15.00	1.00	15.00	_____
POLYACRYLAMIDE	LB.	4.25	3.00	12.75	_____
IRRIGATION CHARGE	ACRE	40.00	1.00	40.00	_____
IRRIg MAINTENANCE	ACRE	6.00	1.00	6.00	_____
TRACTOR REPAIR	ACRE	15.40	1.00	15.40	_____
TRACTOR FUEL/LUBE	ACRE	17.18	1.00	17.18	_____
MACHINERY REPAIRS	ACRE	23.69	1.00	23.69	_____
MACHINE FUEL/LUBE	ACRE	2.99	1.00	2.99	_____
LABOR (TRAC/MACH/IRR)	HOUR	12.00	9.00	108.06	_____
OVERHEAD	ACRE	46.34	1.00	46.34	_____
INTEREST ON OP. CAP.	ACRE	24.85	1.00	24.85	_____
TOTAL VARIABLE COST				664.22	_____

FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	15.53	1.00	15.53	_____
TRACTOR INTEREST	ACRE	17.47	1.00	17.47	_____
TRACTOR INSURANCE	ACRE	1.05	1.00	1.05	_____
TRACTOR TAXES	ACRE	3.14	1.00	3.14	_____
MACH/BUILD DEPRES.	ACRE	27.94	1.00	27.94	_____
MACH/BUILD INTEREST	ACRE	25.53	1.00	25.53	_____
MACH/BUILD INSURANCE	ACRE	1.53	1.00	1.53	_____
MACH/BUILD TAXES	ACRE	4.60	1.00	4.60	_____
MANAGEMENT*	ACRE	74.06	1.00	74.06	_____
LAND RENT	ACRE	150.00	1.00	150.00	_____
TOTAL FIXED COST				320.83	_____

TOTAL COST				985.05	_____

*7% OF EXPECTED GROSS RETURNS (1058 LBS. X \$1.00 X .07).

TABLE 4C: 1997 SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE COST OF PRODUCING HYBRID ONION SEED IN THE COLUMBIA BASIN UNDER RILL IRRIGATION; YEAR 1.

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.			
						\$	\$	\$	\$	\$	\$			
DISC & PACK	130HP-WT, 14' OFFSET DISC&PACK	APR	1997	.25	.28	6.89	4.84	3.30	.00	.00	.41	8.55	15.44	
DISC & PACK	130HP-WT, 14' OFFSET DISC&PACK	MAY	1997	.25	.28	6.89	4.84	3.30	.00	.00	.34	8.48	15.37	
CORRUGATE	80HP-WT, 6 ROW CULTIVATOR	JUN	1997	.20	.22	3.00	2.71	2.64	.00	.00	.18	5.53	8.53	
HEADLAND	80HP-WT, HEADLANDER	JUN	1997	.08	.08	1.05	.76	.99	.00	.00	.06	1.80	2.85	
PREPLT IRRIGATE	RILL IRRIGATION	JUL	1997	.00	1.00	.57	.00	12.00	6.67	1.00	.49	20.16	20.73	
DISC & PACK	130HP-WT, 14' OFFSET DISC&PACK	JUL	1997	.25	.28	6.89	4.84	3.30	.00	.00	.20	8.34	15.24	
PLOW & PACK	150HP-WT, 4-18 PLOW, 6' PACKER	JUL	1997	.40	.44	13.68	11.04	5.28	.00	.00	.41	16.73	30.41	
FERTILIZE	CUSTOM APPLIED	JUL	1997	.00	.00	.00	.00	.00	6.00	61.65	1.69	69.34	69.34	
DISC & PACK (2X)	130HP-WT, 14' OFFSET DISC&PACK	JUL	1997	.50	.55	13.79	9.68	6.60	.00	.00	.41	16.69	30.47	
PLT, CORR, SPRAY	80HP-WT, 6R PLANTER, HYD SPRAY	JUL	1997	.50	1.00	14.18	10.71	12.00	.00	156.80	4.49	183.99	198.17	
HEADLAND	80HP-WT, HEADLANDER	JUL	1997	.08	.08	1.05	.76	.99	.00	.00	.04	1.79	2.84	
IRRIGATE (5X)	RILL IRRIGATION	SEA	1997	.00	5.00	2.86	.00	60.00	33.33	5.00	4.92	103.25	106.11	
EROSION CTL (3X)	W/IRRIGATION	SEA	1997	.00	.15	.00	.00	1.80	.00	12.75	.73	15.28	15.28	
SPRAY	80HP-WT, HYDRAULIC SPRAYER	JUL	1997	.20	.40	2.80	2.16	4.80	.00	7.09	.35	14.41	17.21	
SPRAY	80HP-WT, HYDRAULIC SPRAYER	AUG	1997	.20	.40	2.80	2.16	4.80	.00	12.45	.32	19.74	22.54	
NITROGATE	W/IRRIGATION	AUG	1997	.00	.05	.00	.00	.60	.00	8.75	.16	9.51	9.51	
INSECT CONTROL	AERIAL APPLIED	AUG	1997	.00	.00	.00	.00	.00	8.00	10.80	.31	19.12	19.12	
CULTIVATE	80HP-WT, 6 ROW CULTIVATOR	AUG	1997	.50	.55	7.49	6.79	6.60	.00	.00	.22	13.61	21.10	
SPRAY	80HP-WT, HYDRAULIC SPRAYER	SEP	1997	.20	.40	2.80	2.16	4.80	.00	12.45	.16	19.58	22.38	
SPRAY	80HP-WT, HYDRAULIC SPRAYER	SEP	1997	.20	.40	2.80	2.16	4.80	.00	10.87	.15	17.98	20.78	
CULTIVATE	80HP-WT, 6 ROW CULTIVATOR	SEP	1997	.50	.55	7.49	6.79	6.60	.00	.00	.11	13.50	20.99	
HDLAND WEED CTL.	80 HP-WT, 11' ROTOVA, SPRAYER	SEP	1997	.08	.15	1.85	1.57	1.80	.00	.86	.04	4.26	6.11	
HEADLAND	80HP-WT, HEADLANDER	SEP	1997	.08	.08	1.05	.76	.99	.00	.00	.01	1.76	2.81	
WEEDING	HAND LABOR	SEP	1997	.00	7.00	.00	.00	49.00	.00	.00	.41	49.41	49.41	
FUNGICIDE	80HP-WT, HYDRAULIC SPRAYER	SEP	1997	.20	.40	2.80	2.16	4.80	.00	15.11	.18	22.26	25.06	
FUNGICIDE	80HP-WT, HYDRAULIC SPRAYER	SEP	1997	.20	.40	2.80	2.16	4.80	.00	8.50	.13	15.59	18.39	
FUNGICIDE	80HP-WT, HYDRAULIC SPRAYER	OCT	1997	.20	.40	2.80	2.16	4.80	.00	36.66	.00	43.62	46.42	
LAYBY CULT&HERB	80HP-WT, 6R CULT, HYD SPRAYER	OCT	1997	.50	1.00	9.81	7.41	12.00	.00	14.72	.00	34.14	43.95	
HAUL WATER/MATER	NURSE TRUCK	SEA	1997	.18	.36	4.47	1.55	4.32	.00	.00	.29	6.16	10.64	
MISC. USE	PICKUP	ANN	1997	1.00	.00	7.44	5.76	.00	.00	.00	.29	6.05	13.49	
MISC. USE	NURSE TRUCK	ANN	1997	.05	.10	1.24	.43	1.20	.00	.00	.08	1.71	2.95	
BUILDINGS	MACHINE SHED & SHOP	ANN	1997	.00	.00	7.07	1.00	.00	.00	.00	.05	1.05	8.12	
MISC. USE	SHOP TOOLS	ANN	1997	.00	.00	8.97	1.00	.00	.00	.00	.05	1.05	10.02	
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN	1997	.00	.00	.00	.00	.00	58.08	.00	.00	58.08	58.08	
LAND COST	LAND RENT	ANN	1997	.00	.00	150.00	.00	.00	.00	.00	.00	.00	150.00	
TOTAL PER ACRE				6.78	21.99	297.36	98.37	228.91	112.08	375.47	17.68	832.52	1129.88	

Table 5C: Materials and Services Used by Operation for
Producing Hybrid Onion Seed, Year 1.

Operation		Material and/or Service
Preplant Irrigate	July	Irrigation charge @ \$6.67/acre Irrigation maintenance @ \$1.00/acre
Fertilize	July	Custom applied @ \$6.00/acre 75 lbs. of nitrogen (dry) @ 34¢/lb. 100 lbs. of phosphorous @ 25¢/lb. 30 lbs. of sulfur @ 10¢/lb. 5 lbs. of zinc @ \$1.05/lb. 1 lb. of boron @ \$2.90/lb.
Plant, Corrugate & Spray	July	5 lbs. of onion seed @ \$14.00/lb. 8 lbs. of Dacthal @ \$8.35/lb. 1 gal. of Ramrod @ \$20.00/gal.
Irrigate (5X)	Season	Irrigation charge @ \$33.33/acre Irrigation maintenance @ \$5.00/acre
Erosion control (3X)	Season	3 lb. of polyacrylamide @ \$4.25/lb.
Spray	July	1 pint of glyphosate @ \$7.09/pint
Spray	August	0.75 pints of Buctril @ \$7.88/pint 0.48 pints of Goal 2XL @ \$13.63/pint
Nitrogate	August	25 lbs. of nitrogen (liq.) @ \$0.35/lb.
Insect Control	August	Aerial application @ \$8.00/acre 3.8 ozs. of Warrior @ \$2.77/oz.
Spray	September	0.75 pints of Buctril @ \$7.88/pint 0.48 pints of Goal 2XL @ \$13.63/pint
Spray	September	0.75 pints of Fusilade DX @ \$17.50/pint 2.0 pints of crop oil @ \$1.06/pint
Headland Weed Control	September	0.025 gal. of Eptam @ \$34.25/gal.
Fungicide	September	1.0 qt. of cholorothalonil @ \$15.11/qt.

Table 5C: Continued.

Operation		Material and/or Service
Fungicide	September	1.0 qt. of cupric hydroxide fungicide @ \$8.50/qt.
Fungicide	October	1.5 pints of Rovral @ \$24.44/pint
Layby Cultivation & Herbicide	October	2.4 pints of Prowl @ \$4.09/pint
Overhead	Annual	7.5% of variable cost

TABLE 6C: 1997 ITEMIZED COST PER ACRE COST FOR PRODUCING HYBRID ONION SEED IN THE COLUMBIA BASIN UNDER RILL IRRIGATION; YEAR 1.

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
VARIABLE COSTS		\$		\$	
ONION SEED	LB.	14.00	5.00	70.00	_____
NITROGEN (DRY)	LB.	.34	75.00	25.50	_____
NITROGEN (LIQ)	LB.	.35	25.00	8.75	_____
PHOSPHOROUS	LB.	.25	100.00	25.00	_____
ZINC	LB.	1.05	5.00	5.25	_____
SULFUR	LB.	.10	30.00	3.00	_____
BORON	LB.	2.90	1.00	2.90	_____
CUSTOM FERTILIZATION	ACRE	6.00	1.00	6.00	_____
DACTHAL	LB.	8.35	8.00	66.80	_____
RAMROD	GAL.	20.00	1.00	20.00	_____
GLYPHOSATE	PINT	7.09	1.00	7.09	_____
WARRIOR	OZ.	2.77	3.90	10.80	_____
BUCTRIL	PINT	7.88	1.50	11.82	_____
GOAL 2XL	PINT	13.63	.96	13.08	_____
FUSILADE DX	PINT	17.50	.50	8.75	_____
CROP OIL	PINT	1.06	2.00	2.12	_____
CUPRIC HYDROXIDE FUNG	QT.	8.50	1.00	8.50	_____
EPTAM	GAL.	34.25	.03	.86	_____
CHLOROTHALONIL	QT.	15.11	1.00	15.11	_____
ROVRAL	PINT	24.44	1.50	36.66	_____
PROWL	PINT	4.09	3.60	14.72	_____
CUSTOM AERIAL	ACRE	8.00	1.00	8.00	_____
POLYACRYLAMIDE	LB.	4.25	3.00	12.75	_____
IRRIGATION CHARGE	ACRE	40.00	1.00	40.00	_____
IRRIGATION MAINTEN.	ACRE	6.00	1.00	6.00	_____
TRACTOR REPAIR	ACRE	29.66	1.00	29.66	_____
TRACTOR FUEL/LUBE	ACRE	32.36	1.00	32.36	_____
MACHINERY REPAIRS	ACRE	32.85	1.00	32.85	_____
MACHINE FUEL/LUBE	ACRE	3.51	1.00	3.51	_____
WEEDING LABOR	HOUR	7.00	7.00	49.00	_____
LABOR (TRAC/MACH/IRR)	HOUR	12.00	14.99	179.91	_____
INTEREST ON OP. CAP.	ACRE	17.68	1.00	17.68	_____
OVERHEAD	ACRE	58.08	1.00	58.08	_____
TOTAL VARIABLE COST				832.52	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	28.34	1.00	28.34	_____
TRACTOR INTEREST	ACRE	31.88	1.00	31.88	_____
TRACTOR INSURANCE	ACRE	1.91	1.00	1.91	_____
TRACTOR TAXES	ACRE	5.74	1.00	5.74	_____
MACH/BUILD DEPRES.	ACRE	39.32	1.00	39.32	_____
MACH/BUILD INTEREST	ACRE	32.40	1.00	32.40	_____
MACH/BUILD INSURANCE	ACRE	1.94	1.00	1.94	_____
MACH/BUILD TAXES	ACRE	5.83	1.00	5.83	_____
LAND RENT	ACRE	150.00	1.00	150.00	_____
TOTAL FIXED COST				297.36	_____
TOTAL COST				1129.88	_____

TABLE 4D: 1997 SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING HYBRID ONION SEED IN THE COLUMBIA BASIN UNDER RILL IRRIGATION; YEAR 2.

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.		
						\$	\$	\$	\$	\$	\$	\$	
FERTILIZE	CUSTOM AERIAL	FEB	1998	.00	.00	.00	.00	.00	8.00	24.00	2.13	34.13	34.13
CULT & HERBICIDE	80HP-WT, 6R CULT, HYD SPRAYER	MAR	1998	.50	1.00	9.81	7.41	12.00	.00	9.82	1.70	30.93	40.74
FUNG & INSECT	80HP-WT, HYDRAULIC SPRAYER	APR	1998	.20	.40	2.80	2.16	4.80	.00	25.64	1.63	34.23	37.03
WEEDING	HAND LABOR	APR	1998	.00	10.00	.00	.00	70.00	.00	.00	3.50	73.50	73.50
HDLAND WEED CTL.	80HP-WT, 11'ROTOVA, HYD SPRAY	APR	1998	.08	.15	1.85	1.57	1.80	.00	.86	.21	4.44	6.29
HEADLAND	80HP-WT, HEADLANDER	APR	1998	.08	.08	1.05	.76	.99	.00	.00	.09	1.83	2.88
IRRIGATE (8X)	RILL IRRIGATION	SEA	1998	.00	8.00	3.43	.00	96.00	40.00	6.00	7.10	149.10	152.53
EROSION CTL (2X)	W/IRRIGATION	SEA	1998	.00	.10	.00	.00	1.20	.00	8.50	.49	10.18	10.18
FUNGICIDE	80HP-WT, HYDRAULIC SPRAYER	MAY	1998	.20	.40	2.80	2.16	4.80	.00	36.66	1.82	45.44	48.24
HAUL WATER/MATER	NURSE TRUCK	SEA	1998	.06	.12	1.49	.52	1.44	.00	.00	.10	2.05	3.55
HDLAND WEED CTL.	80HP-WT, 11'ROTOVA, HYD SPRAY	MAY	1998	.08	.15	1.85	1.57	1.80	.00	.86	.18	4.40	6.25
HEADLAND	80HP-WT, HEADLANDER	MAY	1998	.08	.08	1.05	.76	.99	.00	.00	.07	1.82	2.87
POLLINATION	5 BEE HIVES	JUN	1998	.00	.00	.00	.00	.00	150.00	.00	5.00	155.00	155.00
DESTROY MALE ROW	RENTAL MACHINE AND FUEL	JUL	1998	.00	1.00	.00	.00	12.00	5.00	.00	.43	17.43	17.43
HARVEST	HAND PICK, HAUL TO SHED, DRY	AUG	1998	.00	.00	.00	.00	.00	700.00	.00	11.67	711.67	711.67
HARVEST	HANDLING LABOR	AUG	1998	.00	.00	.00	.00	.00	50.00	.00	.83	50.83	50.83
HARVEST	COMBINE UMBELS	AUG	1998	.00	.00	.00	.00	.00	100.00	.00	1.67	101.67	101.67
HARVEST	HAUL SEED TO PLANT	AUG	1998	.00	.00	.00	.00	.00	5.00	.00	.08	5.08	5.08
MISC. USE	PICKUP	ANN	1998	1.00	.00	7.44	5.76	.00	.00	.00	.29	6.05	13.49
MISC. USE	NURSE TRUCK	ANN	1998	.05	.10	1.24	.43	1.20	.00	.00	.08	1.71	2.95
BUILDINGS	MACHINE SHED & SHOP	ANN	1998	.00	.00	7.07	1.00	.00	.00	.00	.05	1.05	8.12
MISC. USE	SHOP TOOLS	ANN	1998	.00	.00	8.97	1.00	.00	.00	.00	.05	1.05	10.02
OVERHEAD	LEGAL, UTILITIES, ACCT., ETC.	ANN	1998	.00	.00	.00	.00	.00	108.27	.00	.00	108.27	108.27
MANAGEMENT	7% OF GROSS RETURNS	ANN	1998	.00	.00	237.16	.00	.00	.00	.00	.00	.00	237.16
LAND COST	LAND RENT	ANN	1998	.00	.00	150.00	.00	.00	.00	.00	.00	.00	150.00
INTEREST	10% OF FIRST YEAR COSTS	ANN	1998	.00	.00	112.99	.00	.00	.00	.00	.00	.00	112.99
TOTAL PER ACRE				2.31	21.58	551.01	25.10	209.02	1166.27	112.32	39.16	1551.88	2102.89

Table 5D: Materials and Services Used by Operation for
Producing Hybrid Onion Seed, Year 2.

Operation		Material and/or Service
Fertilize	February	Aerially applied @ \$8.00/acre 100 lbs. of 46-0-0 @ \$0.24/lb.
Cultivate & Herbicide	March	2.4 pints of Prowl @ \$4.09/pint
Fungicide & Insecticide	April	1.0 qt. of chlorothalonil @ \$15.11/qt. 3.8 ozs. of Warrior @ \$2.77/oz.
Headland Weed Control	April	0.025 gal. of Eptam @ \$34.25/gal.
Irrigate (8X)	Season	Irrigation charge @ \$40.00/acre Irrigation maintenance @ \$6.00/acre
Erosion Control (2X)	Season	2 lb. of polyacrylamide @ \$4.25/lb.
Fungicide	May	1.5 pints of Rovral @ \$24.44/pint
Headland Weed Control	May	0.025 gal. of Eptam @ \$34.25/gal.
Pollination	June	5 bee hives @ \$30.00/hive
Destroy Male Rows	August	Rental machine & fuel @ \$5.00/acre
Harvest	October	Hand pick umbels, haul to shed, & dry @ \$700.00/acre Handling labor @ \$50.00/acre Combine umbels @ \$100.00/acre Haul seed to plant @ \$5.00/acre
Overhead	Annual	7.5% of variable cost

TABLE 6D: 1997 ITEMIZED COST PER ACRE FOR PRODUCING HYBRID ONION SEED IN THE COLUMBIA BASIN UNDER RILL IRRIGATION; YEAR 2

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

VARIABLE COSTS		\$		\$	
46-0-0	LB.	.24	100.00	24.00	_____
CUSTOM AERIAL	ACRE	8.00	1.00	8.00	_____
PROWL	PINT	4.09	2.40	9.82	_____
CHLOROTHALONIL	QT.	15.11	1.00	15.11	_____
WARRIOR	OZ.	2.77	3.80	10.53	_____
EPTAM	GAL.	34.25	.05	1.72	_____
ROVRAL	PINT	24.44	1.50	36.66	_____
POLYACRYLAMIDE	LB.	4.25	2.00	8.50	_____
BEE HIVE RENTAL	HIVE	30.00	5.00	150.00	_____
MALE ROW TILLER	ACRE	5.00	1.00	5.00	_____
PICK, HAUL, DRY	ACRE	700.00	1.00	700.00	_____
HANDLING LABOR	ACRE	50.00	1.00	50.00	_____
COMBINE UMBELS	ACRE	100.00	1.00	100.00	_____
HAUL SEED TO PLANT	ACRE	5.00	1.00	5.00	_____
IRRIGATION CHARGE	ACRE	40.00	1.00	40.00	_____
IRRIGATION MAINTEN.	ACRE	6.00	1.00	6.00	_____
TRACTOR REPAIR	ACRE	5.72	1.00	5.72	_____
TRACTOR FUEL/LUBE	ACRE	5.77	1.00	5.77	_____
MACHINERY REPAIRS	ACRE	10.49	1.00	10.49	_____
MACHINE FUEL/LUBE	ACRE	3.12	1.00	3.12	_____
WEEDING LABOR	HOUR	7.00	10.00	70.00	_____
LABOR (TRAC/MACH/IRR)	HOUR	12.00	11.58	139.02	_____
INTEREST ON OP. CAP.	ACRE	39.16	1.00	39.16	_____
OVERHEAD	ACRE	108.27	1.00	108.27	_____

TOTAL VARIABLE COST				1551.88	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	4.69	1.00	4.69	_____
TRACTOR INTEREST	ACRE	5.28	1.00	5.28	_____
TRACTOR INSURANCE	ACRE	.32	1.00	.32	_____
TRACTOR TAXES	ACRE	.95	1.00	.95	_____
MACH/BUILD DEPREE.	ACRE	19.06	1.00	19.06	_____
MACH/BUILD INTEREST	ACRE	16.59	1.00	16.59	_____
MACH/BUILD INSURANCE	ACRE	1.00	1.00	1.00	_____
MACH/BUILD TAXES	ACRE	2.99	1.00	2.99	_____
INTEREST (1ST YR COST)	ACRE	1129.88	.10	112.99	_____
MANAGEMENT FEE*	ACRE	237.16	1.00	237.16	_____
LAND RENT	ACRE	150.00	1.00	150.00	_____

TOTAL FIXED COST				551.01	_____
TOTAL COST				2102.89	_____

*7% OF EXPECTED GROSS RETURNS (242 LBS. X \$14.00 X .07)

Table 7: Machine and Building Complement

Machine Name	Purchase Price	Years of Use	Salvage Value	Annual Repair Cost	Annual Hours of Use	Gallons of Fuel Use Per Hour
150HP-WT	85,000	15	17,000	3,825	500	8D
130HP-WT	62,000	15	12,400	2,800	500	6.5D, 5D
80HP-WT	40,000	15	8,000	2,600	600	4D
4-18 Plow	11,000	15	2,200	1,360	150	
6' Packer	1,500	15	300	100	200	
14' Packer	5,500	8	1,100	450	350	
15' Beater	7,500	15	1,500	200	100	
14' Tandum Disc	12,000	15	2,400	420	125	
14' Offset Disc	12,000	10	2,400	1,025	250	
11' Rotovator	12,500	15	2,500	1,520	150	
6 Row Planter	14,000	8	2,800	1,800	170	
6 Row Cultivator	6,600	15	1,320	600	150	
6 Row Power Harrow	3,500	10	700	100	125	
Hydraulic Sprayer	3,000	10	600	125	100	
Liquid Fertilizer Applicator	3,000	10	600	300	100	
Headlander	6,000	10	1,200	100	200	
Pickup	18,000	5	7,200	1,500	500	2G
Nurse Truck & Tank	12,000	10	2,000	400	75	3D
Irrigation Tubes	400	5	0	0	40 acres	
Irrigation Dams	200	10	0	0	40 acres	
Machine Shed & Shop	35,000	30	7,000	500	500 acres	
Shop Tools	35,000	15	3,500	500	500 acres	

TABLE 8: MACHINERY AND BUILDING 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-----				
150HP-WT	85,000.00	15	500	9.07	10.20	.61	1.84	.00	21.71	7.65	8.74	16.39	38.10
130HP-WT	62,000.00	15	500	6.61	7.44	.45	1.34	.00	15.84	5.60	5.46	11.06	26.90
80HP-WT	40,000.00	15	600	3.56	4.00	.24	.72	.00	8.52	4.33	4.37	8.70	17.22
4-18 PLOW	11,000.00	15	150	3.91	4.40	.26	.79	.00	9.37	9.07	.00	9.07	18.43
6' PACKER	1,500.00	15	200	.40	.45	.03	.08	.00	.96	.50	.00	.50	1.46
14' PACKER	5,500.00	8	350	1.57	.94	.06	.17	.00	2.74	1.29	.00	1.29	4.03
15' BEATER	7,500.00	15	100	4.00	4.50	.27	.81	.00	9.58	2.00	.00	2.00	11.58
14' OFFSET DISC	12,000.00	10	250	3.84	2.88	.17	.52	.00	7.41	4.10	.00	4.10	11.51
14' TANDEM DISC	12,000.00	15	125	5.12	5.76	.35	1.04	.00	12.26	3.36	.00	3.36	15.62
11' ROTOVATOR	12,500.00	15	150	4.44	5.00	.30	.90	.00	10.64	10.13	.00	10.13	20.78
6 ROW PLANTER	14,000.00	8	170	8.24	4.94	.30	.89	.00	14.36	10.59	.00	10.59	24.95
6 ROW CULTIVATOR	6,600.00	15	150	2.35	2.64	.16	.48	.00	5.62	4.00	.00	4.00	9.62
6 ROW POWER HARROW	3,500.00	10	125	2.24	1.68	.10	.30	.00	4.32	.80	.00	.80	5.12
HYDRALIC SPRAYER	3,000.00	10	100	2.40	1.80	.11	.32	.00	4.63	1.25	.00	1.25	5.88
LIQ FERT APPLICATOR	3,000.00	10	100	2.47	1.77	.11	.32	.00	4.66	3.00	.00	3.00	7.66
HEADLANDER	6,000.00	10	200	2.40	1.80	.11	.32	.00	4.63	.50	.00	.50	5.13
PICKUP	18,000.00	5	500	4.32	2.52	.15	.45	.00	7.44	3.00	2.76	5.76	13.20
NURSE TRUCK & TANK	12,000.00	10	75	13.17	9.42	.56	1.69	.00	24.84	5.33	3.28	8.61	33.45
									-----COST PER ACRE-----				
MAC. SHED & SHOP	35,000.00	30	500	1.87	4.20	.25	.76	.00	7.07	1.00	.00	1.00	8.07
SHOP TOOLS	35,000.00	15	500	4.20	3.85	.23	.69	.00	8.97	1.00	.00	1.00	9.97
IRRIGATION TUBES	400.00	5	40	2.00	.50	.03	.09	.00	2.62	.00	.00	.00	2.62
IRRIGATION DAMS	200.00	10	40	.50	.25	.02	.05	.00	.81	.00	.00	.00	.81

*SHOWN AT 5 GALLONS PER HOUR. AT 6.5 GALLONS PER HOUR THE FUEL AND LUBE COST IS \$7.10.

TABLE 9: 1997 INPUT PRICES

ITEM	UNIT	PRICE
		\$
<u>Fuel</u>		
Gasoline	Gallon	1.20
Diesel	Gallon	.95
<u>Fertilizer</u>		
Nitrogen (dry)	Pound	.34
Nitrogen (liquid)	Pound	.35
46-0-0	Pound	.24
Phosphorous	Pound	.25
Potash	Pound	.14
Sulfur	Pound	.10
Zinc	Pound	1.05
Boron	Pound	2.90
<u>Chemicals</u>		
Asana	Ounce	1.33
Buctril	Pint	7.88
Capture	Ounce	4.53
Chlorothalonil	Quart	15.11
Crop Oil	Pint	1.06
Cupric hydroxide fungicide	Quart	8.50
Dacthal	Pound	8.35
Diazinon 14G	Pound	1.80
Dimethoate	Pint	4.67
Dual II	Pint	10.00
DySyston	Quart	21.50
Eptam	Gallon	34.25
Fusilade DX	Pint	17.50
Glyphosate	Pint	7.09
Goal 2XL	Pint	13.63
Linuron	Pound	14.00
Lorsban 15G	Pound	2.30
Malathion	Quart	7.00
Orthene	Pound	12.35
Polyacrylamide	Pound	4.25
Prowl	Pint	4.09
Ramrod	Gallon	20.00
Rovral	Pint	24.44
Sevin XLR	Quart	7.50
Spreader	Pint	2.28
Trifluralin	Pint	4.67
Warrior	Ounce	2.77
<u>Seed for Planting</u>		
Carrot Seed	Pound	3.00
Radish Seed	Pound	1.00
Onion Seed	Pound	14.00

TABLE 9: 1997 INPUT PRICES (Continued)

ITEM	UNIT	PRICE
		\$
<u>Custom Rates</u>		
Fertilizer Application	Acre	6.00
Thin Carrots	Acre	25.00
Windrow	Acre	30.00
Combine	Acre	85.00
Haul Carrot and Radish Seed	Acre	15.00
Haul Onion Seed	Acre	5.00
Aerial Application	Acre	8.00
<u>Irrigation</u>		
Charge	Acre	40.00
Repair	Acre	6.00
<u>Labor</u>		
Tractor/Machinery	Hour	12.00
Weeding	Hour	7.00
Bee Hive	Hive	30.00
Land Rent	Acre	150.00

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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