

# COST OF PRODUCING ORNAMENTAL CABBAGE AND KALE

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**P**rofitable production of ornamental cabbage and kale is dependent upon the knowledge and control of production costs. A grower who understands production costs will be better prepared to make decisions on the optimal number of plants to produce and to help establish prices. The costs presented here should be useful to current growers who wish to compare their own production expenses and for potential growers in determining whether to begin growing ornamental cabbage and kale. The data was collected from 2 North Carolina growers who specialize in producing high quality ornamental cabbage and kale plants. Each grower produced >3,000 pots and has developed market outlets which demand a high quality crop and the garden centers they sell to are willing to pay a higher price for quality. Costs are calculated for the 1998 growing year.

**Costs: variable versus fixed.** Costs can be categorized as either variable or fixed. Variable costs, also called direct costs, are costs that are incurred directly by growing the crop. Variable costs items are the basic inputs required to grow a crop, such as pots, plants, substrate, or chemicals. These items' costs are easy to allocate to a specific crop because you know the materials used to produce the crop and production practices you followed. The direct costs are \$0.83 per pot (Table 1).

Fixed costs, also called overhead or indirect costs, are incurred whether or not a crop is produced. They include items like management salaries, depreciation, insurance, interest, repairs, and taxes. Fixed costs represent general operation expenses present in every greenhouse facility.

These costs are usually the hardest to determine and to equitably allocate to each crop grown. In general, for greenhouse operations, fixed costs are allocated to a crop on a cost-per-square-foot-per-week basis. Because ornamental cabbage and kale are grown outdoors, fixed costs were allocated to the crop on a percentage basis, based on: 1) the actual use of a piece of equipment or 2) as a percentage of sales. The remaining percentage not allocated to the crop would then be allocated to the other crops produced like garden mums, bedding plants, or poinsettias.

Fixed costs are only \$0.12 per pot (Table 2). The depreciation expense is fairly low and can be attributed to this firm's reliance on used equipment and because ornamental cabbage and kale share of the overall expenses are low because it represents 0.1% of the operations total sales. Firms which purchase new machinery and equipment will have a higher depreciation expense.

The overhead operation expenses represent the total miscellaneous operating expenses of the firm. The costs included in this budget are generalized and costs will vary greatly among firms. Only 0.1% of these expenses were allocated to ornamental cabbage and kale.

**Shrink.** Even under the best production practices, a certain percentage of the crop will not be marketable due to poor growth, insects, disease, or damage. The cost of inputs for these nonmarketable plants have to be accounted for by the operation. This is done by adjusting the production cost by a shrink factor. In this case, a 3% shrink was calculated which involved dividing the total production costs by 0.97 to get the total

<b>Table 1. Variable costs for producing ornamental cabbage and kale in 8" mum pans. Based on 3000 pots.</b>					
<b>ITEM</b>	<b>AMOUNT</b>	<b>TYPE</b>	<b>COST EACH</b>	<b>TOTAL COST</b>	<b>COST PER POT</b>
<b>Direct Items</b>					
Plugs	3000	350 cells	\$0.05	\$150.00	\$0.0500
Substrate	3000	soilless	\$0.33	\$990.00	\$0.3300
Pot	3000	8" mum pan	\$0.13	\$390.00	\$0.1300
Fertilizer	9	Ca(NO <sub>3</sub> ) <sub>2</sub>	\$13.50	\$121.50	\$0.0405
Fertilizer	6	KNO <sub>3</sub>	\$11.00	\$66.00	\$0.0220
Fertilizer	3	Excel 21-5-20	\$20.00	\$60.00	\$0.0200
Insecticide	60	oz Thiodan	\$0.57	\$34.20	\$0.0114
Fungicide	38	fl oz. Cleary's 3336	\$1.43	\$54.34	\$0.0181
Growth Retardant	1.1	pounds B-Nine	\$71.00	\$78.10	\$0.0260
Land	0.12	acres	\$100.00	\$12.00	\$0.0040
<b>Subtotal</b>				<b>\$1,956.14</b>	<b>\$0.6520</b>
<b>Labor</b>					
Transplant in pot	30	Hours	\$8.00	\$240.00	\$0.0800
Fert./Water/Care	12	Hours	\$8.00	\$96.00	\$0.0320
Apply Pesticides	5	Hours	\$8.00	\$40.00	\$0.0133
Growth Retardant	1	Hours	\$8.00	\$8.00	\$0.0027
Irrigation/Cloth Set-up	10	Hours	\$8.00	\$80.00	\$0.0267
<b>Subtotal</b>				<b>\$464.00</b>	<b>\$0.1547</b>
<b>Subtotal Variable Costs (Variable Items &amp; Labor)</b>				<b>\$2,420.14</b>	<b>\$0.8067</b>
<b>Interest on Variable Expenses</b> (Total Direct Expenses × 9% interest × 0.33 years)				\$71.88	\$0.0240
<b>TOTAL DIRECT COSTS</b>				<b>\$2,492.02</b>	<b>\$0.8307</b>

production costs (including shrink). Total production costs will increase for growers who have a higher percent of shrink.

Total production costs per pot, including a 3% shrink and costs for marketing the crop was \$1.21 (Table 3).

**Profitability.** By adding the total variable costs and total fixed costs together, this provides the total costs of producing ornamental cabbage

and kale. The profitability of the crop is directly related to the price received. The profitability per pot of a delivered ornamental cabbage and kale was \$1.04 (a 46% profit margin). A 46% profit margin is a good return for the crop. This high return is due in part because the two growers

*(Text continued on Page 12)*

<b>Table 2. Fixed costs for producing ornamental cabbage and kale in 8" mum pans. Based on 3000 pots.</b>				
<b>ITEM</b>			<b>TOTAL COST</b>	<b>COST PER POT</b>
<b>Items Specifically Allocated to the Crop (Depreciation)</b>				
Weed matt, irrigation system			\$80.00	\$0.0267
<b>Subtotal</b>			<b>\$80.00</b>	<b>\$0.0267</b>
<b>Percentage Allocated Equipment (Total Annual Depreciation)</b>	<b>Total</b>	<b>Percent Assigned</b>		
Sprayer - Hydraulic	\$80.00	0.1%	\$0.08	\$0.0000
Delivery Truck - Used (2)	\$9,600.00	0.1%	\$9.60	\$0.0032
Tractor - John Deere	\$200.00	0.1%	\$0.20	\$0.0001
Shipping Racks (18)	\$540.00	0.1%	\$0.54	\$0.0002
Smith Fertilizer Injector	\$170.00	0.1%	\$0.17	\$0.0001
Potting System Machinery	\$1,205.00	0.1%	\$1.21	\$0.0004
<b>Subtotal</b>			<b>\$11.80</b>	<b>\$0.0039</b>
<b>Interest on Capital Equipment</b> (Total annual equipment costs × 9%)			<b>\$8.26</b>	<b>\$0.0028</b>
<b>Repairs on Capital Equipment</b> (Total annual equipment costs × 3%)			<b>\$2.75</b>	<b>\$0.0009</b>
<b>Overhead Operation Costs</b>	<b>Total</b>	<b>Percent Assigned</b>		
Management Labor	\$50,000.00	0.1%	\$50.00	\$0.0167
Taxes and License	\$14,350.00	0.1%	\$14.35	\$0.0048
Insurance	\$7,650.00	0.1%	\$7.65	\$0.0026
Utilities : Telephone	\$3,600.00	0.1%	\$3.60	\$0.0012
Utilities : Electricity / Fuel	\$39,700.00	0.1%	\$39.70	\$0.0132
Mortgage	\$7,980.00	0.1%	\$7.98	\$0.0027
Misc. Costs	\$29,700.00	0.1%	\$29.70	\$0.0099
Social Security - Management	\$500.00	15.0%	\$75.00	\$0.0250
Social Security for Hired Labor	\$499.00	7.65%	\$38.17	\$0.0127
<b>Subtotal</b>			<b>\$266.15</b>	<b>\$0.0887</b>
<b>TOTAL FIXED COSTS</b>			<b>\$368.96</b>	<b>\$0.1230</b>
<b>TOTAL PRODUCTION COSTS</b>			<b>\$2,860.98</b>	<b>\$0.9537</b>
<b>3% Loss</b> (shrink = [Total Costs ÷ 0.97] - Total Costs)			<b>\$88.48</b>	<b>\$0.0295</b>
<b>TOTAL PRODUCTION COSTS (including shrink)</b>			<b>\$2,949.47</b>	<b>\$0.983</b>

<b>Table 3. Total costs and revenue analysis for ornamental cabbage and kale. Based on 3000 pots.</b>			
<b>ITEM</b>		<b>TOTAL COST</b>	<b>COST PER POT</b>
<b>TOTAL COSTS - NON-DELIVERED PLANTS</b>		\$2,949.47	\$0.983
<b>MARKETING EXPENSES - DELIVERED PLANTS</b>			
Delivery Cost (Labor and Expenses) (\$0.225 × 2,910 plants)		\$654.75	\$0.225
<b>TOTAL COSTS (DELIVERED)</b>		\$3,604.22	\$1.208
<b>REVENUE</b>			
WHOLESALE: Non-Delivered & Delivered ( 2,910 plants at \$2.25)		\$6,547.50	
<b>NET PROFIT</b>			
<b>TOTAL NET PROFIT</b>		\$2,943.28	
<b>PER POT - NON-DELIVERED</b>			\$1.267
<b>PER POT - DELIVERED</b>			\$1.042
<b>NET PROFIT MARGIN ANALYSIS</b>	<b>DESIRED NET PROFIT MARGIN</b>	<b>REQUIRED PRICE PER POT</b>	
		<b>NON-DELIVERED</b>	<b>DELIVERED</b>
	20%	\$1.23	\$1.51
	25%	\$1.31	\$1.61
	30%	\$1.41	\$1.73
	35%	\$1.51	\$1.86
	40%	\$1.64	\$2.01
	45%	\$1.79	\$2.20
	50%	\$1.97	\$2.42
55%	\$2.18	\$2.68	

specialize in producing high quality ornamental cabbage and kale plants and they have developed market outlets which demand a high quality crop and their customers are willing to pay a higher wholesale price for quality.

Using the method outlined will enable ornamental cabbage and kale growers the ability to compare the profitability of their crops for their own operation. Of course costs will vary among greenhouses according to their amount of

capitalization in equipment and structures and their ability to purchase inputs at lower costs. Therefore, each operation will need to calculate their specific production costs in order to determine their own profitability.

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