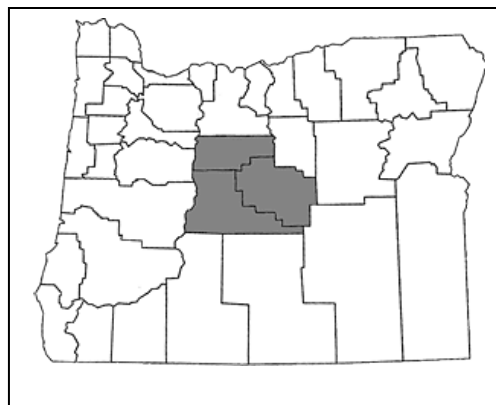


Enterprise Budget

Hybrid Carrot Seed Production under Drip Irrigation Central Oregon Region

Marvin Butler, Extension Crop Scientist
John Weber, Research Assistant
Oregon State University



This enterprise budget estimates the typical costs and returns to management of producing hybrid carrot seed under drip irrigation in the Madras and Culver areas of central Oregon. While efforts were made to reflect common practices, this budget is not representative of any particular farm and should be used only as a guide to estimate actual costs. The major assumptions used in constructing this budget are discussed below. Assistance provided by area producers is greatly appreciated.

Cropping Pattern

This budget is based on a typical 600-acre farm with 40 acres under drip irrigation in production of hybrid carrot seed following wheat. The budget includes production costs for 1 acre, with a yield of 400 pounds per acre. A summary of the estimated costs and returns per acre is shown in Table 1.

Land and Irrigation

A land lease charge of \$120 per acre is included to represent the cost of leasing or owning the land. The charge is based on the cost of a long-term lease for good-quality irrigated land. A water charge of \$2.26 per acre-inch covers the cost of irrigation water and canal maintenance. Calculations are based on the North Unit Irrigation District rates for Deschutes River water rights. \$55 per acre covers interest and depreciation of the drip irrigation system. The yearly recurring costs of drip irrigation are in variable costs.

Labor

Hand labor, irrigation labor, and rogue labor cost \$11.50 per hour, and operator labor costs \$15.00 per hour. All include worker's compensation, social security taxes, and other labor overhead expenses. Labor hours for machinery operation are calculated by multiplying 1.21 times machine hours to allow for machinery setup, movement, and adjustments.

Capital

Opportunity costs of capital are charged at a rate of 8 percent for current, intermediate, and long-term capital provided by the owner.

Machinery and Equipment

The machinery complement is sufficient for producing carrot seed. A detailed breakdown of machinery values and costs used in this budget is shown in Table 3. The machinery costs are estimated. Fixed costs for machinery and equipment include the cost of interest and depreciation.

Operations

The cultural operations are listed in the budget in the approximate order in which they typically are performed. Table 2 shows the cost of field operations with owned machinery. Land preparation includes burning the wheat stubble, one irrigation set, a fertilizer/weed control

application, tillage, and bedding up. Hybrid seed is planted in August followed by four sprinkler irrigation sets, several pesticide applications, cultivation of the small carrots, and covering the male carrots with fabric, which requires 2 hours of hand labor per acre. The field is periodically monitored for pests during the winter months.

In the spring, the row covering is removed, the field is thinned, replanted, rogued (weeding, picking rock, etc), and any necessary nick adjustment made. Removing the row covering and roguing requires 4 hours of hand labor and 10 hrs of rogue labor, respectively. Pesticides are applied as necessary throughout the spring and summer. Installing the drip irrigation system requires 4 hours of irrigation labor per acre, and maintenance of the drip tape takes 1 hour of irrigation labor per acre. An additional 8.325 inches of water are applied

over nine sets using drip irrigation. During the summer, roguing requires another 10 hours of rogue labor per acre. Prior to harvest, the male pollinator rows are rolled down. Soon thereafter, harvest commences, and the carrot seed stalks are swathed and combined.

Other

A charge of \$30 per acre is included to cover general insurance, tools, office supplies, and other expenses. A pickup and ATV are utilized for hauling supplies, checking irrigation, and other activities related to carrot seed production.

Total variable cost is \$2494.84, and the break-even price over variable costs is \$6.24 per lb. The total of all costs is \$3,166.79, with a break-even price over total costs of \$7.92 per lb.

Table 1. Carrot seed production under drip irrigation: Summary of estimated costs per acre.

Item	Unit	Price	Quantity	Amount	Your Farm
		\$		\$	
INCOME					
Carrot Seed	Pound	11.00	400.00	4400.00	
TOTAL INCOME				<u>4400.00</u>	
VARIABLE COSTS					
Insecticides	Acre	170.86	1.00	170.86	
Herbicides	Acre	222.53	1.00	222.53	
Fungicides	Acre	155.77	1.00	155.77	
Fertilizer	Acre	109.90	1.00	109.90	
Other	Acre	149.48	1.00	149.48	
Custom Applications	Acre	142.00	1.00	142.00	
Rentals	Acre	254.60	1.00	254.60	
Seed	Acre	25.00	1.00	25.00	
Water	Acre	47.04	1.00	47.04	
Drip Irrigation	Acre	306.53	1.00	306.53	
Hand Labor	Hour	11.50	6.73	77.39	
Irrigation Labor	Hour	11.50	10.02	115.23	
Operator Labor	Hour	15.00	11.52	172.80	
Roguing Labor	Hour	11.50	20.00	230.00	
Diesel Fuel	Gal	2.85	27.62	78.73	
Gasoline	Gal	3.00	4.67	14.00	
Repair & Maintenance	Acre	132.13	1.00	132.13	
Interest on Operating Capital	Acre	90.86	1.00	90.86	
TOTAL VARIABLE COSTS				<u>2494.84</u>	
INCOME ABOVE VARIABLE COSTS				1905.16	
FIXED COSTS					
Implements	Acre	80.12	1.00	80.12	
Tractors	Acre	171.47	1.00	171.47	
Self-propelled Equipment	Acre	169.18	1.00	169.18	
Trucks	Acre	13.17	1.00	13.17	
Pickup & Miscellaneous Exp.	Acre	63.00	1.00	63.00	
Land Costs	Acre	120.00	1.00	120.00	
Irrigation Systems	Acre	55.00	1.00	55.00	
TOTAL FIXED COSTS				<u>671.95</u>	
TOTAL OF ALL COSTS				3166.79	
NET INCOME				<u>1233.21</u>	

Table 2. Carrot seed production under drip irrigation: Estimated resource use and costs for field operations.

Operation	Perf. Rate	Times Over	Month	Power Unit Cost		Equipment Cost		Labor		Operating Input	Total Cost
	Hours/acre			Variable	Fixed	Variable	Fixed	Hours	\$		
Open Field Burn	0.033	1	Aug	0.24	0.13	---	---	0.87	12.67	8.00	21.04
Disk Field	0.100	3	Aug	9.89	7.24	4.68	15.21	0.39	5.99	---	43.01
Fertilize Field	---	1	Aug	---	---	---	---	---	---	42.40	42.40
Cultimulch Field	0.100	1	Aug	3.63	2.65	0.24	1.17	0.14	2.20	---	9.89
Bed Up Field	0.200	1	Aug	5.45	5.85	0.14	0.95	0.24	3.63	---	16.02
Plant Carrot Seed	2.000	1	Aug	31.39	38.12	---	0.02	2.42	36.30	30.00	135.83
Planting Irrigation	---	5	Aug-Oct	1.18	0.67	---	---	2.69	31.05	44.21	77.11
Weed Control	---	1	Aug	---	---	---	---	---	---	40.41	40.41
Insect Control	---	1	Sept	---	---	---	---	---	---	63.57	63.57
Weed Control	---	1	Sept	---	---	---	---	---	---	79.47	79.47
Cultivate Field	0.250	1	Sept	6.81	7.31	0.33	3.17	0.30	4.54	---	22.16
Weed Control	---	1	Sept	---	---	---	---	---	---	43.84	43.84
Disease Control	---	1	Oct	---	---	---	---	---	---	30.20	30.20
Cover Male Carrots	0.500	1	Nov	13.63	14.62	0.75	7.31	2.60	32.07	---	68.38
Pest Management	---	8	Dec-Feb	---	---	---	---	0.20	3.00	---	3.00
Uncover Male Carrots	1.000	1	Mar	27.26	29.24	1.50	14.62	5.21	64.15	---	136.77
Fertilize Field	0.250	1	Mar	6.81	7.31	---	---	0.30	4.54	74.50	93.16
Cultivate Field	0.250	1	Apr	6.81	7.31	0.33	3.17	0.30	4.54	---	22.16
Replant Field	---	1	Apr	---	---	---	---	---	---	---	20.00
Thin Carrots	1.000	1	Apr	15.70	19.06	1.90	25.69	1.21	18.15	---	80.50
Pick Rock/Rogue	---	1	Apr	---	---	---	---	6.00	69.00	---	69.00
Weed Control	---	1	Apr	---	---	---	---	---	---	55.12	55.12
Nick Adjustment	---	1	May	---	---	---	---	---	---	---	23.00
	---	2	May-	---	---	---	---	7.00	80.50	---	80.50
Roguing			June								
Disease/Insect Control	---	1	May	---	---	---	---	---	---	72.84	72.84
Install Drip Tape	---	1	May	21.80	23.40	0.01	0.86	4.96	60.52	311.53	418.12
Irrigation	---	9	May-Aug	2.12	1.20	---	---	2.87	34.11	47.55	89.11
Drip Tape Maintenance	---	4	May-Aug	---	---	---	---	1.00	11.50	---	11.50

Continued next page

Table 2, continued. Carrot seed production under drip irrigation: Estimated resource use and costs for field operations.

Operation	Perf. Rate	Times Over	Month	Power Unit Cost		Equipment Cost		Labor		Operating Input	Total Cost
	Hours/acre			Variable	Fixed	Variable	Fixed	Hours	\$		
Disease Control	---	1	May	---	---	---	---	---	---	30.20	30.20
Disease Control	---	1	June	---	---	---	---	---	---	94.17	94.17
Weed Control	---	1	June	---	---	---	---	---	---	53.69	53.69
Carrot Pollination	---	1	June	---	---	---	---	---	---	237.60	237.60
Insect Control	---	1	July	---	---	---	---	---	---	49.48	49.48
	---	2	July-	---	---	---	---	7.00	80.50	---	80.50
Roguing			Aug								
Inspection and Sweeping	---	1	July	---	---	---	---	---	---	---	15.00
Insect Control	---	1	July	---	---	---	---	---	---	21.28	21.28
Insect Control	---	1	July	---	---	---	---	---	---	56.89	56.89
Drip Tape Removal	---	1	Aug	---	---	---	---	---	---	---	45.00
Roll Male Carrots	0.160	1	Aug	4.36	4.68	0.24	2.34	0.19	2.90	---	14.52
Swath Carrot Field	0.300	1	Sept	11.33	30.71	---	---	0.36	5.45	---	47.49
Combine Carrot Field	0.500	1	Sept	39.39	136.47	---	---	0.60	9.07	2.14	187.07
Flame Carrot Field	0.160	1	Sept	4.36	4.68	2.02	5.61	0.19	2.90	8.75	28.32

Table 3. Self-propelled machines, tractors, and implements: Estimated performance rating, useful life, annual use, purchase price, repair cost, fuel consumption rating, and direct and fixed cost per hour and acre.

Item Name	Size	Purchase Price	Annual Use	Useful Life	Fuel Use	Perf. Rate	Variable Cost		Fixed Cost		Total Cost	
		\$	Hours	Years	Gallons/ hour	Hours/ acre	\$/hour	\$/acre	\$/hour	\$/acre	\$/hour	\$/acre
Combine w/ pickup	14 ft	280,000	100	20	7.59	0.500	---	48.46	---	136.47	---	184.93
Swather	12 ft	126,000	120	20	4.04	0.300	---	16.77	---	30.70	---	47.48
ATV	20 hp	6,000	200	10	1.38	0.033	---	0.69	---	0.13	---	0.82
2wd Cab tractor	130 hp	90,000	400	20	6.57	---	44.97	---	21.93	---	66.90	---
2wd tractor	50 hp	40,000	200	20	2.7	---	30.69	---	19.05	---	49.75	---
2wd tractor	80 hp	90,000	300	20	4.3	---	42.25	---	29.24	---	71.49	---
4wd Cab tractor	180 hp	165,000	500	20	9.1	---	54.13	---	32.16	---	86.30	---
Tractor w/ Loader	80 hp	89,000	100	25	1	---	35.65	---	80.93	---	116.58	---
Bedder bar	12 ft	3,500	100	10	---	0.2	---	8.59	---	6.78	---	15.38
Carrot roller	4 row	3,000	20	20	---	0.16	---	5.15	---	5.37	---	10.54
Chisel	10 ft	12,500	100	20	---	0.2	---	10.51	---	6.81	---	17.34
Cultimulcher	12 ft	12,000	100	20	---	0.1	---	5.68	---	3.35	---	9.04
Cultipacker	12 ft	3,000	100	20	---	0.15	---	8.25	---	3.72	---	11.98
Disk	15 ft	26,000	50	20	---	0.1	---	6.5	---	7.25	---	13.76
Drip Tape Installer	4 row	1	1	1	---	0.8	---	33.81	---	24.24	---	58.06
Electric thinner	4 row	3,800	20	10	---	1	---	32.59	---	44.74	---	77.34
Fertilizer sidedress	10 ft	1	100	1	---	0.25	---	10.56	---	7.31	---	17.87
Flail Mower	15 ft	18,000	100	20	---	0.1	---	3.51	---	3.65	---	7.18
Flamer	30 ft	18,000	50	20	---	0.16	---	6.92	---	8.65	---	15.59
Flex harrow	20 ft	10,000	100	25	---	0.08	---	2.87	---	2.24	---	5.12
Land leveler	20 ft	18,000	25	20	---	0.16	---	10.07	---	14.72	---	24.81
Mint planter	16 ft	12,000	20	25	---	0.5	---	37.14	---	41.36	---	78.51
Mint Rake	12 ft	5,000	20	20	---	0.01	---	0.33	---	0.43	---	0.77
Paper roller	10 ft	3,000	20	20	---	0.5	---	16.09	---	16.83	---	32.93
Pasture harrow	12 ft	1,600	100	20	---	0.08	---	3.41	---	2.45	---	5.87
Precision planter	20 ft	9,800	75	20	---	0.2	---	8.02	---	6.35	---	14.37
Roller	20 ft	9,000	200	10	---	0.1	---	4.33	---	3.52	---	7.87
Rolling cultivator	20 ft	6,500	50	20	---	0.25	---	10.88	---	10.47	---	21.36
Row sprayer	12.5 ft	13,000	75	20	---	0.2	---	9.66	---	9.21	---	18.89
Tool bar w/shovels	20 ft	6,500	50	25	---	0.2	---	6.91	---	6.17	---	13.09