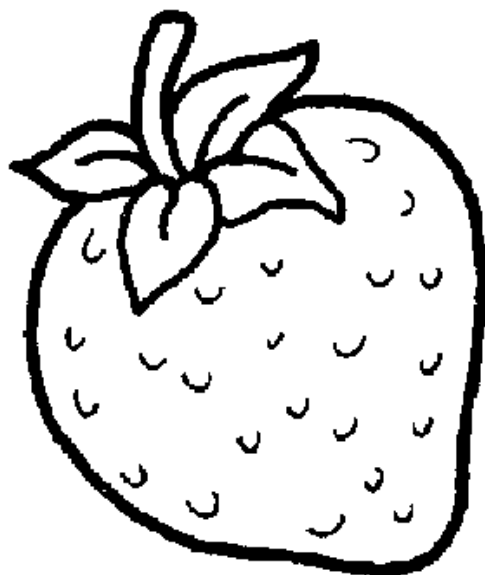

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2001

SAMPLE COSTS TO PRODUCE
Fresh Market

STRAWBERRIES



CENTRAL COAST

Monterey – Santa Cruz Counties

Prepared by:

Karen M. Klonsky
Richard L. De Moura

Extension Specialist, Department of Agricultural and Resource Economics, UC Davis
Staff Research Associate, Department of Agricultural and Resource Economics, UC
Davis

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE FRESH MARKET STRAWBERRIES Central Coast Region - Monterey & Santa Cruz Counties - 2001

CONTENTS

INTRODUCTION	2
ASSUMPTIONS.....	3
Cultural Practices and Material Inputs.....	3
Overhead.....	5
REFERENCES.....	9
Table 1. Cost Per Acre to Produce Strawberries.....	10
Table 2. Costs and Returns Per Acre to Produce Strawberries.....	11
Table 3. Monthly Cash Costs Per Acre to Produce Strawberries	13
Table 4. Whole Farm Annual Equipment, Investment, and Business Overhead Costs.....	14
Table 5. Hourly Equipment Costs.....	15
Table 6. Ranging Analysis.....	16

Acknowledgements. Thank you to Christopher Winterbottom, Research Director and Luis Guerrero, Research Assistant of the California Strawberry Commission and the Central Coast growers for their support.

INTRODUCTION

The sample costs to produce strawberries 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, and will not apply to every farm. Sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, “*Your Costs*”, is provided to enter your actual costs on Tables 1 and 2.

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

Sample Cost of Production studies for many commodities from 1931 to current are available and can be requested through the Department of Agricultural Economics, UC Davis, (530) 752-1515. Current studies can be downloaded from the department website <http://coststudies.ucdavis.edu> or obtained from selected county UC Cooperative Extension offices.

The University of California is an affirmative action/equal opportunity employer
The University of California and the United States Department of Agriculture cooperating.

ASSUMPTIONS

The following assumptions refer to Tables 1 to 6 and pertain to sample costs to produce strawberries in the Central Coast Region - Monterey and Santa Cruz counties. Practices described are not University of California recommendations, but represent production practices considered typical for strawberry production in the Central Coast Region. The costs, practices, and materials will not be applicable to all situations every production year. Cultural practices, materials, and strawberry production costs vary by grower and region, and differences can be significant. The practices and inputs used in the cost study serve as a guide only. *The use of trade names 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.*

Farm. The farm consists of 50 contiguous acres of land. Strawberries are being planted on 40 acres and roads, irrigation system and farmstead are on ten acres. The crop is farmed by the owner and established on ground previously planted to vegetable and strawberry crops.

Cultural Practices and Material Inputs

Land Preparation. The grower does a series of operations: discing 3X (X = number of passes over the land), subsoiling 2X, discing 2X, chiseling 2X, leveling 2X, discing 1X, bed listing/shaping. The field is discing a total of 8X, chiseled 12 inches deep 4X, subsoiled or ripped 30 to 36 inches deep 2X. Beds 52-inches wide and 14-inches high are listed and shaped in one operation. In this study it is assumed the grower owns the equipment, however, growers with this amount of acres will often rent a large tractor for land preparation or have the work done by a custom operator. Land preparation costs by a custom operator range from \$500 to \$650 per acre.

Plant Establishment. Several varieties are available for planting in the region, but no specific variety is assumed in this study. Bed width in the region ranges from 48 to 56 inches. In this study the strawberries are planted on 52-inch beds, two rows per bed at 12-inch plant spacing for a total of 18,000 plants per acre. Five percent of the plants are replanted and included in the planting costs. Holes are punched in the plastic mulch with a mechanical punch machine. The mulch is laid on the bed during the fumigation process. Plants are delivered to the edge of the blocks where planting labor gathers the plants in a bucket and then places the strawberry plants in the punched holes.

Fertilization. Slow release 18-8-13 fertilizer at 500 pounds per acre is drilled preplant in the bed using a fertilizer drill with bed shaper. During the growing season, some growers will apply additional fertilizers through the drip system, but are not included in this study.

Irrigation. The grower rents sprinkler pipe for the two preplant and establishment sprinkler irrigations. Six men including the tractor driver layout and pickup the pipe. Drip tape is buried in the bed at two lines per bed. Ditches are made at field edge with a tractor and blade to lay and bury the lateral lines. The drip tape is trimmed and connected to the lateral lines and the lines are tested for leaks. Beginning immediately after planting, the plants are sprinkled 1 hour per day for one week and 1_ hours on alternate days the following week. From March through September, the plants are irrigated two times per week through the drip lines. Effective rainfall is not taken into account, therefore a total of 36 acre inches (including the preplant irrigations) is applied to the crop.

Pests. The pesticides and rates mentioned in this cost study are listed in the *UC IPM Pest Management Guidelines, Strawberries*. For more information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. **Inputs cited in this report are not recommendations.** Written recommendations are required for many pesticides and are made by licensed pest control advisors. For information on current regulations and pesticide use permits, contact the local county Agricultural Commissioner's office.

Fumigation. Arthropods, soilborne fungi/diseases, nematodes, and weeds are controlled with preplant fumigation. Flat fumigation by a custom operator is the most likely method in this area. The custom operator furnishes the fumigant material (methyl bromide plus chloropicrin), plastic tarp, glue, and three men including the tractor driver. The grower furnishes two additional men to shovel and seal the plastic. The five men can do approximately 1.5 to 2 acres per hour. The grower can incur additional costs, which are not included in this study of \$10 to \$25 per acre to obtain the fumigation permit. These costs include field measuring, field maps and fumigation layout, obtaining permission from nearby residents, and meeting with county representatives.

Weeds. In addition to preplant fumigation, weeds are controlled by hand weeding from December through September. Although weeding times vary by grower and month, the study assumes an average of 10.2 hours per acre per month over the 10 months.

Diseases. Powdery mildew (*Sphaerotheca macularis*) and Botrytis fruit rot (*Botrytis cinerea*) are the two diseases treated in this study. Treatments are combined (tank mixed) with the insect control applications. Fungicide treatments are made every 12 to 16 days through May and every 20 to 25 days thereafter ending in early September.

Insects. Two-spotted mite (*Tetranychus urticae*), beet armyworm (*Spodoptera exigua*) and lygus (*Lygus hesperus*) are the main insects controlled. Treatments for insects are combined with the fungicide treatments.

The insecticide treatments are shown in Table A.

DATE	DISEASE		INSECTS		
	Botrytis	Mildew	Mites	Worms	Lygus
20-Mar	Captan	Rally	Dibrom		
05-Apr	Rovral	Benlate		Dipel	
20-Apr	Elevate		Agrimek	Lannate	
05-May	Captan		Dibrom	Dipel	Dibrom
20-May	Rovral	Rally			
05-Jun	Elevate	Benlate	Danitol		Danitol
25-Jun	Captan		Agrimek		
20-Jul	Rovral				Dibrom
10-Aug		Thiolux	Danitol		Danitol
05-Sep		Thiolux	Savy		
RATES PER ACRE:					
	Agrimek	16.0 oz	Elevate	01.5 lb	
	Benlate	01.0 lb	Lannate	01.0 lb	
	Captan	04.0 lb	Rally	05.0 oz	
	Danitol	16.0 oz	Rovral	01.5 lb	
	Dibrom	16.0 oz	Savy	06.0 oz	
	Dipel	01.0 lb	Thiolux	05.0 lb	

Harvest. The crop is harvested from April through early October with peak harvest in June and July. The percent of the crop harvested each month in this study is shown in Table B. The grower hires a crew foreman to supervise a 35-man crew early and late in the season and two 35-man crews during the peak season. The picker pushes a picking cart that holds a tray with 12 one-pint containers down the furrow. The ripe strawberries are picked by hand and placed in the containers/tray. Other container types and sizes are used, but are not included in this

	April	May	June	July	Aug	Sept	Oct
Fresh %	5	12	25	25	18	12	2

study. Picker labor costs will vary by grower and with crop yield. In this study, the picker is paid an hourly wage plus piecework (see Labor). Piecework ranges from 3 trays per hour early and late in the season and 5 to 8 trays per hour during the peak harvest. Additional labor includes one field checker to check for proper picking, and one picking card puncher per crew to count the trays picked by each picker. To load and haul the fruit, one truck loader stacks the trays on the truck and the truck driver delivers the strawberries to the cooler. The grower uses two one-ton flatbed trucks that holds two to three pallets or 400 trays per load for delivery to the cooler. The truck driver takes about an hour per load to deliver the filled trays and pick up empty trays. The grower will have at least one tractor, one trailer, and one toilet in the field.

Yields. The crop yield in this study for fresh market production is 5,500 trays per acre. Strawberry yields are measured in trays per acre ranging from 10 to 12 pounds per tray. The weight used in this study and in Table C is 12 pounds per tray. Average county yields for total production fresh and freezer markets over the last five years are shown in Table C.

YEAR	MONTEREY			SANTA CRUZ		
	ACRE	² tray/acre	\$/tray	ACRE	² tray/acre	\$/tray
96	7,222	4,500	5.56	3,163	4,567	5.78
97	6,996	4,933	6.08	3,388	5,033	5.38
98	6,540	4,900	6.19	2,716	4,400	6.05
99	6,864	3,743	8.47	3,458	5,090	6.20
00	6,990	5,388	6.05	4,580	5,048	5.47

¹Ag Commissioner Crop Report: Monterey, Santa Cruz counties ²12 lb

Returns. Based on market conditions, the grower average seasonal returns are estimated at \$6.40 per tray. The estimated return provides a basis for a range of yields and prices shown in Table 6. Average county grower fresh and freezer combined returns for the last five years are shown in Table C.

Assessments. The grower pays 2.5 cents per tray and the processor pays 2.5 cents to the Strawberry Commission for research and marketing.

Year-end Cleanup. The plastic mulch and drip tape are pulled and rolled by hand and hauled to the dump. The field is then disced one time in preparation for the next crop and the operation is incorporated with land preparation in this study.

Labor. Hourly wages for workers are \$9.00 for machine operators, \$7.00 per hour for field labor, and \$5.25 per hour for harvesting or picking strawberries. Adding 34% for the employers share of federal and state payroll taxes, insurance, and other possible benefits gives the labor rates shown of \$12.06 per hour for skilled labor, \$9.38 per hour for field labor, and \$7.03 per hour for pickers. In addition, the pickers get a piece rate of \$0.80 per carton. At 3 cartons per hour, this brings the total hourly wage to \$9.43 per hour, but will be higher as the yield increases. 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 repair.

Overhead

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, liability and property insurance, sanitation services, and equipment repairs. Employee benefits, insurance, and payroll taxes are included in labor costs and not in overhead (see Labor).

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 2 on a per acre basis.

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 10.51% per year. A nominal interest rate is the typical market rate for borrowed funds. It is assumed the operating loan goes through harvest, therefore the postharvest operation costs are discounted back to the harvest month using a negative interest charge.

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 0.666% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$509 for the entire farm.

Office Expense. Office and business expenses are estimated at \$1,000 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, utilities, and miscellaneous expenses.

Sprinkler Pipe. Forty-five joints or sections per acre are rented for three months during land preparation through plant establishment

Sanitation Services. Sanitation services provide a double portable toilet and single toilet with washing equipment and cost the farm \$2,760 annually. The cost includes delivery and 12 months of weekly service for the double toilet and 7 months of weekly service for the single.

Supervisor/Management Salaries. Wages for management are not included as a cash cost. Returns above total costs are considered a return to management and risk.

Non-Cash Overhead. Non-cash overhead, shown on an annual per acre basis is calculated as the capital recovery cost for equipment and other farm investments. Farm equipment on strawberry farms in the Central Coast Region is purchased new or used; this study shows the current purchase price for new equipment. The new purchase price is adjusted to 40% to indicate a mix of new and used equipment. Annual ownership costs are shown in Tables 1-4.

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 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 and purchase price for land are the same 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 6.70% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten year average of California's agricultural sector long-run real 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, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Land. Land values in the region range from \$35,000 to \$40,000 for sandy loam soil. Bare land in this study is valued at \$40,000 per acre for the 50 acres or \$50,000 per acre for the 40 producing acres.

Irrigation System. The cost is based on one 75 horsepower electric pump lifting 36 acre-inches from a water level depth of 120 feet. The pump and 300-foot deep well already existed on the site, and the cost of the irrigation system is for the recasing of the well, refurbishment of the pump and the installation of a new filtration system. Water is pumped through a filtration station into main lines. Reusable telescoping lateral lines are buried each year at the edge of the strawberry field and are connected to the main and drip lines. Two drip lines are buried in each bed prior to planting. The cost of pumping water and irrigation labor is included as cultural costs in Tables 1 and 3. The life of the irrigation system is estimated to be 30 years for the pump and filtration system.

Equipment Cash Costs. 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 fuel, lubrication, and repairs. 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 5 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time (operation time) for a given operation to account for fueling, moving equipment, and setup time.

Repairs, Fuel and Lube. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and type of fuel used. Prices for on-farm delivery of diesel and gasoline are \$1.26 and \$1.51 per gallon, respectively.

Risk. The risks associated with producing and marketing strawberries are high. 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 which affect the profitability and economic viability of strawberry production.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

REFERENCES

- Ag Commissioner. *Annual Crop Reports*. 1996 – 2000. Monterey County Agricultural Commissioner. Salinas, CA.
- Ag Commissioner. *Annual Crop Reports*. 1996 – 2000. Santa Cruz County Agricultural Commissioner. Watsonville, CA.
- American Society of Agricultural Engineers. (ASAE). 1994. *American Society of Agricultural Engineers Standards Yearbook*. St. Joseph, MO.
- Boelje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, NY
- Statewide IPM Project. 2000. “UC Pest Management Guidelines, Strawberries”. In M. L. Flint (ed.) *UC IPM Pest Management Guidelines*. Pub. 3339. IPM Education and Publication. University of California, Division of Agriculture and Natural Resources. Oakland, CA.
- United States Department of Agriculture-Economic Reporting Service. *Farm Financial Ratios Indicating Solvency and Profitability 1960 – 99, California*. 2001.
www.ers.usda.gov/data/farbalancesheet/fbsdmu.htm
- Welch, N. C., Carolyn Pickel, Douglas Walsh, J. A. Beutel. 1990. *Strawberry Production in the Central Coast Area of California*. University of California Cooperative Extension. Davis, CA.
- Welch, N. C.. 1996. *Strawberry Sample Cost, Santa Cruz and Monterey Counties*. University of California Cooperative Extension. Santa Cruz and Monterey Counties of California.
- Welch, N. C., James A. Beutel, Royce Bringham, Douglas Gubler, Harry Otto, Carolyn Pickel, Wayne Schrader, Douglas Shaw, Victor Voth. 1989. *Strawberry Production in California*. Leaflet 2959. University of California Cooperative Extension, Division of Agriculture and Natural Resources. Davis, CA.

For information concerning the above mentioned or other University of California publications, contact UC DANR Communications Services (1-800-994-8849), your local county Cooperative Extension office or online at www.ucop.edu.

UC COOPERATIVE EXTENSION

Table 1. COSTS PER ACRE to PRODUCE STRAWBERRIES
CENTRAL COAST REGION- Monterey & Santa Cruz Counties 2001

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre					Total Cost	Your Cost
		Labor Cost	Fuel, & Repairs	Material Cost	Custom/Rent	Total Cost		
Cultural:								
Disc 8X	1.07	15	25	0	0	40		
Subsoil 2X	1.50	22	35	0	0	56		
Chisel 4X	0.56	8	13	0	0	21		
Level 2X	0.50	7	12	0	0	19		
List/Shape 52" beds	0.25	4	6	0	0	9		
Fertilize @ Preplant	0.26	4	1	225	0	230		
Install Drip Tape 2/bed	2.00	29	9	240	0	277		
Grade Field Roads	0.01	0	0	0	0	0		
OpenTrench for laterals/Connect drip	0.10	6	0	0	0	7		
Lay Mulch	2.00	104	11	297	0	412		
Punch Holes	0.69	10	3	0	0	13		
Layout/Pickup Sprinkler Pipe3X	3.00	72	11	0	0	83		
Irrigate-Sprinkle	0.35	3	0	45	0	48		
Irrigate	12.06	113	0	225	0	338		
Plant (includes replant)	45.31	425	0	1,176	0	1,601		
Roll Plants to Pack	0.20	3	1	0	0	4		
Fumigate	3.00	28	0	0	1,700	1,728		
Weed-hand	102.00	957	0	0	0	957		
Botrytis/Mildew	0.58	8	3	72	0	84		
Botrytis/Mildew/Lyigus	0.58	8	3	85	0	97		
Botrytis/Mildew/Mite	0.58	8	3	47	0	59		
Botrytis/Mildew/Worm	0.58	8	3	351	0	363		
Botrytis/Lyigus	0.58	8	3	59	0	71		
Botrytis/Mite	0.58	8	3	124	0	136		
Botrytis/Mite/Worm	0.58	8	3	183	0	195		
Botrytis/Mite/Worm/Lyigus	0.58	8	3	38	0	49		
Mildew/Mite	0.58	8	3	88	0	100		
Mildew/Mite/Lyigus	0.58	8	3	26	0	37		
Yearend PLASTIC Retrieval/Landfill	5.00	47	0	10	45	102		
TOTAL CULTURAL COSTS	185.69	1,941	160	3,291	1,745	7,137		
Harvest:								
Harvest	55.95	525	0	7,700	9,678	17,903		
Load/Haul	6.78	408	61	0	0	469		
Assessments	0.00	0	0	138	0	138		
TOTAL HARVEST COSTS	62.73	933	61	7,838	9,678	18,510		
Interest on operating capital @ 10.51%						1,370		
TOTAL OPERATING		2,874	221	11,128	11,424	27,017		
Cash Overhead								
Liability Insurance						13		
Office Expense						1,000		
Sanitation Fee						69		
Pipe Rent 40ac						250		
Property Taxes						537		
Property Insurance						25		
Investment Repairs						43		
TOTAL CASH OVERHEAD COSTS						1,937		
TOTAL CASH COSTS/ACRE						28,954		
Non-cash Overhead								
		Per Producing Acre		Annual Cost	Capital Recovery			
Buildings		1,229		113		113		
Hand Tools		115		12		12		
Shop Tools		316		33		33		
Irrigation 75hp Pump Filter		375		35		35		
Harvest Carts 70		26		6		6		
Fuel Tanks/Above Ground		163		15		15		
Lateral Lines		250		60		60		
Land		50,000		3,350		3,350		
Equipment		4,142		441		441		
TOTAL NON-CASH OVERHEAD COSTS		56,616		4,065		4,065		
TOTAL COSTS/ACRE						33,019		

UC COOPERATIVE EXTENSION
Table 2. COSTS and RETURNS PER ACRE to PRODUCE STRAWBERRIES
 CENTRAL COAST REGION- Monterey & Santa Cruz Counties 2001

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Strawberry	5,500.00	tray	6.40	35,200	
OPERATING COSTS					
Water:					
Water	36.00	acin	7.50	270	
Fertilizer:					
Scotts 18-8-13 Slow Release	500.00	lb	0.45	225	
Materials:					
T-Tape	10,890.00	foot	0.02	240	
Mulch 1.25m	350.00	lb	0.85	297	
Crate/Basket/Wire	5,500.00	each	1.40	7,700	
Landfill Fee-Yearend Mulch Removal	400.00	lb	0.03	10	
Plants:					
Strawberry Plants	18,375.00	each	0.06	1,176	
Assessment:					
California Strawberry Commission	5,500.00	tray	0.03	138	
Fungicide:					
Benlate	17.00	lb	18.00	306	
Captan 50W	12.00	lb	3.87	46	
Elevate	3.00	lb	32.35	97	
Rally 40W	10.00	oz	4.46	45	
Rovral	6.00	lb	25.00	150	
Thiolux	15.00	lb	0.70	10	
Insecticide:					
Agri-Mek 0.15 EC	32.00	floz	6.78	217	
Danitol	32.00	floz	1.16	37	
Dibrom 8 Emulsive	48.00	floz	0.58	28	
Dipel DF	2.00	lb	12.75	25	
Lannate 90 SP	1.00	lb	26.27	26	
Savy	6.00	floz	14.08	84	
Contract:					
Fumigate - Solid	1.00	acre	1,700.00	1,700	
Plastic Retrieval for fumigation	1.00	acre	45.00	45	
Harvest Labor	918.00	hr	5.75	5,279	
Harvest Piece Work	5,500.00	tray	0.80	4,400	
Labor (machine)	32.56	hrs	12.06	393	
Labor (non-machine)	264.55	hrs	9.38	2,481	
Fuel - Gas	22.95	gal	1.51	35	
Fuel - Diesel	86.74	gal	1.26	109	
Lube				22	
Machinery repair				56	
Interest on operating capital @ 10.51%				1,370	
TOTAL OPERATING COSTS/ACRE				27,017	
NET RETURNS ABOVE OPERATING COSTS				8,183	

UC COOPERATIVE EXTENSION

Table 2. Continued

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS:					
Liability Insurance				13	
Office Expense				1,000	
Sanitation Fee				69	
Pipe Rent 40ac				250	
Property Taxes				537	
Property Insurance				25	
Investment Repairs				43	
TOTAL CASH OVERHEAD COSTS/ACRE				1,937	
TOTAL CASH COSTS/ACRE				28,954	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Buildings				113	
Hand Tools				12	
Shop Tools				33	
Irrigation 75hp Pump Filter System				35	
Harvest Carts 70				6	
Fuel Tanks/Above Ground				15	
Lateral Lines				60	
Land				3,350	
Equipment				441	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				4,065	
TOTAL COSTS/ACRE				33,019	
NET RETURNS ABOVE TOTAL COSTS				2,181	

UC COOPERATIVE EXTENSION
Table 3. MONTHLY CASH COSTS PER ACRE to PRODUCE STRAWBERRIES
 CENTRAL COAST REGION- Monterey & Santa Cruz Counties 2001

Beginning AUG 00 Ending OCT 01	AUG 00	SEP 00	OCT 00	NOV 00	DEC 00	JAN 01	FEB 01	MAR 01	APR 01	MAY 01	JUN 01	JUL 01	AUG 01	SEP 01	OCT 01	TOTAL
Cultural:																
Disc 8X	15	25														40
Subsoil 2X		56														56
Chisel 4X		21														21
Level 2X		19														19
Fumigate		1,728														1,728
Plastic Retrieval/Landfill		45													57	102
Layout/Pickup Sprinkler Pipe		55		28												83
Sprinkle		31		17												48
List/Shape 52" beds		9														9
Fertilize Preplant		230														230
Install Drip Tape 2/bed		277														277
Grade Field Roads		0														0
OpenTrench for laterals/Connect		7														7
Lay Mulch		412														412
Punch Holes				13												13
Irrigate				8					30	45	45	45	45	45	30	338
Plant (includes replant)			1601													1,601
Roll Plants to Pack			4													4
Weed-hand					96	96	96	96	96	96	96	96	96	96	96	959
Botrytis/Mildew/Mite								59								59
Botrytis/Mildew/Worm									363							363
Botrytis/Mite/Worm									195							195
Botrytis/Mite/Worm/Lyigus										49						49
Botrytis/Mildew										84						84
Botrytis/Mildew/Lyigus											97					97
Botrytis/Mite											136					136
Botrytis/Lyigus												71				71
Mildew/Mite/Lyigus													37			37
Mildew/Mite														100		100
TOTAL CULTURAL COSTS	15	2,915	1,626	45	96	96	96	185	699	274	374	212	178	241	87	7,138
Harvest:																
Harvest									1,443	2,498	4,428	4,271	2,498	2,282	484	17,904
Haul to Cooler									67	60	104	97	60	58	23	469
Assessments															138	138
TOTAL HARVEST COSTS									1,510	2,558	4,532	4,368	2,558	2,340	645	18,511
Interest on operating capital	0	26	40	40	41	42	43	44	64	89	132	172	196	218	225	1,370
TOTAL OPERATING COSTS/ACRE	15	2,941	1,666	85	137	138	139	229	2,273	2,921	5,038	4,751	2,931	2,799	957	27,017
Overhead																
Liability Insurance						13										13
Office Expense	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	1,000
Sanitation Fee	6	6	6	6	6	6	6	6	6	6	6	6				69
Pipe Rent 40ac			250													250
Property Taxes						537										537
Property Insurance						25										25
Investment Repairs	4	4	4	4	4	4	4	4	4	4	4	4				43
TOTAL CASH OVERHEAD COSTS	76	76	326	76	76	651	76	76	76	76	76	76	67	67	67	1,937
TOTAL CASH COSTS/ACRE	91	3,017	1,992	161	213	789	215	305	2,349	2,997	5,114	4,827	2,998	2,866	1,024	28,954

UC COOPERATIVE EXTENSION
**Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,
and BUSINESS OVERHEAD COSTS**
CENTRAL COAST REGION- Monterey County 2001

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
01	205HP Crawler	152,000	15	29,592	15,169	605	908	16,681
01	42HP 4WD Tractor 1	27,830	15	5,418	2,777	111	166	3,054
01	42HP 4WD Tractor 2	27,830	12	6,958	3,052	116	174	3,342
01	55HP 2WD Tractor	32,269	15	6,282	3,220	128	193	3,541
01	Blade Rear 3 pt 6'	1,012	15	97	105	4	6	114
01	Chisel Spring 14'	6,163	15	592	640	22	34	696
01	Disc Offset 14'	15,516	10	2,744	1,977	61	91	2,129
01	Drip Machine 1-52"R	3,500	15	336	363	13	19	395
01	Fertilizer Drill 2-52"R 9'	5,000	10	884	637	20	29	686
01	Fume/Plastic Machine 2-52"R	22,500	15	2,160	2,336	82	123	2,541
01	Lister/Shaper 2-52"R	5,000	15	480	519	18	27	565
01	Punch Machine 1-52"	5,000	15	480	519	18	27	565
01	Ripper-5 Shank 14'	9,800	10	1,733	1,249	38	58	1,345
01	Roller 8'	4,500	15	432	467	16	25	508
01	Sprayer 20' boom	3,630	15	349	377	13	20	410
01	Trailer-Pipe	1,950	20	102	177	7	10	194
01	Triplane 15'	18,750	15	1,800	1,947	68	103	2,118
01	Truck 1 Ton #1	36,000	10	10,634	4,274	155	233	4,663
01	Truck 1 Ton #2	36,000	10	10,634	4,274	155	233	4,663
TOTAL		414,250		81,707	44,080	1,652	2,480	48,211
40% of New Cost *		165,700		32,683	17,632	661	992	19,284

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Buildings	49,162	20		4,533	164	246	983	5,925
Fuel Tanks/Above Ground	6,514	20	651	584	24	36	65	709
Hand Tools	4,595	15	460	476	17	25	92	610
Harvest Carts 70	1,042	5		252	3	5	21	282
Irrigation 75hp Pump Filter	15,000	20		1,383	50	75	100	1,608
Land	2,000,000	20	2,000,000	134,000	0	20,000	0	154,000
Lateral Lines Irrigation	10,000	5		2,419	33	50	200	2,703
Shop Tools	12,637	15	1,264	1,310	46	70	253	1,679
TOTAL INVESTMENT	2,098,950		2,002,375	144,958	337	20,507	1,714	167,516

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	50	acre	10.18	509
Office Expense	40	acre	1,000.00	40,000
Pipe Rent 40ac	40	acre	250.00	10,000
Sanitation Fee	40	acre	69.00	2,760

UC COOPERATIVE EXTENSION
Table 5. HOURLY EQUIPMENT COSTS
 CENTRAL COAST REGION- Monterey & Santa Cruz Counties 2001

Yr	Description	COSTS PER HOUR							Total Costs/Hr	
		Actual Hours Used	Capital Recovery	Cash Overhead			Operating			Total Oper.
				Insur- ance	Taxes	Repairs	Fuel & Lube			
01	205HP Crawler	170.40	35.61	1.42	2.13	2.45	17.24	19.69	58.85	
01	42HP 4WD Tractor	245.10	4.53	0.18	0.27	0.45	2.99	3.44	8.42	
01	42HP 4WD Tractor 2	118.30	10.32	0.39	0.59	0.47	2.99	3.46	14.75	
01	55HP 2WD Tractor	256.60	5.02	0.20	0.30	0.91	3.91	4.82	10.34	
01	Blade Rear 3 pt 6'	4.30	9.82	0.34	0.52	0.00	0.00	0.00	10.68	
01	Chisel Spring 14'	22.20	11.51	0.40	0.61	0.84	0.00	0.84	13.35	
01	Disc Offset 14'	42.70	18.53	0.57	0.86	1.66	0.00	1.66	21.62	
01	Drip Machine 1-52"R	80.00	1.82	0.06	0.10	0.58	0.00	0.58	2.56	
01	Fertilizer Drill 2-52"R 9'	10.50	24.32	0.75	1.12	0.89	0.00	0.89	27.08	
01	Fume/Plastic Machine 2-52"R	80.00	11.68	0.41	0.62	1.66	0.00	1.66	14.36	
01	Lister/Shaper 2-52"R	10.00	20.76	0.73	1.10	0.65	0.00	0.65	23.24	
01	Punch Machine 1-52"	27.60	7.53	0.26	0.40	0.37	0.00	0.37	8.56	
01	Ripper-5 Shank 14'	60.00	8.33	0.26	0.38	1.47	0.00	1.47	10.43	
01	Roller 8'	8.10	23.13	0.81	1.22	0.33	0.00	0.33	25.49	
01	Sprayer 20' boom	233.30	0.65	0.02	0.03	0.63	0.00	0.63	1.33	
01	Trailer-Pipe	120.00	0.59	0.02	0.03	0.02	0.00	0.02	0.67	
01	Triplane 15'	20.00	38.93	1.37	2.06	1.86	0.00	1.86	44.21	
01	Truck 1 Ton #1	271.30	6.30	0.23	0.34	2.28	4.34	6.62	13.50	
01	Truck 1 Ton #2	95.30	17.93	0.65	0.98	2.28	4.34	6.62	26.19	

UC COOPERATIVE EXTENSION
Table 6. RANGING ANALYSIS
 CENTRAL COAST REGION - Monterey & Santa Cruz Counties 2001

COSTS PER ACRE AT VARYING YIELD TO PRODUCE STRAWBERRIES

	YIELD (trays/acre)						
	4,000	4,500	5,000	5,500	6,000	6,500	7,000
OPERATING COSTS:							
Cultural Cost	7,137	7,137	7,137	7,137	7,137	7,137	7,137
Harvest Cost	13,678	15,288	16,899	18,510	20,121	21,731	23,342
Interest on operating capital	1,189	1,249	1,310	1,370	1,430	1,490	1,550
TOTAL OPERATING COSTS/acre	22,004	23,674	25,346	27,017	28,688	30,358	32,029
CASH OVERHEAD COSTS	1,937	1,937	1,937	1,937	1,937	1,937	1,937
TOTAL CASH COSTS/acre	23,941	25,611	27,283	28,954	30,625	32,295	33,966
NON-CASH OVERHEAD COSTS	4,065	4,065	4,065	4,065	4,065	4,065	4,065
TOTAL COSTS/acre	28,006	29,676	31,348	33,019	34,690	36,360	38,031
Total Operating Costs/tray	5.50	5.26	5.07	4.91	4.78	4.67	4.58
Total Cash Cost/tray	5.99	5.69	5.46	5.26	5.10	4.97	4.85
Total Cost/tray	7.00	6.59	6.27	6.00	5.78	5.59	5.43

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR STRAWBERRIES

PRICE \$/tray	YIELD (trays/acre)						
	4,000	4,500	5,000	5,500	6,000	6,500	7,000
4.48	-4,084	-3,514	-2,946	-2,377	-1,808	-1,238	-669
5.12	-1,524	-634	254	1,143	2,032	2,922	3,811
5.76	1,036	2,246	3,454	4,663	5,872	7,082	8,291
6.40	3,596	5,126	6,654	8,183	9,712	11,242	12,771
7.04	6,156	8,006	9,854	11,703	13,552	15,402	17,251
7.68	8,716	10,886	13,054	15,223	17,392	19,562	21,731
8.32	11,276	13,766	16,254	18,743	21,232	23,722	26,211

NET RETURN PER ACRE ABOVE CASH COST FOR STRAWBERRIES

PRICE \$/tray	YIELD (trays/acre)						
	4,000	4,500	5,000	5,500	6,000	6,500	7,000
4.48	-6,021	-5,451	-4,883	-4,314	-3,745	-3,175	-2,606
5.12	-3,461	-2,571	-1,683	-794	95	985	1,874
5.76	-901	309	1,517	2,726	3,935	5,145	6,354
6.40	1,659	3,189	4,717	6,246	7,775	9,305	10,834
7.04	4,219	6,069	7,917	9,766	11,615	13,465	15,314
7.68	6,779	8,949	11,117	13,286	15,455	17,625	19,794
8.32	9,339	11,829	14,317	16,806	19,295	21,785	24,274

NET RETURNS PER ACRE ABOVE TOTAL COST FOR STRAWBERRIES

PRICE \$/tray	YIELD (trays/acre)						
	4,000	4,500	5,000	5,500	6,000	6,500	7,000
4.48	-10,086	-9,516	-8,948	-8,379	-7,810	-7,240	-6,671
5.12	-7,526	-6,636	-5,748	-4,859	-3,970	-3,080	-2,191
5.76	-4,966	-3,756	-2,548	-1,339	-130	1,080	2,289
6.40	-2,406	-876	652	2,181	3,710	5,240	6,769
7.04	154	2,004	3,852	5,701	7,550	9,400	11,249
7.68	2,714	4,884	7,052	9,221	11,390	13,560	15,729
8.32	5,274	7,764	10,252	12,741	15,230	17,720	20,209