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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2003

SAMPLE COSTS TO PRODUCE ORGANIC STRAWBERRIES

Central Coast
Santa Cruz and Monterey Counties

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SAMPLE COSTS TO PRODUCE FRESH MARKET ORGANIC STRAWBERRIES
Central Coast - Santa Cruz & Monterey Counties – 2003

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INTRODUCTION

Sample costs to produce organic strawberries in the Central Coast Region—Santa Cruz and Monterey 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 Cost*", 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 the present are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-1515. Current studies can be downloaded from the department Web site http://coststudies.ucdavis.edu or obtained from selected county UC Cooperative Extension offices.

ASSUMPTIONS

The following assumptions refer to Tables 1 to 6 and pertain to sample costs to produce organic strawberries in Santa Cruz and Monterey Counties. Practices described are 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 organic 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. This study assumes a farm operation size of 100 acres of land. Organic strawberries are planted on 10 acres with 30 additional acres planted to conventionally grown strawberries. The remaining acreage is planted to caneberries and vegetables and also contains roads and the irrigation system. The farmer rents the land at $1,800 per acre, and owns the machinery and equipment used.

Cultural Practices and Material Inputs

To gain certified organic status, growers must farm on land to which no synthetically formulated fertilizers and/or pesticides have been applied for a minimum of three years. Organic strawberries are rotated with other crops to assist with disease and weed control and for long-term improvements to soil fertility. The reader must keep in mind that the information presented in this study refers only to one organic strawberry crop cycle, which lasts for 14 months beginning in September of year one and ending in October of year two.

Land Preparation. This study assumes that in September a previously planted cover or cash crop is disked twice to incorporate plant residue. The field is then subsoiled twice, leveled, disked three times, and rototilled twice. In middle to late October, beds are listed and shaped, drip tape is installed, and the beds are covered with a black plastic mulch.

Plant Establishment. At the end of October, strawberries are transplanted into 48-inch beds using two rows per bed at 12-inch spacing for a total plant density of 21,000 plants per acre. Five percent of the transplants are replanted and included in planting costs. A mechanical slotting implement is used to open plastic mulch at appropriate intervals for transplanting strawberries. Several varieties such as *Seascape, Aromas,* and *Camarosa* are suitable for organic production in the region, but no specific variety is assumed in this study.

Fertilization. Ten tons of compost are purchased and spread onto fields by a custom operator immediately after incorporating the cover or cash crop, but before subsoiling, leveling, and disking. In addition, bloodmeal is incorporated into the soil at the rate of 500 pounds per acre. From February to September, the grower applies a series of liquid fertilizers and foliar sprays. Fish emulsion (6-2-2) and soy-based Phytamin 800 (7-0-0) are soil-applied through the drip irrigation system at the rate of five gallons per acre. These two products are applied every other week on an alternating basis for a total of seven applications each. During this time growers also use foliar sprays including Vigor Cal (a calcium supplement, which is also useful for fruit quality) and Maxi Crop Seaweed Extract, applied once per month at a rate of one gallon per acre and 2.5 pounds per acre, respectively. In addition, Fish Agra (4-1-1) is foliar-applied once per month at a rate of one gallon per acre beginning in March and ending in July. These materials are used to ensure that a balance of N, P, K and micronutrients are supplied to plants.

Irrigation. Fields are sprinkler irrigated once during the land preparation process and again after transplanting strawberries, with drip irrigation used for the remainder of the growing season. For the drip irrigation system, one line of tape per bed is installed during bed formation.

Prior to drip irrigation use, ditches are made at field edge with a tractor and blade to lay and bury lateral lines. The drip tape is connected to the lateral lines and the lines are tested for leaks. From March through September, strawberries are irrigated two to three times per week using a total of 36 acre-inches of water for the entire season. Water costs include pumping charges plus an additional Pajaro Valley Water Management Agency augmentation fee of $80 per acre-foot. Effective rainfall is not taken into account.

Pests[1]. *Diseases.* Powdery mildew (*Sphaerotheca macularis* f.sp. *fragariae*) and Botrytis fruit rot (*Botrytis cinerea*) are the two diseases most common to strawberries in this area. Micronized sulfur is applied at the rate of five pounds per acre for powdery mildew control every 12 to 16 days during April and May and then every 20 to 25 days ending in early September, for a total of nine applications per year. Because no organically acceptable fungicide has proven consistently effective for Botrytis control, this fruit rot is managed by culling diseased fruit to keep the strawberry crop free of diseased materials. This management operation is performed at the same time as harvest and is listed on Table 1 under "Disease Control-Cull Fruit."

Insects and mites. Pests common to strawberries in this area include twospotted mite (*Tetranychus urticae*), greenhouse whitefly (*Trialeurodes vaporariorum*), lygus bug (*Lygus hesperus*), Western flower thrips (*Frankliniella occidentalis*) and certain species of aphids and Lepidoptera. To assist with the control of twospotted mite, the predatory mite *Phytoseiulis persimilis*, is released four times during the season for a total application rate of 40,000 mites per acre per year. Application time is estimated at one hour per acre per release. To assist with pest management decisions, growers contract with scouting services at an estimated cost of $150 per acre. To control aphids and whitefly, growers use three applications of insecticidal soap at a rate of two gallons per acre, and six applications of Neem-Oil at a rate of 36 ounces per acre. Lepidopterous pests are managed using four applications of *Bacillus thuringiensis (*Bt), applied at a rate of one pound per acre.

Vertebrates. Rodents, such as pocket gophers, *Thomomys* spp., cause damage in strawberry fields by feeding on the plant roots, digging tunnels into the beds and also gnawing holes in the drip irrigation tape. They may be controlled in organic strawberry fields by trapping and other means throughout the growing season. Labor cost is estimated at two hours per acre.

Weeds. Weed management is especially challenging for organic strawberry production because soil fumigation and synthetic herbicides are not allowed under organic regulations. For 10 months beginning in December and ending in September, weeds in and around plants are managed by hand weeding. Although weeding times vary by grower and month, the study assumes an average of 20 hours per acre per month. Weeds in furrows between beds are controlling using mechanical cultivations.

Harvest. The crop is harvested from April through early October with peak harvest in June and July. In this study the percent of the total crop harvested each month is shown in Table A. The grower hires a 10-person crew, which is supervised by the farm's full time foreman, and assisted by another person who tallies the number of trays harvested by each worker. A worker pushes a picking cart that holds a tray with 12 one-pound clamshell containers down the furrow. Strawberries are picked by hand and placed in the containers. Picker labor costs vary by grower and with crop yield. In this study, the picker is paid an hourly wage plus piecework during the

[1] Pesticides and rates 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.

peak months (see Labor). To load and haul the fruit, one truck loader stacks the trays on the truck and a driver delivers the strawberries to the cooler.

Table A – Percent Crop Harvested by Month

	April	May	June	July	Aug	Sept	October
Harvested Fruit (%)	5	12	25	25	18	12	3

Yields. Yields for organic strawberries vary depending on season and growing conditions. Yields usually range from 3,000 to 4,500 12-pound trays per acre. Costs per acre presented on Tables 1 and 2 are for an expected yield of 3,750 trays per acre. Table 6 shows returns for a range of yields and prices.

Returns. For this study growers' average seasonal returns are estimated at $8.50 per 12-pound tray. Prices can vary from a low of $5.00 to a high of $18.00 per tray depending on market conditions. Fresh market fruit harvested early in the season is generally sold at prices higher than fruit harvested mid to late season. Estimated returns for a range of prices are shown on Table 6.

Assessment Fees. Assessment fees for the organic strawberry operation analyzed here are estimated at $143 per acre. This includes fees associated with certification and inspection by an accredited certification agent and also registration fees associated with the California Department of Food and Agriculture's Organic Program. A Strawberry Commission assessment fee of $0.025 per tray is also assumed for this study.

Postharvest Operations. After all harvest operations have been completed, the plastic mulch and drip tape are removed from the field and disposed of. Cost is incorporated in the postharvest operations on Tables 1, 2 and 3 in this study.

Labor. Hourly wages for workers are $11.20 for machine operators, $7.50 per hour for field labor. Adding 34% for the employer's share of federal and state payroll taxes, insurance, and other possible benefits gives the labor rates shown of $15.00 per hour for machine operators, $10.05 per hour for field labor. In addition, pickers get a piece rate of $0.80 per tray during the peak harvest months of June and July. 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 two 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 7.40% 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 $250 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, utilities, and miscellaneous expenses.

Sanitation Services. Sanitation services provide a double portable toilet and single toilet with washing equipment and cost the farm $2,540 annually for all strawberry acreage. The cost includes delivery and 12 months of weekly service for the single toilet and 6 months of weekly service for the double.

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 60% to indicate a mix of new and used equipment. Annual ownership costs are shown in Table 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 ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x 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 4.

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 6.41% 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.

Irrigation System. The cost is based on one 75 horsepower electric pump lifting 43 acre-inches from a water level depth of 120 feet. The pump and 300-foot deep well already existed on the site. Reusable telescoping lateral lines are buried each year at the edge of the strawberry field and are connected to the main and drip lines. One drip line is buried in each bed prior to planting. The life of the irrigation system is estimated to be 20 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 $1.40 and $1.70 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 that 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

American Society of Agricultural Engineers. 1994. *American Society of Agricultural Engineers Standards Yearbook.* Russell H.Hahn and Evelyn E. Rosentreter (Eds.). St. Joseph, MO, 41st. edition.

Boehlje, Michael D. and Vernon R. Eidman. 1984. *Farm management*. John Wiley & Sons, New York, NY.

Table 1. COSTS PER ACRE TO PRODUCE ORGANIC STRAWBERRIES

CENTRAL COAST – Monterey and Santa Cruz Counties - 2003

		Cash and Labor Cost per Acre					
Operation	Operation Time (hr/A)	Labor Cost	Fuel & Repairs	Material Cost	Custom Rent	Total Cost	Your Cost
Cultural:							
Disk 2X – Land preparation	0.50	9	7			16	
Compost Application	0.00				350	350	
Set up/Remove Sprinkler Pipe	3.00	84	20			104	
Sprinkler Irrigate	0.60	6		26		32	
Subsoil 2X	1.00	18	11			29	
Level Land	0.50	9	6			15	
Disk 3X	0.75	14	11			25	
Rototill 2X	1.30	23	13			36	
Bloodmeal Application	0.00				200	200	
List/Shape Beds	0.48	9	5			14	
Install Drip Tape	0.41	17	3	198		218	
Open Trench for Laterals	0.10	3	1			4	
Drip Irrigation	12.00	121		480		601	
Plastic Mulch-Open for Planting	0.41	7	3	163		173	
Transplant Strawberries	6.00	60		1,323		1,383	
Weed Control - Cultivations	0.50	9	4			13	
Weed Control – Hand	200.00	2,010				2,010	
Scouting Services	0.00				150	150	
Mite Control–Release Beneficials	4.00	40		220		260	
Liquid Fertilizers-Soil-Applied	3.00	30		259		289	
Liquid Fertilizers-Foliar Applied	8.40	151	61	305		517	
Disease Control-Cull Fruit	225.00	2,261				2,261	
Vertebrate Control	2.00	20				20	
Insect Control-Soap	1.20	22	9	121		152	
Insect Control-Neem Oil	2.40	43	18	203		264	
Insect Control-Bt	1.60	29	12	48		89	
Disease Control-Sulfur	3.60	65	26	36		127	
ATV	1.00	18	2			20	
Pick-up 1/2 ton	3.00	54	21			75	
TOTAL CULTURAL COSTS	483.00	5,132	233	3,224	700	9,447	
Harvest:							
Harvest – Hourly Rate	750.00	7,538		6,938		14,476	
Harvest – Piece Rate		1,500				1,500	
Haul fruit	5.00	341	37			378	
Assess. Fees – Organic Cert/Reg.					143.00	143	
Assess. Fees – Straw. Comm.					94.00	94	
Post Harvest	0.35	26	5			31	
TOTAL HARVEST COSTS	755	9,405	42	6,938	237	16,622	
Interest on operating capital @ 7.40%						881	
TOTAL OPERATING COSTS/ACRE		14,537	275	10,162	937	26,950	

Table 1. Costs and Returns Per Acre to Produce Organic Strawberries (Continued)

Cash Overhead:	
Liability Insurance	6
Office Expenses	292
Sanitation Facilities	74
Land Rent (14 months)	2,100
Property Taxes	25
Property Insurance	16
Investment Repairs	31
TOTAL CASH OVERHEAD COSTS	2,544
TOTAL CASH COSTS/ACRE	29,494

Non-cash Overhead:		Annual	
	Per producing	Capital Recovery	
Investment	acre	per acre	14-month
Buildings	546	49	57
Fuel Tanks & Pumps	72	20	23
Miscellaneous Tools	194	20	23
Harvest Carts	28	7	8
Well & Pump	375	34	39
Sprinklers	500	53	62
Lateral Lines - Irrigation	250	60	70
Equipment	1,786	198	231
TOTAL NON-CASH OVERHEAD COSTS	3,751	440	513
TOTAL COSTS/ACRE			30,007

Table 2. COSTS and RETURNS PER ACRE TO PRODUCE ORGANIC STRAWBERRIES
CENTRAL COAST – Monterey and Santa Cruz Counties - 2003

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Organic Strawberries	3,750	trays	8.50	31,875	
OPERATING COSTS					
Plant:					
Strawberry Transplants	22,050	plants	0.06	1,323	
Fertilizer:					
Compost	10	ton	35.00	350	
Bloodmeal	500	lb	0.40	200	
Phytamin 800	35	gal	3.20	112	
Fish emulsion 6-2-2	35	gal	4.20	147	
Vigor Cal	8	gal	15.00	120	
Maxi-Crop	20	lb	7.25	145	
Fish Agra 4-1-1	5	gal	8.00	40	
Irrigation:					
Water - Pumped	38	ac-in	6.67	253	
Water – PVWMA	3.2	ac-ft	80.00	253	
Drip tape	9,000	feet	0.02	198	
Insect/Mite Control:					
Predatory Mites	40	thous.mites	5.50	220	
Neem Oil	6.75	qt	30	203	
Insecticidal Soap	6	gal	20.10	121	
Di Pel DF (Bt)	4	lb	12.00	48	
Scouting services	1	acre	150.00	150	
Disease Control:					
Micronized Sulfur	45	lb	0.80	36	
Materials:					
Black plastic mulch	2.5	rolls	65	163	
Assessment Fees:					
Strawberry Commission Fees	3,750	tray	0.025	94	
Organic Certification/Registration Fees	1	acre	143.00	143	
Harvest:					
Trays, Wires, Clamshells	3,750	each	1.85	6,938	
Harvest – Piece Rate	1,875	tray	0.80	1,500	
Labor (machine)	43	hr	15.00	639	
Labor (non-machine)	1,234	hr	10.05	12,399	
Fuel - Gas	18	gal	1.70	31	
Fuel - Diesel	87	gal	1.40	121	
Lube				23	
Machinery repair				98	
Interest on operating capital @ 7.40%				881	
TOTAL OPERATING COSTS/ACRE				26,948	
NET RETURNS ABOVE OPERATING COSTS				4,927	

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE ORGANIC STRAWBERRIES

CENTRAL COAST – Monterey and Santa Cruz Counties - 2003

Beginning Sep '01	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	TOTAL
Ending Oct '02	01	01	01	01	02	02	02	02	02	02	02	02	02	02	
Cultural:															
Disk 2x	16														16
Compost, bloodmeal applic.	350	200													550
Sprinklers set/remove	52		52												104
Irrigate overhead	16		16												32
Subsoil 2x	29														29
Level land	15														15
Disk 3x	25														25
Rototill 2x	36														36
Beds list/shape		14													14
Drip irrigat. setup		218													218
Open trench, laterals		4													4
Plastic mulch		173													173
Plant strawberries		1,383													1,383
Weed control (cult., hoeing)				201	201	205	205	205	201	201	201	201	201		2,023
Mites control (scouting incl.)							150	130	130						410
Fertilization, foliar spray						53	113	113	113	113	113	95	95		806
Irrigation water							86	86	86	86	86	86	86		601
Botrytis control								565	565	565	565				2,261
Insects control								139	183	183					505
Vertebrate control						4	4	4	4	4					20
P. mildew control								21	21	21	21	21	21		127
Use ATV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Use Pick-up 1/2 ton	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
TOTAL CULTURAL COSTS	546	1,999	75	208	208	269	565	1,270	1,310	1,180	993	409	409	7	9,447
Harvest:															
Regularly paid labor								724	1,737	3,619	3,619	2,606	1,737	434	14,476
Piece rate										750	750				1,500
Haul fruit								19	45	95	95	68	45	11	378
Fees														237	237
Post harvest clean up														31	31
TOTAL HARVEST								743	1,782	4,463	4,463	2,674	1,782	714	16,622
Interest on oper. capital	3	16	16	17	19	20	24	36	55	90	124	143	156	161	881
TOTAL OPERATING COSTS/ACRE	549	2,014	91	225	227	290	589	2,049	3,148	5,733	5,580	3,226	2,348	881	26,950
OVERHEAD: (14 month period)															
Liability Insurance				6											6
Office expenses	21	21	21	21	21	21	21	21	21	21	21	21	21	21	292
Sanitation facilities	5	5	5	5	5	5	5	5	5	5	5	5	5	5	74
Land rent				600										1,500	2,100
Property taxes				7										18	25
Property insurance				5										12	16
Investment repairs				9										22	31
TOTAL CASH OVERHEAD COSTS	26	26	26	653	26	26	26	26	26	26	26	26	26	1,578	2,544
TOTAL CASH COSTS/ACRE	575	2,041	117	878	253	316	615	2,075	3,174	5,760	5,606	3,252	2,374	2,459	29,494

Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT and BUSINESS OVERHEAD COSTS

CENTRAL COAST – Monterey and Santa Cruz Counties - 2003

ANNUAL EQUIPMENT COSTS

					Cash Overhead		
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
75HP 4WD Tractor	45,000	15	8,775	4,393	179	269	4,841
90HP 4WD Tractor	47,000	15	9,165	4,588	187	281	5,056
55HP 2WD Tractor	32,269	12	8,068	3,469	134	202	3,805
Subsoiler - 5 Shank	8,350	15	802	850	30	46	926
Triplane	18,750	15	1,800	1,908	68	103	2,079
Rototiller	4,500	15	432	458	16	25	499
Cultivator – 3 Row	9,400	15	902	956	34	52	1,042
Disc offset 14'	16,000	10	2,832	2,006	63	94	2,162
Drip Irrigation Machine	3,500	15	336	356	13	19	388
Rear Blade 8'	1,560	15	150	159	6	9	173
Plastic Mulch Layer	3,000	10	288	394	11	16	422
Lister/Shaper	5,000	15	480	509	18	27	554
Sprayer 100 g/ w12' Boom	3,630	15	348	369	13	20	402
Irrigation Pipe Trailer	1,950	20	101	173	7	10	190
Pickup Truck – 1/2 Ton	24,500	7	12,000	3,041	122	183	3,345
Truck - 1 Ton	36,000	5	20,000	5,123	186	280	5,589
ATV 4WD	7,430	7	2,818	1,019	34	51	1,104
Total	267,839		69,298	29,770	1,123	1,686	32,578
60% of New Cost (*)	160,703		41,579	17,862	674	1,011	19,547

(*) Used to reflect a combination of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Investment	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
Buildings	49,162	20		4,430	164	246	983	5,822
Fuel tanks & pumps	6,500	20	650	569	24	36	65	693
Miscellaneous tools	17,500	15	1,750	1,778	64	96	340	2,278
Harvest carts	1,100	5		264	4	6	22	295
Well & pump	15,000	20		1,352	50	75	100	1,577
Sprinkler pipe	20,000	15		2,115	67	100	133	2,414
Lateral lines-irrigation	10,000	5		2,401	33	50	200	2,684
Total	119,262		2,400	12,907	405	608	1,843	15,764

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land rent	100	acre	1,800	180,000
Liability insurance	1	farm	509	509
Office expenses	100	acre	250	25,000
Sanitation Facilities (*)	1	crop	2,540	2,540

(*): For 40 acres of strawberries.

Table 5. HOURLY EQUIPMENT COSTS, ORGANIC STRAWBERRIES

CENTRAL COAST – Monterey and Santa Cruz Counties - 2003

		Costs per Hour						
		Cash Overhead			Operating Costs			
Description	Hours Used	Capital recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Operat.	Total Cost/Hr
55HP 2WD Tractor	936.8	2.22	0.09	0.13	1.43	4.35	5.78	8.22
75HP 4WD Tractor	720.7	3.66	0.15	0.22	1.92	5.93	7.85	11.88
90HP 4WD Tractor	784.1	3.51	0.14	0.21	1.07	7.12	8.19	12.05
ATV 4WD	110	5.56	0.19	0.28	0.39	1.3	1.69	7.72
Cultivator 3row	105	5.47	0.2	0.29	1.85	0	1.85	7.81
Disc offset 14'	216	5.57	0.17	0.26	5.29	0	5.29	11.29
Drip irrigat. machine	104.1	1.92	0.08	0.13	0.38	0	0.38	2.51
Lister/shaper	154.9	1.92	0.08	0.11	0.74	0	0.74	2.85
Plastic layer	19.1	12.36	0.34	0.52	0.34	0	0.19	13.56
Pickup Truck 1/2 T	500	3.65	0.15	0.22	2.24	4.89	7.13	11.15
Rear blade 8'	121	0.76	0.03	0.04	0.49	0	0.49	1.32
Subsoiler 5 shank	93.6	5.45	0.2	0.29	2.62	0	2.62	8.56
Rototiller	87.9	3.12	0.11	0.17	1.24	0	1.24	4.64
Sprayer 12' boom	172	1.28	0.05	0.07	0.95	0	0.95	2.35
Trailer pipes	130	0.71	0.04	0.06	0.28	0	0.28	1.09
Truck - 1 Ton	400	7.68	0.28	0.42	3.53	3.91	7.44	15.82
Triplane	155	7.66	0.24	0.36	2.7	0	2.7	10.96

Table 6. RANGING ANALYSIS FOR ORGANIC STRAWBERRIES
CENTRAL COAST – Monterey and Santa Cruz Counties - 2003

	YIELD (TRAY/ACRE)						
	3,000	3,250	3,500	3,750	4,000	4,250	4,500
OPERATING COSTS/ACRE:							
Cultural Cost	9,447	9,447	9,447	9,447	9,447	9,447	9,447
Harvest Cost	13,332	14,429	15,525	16,622	17,718	18,815	19,911
Interest on operating capital	797	825	853	881	909	937	965
TOTAL OPERATING COSTS/ACRE	23,576	24,700	25,825	26,949	28,074	29,198	30,323
TOTAL OPERATING COSTS/TRAY	7.86	7.60	7.38	7.19	7.02	6.87	6.74
CASH OVERHEAD COSTS/ACRE	2,544	2,544	2,544	2,544	2,544	2,544	2,544
TOTAL CASH COSTS/ACRE	26,120	27,244	28,369	29,493	30,618	31,742	32,867
TOTAL CASH COSTS/TRAY	8.71	8.38	8.11	7.86	7.65	7.47	7.30
NON-CASH OVERHEAD COSTS/ACRE	513	513	513	513	513	513	513
TOTAL COSTS/ACRE	26,633	27,757	28,882	30,006	31,131	32,255	33,380
TOTAL COSTS/TRAY	8.88	8.54	8.25	8.00	7.78	7.59	7.42

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR ORGANIC STRAWBERRIES

	YIELD (TRAY/ACRE)						
Price ($/tray)	3,000	3,250	3,500	3,750	4,000	4,250	4,500
5.00	(8,576)	(8,450)	(8,325)	(8,199)	(8,074)	(7,948)	(7,823)
6.00	(5,576)	(5,200)	(4,825)	(4,449)	(4,074)	(3,698)	(3,323)
7.00	(2,576)	(1,950)	(1,325)	(699)	(74)	552	1,178
8.50	1,925	2,925	3,926	4,926	5,927	6,927	7,928
11.00	9,425	11,050	12,676	14,301	15,927	17,552	19,178
15.00	21,425	24,050	26,676	29,301	31,927	34,552	37,178
18.00	30,425	33,800	37,176	40,551	43,927	47,302	50,678

NET RETURNS PER ACRE ABOVE CASH COSTS FOR ORGANIC STRAWBERRIES

	YIELD (TRAY/ACRE)						
Price ($/tray)	3,000	3,250	3,500	3,750	4,000	4,250	4,500
5.00	(11,120)	(10,994)	(10,869)	(10,743)	(10,618)	(10,492)	(10,367)
6.00	(8,120)	(7,744)	(7,369)	(6,993)	(6,618)	(6,242)	(5,867)
7.00	(5,120)	(4,494)	(3,869)	(3,243)	(2,618)	(1,992)	(1,367)
8.50	(620)	381	1,382	2,382	3,383	4,383	5,384
11.00	6,881	8,506	10,132	11,757	13,383	15,008	16,634
15.00	18,881	21,506	24,132	26,757	29,383	32,008	34,634
18.00	27,881	31,256	34,632	38,007	41,383	44,758	48,134

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR ORGANIC STRAWBERRIES

	YIELD (TRAY/ACRE)						
Price ($/tray)	3,000	3,250	3,500	3,750	4,000	4,250	4,500
5.00	(11,633)	(11,507)	(11,382)	(11,256)	(11,131)	(11,005)	(10,880)
6.00	(8,633)	(8,257)	(7,882)	(7,506)	(7,131)	(6,755)	(6,380)
7.00	(5,633)	(5,007)	(4,382)	(3,756)	(3,131)	(2,505)	(1,880)
8.50	(1,133)	(132)	869	1,869	2,870	3,870	4,871
11.00	6,368	7,993	9,619	11,244	12,870	14,495	16,121
15.00	18,368	20,993	23,619	26,244	28,870	31,495	34,121
18.00	27,368	30,743	34,119	37,494	40,870	44,245	47,621

NOTE: numbers within parenthesis indicate net losses.