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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2004

**SAMPLE COSTS TO PRODUCE  
ORGANIC  
BROCCOLI**



**CENTRAL COAST REGION**

Monterey & Santa Cruz Counties

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# UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

## SAMPLE COSTS TO PRODUCE ORGANIC BROCCOLI - Central Coast Region 2004

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### INTRODUCTION

Organic production, as defined by the USDA's Organic Foods Production Act of 1990, as amended (7 U.S.C. 6501 et seq.), is 'a production system that is managed in accordance with the Act and associated regulations to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity'.

The sample costs to produce organic broccoli in the Central Coast Region – Monterey and Santa Cruz Counties - are presented in this study. The study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. The practices described are based on production procedures considered typical for this crop and area but will not apply to every situation. Sample costs for labor, materials, equipment and custom services are based on current figures. A "Your Costs" column in Tables 1 and 2 is provided for you to enter your farm costs.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or explanation of calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, (530) 752-3589 or the Santa Cruz County UC Cooperative Extension office, (831) 763-8040.

Sample Cost of Production Studies for many commodities can be downloaded at <http://coststudies.ucdavis.edu>, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-4424 or from local county UC Cooperative Extension offices.

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## ASSUMPTIONS

The following assumptions refer to tables 1 to 7 and pertain to sample costs to produce organic broccoli in the Central Coast Region – Monterey and Santa Cruz Counties. Cultural practices and costs for organic broccoli production vary considerably among growers within the region; therefore, many of the costs, practices, and materials in this study will not be applicable to every farm. The practices and inputs used in this cost study serve as a guide only. **The use of trade names and cultural practices in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products or cultural practices.**

**Farm.** The hypothetical farm is based on a 200 non-contiguous acre vegetable crop operation on which five acres are planted to organically grown broccoli. Other crops grown are conventional and organic lettuce, cauliflower, and celery. The farm can produce up to 2 to 2.5 vegetable crops per year on each field. However in organic systems, when cover crops are planted, the number of vegetable or cash crops is often reduced to 1.5 to 2.0 crops per year per field. For this study, two crops per field per year are assumed. Costs that affect both crops are allocated accordingly. The farm is operated by the grower and includes rented land on which the organic broccoli is planted. Organic farmers generally use a ‘systems management’ approach to farming by including a suite of production practices such as crop rotation, diversification, cover crops and organic matter additions to help build soil fertility and manage pests. Also, growers are continually experimenting with new techniques—especially in fertilization and pest management—as new strategies and technologies become available.

### Production Operating Costs

**Land Preparation.** Primary tillage, which includes discing, rolling, subsoiling, and land leveling occurs in October and November of the year preceding planting. Fields are subsoiled (in this study cost is allocated to two crops), disced and rolled two times, then chiseled twice, followed by two passes with a landplane. The land is disced and rolled to incorporate the cover crop. In April a custom operator lists the 40-inch beds and incorporates the preplant fertilizer. Two passes are made with a rolling cultivator, and then in one operation, the grower shapes and rolls the beds.

**Cover Crop.** A cereal/legume mix cover crop is planted every second season (alternate years) following basic land preparation. However, practices vary widely among organic growers. For example, alternative cover crops that are used include cereal cover crops and mustards. In addition the frequency of their use can vary between growers (i.e. every year versus every other year) The crop is chopped in March of the first year and incorporated into the soil with a single discing. One-half of the cost is allocated to the field each year with one-quarter of the cost charged to each crop (4 crops over a 2 year period).

**Plant/Stand Establishment.** An organic hybrid broccoli variety is direct seeded using a four-bed precision planter, planting two rows (lines) on 40-inch beds. Fields are planted to a stand of 62,000 plants per acre at a 4 1/2-inch plant spacing. Alyssum for insectary purposes is planted on 5% of the acres, thus reducing the actual broccoli to 58,900 plants per acre over the five acres. In the Central Coast organic broccoli is planted year round. In this study the broccoli is planted in April.

**Fertilize/Soil Amendments.** Two and one-half tons of compost (manure/green waste) and one-half ton of gypsum are commercially broadcast over the field prior to the primary tillage operations. The gypsum and compost are blended and applied in a single operation. Meat and bone fertilizer mix (8-5-1) at 800 pounds per acre (64 pounds N) is applied at listing. Bloodmeal (13-0-0) is sidedressed at 500 pounds (65 pounds N) per acre approximately 35 days after planting. It is assumed that soil-building practices including incorporating

leguminous cover crops and compost applications increase soil organic matter to levels that can mineralize sufficient N for the remainder of the crop needs.

**Irrigation.** The water is pumped from wells. Based on current grower and district information, the estimated cost is \$160.00 per acre-foot or \$13.33 per acre-inch. The water cost includes pumping and water district/agency fees. Water costs vary considerably depending upon water district and pumping variables. The water is applied using hand moved sprinklers and the labor cost is included in the irrigation costs. The labor hours include laying out, picking up, and moving pipe. Approximately three-acre inches of water are applied through the sprinklers during stand establishment. An additional 27-acre inches are sprinkler applied at seven to ten day intervals during the remainder of the growing season for a seasonal total of 30 acre-inches. Water use will vary depending on various factors such as irrigation method, soil type, weather, and the time of the year the crop is planted.

**Pest Management.** Pest control materials and rates mentioned in this study are listed in *Integrated Pest Management for Cole Crops and Lettuce*, and *UC Pest Management Guidelines: Cole Crops*. For more information on pesticides available, pest identification, monitoring, and management visit the UC IPM website at [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu). Written recommendations are required for many commercially applied pesticides and are made by licensed pest control advisers. For information and pesticide use permits, contact the local county agricultural commissioner's office.

*Pest Control Adviser.* A Pest Control Adviser (PCA) or Consultant monitors the field for insects, diseases, beneficial insects, and agronomic problems to determine if control measures are necessary. The Pest Management Consultant fee in this study is \$30 per acre.

*Weeds.* The field is cultivated about 45 days after planting followed by two additional cultivations at 10-day intervals. The field is hand hoed after the last cultivation.

*Insects.* The grower applies Entrust (spinosad) organic insecticide in June for control of various worms. An insectary planting is made in April to manage various insects. One bed with two rows (lines) every 20 beds (5% of the acres) in the field are planted to alyssum using a planter junior. Seeding rate per acre is two to three million seed or approximately one pound. In this study 0.05 pounds per acre are planted over the five acres. The percentage of acreage planted will depend on the history of the field and pest pressure, but can range from 0 to 9%. Also the land cost or rent will influence the amount planted to insectaries – lower cost ground, more planting; higher cost ground, lesser planting.

**Harvest.** The organic broccoli crop is hand harvested 90 to 120 days after planting. Cool season plantings may require 120 days to mature but as the season warms, time to maturity decreases. Harvesting is done under contract and the broccoli is packed in the field. Field labor cost \$2.60 per box (carton) plus \$0.18 per box for field overhead (supervision). The containers cost \$1.12 each and include the ties and rubber bands. This brings the field harvest cost to \$3.90 per packed box. A packed box of organic broccoli weighs 22 pounds. Transportation costs vary depending on the distance to market, but in this study are included in the above costs. Most growers are within a 25-mile radius of the cooler. Cooling and palletizing cost an additional \$1.90 per box, which brings the total harvest cost to \$5.80 per box. Selling costs are 8% of the market price and \$0.80 per box is used in this study.

**Yields.** The crop yield in this study is 650 twenty-two pound boxes or 7.15 tons per acre, which takes into account, the 5% acreage dedicated to the insectary planting. The typical yield range is 500 to 900 boxes per acre. Like conventionally produced crops, yields for organically produced crops can vary depending on site

and growing conditions. In some situations, and in years with high pest populations, organic yields may be lower than conventional yields because of fewer treatment options. Conversely, when growing conditions are optimal, and pest pressure low, organic yields can be similar or the same as conventional yields.

**Returns.** The price for Central Coast fresh market organic broccoli delivered and sold through the grower-shipper channels is assumed for this study to be \$10.00 per 22-pound box. Typical returns over years ranges from \$6.50 to \$13.50 per box. The ranging analysis in table 4 shows the net returns above operating costs, cash costs and total costs for a range of prices and yields.

**Assessments.** Organic growers are required to be registered with the state of California and certified by a federal government approved agency, for which they incur various costs. The total costs vary by the grower's gross organic income, inspection time, and other possible fees. Estimated costs in this study for the state and certifying agencies, the annual membership fee and crop inspection are converted to a \$25 per acre fee. Other fees may be applicable, but are not assessed in this study. Some certifying agencies charge a non-refundable application fee to new growers. Thereafter an annual fee based on total organic farm income is assessed, as well as a crop and organic system plan inspection fee. The crop inspection fee varies based on inspector's hourly rate, travel time and travel expenses.

**Pickup.** The grower uses the pickup for business and personal use. The assumed business use is 2,856 miles per year for the farm.

**Labor.** Labor rates of \$13.84 per hour for machine operators and \$11.81 for general labor includes payroll overhead of 35%. The basic hourly wages are \$10.25 for machine operators and \$8.75 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for truck crops (code 0172), and a percentage for other possible benefits. Workers' compensation insurance costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2004 (California Department of Insurance). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

**Equipment Operating Costs.** Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agriculture Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum Power Take-Off (PTO) horsepower, and fuel type. Average prices in January 2004 on-farm delivery of diesel and gasoline are \$1.45 and \$1.88 per gallon, respectively. The fuel prices are averaged based on four California delivery locations plus \$0.24 per gallon, which is one-half the difference between the high and low price for regular gasoline in 2003 from the California State Automobile Association Monthly Survey. The cost includes a 2.25% sales tax (effective September 2001) on diesel fuel and 7.25% sales tax on gasoline. Gasoline also includes federal and state excise tax, which can be refunded for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

**Interest On Operating Capital.** Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 6.89% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

**Risk.** Risks associated with organic broccoli production are not assigned a production cost. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks that affect the profitability and economic viability of fresh market vegetable production. The market for fresh vegetables is volatile for both price and quantity. A market channel should be determined before production begins.

### **Cash Overhead**

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, rent, liability and property insurance, and investment repairs. Because overhead costs are farm and ranch specific, costs will vary among growers.

**Property Taxes.** Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by two on a per acre basis.

**Insurance.** Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$715 for the entire farm or \$3.58 per acre.

**Office Expense.** Annual office and business expenses are estimated at \$200 per acre. Being two crops are grown on the same acres, \$100 is allocated to each crop. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

**Rent.** Land rent for Monterey and Santa Cruz Counties ranges from \$800 to \$2,400 per acre. In this study, land rented for broccoli production is \$900 per acre. Rents vary by area and ground quality. The land rented includes developed wells and irrigation system. The landowner incurs all costs for the land and the irrigation system.

**Supervisor Salaries.** Wages for managers are not included as a cash cost. Any returns above total costs are considered a return to management.

**Field Sanitation.** Sanitation services provide portable toilets and washbasins to the farm. The cost includes a single toilet with washbasins, delivery and pickup, and three months of weekly servicing. Costs also include soap or other suitable cleansing agent, and single use towels. Separate potable water and single-use drinking cups are also supplied. Growers using contract labor may not have a separate sanitation cost. The contractor supplies the sanitation facilities.

**Investment Repairs.** Repair costs are the annual maintenance costs for investments in non-cash overhead. Annual repairs in this study are calculated as 2% of the new cost.

## Non-Cash Overhead

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

**Capital Recovery Costs.** Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is  $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$ .

*Salvage Value.* Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in Table 5.

*Capital Recovery Factor.* Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

*Interest Rate.* The interest rate of 6.23% used to calculate capital recovery cost is the USDA-ERS's ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector.

**Building.** The metal building or buildings are on a cement slab and comprise 2,400 square feet.

**Tools.** This includes shop and field tools used on the farm. The value is estimated and does not represent any specific data.

**Fuel Tanks.** Two 300-gallon fuel tanks using gravity feed are on metal stands. The tanks are setup in a cement containment pad that meets federal, state, and county regulations.

**Irrigation/Pipe/Trailers.** The irrigation system is maintained by the owner and included in the land rental cost. The grower owns 1,456 feet of sprinkler pipe. The grower also owns two pipe trailers for hauling the pipe to the field. Irrigation water is pumped from a well and delivered to the fields through an underground pipe system. Main lines above ground are connected to the underground system to deliver water for the sprinkler and furrow irrigations. In this study, water is pumped from a depth of 120 feet in a 500-foot well and the grower pays the pumping cost.

**Equipment.** Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment.

Annual ownership costs for equipment and other investments are shown in Table 5. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

**Table Values.** Due to rounding, the totals may be slightly different from the sum of the components. Some growers prefer to separate Harvest Costs from Total Cash Costs to reflect Total Growing Costs. In the tables in this study: Total Cash Costs - Harvest Costs = Total Growing Costs.



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**Table 1. COST PER ACRE TO PRODUCE ORGANIC BROCCOLI**  
 CENTRAL COAST 2004

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent			
<b>Cultural:</b>								
Fertilizer: Preplant (Gypsum, Compost)	0.00	0	0	119	0	119		
Land Prep: Sub Soil 2X, 1/2 cost	0.61	10	22	0	0	32		
Land Prep: Disc & Roll 2X	0.29	5	11	0	0	16		
Land Prep: Chisel 2X	0.35	6	13	0	0	18		
Land Prep: Land plane field 2X	0.24	4	9	0	0	13		
Cover Crop: Plant 1X/2Yr	0.08	1	2	11	0	14		
Cover Crop: Chop 1X/2Yr	0.08	1	2	0	0	3		
Cover Crop: Disc 1X/2Yr	0.08	1	2	0	0	3		
Land Prep: Disc & Roll 1X	0.14	2	6	0	0	8		
Land Prep: List Beds. Fertilize: (Meat and Bone)	0.00	0	0	262	0	262		
Land Prep: Lilliston Beds 2X	0.21	4	4	0	0	8		
Land Prep: Shape beds & roll	0.23	4	4	0	0	8		
Plant: Broccoli	0.28	7	6	442	0	455		
Insect: Plant Insectary (Alyssum)	0.07	1	1	1	0	3		
Irrigate: Sprinkle 3X (irrigate up)	0.75	9	0	40	0	49		
Fertilize: (Bloodmeal)	0.20	3	2	225	0	231		
Weed: Cultivate/Furrow 3X	0.44	7	8	0	0	16		
Insect: Worm (Entrust)	0.00	0	0	7	16	23		
Weed: Hand Hoe	21.50	254	0	0	0	254		
Irrigate 8X	6.50	77	0	360	0	436		
Pest Management Consultant	0.00	0	0	0	30	30		
Pickup use	1.43	24	15	0	0	39		
<b>TOTAL CULTURAL COSTS</b>	<b>33.48</b>	<b>420</b>	<b>107</b>	<b>1,466</b>	<b>46</b>	<b>2,039</b>		
<b>Harvest:</b>								
Cut, Band, Pack, Haul	0.00	0	0	0	2,535	2,535		
Cool, Palletize, Sell	0.00	0	0	0	1,755	1,755		
<b>TOTAL HARVEST COSTS</b>	<b>0.00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4,290</b>	<b>4,290</b>		
<b>Assessment:</b>								
CCOF Membership & Inspection	0.00	0	0	25	0	25		
<b>TOTAL ASSESSMENT COSTS</b>	<b>0.00</b>	<b>0</b>	<b>0</b>	<b>25</b>		<b>25</b>		
<b>Postharvest:</b>								
Chop stubble	0.16	3	4	0	0	6		
<b>TOTAL POSTHARVEST COSTS</b>	<b>0.16</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>6</b>		
Interest on operating capital @ 6.89%						78		
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>423</b>	<b>110</b>	<b>1,491</b>	<b>4,336</b>	<b>6,438</b>		
<b>Cash Overhead:</b>								
Land Rent						900		
Office Expense						100		
Field Sanitation						1		
Liability Insurance						4		
Property Taxes						5		
Property Insurance						3		
Investment Repairs						10		
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>1,024</b>		
<b>TOTAL CASH COSTS/ACRE*</b>						<b>7,462</b>		

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Table 1, continued

	Per Producing Acre	Annual Cost Capital Recovery	Total	Your Costs
Non-Cash Overhead:				
Building 2,400 sqft	300	22	22	
Shop Tools	65	6	6	
Fuel Tank OH 2-300g	18	1	1	
Pipe Sprinkler 1,456'	46	6	6	
Trailer - Pipe #1	11	2	2	
Trailer - Pipe #2	11	2	2	
Equipment	388	49	49	
<b>TOTAL NON-CASH OVERHEAD COSTS</b>	<b>839</b>	<b>87</b>	<b>87</b>	
<b>TOTAL COSTS/ACRE</b>			<b>7,550</b>	

\*See text, page 8, Table Values. Some growers prefer to separate harvest costs from total cash costs to reflect total growing costs. In this and following tables: Growing Costs = Total Cash Costs – Harvest Costs. (\$7,462 - \$4,290 = \$3,172).

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**Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE ORGANIC BROCCOLI**  
 CENTRAL COAST 2004

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Organic Broccoli	650.00	box	10.00	6,500	
<b>Operating Costs:</b>					
<b>Fertilizer/Soil Amendments:</b>					
Compost-Manure/Green Waste (Haul/Spread)	2.50	ton	40.00	100	
Gypsum	0.50	ton	38.50	19.00	
8-5-1 Meat & Bone (List Beds/Fertilize)	800.00	lb	0.33	262	
13-0-0 Bloodmeal	500.00	lb	0.45	225	
<b>Seed:</b>					
Cover Crop (cereal/legume mix)	30.00	lb	0.35	11	
Broccoli Hybrid (organic)	58.90	thou	7.50	442	
Alyssum	0.05	lb	13.00	1	
<b>Water:</b>					
Water-Pumped	30.00	acin	13.33	400	
<b>Insecticide:</b>					
Entrust	2.00	oz	3.43	7	
<b>Assessment:</b>					
CCOF Total Fees	1.00	acre	25.00	25	
<b>Contract:</b>					
Ground Application (insect)	1.00	acre	16.00	16	
Pest Management Consultant	1.00	acre	30.00	30	
Harvest (box, pick, haul, supervision)	650.00	box	3.90	2,535	
Harvest (palletize, cool)	650.00	box	1.90	1,235	
Harvest - Sell 8% of \$10	650.00	box	0.800	520	
Labor (machine)	5.87	hrs	13.84	81	
Labor (non-machine)	28.95	hrs	11.81	342	
Fuel - Gas	5.95	gal	1.88	11	
Fuel - Diesel	43.40	gal	1.45	63	
Lube				11	
Machinery repair				25	
Interest on operating capital @ 6.89%				78	
<b>TOTAL OPERATING COSTS/ACRE</b>				<b>6,438</b>	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				<b>62</b>	
<b>Cash Overhead:</b>					
Land Rent				900	
Office Expense				100	
Field Sanitation				1	
Liability Insurance				4	
Property Taxes				5	
Property Insurance				3	
Investment Repairs				10	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				<b>1,024</b>	
<b>TOTAL CASH COSTS/ACRE</b>				<b>7,462</b>	
<b>Non-Cash Overhead (Capital Recovery):</b>					
Buildings 2,400 sqft				22	
Shop Tools				6	
Fuel Tank OH 2-300g				1	
Pipe Sprinkler 1,456'				6	
Trailer - Pipe (2)				4	
Equipment				49	
<b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b>				<b>87</b>	
<b>TOTAL COSTS/ACRE</b>				<b>7,550</b>	
<b>NET RETURNS ABOVE TOTAL COSTS</b>				<b>-1,050</b>	

UC COOPERATIVE EXTENSION  
**Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE ORGANIC BROCCOLI**  
 CENTRAL COAST 2004

Beginning OCT 03	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Ending NOV 04	03	03	03	04	04	04	04	04	04	04	04	04	04
Cultural:													
Fertilizer: (Gypsum, Compost)	119												119
Land Prep: Sub Soil 2X, 1/2 cost	32												32
Land Prep: Disc & Roll 2X	16												16
Land Prep: Chisel 2X	19												19
Land Prep: Land plane field 2X	13												13
Cover Crop: Plant 1X/2Yr	14												14
Cover Crop: Chop 1X/2Yr						3							3
Cover Crop: Disc 1X/2Yr						3							3
Land Prep: Disc & Roll 1X							8						8
Land Prep: List Beds. Fertilize: (Meat and Bone)							262						262
Land Prep: Lilliston Beds 2X							8						8
Land Prep: Shape beds & roll							8						8
Plant: Broccoli							455						455
Plant: Alyssum. Insect: Insectary							3						3
Irrigate: Sprinkle 3X (irrigate up)							49						49
Fertilize: (Bloodmeal)									231				231
Weed: Cultivate/Furrow 3X									16				16
Insect: Worm (Entrust)									23				23
Weed: Hand Hoe										254			254
Irrigate 8X								54	165	165	54		436
Pest Management Consultant	3	3	3	3	3	3	3	3	3	3	3	3	30
Pickup use	3	3	3	3	3	3	3	3	3	3	3	3	39
<b>TOTAL CULTURAL COSTS</b>	<b>218</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>12</b>	<b>798</b>	<b>59</b>	<b>440</b>	<b>424</b>	<b>59</b>	<b>6</b>	<b>2,039</b>
Harvest:													
Cut, band, Pack, Haul											2,535		2,535
Cool, Palletize, Sell											1,755		1,755
<b>TOTAL HARVEST COSTS</b>											<b>4,290</b>		<b>4,290</b>
Assessment:													
Organic Farm Assessment							25						25
<b>TOTAL ASSESSMENT COSTS</b>							<b>25</b>						<b>25</b>
Postharvest:													
Chop stubble												6	6
<b>TOTAL POSTHARVEST COSTS</b>												<b>6</b>	<b>6</b>
Interest on operating capital	1	1	1	1	1	1	6	7	9	11	36	-0	78
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>220</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>13</b>	<b>829</b>	<b>66</b>	<b>449</b>	<b>436</b>	<b>4,386</b>	<b>12</b>	<b>6,438</b>
Cash Overhead:													
Land Rent												900	900
Office Expense	8	8	8	8	8	8	8	8	8	8	8	8	100
Field Sanitation	0	0	0	0	0	0	0	0	0	0	0	0	1
Liability Insurance				4									4
Property Taxes				5									5
Property Insurance				3									3
Investment Repairs	1	1	1	1	1	1	1	1	1	1	1	1	10
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>21</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>909</b>	<b>1,024</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>229</b>	<b>16</b>	<b>16</b>	<b>28</b>	<b>17</b>	<b>23</b>	<b>838</b>	<b>75</b>	<b>458</b>	<b>445</b>	<b>4,395</b>	<b>921</b>	<b>7,462</b>

UC COOPERATIVE EXTENSION  
**Table 4. RANGING ANALYSIS FOR ORGANIC BROCCOLI**  
 CENTRAL COAST - 2004

COSTS PER ACRE AT VARYING YIELD TO PRODUCE ORGANIC BROCCOLI

OPERATING COSTS	YIELD (22 lb box/acre)						
	550	600	650	700	750	800	850
Cultural Cost	2,039	2,039	2,039	2,039	2,039	2,039	2,039
Harvest Cost	3,630	3,960	4,290	4,620	4,950	5,280	5,610
Assessments*	25	25	25	25	25	25	25
Postharvest Cost	6	6	6	6	6	6	6
Interest on operating capital	74	76	78	80	81	83	85
<i>TOTAL OPERATING COSTS/ACRE</i>	5,774	6,106	6,438	6,770	7,101	7,433	7,765
<i>TOTAL OPERATING COSTS/box</i>	10.50	10.18	9.90	9.67	9.47	9.29	9.14
CASH OVERHEAD COSTS/ACRE	1,024	1,024	1,024	1,024	1,024	1,024	1,024
<i>TOTAL CASH COSTS/ACRE</i>	6,798	7,130	7,462	7,794	8,125	8,457	8,789
<i>TOTAL CASH COSTS/box</i>	12.36	11.88	11.48	11.13	10.83	10.57	10.34
NON-CASH OVERHEAD COSTS/ACRE	87	87	87	87	87	87	87
<i>TOTAL COSTS/ACRE</i>	6,885	7,217	7,549	7,881	8,212	8,544	8,876
<i>TOTAL COSTS/box</i>	12.52	12.03	11.61	11.26	10.95	10.68	10.44

\*Varies by gross income and other factors

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/box	YIELD (22 lb box/acre)						
	550	600	650	700	750	800	850
7.00	-1,924	-1,906	-1,888	-1,870	-1,851	-1,833	-1,815
8.00	-1,374	-1,306	-1,238	-1,170	-1,101	-1,033	-965
9.00	-824	-706	-588	-470	-351	-233	-115
10.00	-274	-106	62	230	399	567	735
11.00	276	494	712	930	1,149	1,367	1,585
12.00	826	1,094	1,362	1,630	1,899	2,167	2,435
13.00	1,376	1,694	2,012	2,330	2,649	2,967	3,285

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/box	YIELD (22 lb box/acre)						
	550	600	650	700	750	800	850
7.00	-2,948	-2,930	-2,912	-2,894	-2,875	-2,857	-2,839
8.00	-2,398	-2,330	-2,262	-2,194	-2,125	-2,057	-1,989
9.00	-1,848	-1,730	-1,612	-1,494	-1,375	-1,257	-1,139
10.00	-1,298	-1,130	-962	-794	-625	-457	-289
11.00	-748	-530	-312	-94	125	343	561
12.00	-198	70	338	606	875	1,143	1,411
13.00	352	670	988	1,306	1,625	1,943	2,261

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/box	YIELD (22 lb box/acre)						
	550	600	650	700	750	800	850
7.00	-3,035	-3,017	-2,999	-2,981	-2,962	-2,944	-2,926
8.00	-2,485	-2,417	-2,349	-2,281	-2,212	-2,144	-2,076
9.00	-1,935	-1,817	-1,699	-1,581	-1,462	-1,344	-1,226
10.00	-1,385	-1,217	-1,049	-881	-712	-544	-376
11.00	-835	-617	-399	-181	38	256	474
12.00	-285	-17	251	519	788	1,056	1,324
13.00	265	583	901	1,219	1,538	1,856	2,174

UC COOPERATIVE EXTENSION  
**Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS**  
 CENTRAL COAST -2004

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
04	130 HP 2WD Tractor	62,500	10	18,462	7,199	274	405	7,877
04	280 HP Crawler	180,000	10	53,169	20,733	788	1,166	22,687
04	92 HP 2WD Tractor	39,775	10	11,749	4,581	174	258	5,013
04	Bed Shaper 4 Row 13'	4,600	12	637	518	18	26	562
04	Chisel - Heavy 16'	9,333	12	1,293	1,052	36	53	1,141
04	Cultivator - Rolling	8,292	10	1,466	1,029	33	49	1,111
04	Cultivator	8,580	10	1,517	1,065	34	50	1,149
04	Disc - Finish 21'	19,595	12	2,714	2,208	75	112	2,395
04	Fertilizer Rig - Gandy 4 Row 13'	3,022	10	534	375	12	18	405
04	Mower-Flail 13'	12,749	10	2,255	1,582	51	75	1,708
04	Pickup 1/2 Ton	28,000	5	12,549	4,473	137	203	4,813
04	Planter Grain Drill	18,000	15	1,728	1,808	67	99	1,974
04	Planter Jr 1 Bed 2 Row (lines) 3'	1,100	10	195	136	4	6	147
04	Planter Precision 4 Row	17,521	10	3,098	2,174	70	103	2,347
04	Ringroller - 21'	4,200	10	743	521	17	25	563
04	Roller - Flat 16'	2,300	12	319	259	9	13	281
04	Subsoiler - 8'	8,022	10	1,419	995	32	47	1,074
04	Triplane - 16'	20,109	12	2,785	2,266	77	114	2,458
TOTAL		447,698		116,632	52,975	1,907	2,821	57,704
60% of New Cost *		268,619		69,979	31,785	1,144	1,693	34,622

\*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
Building 2,400 sqft	60,000	32		4,370	203	300	1,200	6,073
Fuel Tank OH 2-300 gal	3,500	30	350	256	13	19	70	359
Pipe Sprinkler 1,456'	9,279	10	928	1,205	35	51	510	1,800
Shop Tools	13,072	20	1,307	1,126	49	72	131	1,378
Trailer - Pipe #1	2,100	7	210	354	8	12	42	416
Trailer - Pipe #2	2,100	7	210	354	8	12	42	416
TOTAL INVESTMENT	90,051		3,005	7,666	315	465	1,995	10,441

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Field Sanitation	5	acre	57.60	288
Land Rent	5	acre	900.00	4,500
Liability Insurance	200	acre	3.58	716
Office Expense	200	acre	200.00	40,000

UC COOPERATIVE EXTENSION  
**Table 6. HOURLY EQUIPMENT COSTS**  
 CENTRAL COAST - 2004

Yr Description	Actual	Capital Recovery	Cash Overhead		Operating		Total Oper.	Total Costs/Hr.
	Hours Used		Insur- ance	Taxes	Repairs	Fuel & Lube		
04 130 HP 2WD Tractor	1,198.70	3.60	0.14	0.20	2.84	12.58	15.42	19.36
04 280 HP Crawler	1,599.90	7.77	0.30	0.44	4.67	27.10	31.77	40.28
04 92 HP 2WD Tractor	1,199.50	2.29	0.09	0.13	1.81	7.53	9.34	11.85
04 Bed Shaper 4 Row 13'	166.10	1.87	0.06	0.09	0.93	0.00	0.93	2.95
04 Chisel - Heavy 16'	166.10	3.80	0.13	0.19	1.94	0.00	1.94	6.06
04 Cultivator Rolling 13'	200.10	3.09	0.10	0.15	1.69	0.00	1.69	5.03
04 Cultivator	200.20	3.20	0.10	0.15	1.79	0.00	1.79	5.24
04 Disc - Finish 21'	166.10	7.97	0.27	0.40	3.11	0.00	3.11	11.75
04 Fertilizer Rig-Gandy 4 Row 13'	120.00	1.87	0.06	0.09	1.16	0.00	1.16	3.18
04 Mower-Flail 13'	199.20	4.76	0.15	0.23	5.27	0.00	5.27	10.41
04 Pickup 1/2 Ton	285.10	9.41	0.29	0.43	1.81	9.01	10.82	20.95
04 Planter Grain Drill	99.40	10.91	0.40	0.60	4.55	0.00	4.55	16.46
04 Planter Jr 1 Bed 2 Row 3'	149.40	0.55	0.02	0.03	0.29	0.00	0.29	0.89
04 Planter Precision 4 Row	150.40	8.69	0.28	0.41	4.70	0.00	4.70	14.08
04 Ringroller - 21'	200.10	1.56	0.05	0.07	0.47	0.00	0.47	2.15
04 Roller - Flat 16'	166.10	0.94	0.03	0.05	0.26	0.00	0.26	1.28
04 Subsoiler - 8'	200.10	2.98	0.10	0.14	1.81	0.00	1.81	5.03
04 Triplane - 16'	250.20	5.43	0.19	0.27	3.04	0.00	3.04	8.93



UC COOPERATIVE EXTENSION  
**Table 7. OPERATIONS WITH EQUIPMENT – ORGANIC BROCCOLI**  
 CENTRAL COAST 2004

Operation	Operation Month	Tractor	Implement	Material	Broadcast Rate/acre	Unit
Cultural:						
Compost/Gypsum	October	Custom		Manure Green Waste Compost	2.50	ton
				Gypsum	0.50	ton
Sub Soil 2X 1/2 cost	October	280 HP Crawler	Subsoiler 8'			
Disc & Roll 2X	October	280 HP Crawler	Disc Finish 21'			
			Ringroller 21'			
Chisel 2X	October	280 HP Crawler	Chisel 16'			
Landplane 2X	October	280 HP Crawler	Triplane 16'			
Plant Cover Crop 1X/2Yr	October	130 HP 2WD	Grain Drill 15'	Cover Crop Seed	30.00	lb
Chop Cover Crop 1X/2Yr	March	130 HP 2WD	Mower-Flail 13'			
Disc Cover Crop 1X/2Yr	March					
Disc & Roll	April	280 HP Crawler	Disc Finish 21'			
			Ringroller 21'			
List Beds & Preplant Fertilizer	April	Custom		Meat & Bone	800.00	lb
Shape Beds & Roll	April	130 HP 2WD	Bed Shaper 13'			
			Roller Flat 16'			
Lilliston 2X	April	130 HP 2WD	Cultivator Rolling			
Plant Broccoli	April	130 HP 2WD	Precision Planter	Hybrid Seed	58.90	thou
Plant Alyssum (Insectary)	April	92 HP 2WD	Planter Jr	Alyssum Seed	0.05	lb
Irrigate - Sprinkler 3X	April			Water	1.00	acin
	April			Water	1.00	acin
	April			Water	1.00	acin
Irrigate - Sprinkle 8X	May			Water	3.35	acin
	June			Water	10.14	acin
	July			Water	10.14	acin
	Aug			Water	3.35	acin
Fertilize 1X Sidedress	June	92 HP 2WD	Fertilizer-Gandy	Bloodmeal	500.00	lb
Cultivate & Furrow 3X	June	130 HP 2WD	Cultivator 13'			
	June	130 HP 2WD	Cultivator 13'			
	June	130 HP 2WD	Cultivator 13'			
Insect: Worms	June	Custom		Entrust	2.00	oz
Weed-Hand Hoe	July			Labor	21.50	hr
Harvest - Cut Pack Haul	Aug	Contract				
Harvest - Cool, Palletize, Sell	Aug	Contract				
Chop Stubble - Post Harvest	Sept	130 HP 2WD	Mower-Flail 13'			