

Strawberry Production: Sample Costs and Profitability Analysis

**Based on 1999 Data Collected in Ventura County,
California**



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This study presents sample costs of production for strawberries developed in Ventura County, California, in 1999, but the methodology we used to analyze costs, profits, and investments can easily be modified to address individual situations in production areas throughout California. Tables 1 and 2 include a "Your cost" column where growers can enter their own costs for comparison with ours. Also please note that because of rounding, the totals given in tables 1 through 6 may differ from the sum of their constituent numbers.

We based our study on certain assumptions that we developed from production practice and cost information gathered from growers and agricultural institutions in the area.

As a grower or other agriculture professional, you can benefit from this report in many ways. It can help you make production decisions, determine potential returns, prepare budgets, evaluate production loans, and analyze policies.

A discussion of the assumptions and calculation methods we used in this study is provided in the text. Cultural practice and cost data are presented in detail in six tables:

Table 1. Costs per acre to produce strawberries

Table 2. Costs and returns per acre to produce strawberries

Table 3. Monthly cash costs per acre to produce strawberries

Table 4. Range analyses of strawberry production costs and returns

Part A. Costs per acre and per tray at varying yields

Part B. Returns per acre above operating costs

Part C. Returns per acre above all cash costs (gross margin)

Part D. Returns per acre above total costs (returns to management)

Table 5. Farm equipment and investment values and annual costs

Table 6. Farm equipment actual hours of use and hourly costs

Strawberries are grown for both the fresh and processed markets. Market price sometimes determines how strawberries are harvested. This study assumes that the costs of production are the same for fresh market and processed strawberry crops except for harvesting (picking and packing, loading and hauling, and trays for fresh strawberries), selling costs, crop prices, and yield.

STUDY ASSUMPTIONS

This report is based on a 200-acre strawberry farm, the average size of farm for the growers we interviewed.

Prices used for materials, equipment, contract services, and labor wages (unless otherwise specified) are for the year 1999.

PRODUCTION PRACTICES

Land preparation. Land preparation differs by types of fields and management preferences. In this study, land preparation practices are assumed to begin in August or September. Land preparation operations can be done using custom operators or by growers themselves. Most growers in our interview pool used custom operators for land preparation. The average cost of land preparation of the growers we interviewed is about \$375 per acre.

Following land preparation, fumigation is performed. This operation is also done using custom applicators for an average cost of \$1,550 per acre. In addition to fumigation some growers apply compost gypsum mix for soil amendment. The land is then leveled. Some growers use springtooth to take out weeds and break up soil lumps. Others chisel plow two to three times. The cost of land leveling, springtooth or chisel plow is included in the \$375 custom cost discussed above.

The ground is pre-irrigated using a sprinkler system. Then a combined operation of listing and a preplant fertilization is done before the ground is shaped and rolled into beds. Also prior to planting plastic mulches and drip irrigation systems are installed. Plastic mulches are punctured with a spacing of 18 inches apart for transplanting the strawberry plants. The drip irrigation system is installed for use later during the growing period.

Stand establishment. There are several different varieties of strawberries grown throughout California. The primary varieties produced in Ventura County are Camarosa and Proprietary. There is also a small production of other varieties. All varieties have similar cultural, harvesting, and marketing requirement.

Transplanting rates vary depending on spacing. For this study, transplanting rate is at 21,800 per acre with additional 3% replacement planting. Transplanting is done on beds with bed centers of about 64 inches apart. Each bed is divided into four rows. Transplants are 18 inches apart within a row.

Weed management. Weeds common in this area include various spring grasses and broad leaf weeds. Fumigation prior to planting is important in controlling weed growth resulting from the use of plastic mulch on the established beds. Hand weeding is common because it is hard to operate conventional cultivating equipment in established strawberry beds.

Fertilization. As mentioned previously, most growers apply preplant fertilizer of nitrogen (N), phosphorous, and potassium while listing before the ground is shaped and rolled into beds. Fertilizer applications during the growth period are mostly N and are applied via the irrigation system. The amount and type of fertilizer we included in this study are based on an average of what most growers applied.

Irrigation. Prior to transplanting and during root establishment, irrigation is applied via a sprinkler system. Growers can purchase or rent sprinkler irrigation systems. We calculated costs for this study based on ownership of an existing sprinkler irrigation system.

The number of pumps, pipes, and fittings that growers own or rent varies based on farm size, sources of water and ease of transportation between fields. Based on our growers interview, electric pumps are most commonly used. We based our study on uses of a 60 HP electric booster pump and a 50 HP electric well pump to serve the 200 acres. We also assumed that there would be pipes and fittings enough to irrigate 100 acres at a time. The costs of pumps, pipes, fittings and various installation costs are included in the investment section.

Growers can stagger irrigation; therefore they do not necessarily have pipes and fittings for their whole farm. However, they should evaluate the costs of transportation and labor that will be required to set up and remove the pipes in the process of staggering in comparison to the cost of having more pipes and fittings.

Three months into the growing period, the use of the drip system will begin. Irrigation labor for inspection and maintenance of the system is estimated at about 30 minutes per acre per irrigation for sprinklers, and about 33 minutes per acre per irrigation for drip irrigation.

The cost of water to irrigate crops varies greatly from region to region in Ventura County, and also depends on whether district or well water is used. The farm in this study is in the Oxnard area where growers use both well and district water. We calculated the water cost at \$85.00 per acre-foot. This rate is a weighted average paid by the growers we interviewed for pumping and district charges assuming that one-third of the water comes from wells and two-thirds from districts. Commonly, irrigation in strawberry production includes about 2 to 4 acre-feet of water. In this study, we assumed an application of about 2.5 acre-feet of water.

Pest and disease management. Insects that can affect strawberry production include aphids, lygus, spider mites, strawberry rootworm, white grubs, corn earworm, leaf rolling caterpillar, white flies, gray mold, common leaf spot, powdery mildew, anthracnose, and root-rot nematodes. Most of these pests can be treated at the larval stage. Growers usually rotate insecticide in order to slow potential pest resistance. Written recommendations from State of California licensed pest control advisors are required for pesticide use. For information and pesticide use permits, contact your county Agricultural Commissioner's office. You can also find pest management information from the University of California on the UC Statewide Integrated Pest Management project website, <http://www.ipm.ucdavis.edu>.

Disease control treatments or preventive methods may also be needed during any phase in the production of strawberries.

HARVESTING AND SELLING

Most of the growers in our interview pool grow strawberries for both fresh and processed market. Market condition usually determines the volume that goes to fresh and processed market. In this study, based on averages of interviewed growers we assumed that 67 percent of the crop is packed fresh and 33 percent is processed. Strawberries that are harvested for fresh market are usually picked when they appear pink in color. Overripe berries are discarded as they can be easily damaged and cannot be marketed as high-quality fruit.

A strawberry field usually is harvested multiple times throughout the year. Harvest depends on the weather, typically however, 10 percent of the fresh strawberries are harvested in January, 15 percent in February, 25 percent in March, 25 percent in April, and 25 percent in May. Processed strawberries harvest would be in May and June.

Nearly all strawberries are harvested by hand and are mostly packed into trays in the field from mobile packing platforms. A tray weighs 11 to 12 pounds for fresh and 14 to 18 pounds for processed market. After the strawberries are packed, they are quickly transported to a storage facility where they are cooled and palletized at scientifically recommended temperature.

Harvesting costs in this study include trays, picking and packing, loading, and hauling to the nearest cooling facility. Harvesting cost estimates obtained from our interviews include \$1.125 for each tray, \$1.50 per tray for picking and packing fresh strawberries, \$0.09 per tray for loading and hauling fresh strawberries, \$2 per tray for picking and packing processed strawberries, \$0.09 per tray for loading and hauling processed strawberries. Selling cost is estimated at \$0.48 per tray only for fresh strawberries.

We did not include cooling costs because we did not get sufficient information on actual costs or usage of cooling facilities.

INTEREST ON OPERATING CAPITAL

We calculated interest on operating capital at a nominal rate of 10 percent per year. Interest on operating capital reflects the costs of borrowed money or an opportunity cost for using in-house funds. Interest on operating capital is charged until income is received from the crop at harvest.

DISPOSING OF CROP RESIDUES, MULCHES, AND DRIP TAPES

After harvest, the drip tapes and plastic mulches are removed and disposed. This operation takes about 11 to 12 hours per acre.

CASH OVERHEAD COSTS

Land rent. Land rental contracts and charges for agricultural production can range widely by region and also depend on the availability of well water on the property. In Ventura County, if there is a well on the property the landlord often pays for the permanent parts of the irrigation facilities, and the costs of maintaining the well. The grower generally is responsible for the costs of energy needed to pump the water.

Most of the growers we interviewed rented land with wells that provide a portion of their farms' water requirements. This study uses \$1,650 per acre (an average of the growers' interviewed) per production period.

Property taxes. Counties charge a base property tax rate of 1 percent on the assessed value of the property, including equipment, buildings, and improvements. Special assessment districts in some counties charge additional taxes on property. For our study we calculated county taxes at 1 percent of the value of the property.

Insurance. Growers also carry insurance for property protection, which is typically calculated at 0.713 percent of the average value of assets. In addition, a farm of the size specified in this report would carry liability insurance of \$684 per year to cover accidents on the entire farm.

Sanitation services. Sanitation service costs include the rental for portable toilets delivery, pickup, and once per week services.

Supervisor and foremen wages. Interview information indicated an average wage of \$110 per acre per production period for supervisors and foremen. Most growers in the survey did not provide management costs, and the wide variations in wages and salaries for professional managers make it difficult to approximate a typical situation. We suggest that, once all production costs have been subtracted from receipts, the residual should be referred to as returns to management.

Office expenses. Our interview average for office expenses is about \$360 per acre per production period. Office expenses include office supplies, telephone service, operating costs for a fax machine, photocopier, computer, bookkeeping, accounting, legal fees, and so on.

NON-CASH OVERHEAD COSTS

We calculated the non-cash overhead or ownership costs of assets (including farm equipment and other investments like the irrigation system, building, tools, fuel tank, and pumps) using the capital recovery method. This method helps growers calculate an annual amount of money to charge the enterprise so that the value of assets will be recovered within a specified period of time at a designated rate of interest. The rate of interest used to calculate ownership cost is 7.40 percent, California's long-term average return rate on agricultural production assets from current income. Because farms use a mix of old and new equipment, we evaluated the value of the equipment complement at 60 percent of new prices.

EQUIPMENT OPERATING CASH COSTS

Equipment operating cash costs for fuel, lubrication, and repairs are calculated using formulas and coefficients developed by the American Society of Agricultural Engineers (ASAE). Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the ASAE. Fuel and lubrication costs are also determined by ASAE equations based on machinery horsepower (maximum PTO hp) and type of fuel used. Fuel costs are calculated using average (1996 to 1999 period) on-farm delivery prices of \$0.72 per gallon for diesel and \$1.20 per gallon for gasoline. The cost of energy for electric irrigation pumps is \$0.105 per KW.

LABOR

We calculated both owner and hired labor at the same wage rate. Hourly labor wages are \$7.50 per hour for machine operators and \$6.25 per hour for non-machine workers. These wages are averages based on data from the growers we interviewed. Growers also pay 20 to 34 percent for benefits, which include Workers Compensation, Social Security, Medicare insurance, and other possible benefits. In this study, we assumed an additional 34 percent for benefits, which brings the labor rate to about \$10.00 per hour for machine operators and \$8.40 per hour for non-machine workers.

Machinery labor is 20 percent more than the time estimated for actual operation. This percentage accounts for the setup, moving, maintenance, and repair of equipment.

PRICES AND YIELDS

We calculated an average gross return based on the prices and yield we obtained from the growers we interviewed. Crop yield and prices received by growers, however, vary depending on several factors. Prices for strawberries in particular vary based on what proportions of the crop are marketed as fresh and processed. Selling and cooling costs also influence prices, depending on whether the costs are incurred by the grower or by the buyer. For this purpose, we have provided a range analysis of price and yield variations on profitability so that each grower can find figures that best match his or her specific situation.

SUMMARY OF COSTS

The total production cost estimate of our sample strawberry farm in Ventura County is \$26,035 per acre (tables 1 and 2). Table 1 presents costs by type of activity and table 2 presents costs by type of input.

The pie graph that follows shows the breakdown of costs. Thirty percent of the total cost is accounted for by land preparation, planting, and growing costs, 56 percent by harvest and postharvest costs, 4 percent by interest on operating capital, 9 percent by cash overhead, and 1 percent by non-cash overhead costs. Land preparation, planting, and

growing costs include fuel, lube, and machinery repairs, as well as materials and labor for all production practices. Harvest costs in this study include the cost of trays, picking and packing, loading, and hauling to the nearest cooling facility, and selling. Postharvest cost in this study includes disposal of crop residue, removal of plastic mulches, and drip tapes. Cash overhead costs include land rent, office expenses, sanitation fee, supervisor and foremen wages, property taxes, property insurance, and investment repairs.

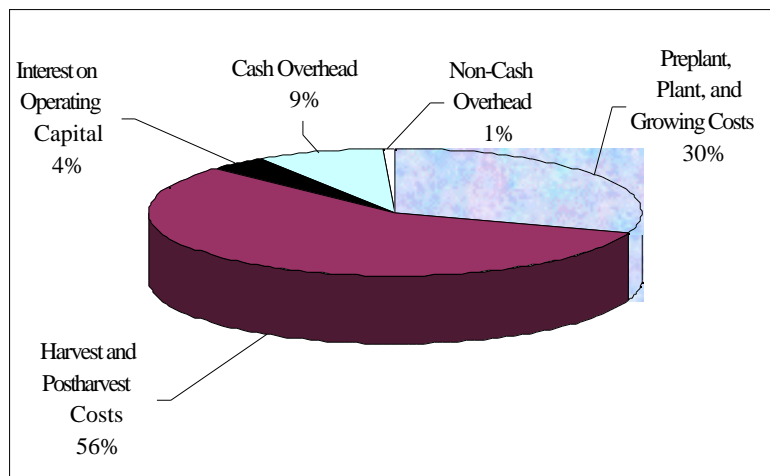


Figure 1. Proportion of production costs for strawberries, Ventura County, 1999

PROFITABILITY ANALYSIS

We analyzed profitability using breakeven costs as well as gross and economic margins. Breakeven costs allow growers to compare expected market prices with the unit cost of production. Breakeven cost is calculated as the cost of production per acre divided by the yield per acre.

Gross margin (or returns above cash costs) is what growers often refer to as *profit* if there is no debt on the farming operation. It approximates the return to management and investment. If you deduct depreciation, it also approximates taxable income. Gross margin is calculated as gross returns (price times yield) minus cash costs of production.

Economic profit (or returns above total cost including management) is a very useful measure of how attractive the enterprise is for potential investors and entrants into the business. Economic profit can be positive or zero. A zero economic profit should not be alarming if all costs, including the owners' labor and management costs, are included (and assumed paid) in the production cost. In this study we do not include management charges, so the return after all costs are deducted reflects return to management. Economic margin is calculated as gross returns minus total (cash and non-cash) costs of production.

Given the assumptions of this study, the breakeven cost (or breakeven price) for the average yield of the growers in our interview is \$4.96 per tray to cover all cash costs and \$5.01 per tray to cover total costs (table 4 part A). Since the average price (\$5.50/tray)

reported by the growers is higher than the breakeven costs, it shows that our sample farm provides positive returns to management.

Gross margin for the average yield and price of the growers in our interview is estimated at \$2,837 per acre (table 4 part C). Return to management for the growers' average yield and price is estimated at \$2,615 per acre (table 4 part D).

In table 4 part A we provided a range of breakeven costs (or prices) at various yields. Also we provided a range of gross margins and returns to management at various yield and price combinations. This will help growers analyze their returns based on their yield and price combinations. The gross margin and returns to management ranges are analyzed at price increments of \$0.50 per tray, and yield increments of 200 trays per acre (table 4, parts A to D).

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Welch, C. N. 1989. Strawberry production in California. Oakland: University of California Division of Agriculture and Natural Resources. Publication 2959.

Table 1. Costs per acre to produce strawberries, Ventura County, 1999 (labor rates: \$10.00/hr for machine labor, \$8.40/hr for non-machine labor; interest rate: 10.00%)

Operation	Operation time (hrs/ac)	Costs per acre (\$)					Total cost	Your cost (\$)
		Labor cost	Fuel, lube, & repairs	Material cost	Custom or rent			
Preplant:								
Custom land preparation	0	0	0	0	375	375		
Fumigation	0	0	0	0	1,550	1,550		
Sprinkler setup & removal	1.60	120	5	0	0	125		
Preplant irrigation (sprinkler)	1.00	8	0	2	0	10		
Electricity for irrigation pumps	0	0	0	1	0	1		
Listing & fertilization	0.33	7	3	428	0	438		
Shaping beds & rolling	0.23	3	2	0	0	5		
Installing drip tapes	0.50	6	2	186	0	194		
Installing plastic mulches	0.91	11	4	385	0	400		
Connecting drip system	10.00	84	0	143	0	227		
Punching holes in plastic	0.50	6	2	0	0	8		
TOTAL PREPLANT COSTS	15.07	245	18	1,144	1,925	3,332		
Planting:								
Transplants	0.94	792	8	1,190	0	1,991		
TOTAL PLANTING COSTS	0.94	792	8	1,190	0	1,991		
Growing:								
Sprinkler setup & removal	12.80	960	42	0	0	1,002		
Irrigation (sprinkler)	8.00	67	0	67	0	135		
Electricity for irrigation pumps	0	0	0	35	0	35		
Fertilization	0	0	0	47	0	47		
Irrigation (drip)	22.55	189	0	145	0	335		
Electricity for irrigation pump	0	0	0	17	0	17		
Pest management	0.62	7	6	174	0	187		
Hand weeding	18.00	151	0	0	0	151		
Disease management & pest management	0.62	7	6	192	0	205		
Disease management	0.82	10	7	189	0	206		
Beneficial insects	0	0	0	0	125	125		
Pickup truck	2.70	32	11	0	0	43		
TOTAL GROWING COSTS	66.11	1,425	71	867	125	2,488		
HARVESTING & SELLING COSTS	0	0	0	0	14,736	14,736		
Disposing Crop Residues, Mulches, & Drip Tapes:								
Chopping crop residues	0.40	5	4	0	0	9		
Removing plastic mulches & drip tapes	11.37	96	0	0	0	96		
TOTAL DISPOSING CROP RESIDUES, MULCHES, & DRIP TAPES COSTS	11.77	100	4	0	0	104		
Interest on operating capital @ 10.00%						942		
TOTAL OPERATING COSTS/ACRE		2,563	101	3,202	16,786	23,593		
TOTAL OPERATING COSTS/TRAY						4.54		

Table 1. Costs per acre to produce strawberries, Ventura County, 1999 (labor rates: \$10.00/hr for machine labor, \$8.40/hr for non-machine labor; interest rate: 10.00%) cont.

Operation	Operation time (hrs/ac)	Costs per acre (\$)					Total cost	Your cost (\$)
		Labor cost	Fuel, lube, & repairs	Material cost	Custom or rent			
Cash Overhead:								
Land rent						1,650		
Office expense						360		
Liability insurance						3		
Sanitation fee						46		
Supervisor & foreman wages						110		
Property taxes						11		
Property insurance						8		
Investment repairs						33		
TOTAL CASH OVERHEAD COSTS						2,220		
TOTAL CASH COSTS/ACRE							25,813	
TOTAL CASH COSTS/TRAY							4.96	
<hr/>								
				Cost per producing acre	Annual cost: capital recovery			
Non-Cash Overhead:								
Investment								
Shop building				150	16		16	
Shop tools				75	8		8	
Fuel tanks & pumps				100	11		11	
Irrigation pumps				125	12		12	
Sprinkler system				1,000	95		95	
Equipment				495	80		80	
TOTAL NON-CASH OVERHEAD COSTS				1,945	222		222	
TOTAL COSTS/ACRE							26,035	
TOTAL COSTS/TRAY							5.01	

Table 2. Costs and returns per acre to produce strawberries, Ventura County, 1999 (labor rates: \$10.00/hr for machine labor, \$8.40/hr for non-machine labor; interest rate: 10.00%)

	Quantity per acre	Unit	Price or cost per unit (\$)	Value or cost per acre (\$)	Your cost (\$)
Gross Returns:					
Fresh strawberries	3,500.00	tray	6.00	21,000	
Processed strawberries	1,700.00	tray	4.50	7,650	
TOTAL GROSS RETURNS FOR STRAWBERRIES				28,650	
Operating costs:					
Contract:					
Custom land preparation	1.00	acre	375.00	375	
Fumigation	1.00	acre	1,550.00	1,550	
Beneficial insects	1.00	acre	125.00	125	
Irrigation:					
Drip tape (13,200 feet)	1.00	roll	186.00	186	
Hose	209.00	foot	0.671	140	
Wire ties	54.00	wire ties	0.05	3	
Water (preplant)	0.22	acre-inch	7.10	2	
Water (growing)	29.93	acre-inch	7.1	213	
Electric pumps:					
Well pump	237.09	KW	0.105	25	
Booster pump	266.79	KW	0.105	28	
Fertilization:					
22-7-10 (preplant)	900.00	pound	0.475	428	
CAN-17 (growing)	35.04	gallon	1.35	47	
Mulching:					
Plastic mulch	1.00	acre	385.00	385	
Transplanting:					
Strawberry plants	21,800.00	plant	0.053	1,155	
Strawberry plants (3% replant)	654.00	plant	0.053	35	
Pest management:					
Disease management:	1.00	acre	273.00	273	
Harvesting & selling:					
Trays fresh	3,500.00	tray	1.125	3,938	
Pick & pack fresh	3,500.00	tray	1.50	5,250	
Load & haul fresh	3,500.00	tray	0.09	315	
Sell fresh	3,500.00	tray	0.48	1,680	
Pick & pack process	1,700.00	tray	2.00	3,400	
Load & haul process	1,700.00	tray	0.09	153	
Labor (machine)	27.56	hour	10.00	276	
Labor (non-machine)	272.25	hour	8.40	2,287	
Fuel					
Gasoline	5.40	gallon	1.20	6	
Diesel	69.94	gallon	0.72	50	
Lube				9	
Machinery repair				36	
Interest on operating capital @ 10.00%				942	
TOTAL OPERATING COSTS/ACRE				23,593	
TOTAL OPERATING COSTS/TRAY				4.54	
NET RETURNS ABOVE OPERATING COSTS				5,057	

Table 2. Costs and returns per acre to produce strawberries, Ventura County, 1999 (labor rates: \$10.00/hr for machine labor, \$8.40/hr for non-machine labor; interest rate: 10.00%) cont.

	Quantity per acre	Unit	Price or cost per unit (\$)	Value or cost per acre (\$)	Your cost (\$)
Cash Overhead Costs:					
Land rent				1,650	
Office expense				360	
Liability insurance				3	
Sanitation fee				46	
Supervisor & foreman wages				110	
Property taxes				11	
Property insurance				8	
Investment repairs				33	
TOTAL CASH OVERHEAD COSTS/ACRE				2,220	
TOTAL CASH COSTS/ACRE				25,813	
TOTAL CASH COSTS/TRAY				4.96	
Non-cash Overhead Costs (Capital Recovery):					
Shop building				16	
Shop tools				8	
Fuel tanks & pumps				11	
Irrigation pumps				12	
Sprinkler system				95	
Equipment				80	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				222	
TOTAL COSTS/ACRE				26,035	
TOTAL COSTS/TRAY				5.01	
NET RETURNS ABOVE TOTAL COSTS				2,615	

Table 3. Monthly cash costs per acre to produce strawberries, Ventura County, 1999

Beginning SEP 98 Ending JUN 99	Costs per acre (\$)											
	SEP 98	OCT 98	NOV 98	DEC 98	JAN 99	FEB 99	MAR 99	APR 99	MAY 99	JUN 99	TOTAL	
Preplant:												
Custom land preparation	375											375
Fumigation	1,550											1,550
Sprinkler setup & removal	125											125
Preplant irrigation (sprinkler)	10											10
Electricity for irrigation pumps	1											1
Listing & fertilization	438											438
Shaping beds & rolling	5											5
Installing drip tapes	194											194
Installing plastic mulches	400											400
Connecting drip system	227											227
Punching holes in plastic	8											8
TOTAL PREPLANT COSTS	3,332											3,332
Planting:												
Transplants		1,991										1,991
TOTAL PLANTING COSTS		1,991										1,991
Growing:												
Sprinkler setup & removal		564	438									1,002
Irrigation (sprinkler)		80	54									135
Electricity for irrigation pumps		22	13									35
Fertilization		6	6	6	6	6	6	6	6			47
Irrigation (drip)				36	17	17	43	74	74	74		335
Electricity for irrigation pump				2	0.5	0.5	2	4	4	4		17
Pest management			28	105	55							187
Hand weeding					151							151
Disease management & pest management							145		60			205
Disease management							53	54	100			206
Beneficial insects							125					125
Pickup truck	4	4	4	4	4	4	4	4	4	4	4	43
TOTAL GROWING COSTS	4	676	543	153	234	351	109	188	148	82		2,488
HARVESTING & SELLING COSTS					1,118	1,677	2,796	2,796	4,572	1,776		14,736
Disposing Crop Residues, Mulches, & Drip Tapes:												
Chopping crop residues											9	9
Removing plastic mulches & drip tapes											96	96
TOTAL DISPOSING CROP RESIDUES, MULCHES, & DRIP TAPES COSTS											104	104
Interest on operating capital @ 10.00%	28	50	55	56	67	84	108	133	172	189		942
TOTAL OPERATING COSTS/ACRE	3,364	2,717	598	208	1,419	2,112	3,013	3,117	4,893	2,152		23,593
TOTAL OPERATING COSTS/TRAY	0.65	0.52	0.12	0.04	0.27	0.41	0.58	0.60	0.94	0.41		4.54

Table 3. Monthly cash costs per acre to produce strawberries, Ventura County, 1999 cont.

Beginning SEP 98 Ending JUN 99	Costs per acre (\$)										
	SEP 98	OCT 98	NOV 98	DEC 98	JAN 99	FEB 99	MAR 99	APR 99	MAY 99	JUN 99	TOTAL
Cash Overhead:											
Land rent	165	165	165	165	165	165	165	165	165	165	1,650
Office expense	36	36	36	36	36	36	36	36	36	36	360
Liability insurance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3
Sanitation fee	5	5	5	5	5	5	5	5	5	5	46
Supervisor & foreman wages	11	11	11	11	11	11	11	11	11	11	110
Property taxes	5									5	11
Property insurance	4									4	8
Investment repairs	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	33
TOTAL CASH OVERHEAD COSTS	229	220	220	220	220	220	220	220	220	229	2,220
TOTAL CASH COSTS/ACRE	3,593	2,937	818	428	1,639	2,332	3,233	3,337	5,113	2,381	25,813
TOTAL OPERATING COSTS/TRAY	0.69	0.56	0.16	0.08	0.32	0.45	0.62	0.64	0.98	0.46	4.96

Table 4. Range analyses of strawberry production costs and returns, Ventura County, 1999

	Yield (trays/acre)							
	Fresh	2,900	3,100	3,300	3,500	3,700	3,900	4,100
Processed	1,100	1,300	1,500	1,700	1,900	2,100	2,300	
-----\$/acre-----								
Part A. Costs per acre and per tray at varying yields								
Operating costs/acre:								
Preplant		3,328	3,328	3,328	3,332	3,328	3,328	3,328
Planting		1,991	1,991	1,991	1,991	1,991	1,991	1,991
Growing		2,488	2,488	2,488	2,488	2,488	2,488	2,488
Harvesting & selling		11,565	12,622	13,679	14,736	15,793	16,850	17,907
Disposing crop residues, mulches, & drip tapes		104	104	104	104	104	104	104
Interest on operating capital		868	893	917	942	966	990	1,015
TOTAL OPERATING COSTS/ACRE		20,344	21,426	22,507	23,593	24,670	25,751	26,833
TOTAL OPERATING COSTS/TRAY		5.09	4.87	4.69	4.54	4.41	4.29	4.19
CASH OVERHEAD COSTS/ACRE		2,220	2,220	2,220	2,220	2,220	2,220	2,220
TOTAL CASH COSTS/ACRE		22,564	23,646	24,727	25,813	26,890	27,971	29,053
TOTAL CASH COSTS/TRAY		5.64	5.37	5.15	4.96	4.80	4.66	4.54
NON-CASH OVERHEAD COSTS/ACRE		222	222	222	222	222	222	222
TOTAL COSTS/ACRE		22,786	23,868	24,949	26,035	27,112	28,193	29,275
TOTAL COSTS/TRAY		5.70	5.42	5.20	5.01	4.84	4.70	4.57

Part B. Returns per acre above operating costs

Price (\$/tray):	Fresh	Processed							
	4.50	3.00	-3,994	-3,576	-3,157	-2,743	-2,320	-1,901	-1,483
	5.00	3.50	-1,994	-1,376	-757	-143	480	1,099	1,717
	5.50	4.00	6	824	1,643	2,457	3,280	4,099	4,917
	6.00	4.50	2,006	3,024	4,043	5,057	6,080	7,099	8,117
	6.50	5.00	4,006	5,224	6,443	7,657	8,880	10,099	11,317
	7.00	5.50	6,006	7,424	8,843	10,257	11,680	13,099	14,517
	7.50	6.00	8,006	9,624	11,243	12,857	14,480	16,099	17,717

Part C. Returns per acre above all cash costs (gross margin)

Price (\$/tray):	Fresh	Processed							
	4.50	3.00	-6,214	-5,796	-5,377	-4,963	-4,540	-4,121	-3,703
	5.00	3.50	-4,214	-3,596	-2,977	-2,363	-1,740	-1,121	-503
	5.50	4.00	-2,214	-1,396	-577	237	1,060	1,879	2,697
	6.00	4.50	-214	804	1,823	2,837	3,860	4,879	5,897
	6.50	5.00	1,786	3,004	4,223	5,437	6,660	7,879	9,097
	7.00	5.50	3,786	5,204	6,623	8,037	9,460	10,879	12,297
	7.50	6.00	5,786	7,404	9,023	10,637	12,260	13,879	15,497

Table 4. Range analyses of strawberry production costs and returns, Ventura County, 1999 cont.

		Yield in trays/acre						
	Fresh	2,900	3,100	3,300	3,500	3,700	3,900	4,100
	Processed	1,100	1,300	1,500	1,700	1,900	2,100	2,300
-----\$/acre-----								

Part D. Returns per acre above total costs (returns to management)

Price (\$/tray):	Fresh	Processed							
4.50	3.00		-6,436	-6,018	-5,599	-5,185	-4,762	-4,343	-3,925
5.00	3.50		-4,436	-3,818	-3,199	-2,585	-1,962	-1,343	-725
5.50	4.00		-2,436	-1,618	-799	15	838	1,657	2,475
6.00	4.50		-436	582	1,601	2,615	3,638	4,657	5,675
6.50	5.00		1,564	2,782	4,001	5,215	6,438	7,657	8,875
7.00	5.50		3,564	4,982	6,401	7,815	9,238	10,657	12,075
7.50	6.00		5,564	7,182	8,801	10,415	12,038	13,657	15,275

**Table 5. Farm equipment and investment values and annual costs based on 200 annual farmed acres,
Ventura County, 1999**

Description	1999 Price (\$)	Life (yrs)	Salvage value (\$)	Capital recovery (\$)	Annual cash overhead (\$)		Total (\$)	
					Insurance	Taxes		
Equipment:								
120 HP 4WD Tractor	75,180	16	7,518	7,910	295	413	8,618	
45 HP 4WD Tractor #1	28,000	9	2,800	4,141	110	154	4,405	
45 HP 4WD Tractor #2	28,000	9	2,800	4,141	110	154	4,405	
Bed shaper	8,900	15	890	968	35	49	1,052	
Chopper	3,000	15	300	326	12	16	354	
Drip tape layer	5,000	15	500	544	20	28	591	
Lister	6,000	15	600	652	24	33	709	
Mulch layer	5,000	8	500	802	20	28	849	
Pickup truck 3/4 ton	16,698	3	1,669	5,892	65	92	6,050	
Punch machine	2,500	13	250	294	10	14	317	
Sprayer	5,000	3	500	1,764	20	28	1,811	
Trailer #1	2,000	3	200	706	8	11	725	
Trailer #2	2,000	3	200	706	8	11	725	
Trailer #3	2,000	3	200	706	8	11	725	
Trailer #4	2,000	3	200	706	8	11	725	
TOTAL EQUIPMENT	191,278		19,127	30,257	750	1,052	32,060	
60% OF NEW COST *	114,767		11,476	18,154	450	631	19,236	

Description	1999 Price (\$)	Life (yrs)	Salvage value (\$)	Capital recovery (\$)	Insurance	Taxes	Repairs	Total
Fuel tanks & pumps	20,000	15	2,000	2,175	78	110	450	2,813
Irrigation pumps	25,000	20	2,500	2,375	98	138	563	3,174
Shop building	30,000	15	3,000	3,262	118	165	675	4,219
Shop tools	15,000	15	1,500	1,631	59	83	338	2,110
Sprinkler system	200,000	20	20,000	19,003	784	1,100	4,500	25,387
TOTAL INVESTMENT	290,000		29,000	28,445	1,137	1,595	6,526	37,703

Description	Enterprise/Farm		Unit	Price/ Unit	Total Cost
	Size				
Business Overhead:					
Land rent	200		acre	1,650	330,000
Liability insurance	200		acre	3.42	684
Office expense	200		acre	360	72,000
Sanitation fee	200		acre	46	9,200
Supervisor & foreman wages	200		acre	110	22,000

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

**Table 6. Farm equipment actual hours of use and hourly costs based on 200 annual farmed acres,
Ventura County, 1999**

Description	Actual hours of use	Costs per hour (\$)						Total costs per hour
		Capital recovery	Cash Overhead		Operating		Total operating	
			Insurance	Taxes	Repairs	Fuel & lube		
120 HP 4WD Tractor	1,000	4.75	0.18	0.25	1.76	5.77	7.53	12.71
45 HP 4WD Tractor #1	1,800	1.38	0.04	0.05	0.73	1.83	2.56	4.03
45 HP 4WD Tractor #2	1,800	1.38	0.04	0.05	0.73	1.83	2.56	4.03
Bed Shaper	130	4.47	0.16	0.23	1.22	0	1.22	6.07
Chopper	130	1.51	0.05	0.08	1.14	0	1.14	2.78
Drip tape layer	130	2.51	0.09	0.13	1.23	0	1.23	3.96
Lister	130	3.01	0.11	0.15	2.28	0	2.28	5.55
Mulch layer	240	2.01	0.05	0.07	1.25	0	1.25	3.37
Pickup truck 3/4 ton	660	5.36	0.06	0.08	1.24	2.76	4.00	9.50
Punch machine	150	1.18	0.04	0.06	0.62	0	0.62	1.89
Sprayer	460	2.30	0.03	0.04	0.61	0	0.61	2.97
Trailer #1	830	0.51	0.01	0.01	0.46	0	0.46	0.98
Trailer #2	830	0.51	0.01	0.01	0.46	0	0.46	0.98
Trailer #3	830	0.51	0.01	0.01	0.46	0	0.46	0.98
Trailer #4	830	0.51	0.01	0.01	0.46	0	0.46	0.98

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