
1997

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

~BELL PEPPERS~



SAN BENITO AND SANTA CLARA COUNTIES

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UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

GENERAL INFORMATION

FOR PRODUCING BELL PEPPERS San Benito and Santa Clara Counties - 1997

The detailed costs for subsurface, drip irrigated, bell pepper production in the San Benito and Santa Clara Counties are presented in this study. The hypothetical farm used in this report consists of 600 acres of which 200 acres are used to grow bell peppers. The remainder of the farm is planted to different row crops.

Practices described are based on those production procedures considered typical for this crop and area. Sample costs for labor, materials, equipment and custom services are based on current figures. Some costs and practices detailed in this study may not be applicable to your situation. This study is only intended as a guide and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. A blank column, "Your Costs", is provided to enter your actual costs on Table 1, Costs Per Acre To Bell Peppers and Table 2, Costs And Returns Per Acre To Bell Peppers.

For an explanation of calculations used for the study refer to the attached General Assumptions or call the Department of Agricultural and Resource Economics, Cooperative Extension, University of California, Davis, (916) 752-3589. Questions concerning production practices may be directed to the bell pepper farm advisor in San Benito and Santa Clara Counties, (408) 637-5346.

This study consists of General Assumptions for Producing Bell Peppers and six tables.

Table 1.	Costs Per Acre To Produce Bell Peppers
Table 2.	Costs And Returns Per Acre To Produce Bell Peppers
Table 3.	Monthly Cash Costs Per Acre To Produce Bell Peppers
Table 4.	Annual Equipment, Investment And Business Overhead
Table 5.	Hourly Equipment Costs
Table 6.	Ranging Analysis

A study for organic bell peppers on the Central Coast can be found in a publication entitled, "Production Practices and sample Costs for Organic Vegetable Production on the Central Coast of California", for those interested in organic bell pepper production in this region.

The study mentioned above and others can be requested through the Department of Agricultural and Resource Economics, U.C. Davis, (530) 752-1515, or from selected county Cooperative Extension offices.

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UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

GENERAL ASSUMPTIONS

FOR PRODUCING BELL PEPPERS San Benito and Santa Clara Counties - 1997

The following general assumptions pertain to sample costs to produce bell pepper production utilizing subsurface, drip irrigation in San Benito and Santa Clara Counties. Practices described should not be considered recommendations by the University of California, but rather represent production procedures considered typical for this crop and area. Some practices listed may not be needed or used during every production year. Additional ones not indicated maybe needed. Cultural practices for the production of bell peppers vary by grower and region. Variations can be significant. The practices and inputs used in this cost study serve only as a sample or guide. These costs are represented on an annual, per acre basis. **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.**

Land and Share Rent. This cost of production study is based on a 600 acre row crop operation of which bell peppers are grown on 200 acres. Only one crop of bell peppers are grown during the year, but are picked three times during the growing season. Other commodities grown on the same acreage in rotation with peppers and on the remaining 400 acres might include cabbage, cauliflower, cucumbers, garlic, lettuce, tomatoes, onions, sweet corn, etc.

The 200 acres used for bell pepper production in this study is rented on a cash per acre basis. Under this agreement the landowner receives \$350 per acre. The landowner is responsible for the maintenance of the main irrigation system. Investment costs for land and the permanent irrigation system is incurred by the landowner, with the exception of the subsurface, drip irrigation system. The cost and installation of the drip irrigation system is the responsibility of the tenant.

Irrigation. The irrigation system for the 200 acres of bell peppers is actually two separate elements. The first is the permanent irrigation system which is utilized by the entire 600 acres, an improvement to the property, and owned and maintained by the property owner. This part of the infrastructure delivers water from the district pipelines or wells and pumps to the individual fields on the property. The second element consists of the subsurface, drip irrigation system. In this study, the drip system includes mains, submains, manifolds, filters, valves, flowmeter, chemical injectors and drip tape. The subsurface, drip system has a twenty year life except for the drip tape which has an estimated 3 year life.

Drip tape life varies depending on several factors such as wall thickness, soil conditions, insect and rodent pressures, clogging, root intrusion, etc. N Phuric, an acid, or other products are injected into the irrigation system to remove minerals that can restrict water flow and causes clogging, in the tape and emitters. The useful life of drip tape can vary from 1 to 10 years. The length of time that the drip tape is used before removal will affect its annual depreciation and opportunity costs.

Drip tape (8 millimeter) is buried at a depth of 8 inches in the center of a 40 inch bed. This is done at the beginning of the first year using a 4 row injector machine. At the end of the third year's harvest the drip

tape is removed with a single row retrieval machine. The cost of the drip tape insertion and retrieval operations are divided between the 3 years and are shown as an investment in Tables 1, 2 and 4. Costs for the subsurface, drip irrigation system is paid for by the grower and is shown in investment costs of Tables 1, 2 and 4.

Growers must be able to utilize the same size beds for all of the subsequent crops until the tape is removed. In this example, 40 inch beds are used. Machinery for the subsequent crops (such as bed shapers, cultivators and planters) will have to be set for 40 inches. Therefore, the decision to invest in buried drip irrigation requires consideration of differences in production practices and equipment requirements for all of the crops in rotation as well as the direct cost of the drip irrigation system.

Cultural Practices and Material Inputs

Land Preparation. Primary tillage which includes laser leveling, disking, rolling, subsoiling, land leveling, and listing beds is performed from July through October in the year preceding planting. Operations done on a percent of the acreage are noted. All other operations are done on 100% of the acres. The cultural, pesticide and fertilizer inputs for the production of fresh market bell pepper vary considerably by grower and field. The land preparation operations prior to fertilization (disking and reforming beds and mowing the prior crop residue) are done with a 145 HP, four-wheel drive tractor. All other operations are performed with 86 and 60 HP, two-wheel drive tractors.

Stand Establishment. The open-pollinated variety, Cal Wonder 300, is direct seeded at a rate of 3.0 pounds per acre during the month of April. After seedlings are established a contract crew hand thins the stand to the appropriate plant density.

Weed Management. Managing weeds for bell pepper production in San Benito and Santa Clara Counties uses a mix of materials and cultural practices. Devrinol[®] is custom applied preplant and incorporated into the beds in April. Gramoxone[®] is applied just prior to the emergence of pepper seedlings to kill any emerged weeds.

Weed control for the remainder of the season consists of two hand hoeings and several mechanical cultivations. The two hoeings occur in June and July. Hoeing costs may vary from \$150 - \$700 per acre depending on the weed population in the field. Eight mechanical cultivations are performed beginning in November and continue until the end of June using both rolling and sled cultivators.

In addition to the above mentioned weed management practices, the use of subsurface, drip irrigation can produce a dry surface mulch which can inhibit weed growth and if managed properly can reduce weed control costs. However, this study assumes no reduction in weed management practices over furrow irrigated bell pepper.

Fertilization. Nitrogen is the primary nutrient applied to peppers before planting and throughout the growing season. A total of 342 pounds of nitrogen per acre is applied both as a dry granular and liquid formulation. Phosphate, potassium, and calcium are also applied to the crop. Total applied rates in pounds of actual N, P, K, Ca, and S are shown in Table A.

Nutrient	Pounds of Material	Pounds of Nutrient
N	1,406	342
P	400	80
K	400	80
Ca	2,000	NA ^{1/}
S		108

^{1/} Purity of gypsum varies to accurately estimate Ca content.

Gypsum is spread to provide calcium for the peppers. The grower spreads the gypsum at a rate of 1 ton per acre. During November 400 pounds per acre of 6-20-20 is custom applied preplant. This adds 24 pounds of nitrogen, 80 pounds of phosphate, and 80 pounds of potassium per acre which is incorporated into the beds before cultivation. The remaining 318 pounds nitrogen is injected into the irrigation water during the growing season, May through October. UN-32 provides 249 pounds of N per acre supplied through irrigation.

The final small amount of nitrogen is applied through the drip system as N Phuric. While it is used principally to keep the drip tape and emitters from clogging due to bicarbonates in the water it also provides 69 pounds of nitrogen and approximately 108 pounds of sulfur. The rate of N Phuric or other product utilized to keep irrigation lines clear is dependent on the quality of water used to irrigate the crop. Contact an irrigation or chemical company for further advice.

Irrigation. The irrigation water for this area can be supplied by either a water district or pumped from a well. A price of \$85.80 per acre-foot is used in this study to represent the range of water costs that exist in the region. The water is pumped from the permanent irrigation system into the drip system. The first 3 irrigations are sprinkled on the beds during April and May. The subsequent irrigations are applied through the drip irrigation lines from May until October. A total of 34 acre inches of water is applied to the crop; 3 acre-inches is applied by sprinklers and 31 acre-inches by drip. Since subsurface, drip irrigation places the required amount of water in the root zone of the plant, less water is lost through runoff and evaporation. This reduces the amount of water applied to the crop when compared to furrow irrigated crops.

Insect and Disease Pest Management. Integrated pest management techniques are used to manage several different species of insects and diseases. Symphylans (*Scutigera* sp.) and wireworms (*Limonioides* sp.) which attack seed or young seedlings are controlled by an application of Dyfonate[®] and Diazinon[®] in April. Damage to the peppers by various aphids, leafminers and pepper weevils is managed by injection of Vydate into the drip irrigation system during July.

As aphid populations increase late into the growing season, 3 insecticide applications are used to control them. Orthene[®] is used for the first 2 sprays and is applied once by ground sprayer and the second time by aircraft. The final spray for aphid control consists of Dimethoate[®] applied by aircraft in August. The last two aphid treatments are mixed with fungicides for mildew control.

Management of root rot in peppers (*Phytophthora capsici*) begins before the disease infects the plant. A custom aerial application of Ridomil[®] is made in April prior to planting. Two applications of Ridomil[®] are made after emergence. They are mixed with irrigation water and moved into the root zone via the drip lines in June and July.

In May powdery mildew (*Leveillula tautica*) control is begun with aerial treatments of Thiolutax[®] and Kocide[®]. Two applications are made in May and June while both fungicides are mixed with Orthene in the July aphid treatment. Kocide[®] is also mixed and applied with Dimethoate[®] in the August aphid spray. Mildew continues to be a problem late in the growing season and requires 2 applications of Bayleton[®] for additional control. Bayleton[®] is sprayed during August and September by aircraft.

The pesticides and rates mentioned in this cost study are on the labels for each product used and are some of those that are listed in UC Pest management guidelines, peppers. Bayleton 50 % D.F.[®] and Vydate L[®] are registered in the State of California with a Section 18, special local need permit, for control of the specified pests that affect bell pepper in certain counties. Written recommendations are required for many pesticides and are made by licensed pest control advisors. For information and pesticide use permits, contact the local county Agricultural Commissioner's office. Contact your local farm advisor for advice on production practices.

Harvest. Bell peppers are hand picked three times from August until the end of October by hand labor. The peppers are picked, placed into field bins and hauled from the field to the packing shed. Hand harvest of the bell pepper costs \$69 per gross ton plus \$2.33 per gross ton to haul the bell pepper to the packing shed where they are put into 30 pound boxes. The \$71 per gross ton for harvesting and hauling equates to \$1.28 per 30 pound, packed box. The costs of sorting and packing is \$1.00 per box, while the box itself costs \$0.80 each. The total cost of harvest, hauling, sorting, and packing is \$2.82 per packed box.

Costs for harvest operations are shown in Tables 1 and 3 while the equipment complement is listed in Tables 4 and 5. If a grower has their peppers custom harvested the expense of harvesting with their own equipment should be subtracted from harvest costs in Tables 1 and 3 and all equipment for harvest operations should be subtracted from investment costs in Table 4. A custom harvest charge would then be added to harvest costs in Tables 1 and 3.

Growers may choose to own harvesting equipment, purchased either new or used, or hire a custom harvester to perform the harvest. Many factors are important in deciding which harvesting option a grower uses. These considerations and appropriate method of analysis is discussed in "*Acquiring alfalfa hay harvest equipment: A financial analysis of alternatives*".

Assessments. Assessments also add to the cost of production. Peppers have two assessments that they are subject to; California Pepper Commission (CPC) and Curly Top Virus Control Program (CTVCP).

The California Pepper Commission is a state administered market order that collects mandatory assessments from all California pepper growers. The fees collected by the CPC is used to fund research on peppers and growers are charged \$0.50 per gross ton of peppers harvested.

Bell pepper growers are also assessed a fee for the CTVCP administered by the California Department of Food and Agriculture (CDFA). The objective of the CTVCP is to reduce the occurrence of curly top virus (CTV) infection in susceptible crops below economic thresholds using integrated pest management methods. CTV is transmitted by the beet leafhopper. CTVCP relies on monitoring for infection, notification to growers with infected crops, and treatment of overwintering plant sites of virus vectors on rangelands. Growers in San Benito and Santa Clara Counties are charged \$0.27 per ton by CDFA for program costs.

Yields. Bell pepper harvests in San Benito and Santa Clara county have, on average, yielded between 17.9 to 19.7 gross tons annually, over the past 5 years. This produces a net 800 to 1500 packed boxes and an additional 3 to 7 tons of culls per acre harvested and sold. A packed box of bell pepper equals 30 pounds. This study assumes bell pepper that are subsurface, drip irrigated yield 18 tons per acre with an 83 % packout. This results in 1000 packed boxes and 3 tons of culls per acre.

Returns. Prices in the last 5 years ranged from \$4.50 to \$6.00 per box and approximately \$125 to \$145 per ton for culls for growers in the San Benito and Santa Clara Counties. No specific return price is assumed in this study due to the seasonal market fluctuation of prices received by growers. Table 6, Ranging Analysis, shows the net returns above operating costs, cash costs and total costs for various price and yield levels. Changes in fresh market bell pepper prices and yields can be substantial over the season.

Risk. Risks associated with fresh market vegetables production are not assigned a production cost. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of fresh market vegetable production.

Risk is caused by various sources of uncertainty which include production, price, and financial. Examples of these are insect damage, a decrease in price, and increase in interest rates. Because of the risk involved, access to a market is crucial.

Labor. Hourly wages for workers are \$6.78 and \$5.75 per hour for machine operators and non-machine (irrigators) workers respectively. Adding 34% for Workers Compensation, Social Security, Medicare, insurance, and other possible benefits gives the labor rates shown of \$9.08 and \$7.71 per hour for machine labor and non-machine labor, respectively. Wages for a supervisor is included as a cash overhead cost. Any returns above total costs are considered returns to investment.

On September 1, 1997, the minimum wage increased from \$5.00 per hour to \$5.15 per hour and will be \$5.75 per hour by March 1, 1998. The wage rates for non-machine labor used in this study reflects the March 1, 1998 rate. Growers using wage rates different from those shown in this report should adjust their labor costs by subtracting or adding the appropriate amounts.

Cash Overhead. Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm, not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, and equipment repairs.

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. The salvage value for land is equal to the purchase price because land does not depreciate.

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 10.00% per year. A nominal interest rate is the going market cost of borrowed funds.

Insurance. Insurance for farm investments vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.713% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$894 for the entire farm.

Office Expense. Office and business expenses for 600 acres are estimated at \$19,098 annually or \$32 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

Sanitation Services. Sanitation services provide portable toilets for the farm and costs \$1,540 annually. This cost includes delivery and servicing of toilets. Cash overhead costs are found in Tables 1, 2, 3, and 4.

Non-cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment used on vegetable farms on the Central Coast may be 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 (Equipment and Investments) are shown in Tables 3, and 5. They represent the capital recovery cost for investments on an annual per acre basis.

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). Put another way, it is equivalent to the annual payment on a loan for the investment with the downpayment 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. The calculation for the annual capital recovery costs is taken from the publication Farm Management (Boehlje and Eidman) and is as follows.

$$\frac{\text{Purchase Price} - \text{Salvage Value}}{\text{Capital Recovery Factor}} + \frac{\text{Salvage Value} \times \text{Interest Rate}}$$

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its life. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. The life in years is estimated by dividing the wear-out life, as given by American Society of Agricultural Engineers (ASAE) by the annual use in hours. Salvage value is calculated by Boelje and Eidman as

$$\text{New Price} \times \% \text{Remaining Value}$$

Salvage value for other investments including irrigation systems, buildings, and miscellaneous equipment is zero. The salvage value for land is equal to the purchase price because land does not depreciate. The purchase price and salvage value for certain 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. It is the function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 8.25% 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 longrun 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. In other words, the next best alternative use for these resources is in another agricultural enterprise.

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.

In allocating the equipment costs on a per acre basis, the following hourly charges are calculated first and shown in Table 6. 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 hp, and type of fuel used. The fuel and repair cost per acre for each operation in Table 2. is determined by multiplying the total hourly operating cost in Table 6. for each piece of equipment used for the cultural practice by the number of hours peracre for that operation. Tractor time is 10% higher than implement time for a given operation to account for setup time. Prices for on-farm delivery of diesel and gasoline are \$0.97 and \$1.30 per gallon, respectively.

Acknowledgment. Appreciation is expressed to those growers and other cooperators who provided support for this study.

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Table 1.

U.C. COOPERATIVE EXTENSION
COSTS PER ACRE TO PRODUCE BELL PEPPERS
SAN BENITO & SANTA CLARA COUNTIES - 1997

Labor Rate: \$9.08/hr. machine labor
\$7.71/hr. non-machine labor

Interest Rate: 10.0%
Yield per Acre: 1000 - 30 Lb Boxes

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre				Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/Rent		
Cultural:							
Mow Prior Crop Residue	0.40	9	6	0	0	15	
Apply Gypsum	0.00	0	0	98	12	110	
Disc & Reform Beds - 3X	0.25	3	6	0	0	8	
Chisel Furrow Bottoms	0.77	8	6	0	0	14	
Fertilizer - Apply Preplant	0.00	0	0	75	12	87	
Cultivate Beds	2.13	23	21	0	0	44	
Harrow Beds - 2X	0.22	2	2	0	0	4	
Reshape Beds	0.25	3	2	0	0	5	
Apply & Incorporate Herbicide	0.21	2	2	43	0	48	
Apply Insecticide	0.00	0	0	69	6	75	
Apply & Incorporate Fungicide	0.00	0	0	34	8	41	
Plant	0.26	3	2	261	0	266	
Roll Beds	0.15	2	1	0	0	3	
Irrigation - Sprinkler - 3x	2.10	16	0	21	31	69	
Apply Herbicide	0.00	0	0	16	15	31	
Apply Fungicide	0.00	0	0	18	15	33	
Irrigation - Drip	3.00	23	0	261	0	284	
Fertigation - Drip	0.00	0	0	91	0	91	
Thin Stand	0.00	0	0	0	150	150	
Break Furrow Bottoms	0.77	8	6	0	0	14	
Hoe Weeds	39.40	304	0	0	0	304	
Apply Fungicide Thru Drip	0.00	0	0	68	0	68	
Apply Insecticide - Aphids - 3x	0.08	1	1	54	15	70	
Apply Insecticide Thru Drip	0.21	2	0	38	0	40	
Apply Fungicide - Mildew - 2x	0.00	0	0	48	15	63	
Pickup Truck Use	0.48	5	2	0	0	8	
TOTAL CULTURAL COSTS	50.68	410	56	1,195	278	1,944	
Harvest:							
Hand Pick Peppers	1.20	1,231	12	0	0	1,243	
Haul To Shed & Buyer	1.42	23	19	0	0	42	
Sort & Pack Peppers	0.00	0	0	800	1,000	1,800	
TOTAL HARVEST COSTS	2.63	1,255	30	800	1,000	3,085	
Assessment:							
Curley Top Virus Control Program	0.00	0	0	5	0	5	
California Pepper Commission	0.00	0	0	9	0	9	
TOTAL ASSESSMENT COSTS	0.00	0	0	14	0	14	
Interest on operating capital @	0.10					148	
TOTAL OPERATING COSTS/ACRE		1,664	86	2,009	1,279	5,191	
CASH OVERHEAD:							
Land Rent						350	
Office Expense						32	
Liability Insurance						1	
Sanitation Facilities						3	
Property Taxes						13	
Property Insurance						9	
Investment Repairs						25	
TOTAL CASH OVERHEAD COSTS						432	
TOTAL CASH COSTS/ACRE						5,623	

U.C. COOPERATIVE EXTENSION
Table 1. continued

NON-CASH OVERHEAD:	Per producing Acre	-- Annual Cost -- Capital Recovery	
Investment			
Shop Building	102	10	10
Shop Tools	20	2	2
Fuel Tanks & Pumps	29	3	3
Main, Filter, & Manifolds	1,056	110	110
Drip Tape - 3 Year Life	337	131	131
Tool Carrier	24	3	3
Harvest Bins	14	2	2
Pipe Trailers	3	0	0
Equipment	741	96	96
TOTAL NON-CASH OVERHEAD COSTS	2,328	357	357
TOTAL COSTS/ACRE			5,980

U.C. COOPERATIVE EXTENSION
Table 2. Continued

CASH OVERHEAD COSTS:	
Land Rent	350
Office Expense	32
Liability Insurance	1
Sanitation Services	3
Property Taxes	13
Property Insurance	9
Investment Repairs	25
TOTAL CASH OVERHEAD COSTS/ACRE	432
TOTAL CASH COSTS/ACRE	5,623
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):	
Shop Buildings	10
Shop Tools	2
Fuel Tanks & Pumps	3
Main, Filter, & Manifolds	110
Drip Tape - 3 Year Life	131
Tool Carrier	3
Harvest Bins	2
Pipe Trailers	0
Equipment	96
TOTAL NON-CASH OVERHEAD COSTS/ACRE	357
TOTAL COSTS/ACRE	5,980
NET RETURNS ABOVE TOTAL COSTS	365

Table 3.

U.C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE BELL PEPPERS
SAN BENITO & SANTA CLARA COUNTIES - 1997

Beginning OCT 96 Ending OCT 97	OCT 96	NOV 96	DEC 96	JAN 97	FEB 97	MAR 97	APR 97	MAY 97	JUN 97	JUL 97	AUG 97	SEP 97	OCT 97	TOTAL
Cultural:														
Mow Prior Crop Residue	15													15
Apply Gypsum	110													110
Disc & Reform Beds - 3X	8													8
Chisel Furrow Bottoms		14												14
Fertilizer - Apply Preplant		87												87
Cultivate Beds			4	4		4	4	14	14					44
Harrow Beds - 2X							4							4
Reshape Beds							5							5
Apply & Incorporate Herbicide							48							48
Apply Insecticide							75							75
Apply & Incorporate Fungicide							41							41
Plant							266							266
Roll Beds							3							3
Irrigation – Sprinkler – 3X							31	38						69
Apply Herbicide								31						31
Apply Fungicide								16	16					33
Irrigation – Drip								47	47	47	47	47	47	284
Fertigation – Drip								17	17	6	17	17	17	91
Thin Stand									150					150
Break Furrow Bottoms									14					14
Hoe Weeds									152	152				304
Apply Fungicide Thru Drip								34	34					68
Apply Insecticide – Aphid – 3X									20	34	16			70
Apply Insecticide Thru Drip										40				40
Apply Fungicide – Mildew – 2X											32	32		63
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1	1	1	8
TOTAL CULTURAL COSTS	134	102	5	5	1	5	477	163	464	314	113	97	65	1,944
Harvest:														
Hand Pick Peppers											413	413	417	1,243
Haul To Shed & Buyer											14	14	14	42
Sort & Pack Peppers											600	600	600	1,800
Assessment											5	5	5	14
TOTAL HARVEST COSTS											1,032	1,032	1,036	3,099
Interest on oper. Capital	1	2	2	2	2	2	6	7	11	14	23	33	42	148
TOTAL OPERATING COSTS/ACRE	135	104	7	7	3	7	483	171	475	328	1,168	1,161	1,143	5,191
OVERHEAD:														
Land Rent	350													350
Office Expense	2	2	2	2	2	2	2	2	2	2	2	2	2	32
Liability Insurance	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sanitation Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Property Taxes				6						6				13
Property Insurance				4						4				9
Investment Repairs	2	2	2	2	2	2	2	2	2	2	2	2	0	25
TOTAL CASH OVERHEAD COSTS	355	5	5	16	5	5	5	5	5	16	5	5	3	432
TOTAL CASH COSTS/ACRE	490	108	12	22	7	12	488	176	480	343	1,173	1,166	1,145	5,623

Table 4.

U.C. COOPERATIVE EXTENSION
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SAN BENITO & SANTA CLARA COUNTIES - 1997

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
95	145 HP 4WD Tractor	95,453	12	23,865	11,592	425	597	12,614
95	60 HP 2WD Tractor	29,778	12	7,445	3,616	133	186	3,935
95	86 HP 4WD Tractor	39,683	12	9,921	4,819	177	248	5,244
95	Bed Disc - 4 Row 40"	9,010	15	865	1,038	35	49	1,122
95	Bed Shaper - 4 Row	2,066	15	198	238	8	11	257
95	Cultivator - 4 Row 40"	7,344	15	705	846	29	40	915
95	Cultivator - 4 Row 40"	7,344	15	705	846	29	40	915
95	Cultivator - Rolling 16'	7,810	15	750	899	31	43	973
95	Harrow - Spike 27'	2,261	15	217	260	9	12	282
95	Mower - Flail 15'	12,749	10	2,255	1,768	53	75	1,896
95	Pickup - 1/2 Ton	18,063	7	6,852	2,737	89	125	2,950
95	Planter - 4 Row 40"	4,689	10	829	650	20	28	697
95	Roller - Flat 16'	2,135	12	296	272	9	12	292
95	Saddle Tank - 300 Gal	2,450	10	433	340	10	14	364
95	Spray Boom - 25'	586	10	104	81	2	3	87
95	Toolbar - 4 Row 40"	1,398	15	134	161	5	8	174
95	Toolbar - 4 Row 40"	1,398	15	134	161	5	8	174
95	Trailer - Harvest	13,802	15	1,325	1,589	54	76	1,719
95	Trailer - Harvest	13,802	15	1,325	1,589	54	76	1,719
95	Truck - 2 Ton	34,662	7	13,149	5,252	170	239	5,662
TOTAL		306,483		71,507	38,754	1,348	1,890	41,991

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Drip Tape - 3 Year Life	67,473	3		26,300	241	337	4,048	30,926
Fuel Tanks & Pumps	17,638	20	1,764	1,793	69	97	342	2,301
Harvest Bins	8,323	10	832	1,198	33	46	83	1,359
Main, Filter, & Manifolds	211,140	20		21,907	753	1,056	224	23,939
Pipe Trailers	1,850	20	185	188	7	10	92	297
Shop Building	61,472	25	5,968	5,803	240	337	596	6,977
Shop Tools	12,294	20	1,229	1,249	48	68	123	1,488
Tool Carrier	14,479	15	1,448	1,665	57	80	796	2,598
TOTAL INVESTMENT	394,669		11,426	60,103	1,448	2,030	6,304	69,885

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	200	Acre	350.00	70,000
Liability Insurance	600	Acre	1.49	894
Office Expense	600	Acre	31.83	19,098
Sanitation Facilities	7	Month	220.00	1,540

Table 5.

U.C. COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
SAN BENITO & SANTA CLARA COUNTIES - 1997

Description	Actual Hours Used	Capital Recovery	COSTS PER HOUR					Total Oper.	Total Costs/Hr.
			- Cash Overhead -			Operating			
			Insur- ance	Taxes	Repairs	Fuel & Lube			
145 HP 4WD Tractor	1,000.0	11.59	0.43	0.60	6.77	9.39	16.16	28.77	
60 HP 2WD Tractor	1,089.8	3.32	0.12	0.17	2.11	3.29	5.40	9.01	
86 HP 4WD Tractor	1,091.3	4.42	0.16	0.23	1.21	4.71	5.92	10.73	
Bed Disc - 4 Row 40"	166.0	6.25	0.21	0.30	4.52	0.00	4.52	11.28	
Bed Shaper - 4 Row	166.0	1.43	0.05	0.07	1.04	0.00	1.04	2.59	
Cultivator - 4 Row 40"	162.6	5.20	0.18	0.25	3.68	0.00	3.68	9.3	
Cultivator - 4 Row 40"	266.7	3.17	0.11	0.15	3.68	0.00	3.68	7.11	
Cultivator - Rolling 16'	166.0	5.42	0.18	0.26	3.91	0.00	3.91	9.77	
Harrow - Spike 27'	165.4	1.57	0.05	0.07	1.13	0.00	1.13	2.83	
Mower - Flail 15'	133.0	13.29	0.40	0.56	8.56	0.00	8.56	22.82	
Pickup - 1/2 Ton	285.0	9.60	0.31	0.44	2.18	2.99	5.17	15.52	
Planter - 4 Row 40"	116.8	5.57	0.17	0.24	1.58	0.00	1.58	7.55	
Roller - Flat 16'	167.4	1.62	0.05	0.07	0.39	0.00	0.39	2.14	
Saddle Tank - 300 Gal	112.2	3.03	0.09	0.13	0.57	0.00	0.57	3.82	
Spray Boom - 25'	115.6	0.70	0.02	0.03	0.26	0.00	0.26	1.01	
Toolbar - 4 Row 40"	165.8	0.97	0.03	0.05	0.70	0.00	0.70	1.75	
Toolbar - 4 Row 40"	165.8	0.97	0.03	0.05	0.70	0.00	0.70	1.75	
Trailer - Harvest	166.0	9.57	0.32	0.46	3.18	0.00	3.18	13.53	
Trailer - Harvest	166.0	9.57	0.32	0.46	3.18	0.00	3.18	13.53	
Truck - 2 ton	285.0	18.43	0.60	0.84	5.54	7.67	13.21	33.08	

Table 6.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SAN BENITO & SANTA CLARA COUNTIES - 1997

	COSTS PER ACRE AT VARYING YIELDS TO PRODUCE BELL PEPPERS						
	YIELD (30 LB BOXES/ACRE)						
	850	900	950	1,000	1050	1,100	1,150
OPERATING COSTS/ACRE:							
Cultural Cost	1,944	1,944	1,944	1,944	1,944	1,944	1,944
Harvest & Assessment Costs	2,634	2,789	2,944	3,099	3,254	3,409	3,564
Interest on operating capital	141	143	145	148	150	153	156
TOTAL OPERATING COSTS/ACRE	4,719	4,876	5,034	5,191	5,349	5,506	5,664
CASH OVERHEAD COSTS/ACRE	432	432	432	432	432	432	432
TOTAL CASH COSTS/ACRE	5,151	5,308	5,466	5,623	5,781	5,939	6,096
NON-CASH OVERHEAD COSTS/ACRE	356	356	357	357	357	357	357
TOTAL COSTS/ACRE	5,507	5,665	5,822	5,980	6,138	6,295	6,453

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR BELL PEPPERS								
PRICE (DOLLARS/UNIT)		YIELD (UNITS/ACRE)						
		850	900	950	1,000	1050	1,100	1,150
Fresh Market 30 Lb Boxes								
	Culls Tons	1.5	2.0	2.5	3.0	3.5	4.0	4.5
4.50	100.00	-744	-626	-59	-391	-274	-156	-39
5.00	105.00	-311	-166	-21	124	269	414	599
5.50	110.00	121	294	466	639	811	984	1,156
6.00	115.00	544	754	954	1,154	1,354	1,554	1,754
6.50	120.00	986	1,214	1,441	1,669	1,896	2,124	2,351
7.00	125.00	1,419	1,674	1,929	2,184	2,439	2,694	2,949
7.50	130.00	1,851	2,134	2,416	2,699	2,981	3,264	3,546

NET RETURNS PER ACRE ABOVE CASH COSTS FOR BELL PEPPERS								
PRICE (DOLLARS/UNIT)		YIELD (UNITS/ACRE)						
		850	900	950	1,000	1050	1,100	1,150
Fresh Market 30 Lb Boxes								
	Culls Tons	1.5	2.0	2.5	3.0	3.5	4.0	4.5
4.50	100.00	-1,176	-1,058	-941	-823	-706	-589	-471
5.00	105.00	-743	-598	-453	-308	-163	-19	126
5.50	110.00	-311	-138	34	207	379	511	724
6.00	115.00	122	322	522	722	922	1,121	1,321
6.50	120.00	554	782	1,009	1,237	1,464	1,691	1,919
7.00	125.00	987	1,242	1,497	1,752	2,007	2,261	2,516
7.50	130.00	1,419	1,702	1,984	2,267	2,549	2,831	3,114

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR BELL PEPPERS								
PRICE (DOLLARS/UNIT)		YIELD (UNITS/ACRE)						
		850	900	950	1,000	1050	1,100	1,150
Fresh Market 30 Lb Boxes								
	Culls Tons	1.5	2.0	2.5	3.0	3.5	4.0	4.5
4.50	100.00	-1,532	-1,415	-1,297	-1,180	-1,063	-945	-828
5.00	105.00	-1,100	-955	-810	-665	-520	-375	-231
5.50	110.00	-667	-495	-322	-150	22	195	367
6.00	115.00	-235	-35	165	365	565	765	964
6.50	120.00	198	425	653	880	1,107	1,335	1,562
7.00	125.00	630	885	1,140	1,395	1,650	1,905	2,159
7.50	130.00	1,063	1,345	1,628	1,910	2,192	2,475	2,757