UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2005

SAMPLE COSTS TO PRODUCE

BITTERMELON

ASIAN VEGETABLES

SAN JOAQUIN VALLEY - SOUTH

Small Farm

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San Joaquin Valley - 2005

STUDY CONTENTS

INTRODUCTION

Sample costs to produce bittermelon in the San Joaquin Valley are shown 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 operations considered typical for this crop and region, but will not apply to every farm. Sample costs for labor, materials, equipment and custom services are based on current figures. "Your Costs" columns in Tables 1 and 2 are provided for entering your farm costs.

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

Sample Cost of Production Studies for many commodities can be downloaded at http://coststudies.ucdavis.edu, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-4424 or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

ASSUMPTIONS

The assumptions refer to Tables 1 to 7 and pertain to sample costs to produce bittermelon in the San Joaquin Valley. The cultural practices described represent production operations and materials considered typical for a small farm in the region. Costs, materials, and practices in this study will not apply to all farms. Timing of and types of cultural practices will vary among growers within the region and from season to season due to variables such as weather, soil, and insect and disease pressure. **The use of trade names and cultural practices in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products or cultural practices.**

Farm. This report is based on a 10 contiguous acre farm. The land is rented and planted to Asian vegetables. In this study two acres are planted to bittermelon and the remaining acres to other Asian vegetables. The grower and family do the majority of the labor for the operations, but a labor cost (opportunity cost) is shown for each operation.

Production Operating Costs

Land Preparation. A custom operator plows the land one time, discs two times and lists the beds in January. After listing, the bed peaks are flattened with a nine-foot pipe (3 rows) towed behind the grower's tractor. Black plastic is then laid by hand (2 persons) on alternate beds.

Plant. A cost is not shown for seed or transplants, because the bittermelon seed is saved from the previous year's crop and is planted in the grower's greenhouse sometime during December to January. The plant trays hold 50 plants per tray and take about 20 minutes per tray to plant. The germinated plants are transplanted in the field in mid-February to mid-March. The grower transplants 1,200 plants per acre at a six-foot in-row spacing. Holes for the plants are burned or punched in the plastic as the planter person plants. Rows are usually 250 to 300 feet long. Two people (16 man hours) plant one acre per day.

Irrigation. Irrigation includes the water costs and irrigation labor. Lay-flat poly vinyl pipe is laid at the end of the rows and the water is run down the furrows. Irrigation begins in March two to three days after planting. The field is irrigated every five days during March, April, and May, every three days during July, August, and September and once a week during early-October. Water at $2.50 per irrigation is assumed to be a typical cost. Water costs were provided from the growers pumping charges for the summer months. Assuming the crop uses approximately 30 acre-inches per season, this equates to a cost of $4.83 per acre-inch. Irrigation labor is calculated as one-half hour per acre per irrigation.

Fertilization. The crop is fertilized at planting with soluble 20-20-20 fertilizer dissolved in water at three ounces of liquid fertilizer per plant or one 25-pound bag per two to three acres. (10 pounds per acre in this study). The fertilizer is placed in the planting hole at planting. Labor costs for applying the fertilizer are included in the planting labor. One or two more fertilizations with UN32 at five gallons per acre per application is typical in May and July. Labor costs for the UN32 fertilization are included in the irrigation labor.

Crop Protection. The grower builds tunnels over the new transplants. Wire hoops (reusable) are spaced down the row every six-feet. Three-foot wide plastic is laid over each side of the hoop and attached to each other at the top with a clothespin. They are opened as needed to allow the plants to grow through and to vent on warm days to prevent burning. It takes one person per day per acre to set out the hoops and two persons per day per acre to stretch the plastic over the hoops. The tunnels are removed in mid-April or May and it takes two-hours per acre with two persons. Some growers use hot caps instead of tunnels. (If the grower plants after any danger of frost the tunnel cost ($1,200) can be omitted.)

Trellis System. Six-foot stakes (reusable) are pounded in the ground at six-foot spacing; netting is attached to the stakes to form a trellis that the plants will grow up. It takes two persons one day (8 hours) per acre to pound the stakes and an equal amount of time to install the net. The trellis is removed at the end-of-the season. See Field Cleanup.

Pest Management. Pesticides for insects and diseases are not currently recommended for bittermelon. If insects or diseases appear, contact your local farm advisor or pest control adviser.

Weeds. The furrows are hand sprayed using a backpack sprayer with Roundup in April or May and in August. It takes about 1.5 hours per acre per spray. Black plastic provides weed control on the beds. The field is hand-weeded in March and again in May to control the weeds in the area where weeds were not controlled by the spray and black plastic. Hand weeding time will vary according to the weed population, but an average of three hours per acre is used in this study.

Insects. Nematodes can be a problem but are usually not treated.

Diseases. None

Harvest. The crop is harvested twice a week from June 15 through October 15. The vegetables are packed in 30-pound boxes and hauled to a packinghouse. According to the growers, one person can pick approximately 2.5 boxes per hour. At the end of each picking day, the grower delivers the product to the packinghouse or to a farmers market using the pickup and trailer.

Yields. For this study, the crop yields an average of 62.5 boxes per week (31.25 per picking) per acre or 1,000 thirty-pound boxes per acre per season. A range of yields over various prices is shown in Table 4.

Returns. Based on grower information, the crop returns average $15 per 30-pound box. According to the 2004 USDA Wholesale Reports for June to October, the price ranged from $7.50 to $22.50 per box. Assuming that 70% of the wholesale price is the net return to the grower, the grower range is $5.25 to $15.75 per box.

Field Cleanup. In October after the last harvest, the plants are chopped by hand, and the stakes, netting, and mulch are removed. One person can chop the plants and remove the mulch at the rate of three 250-foot rows per eight-hour day (approximately 80 hours per acre).

Pickup/ATV. Costs for a 1/2-ton pickup is included in the study. The pickup and a trailer are used for hauling the harvested bittermelon to the packing shed and is included in that cost. The pickup and trailer are used to haul the removed tunnels, mulch and netting to the landfill and the costs are included in the respective operations. In addition, the grower drives another 250 miles per acre for farming purposes or to sell his crop at a farmers market.

Labor. Labor rates of $12.42 per hour for machine operators and $9.32 for general labor includes payroll overhead of 38%. The basic hourly wages are $9.00 for machine operators and $6.75 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for truck crops (code 0172), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2005 (California Department of Insurance). Labor for operations involving machinery are 20%

higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum Power Take Off (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $1.51 and $2.05 per gallon, respectively. The cost includes a 2% local sales tax on diesel fuel and 8% sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Interest On Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 7.65% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

Risk. Production risks should not be minimized. 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.

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, and investment 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.

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 0.69% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $429 for the entire farm.

Office Expense. Office and business expenses are estimated at $10 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, and legal fees. The cost is a general estimate and not based on any actual data.

Land Rent. The 10 acres are rented for cash at $300 per acre. The rented land includes the irrigation system that is maintained by the landlord. The landowner also pays the property tax on the rented land. Land rents range from $250 to $350 per acre.

Investment Repairs. Annual maintenance except for the greenhouse, which is 20%, is calculated as two percent of the purchase price.

Non-cash Overhead

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

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is ((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 (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in the tables.

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 6.01% used to calculate capital recovery cost is the USDA-ERSs ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources used effectively in the agricultural sector.

Tools. This includes shop tools, hand tools, and miscellaneous field tools. The tools are an estimated value and not taken from any specific data.

Irrigation. The grower owns 1,732 feet of vinyl flat pipe to deliver the water to the furrows. The pipe was purchased for the farm and the cost is allocated among the various crops.

Greenhouse. The grower builds a greenhouse of PVC pipe and plastic to start the plants and for some plant storage. The greenhouse is 20 feet x 20 feet. The plastic cover may need to be replaced in one or two years. The greenhouse is assumed to be used for other crops on the farm and the cost is allocated accordingly.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in the Whole Farm Annual Equipment, Investment, and Business Overhead Costs table. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

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

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For information concerning University of California publications contact UC DANR Communications Services (1-800-994-8849), online at http://anrcatalog.ucdavis.edu or your local county Cooperative Extension office.

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Table 1. COST PER ACRE TO PRODUCE BITTERMELON

SAN JOAQUIN VALLEY 2005

Operation	Operation Time (Hrs/A)	Field Labor (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:								
Plant: Greenhouse (seed saved from previous crop)	0.00	8.00	75	0	25	0	100	
Land Prep: Plow, Disc, List	0.00	0.00	0	0	0	100	100	
Land Prep: Flatten Bed Tops	0.33	0.00	5	1	0	0	6	
Land Prep: Lay Black Plastic on Alternate Beds	0.00	8.00	75	0	116	0	191	
Plant: Transplants (from Greenhouse). Fertilize: (20-20-20)	0.00	16.00	149	0	6	0	155	
Crop Protection: Install Tunnels	0.00	24.00	224	0	458	0	681	
Irrigate: (water & labor)	0.00	30.00	280	0	150	0	430	
Trellis: Install	0.00	32.00	298	0	1,326	0	1,624	
Weed: Hand	0.00	6.00	56	0	0	0	56	
Weed: Hand Spray Furrow (Roundup)	0.00	3.00	28	0	16	0	44	
Fertilize: In irrigation water (UN32)	0.00	0.00	0	0	14	0	14	
Crop Protection: Remove Tunnels	0.50	4.00	45	6	0	5	56	
Field Cleanup: Chop Plants, Trellis, Mulch	0.50	80.00	753	6	0	7	766	
Miscellaneous Pickup Use	5.00	0.00	75	59	0	0	134	
TOTAL CULTURAL COSTS	6.33	211.00	2,061	73	2,110	111	4,355	
Harvest:								
Hand Pick	0.00	400.00	3,728	0	1,000	0	4,728	
Haul	16.00	0.00	238	201	0	0	439	
TOTAL HARVEST COSTS	16.00	400.00	3,966	201	1,000	0	5,167	
Interest on operating capital							211	
TOTAL OPERATING COSTS/ACRE			6,027	274	3,110	111	9,734	
CASH OVERHEAD:								
Liability Insurance							43	
Office Expense							10	
Land Rent							300	
Property Taxes							11	
Property Insurance							8	
Investment Repairs							10	
TOTAL CASH OVERHEAD COSTS							381	
TOTAL CASH COSTS/ACRE							10,115	
Non-Cash Overhead (Capital Recovery)			Per Producing Acre		Annual Cost Capital Recovery			
Plastic Greenhouse 20x20'			35		8		8	
Flat Irrigation Pipe			46		25		25	
Miscellaneous Field Tools			100		24		24	
Equipment			1,543		221		221	
TOTAL NON-CASH OVERHEAD COSTS			1,724		278		278	
TOTAL COSTS/ACRE							10,393	

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Table 2. COST PER ACRE TO PRODUCE BITTERMELON

SAN JOAQUIN VALLEY 2005

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Bittermelon	1,000.00	box	15.00	15,000	
OPERATING COSTS					
Carton:					
Trays - Planting 50 Cell	25.00	each	1.00	25	
Boxes 30 lb	1,000.00	each	1.00	1,000	
Seed:					
Seed -Saved from previous year (no costs)	0.00	lb	0.00	0	
Transplants (seed germinated by grower) (no costs)	1,250.00	ea	0.00	0	
Custom:					
Land Preparation	1.00	acre	100.00	100	
Landfill Fee	555.00	lb	0.02	11	
Crop Protect:					
Plastic Black 3 ft x 2000 ft/roll. 1mil	7,250.00	foot	0.02	116	
Plastic Clear 3 ft x 2000 ft/roll	14,500.00	foot	0.02	218	
Wire Hoops (reusable)	1,200.00	each	0.20	240	
Stakes - 5 ft (reusable)	1,200.00	each	0.99	1,188	
Netting for Trellis 320 ft/roll	7,250.00	foot	0.02	138	
Fertilizer:					
20-20-20	10.00	lb	0.57	6	
UN 32 (11 lbs/gal)	110.00	lb	0.13	14	
Irrigation:					
Water	60.00	each	2.50	150	
Herbicide:				0	
Roundup Ultra Max	32.00	floz	0.49	16	
Labor (machine)	26.80	hrs	12.42	333	
Labor (non-machine)	611.00	hrs	9.32	5,695	
Fuel - Gas	91.65	gal	2.05	188	
Fuel - Diesel	0.63	gal	1.51	1	
Lube				28	
Machinery repair				57	
Interest on operating capital @ 7.65%				211	
TOTAL OPERATING COSTS/ACRE				9,734	
NET RETURNS ABOVE OPERATING COSTS				5,266	
CASH OVERHEAD COSTS:					
Liability Insurance				43	
Office Expense				10	
Land Rent				300	
Property Taxes				11	
Property Insurance				8	
Investment Repairs				10	
TOTAL CASH OVERHEAD COSTS/ACRE				381	
TOTAL CASH COSTS/ACRE				10,115	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Plastic Greenhouse 20x20'				8	
Flat Irrigation Pipe				25	
Miscellaneous Field Tools				24	
Equipment				221	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				278	
TOTAL COSTS/ACRE				10,393	
NET RETURNS ABOVE TOTAL COSTS				4,607	

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Table 3. COST PER ACRE TO PRODUCE BITTERMELON

SAN JOAQUIN VALLEY 2005

Beginning JAN 05 Ending DEC 05	JAN 05	FEB 05	MAR 05	APR 05	MAY 05	JUN 05	JUL 05	AUG 05	SEP 05	OCT 05	NOV 05	DEC 05	TOTAL
Cultural:													
Plant: Greenhouse (seed saved from previous crop)	100												100
Land Prep: Plow, Disc, List	100												100
Land Prep: Flatten Bed Tops		6											6
Land Prep: Lay Black Plastic on alternate beds.		191											191
Plant: Transplants (from greenhouse). Fertilize: (20-20-20)		155											155
Crop Protection: Install Tunnels		681											681
Irrigate: (water & labor)			43	43	43	72	72	72	72	14			430
Trellis: Install			1,624										1,624
Weed: Hand			28		28								56
Weed: Hand Spray Furrow (Roundup)				22				22					44
Fertilize: In irrigation water (UN32)					7		7						14
Crop Protection: Remove Tunnels					56								56
Field Cleanup: Chop Plants, Trellis, Mulch										766			766
Miscellaneous Pickup Use	11	11	11	11	11	11	11	11	11	11	11	11	134
TOTAL CULTURAL COSTS	211	1,044	1,706	76	145	83	90	105	83	791	11	11	4,355
Harvest:													
Hand Pick						591	1,182	1,182	1,182	591			4,728
Haul						55	110	110	110	55			439
TOTAL HARVEST COSTS	0	0	0	0	0	646	1,292	1,292	1,292	646	0	0	5,167
Interest on operating capital @ 7.65%	1	8	19	19	20	25	34	43	51	-9	0	0	211
TOTAL OPERATING COSTS/ACRE	212	1,052	1,725	95	165	754	1,416	1,439	1,426	1,428	11	11	9,734
OVERHEAD:													
Liability Insurance			43										43
Office Expense	1	1	1	1	1	1	1	1	1	1			10
Land Rent												300	300
Property Taxes	11												11
Property Insurance	8												8
Investment Repairs	1	1	1	1	1	1	1	1	1	1	1	1	10
TOTAL CASH OVERHEAD COSTS	20	2	45	2	2	2	2	2	2	2	1	301	381
TOTAL CASH COSTS/ACRE	232	1,054	1,770	97	167	755	1,417	1,441	1,428	1,430	12	312	10,115

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Table 4. RANGING ANALYSIS FOR BITTERMELON

SAN JOAQUIN VALLEY - 2005

COSTS PER ACRE AT VARYING YIELD TO PRODUCE BITTERMELON

	YIELD (30 lb boxes/acre)						
	400	600	800	1,000	1,200	1,400	1,600
OPERATING COSTS/ACRE:							
Cultural Cost	4,355	4,355	4,355	4,355	4,355	4,355	4,355
Harvest Cost (Pick & Haul)	2,067	3,100	4,134	5,167	6,201	7,234	8,268
Interest on operating capital	174	186	199	211	223	236	248
TOTAL OPERATING COSTS/ACRE	6,596	7,641	8,688	9,733	10,779	11,825	12,871
TOTAL OPERATING COSTS/cwt	16.49	12.74	10.86	9.73	8.98	8.45	8.04
CASH OVERHEAD COSTS/ACRE	374	377	379	381	384	386	388
TOTAL CASH COSTS/ACRE	6,970	8,018	9,067	10,114	11,163	12,211	13,259
TOTAL CASH COSTS/cwt	17.43	13.36	11.33	10.11	9.30	8.72	8.29
NON-CASH OVERHEAD COSTS/ACRE	188	219	250	278	306	332	357
TOTAL COSTS/ACRE	7,158	8,237	9,317	10,392	11,469	12,543	13,616
TOTAL COSTS/cwt	17.90	13.73	11.65	10.39	9.56	8.96	8.51

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD (30 lb boxes/acre)						
$/box	400	600	800	1,000	1,200	1,400	1,600
6.00	-4,196	-4,041	-3,888	-3,733	-3,579	-3,425	-3,271
9.00	-2,996	-2,241	-1,488	-733	21	775	1,529
12.00	-1,796	-441	912	2,267	3,621	4,975	6,329
15.00	-596	1,359	3,312	5,267	7,221	9,175	11,129
18.00	604	3,159	5,712	8,267	10,821	13,375	15,929
21.00	1,804	4,959	8,112	11,267	14,421	17,575	20,729
24.00	3,004	6,759	10,512	14,267	18,021	21,775	25,529

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE	YIELD (30 lb boxes/acre)						
$/box	400	600	800	1,000	1,200	1,400	1,600
6.00	-4,570	-4,418	-4,267	-4,114	-3,963	-3,811	-3,659
9.00	-3,370	-2,618	-1,867	-1,114	-363	389	1,141
12.00	-2,170	-818	533	1,886	3,237	4,589	5,941
15.00	-970	982	2,933	4,886	6,837	8,789	10,741
18.00	230	2,782	5,333	7,886	10,437	12,989	15,541
21.00	1,430	4,582	7,733	10,886	14,037	17,189	20,341
24.00	2,630	6,382	10,133	13,886	17,637	21,389	25,141

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE	YIELD (30 lb boxes/acre)						
$/box	400	600	800	1,000	1,200	1,400	1,600
6.00	-4,758	-4,637	-4,517	-4,392	-4,269	-4,143	-4,016
9.00	-3,558	-2,837	-2,117	-1,392	-669	57	784
12.00	-2,358	-1,037	283	1,608	2,931	4,257	5,584
15.00	-1,158	763	2,683	4,608	6,531	8,457	10,384
18.00	42	2,563	5,083	7,608	10,131	12,657	15,184
21.00	1,242	4,363	7,483	10,608	13,731	16,857	19,984
24.00	2,442	6,163	9,883	13,608	17,331	21,057	24,784

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Table 5. WHOLE FARM ANNUAL EQUPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

SAN JOAQUIN VALLEY - 2005

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
05	35HP 2WD Tractor	15,265	20	1,959	1,279	59	86	1,424
05	Bed Shaper (Pipe 9')	150	10	27	18	1	1	20
05	Pickup 1/2 Ton	28,000	5	12,549	4,423	140	203	4,766
05	Trailer 12' x 16'	4,500	20	235	386	16	24	426
	TOTAL	47,915		14,770	6,107	216	313	6,636
	60% of New Cost *	28,749		8,862	3,664	130	188	3,982

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
Irrigation Flat Pipe	455	2		248	0	0	9	257
Miscellaneous Field Tools	1,000	5		237	3	0	20	261
Plastic Greenhouse 20' x 20'	350	5		84	1	2	70	157
TOTAL INVESTMENT	1,805		0	569	5	2	99	675

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	10	acre	300.00	3,000
Liability Insurance	10	acre	42.90	429
Office Expense	10	acre	10.00	100

UC COOPERATIVE EXTENSION

Table 6. HOURLY EQUIPMENT COSTS

SAN JOAQUIN VALLEY - 2005

				Cash Overhead		Operating			
Yr	Description	Actual Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
05	35HP 2WD Tractor	600	1.28	0.06	0.09	0.62	2.98	3.60	5.03
05	Bed Shaper (Pipe 9')	100	0.11	0.00	0.01	0.01	0.00	0.01	0.13
05	Pickup 1/2 Ton	300	8.85	0.28	0.41	2.08	9.82	11.90	21.43
05	Trailer 12' x 16'	150	1.55	0.07	0.09	0.66	0.00	0.66	2.37

UC COOPERATIVE EXTENSION

Table 7. OPERATIONS WITH EQUIPMENT

SAN JOAQUIN VALLEY - 2005

Operation	Operation Month	Tractor	Implement	Non-Machine	Material	Broadcast Rate/acre	Unit
Cultural:							
Plant: Greenhouse	January			8.00	Planting Trays	25.00	ea
					Grower saved seed		
Land Prep: (plow, disc, list)	February	Custom					
Land Prep: Flatten Bed Tops	February	35 HP 2WD	Pipe				
Land Prep: Lay black plastic (alternate rows)	February			8.00	Black Plastic	7,250.00	ft
Plant: Transplants. Fertilize: 20-20-20	February			16.00	20-20-20	10.00	lb
					Greenhouse seedlings	1,200	ea
Crop Protect: Install Tunnels	February			24.00	Hoops	1,200.00	ea
					Clear Plastic	14,500.00	ft
Trellis: Install	March			32.00	Stakes	1,200.00	ea
					Netting	7,250.00	ft
Irrigate 6X	March			3.00	Water	6.00	ea
Irrigate 6X	April			3.00	Water	6.00	ea
Irrigate 6X	May			3.00	Water	6.00	ea
Irrigate 10X	June			5.00	Water	10.00	ea
Irrigate 10X	July			5.00	Water	10.00	ea
Irrigate 10X	August			5.00	Water	10.00	ea
Irrigate 10X	September			5.00	Water	10.00	ea
Irrigate 2X	October			1.00	Water	2.00	ea
Fertilize	May				UN32	55.00	lb
	July				UN32	55.00	lb
Weed: Hand	March			3.00			
	May			3.00			
Weed: Hand Spray Furrows	April			1.50	Roundup	16.00	floz
	August			1.50	Roundup	16.00	floz
Crop Protection: Remove Tunnels	May			4.00	Landfill	230.00	lb
Field Cleanup: plants, netting, mulch	October			80.00	Landfill	325.00	lb
Harvest	June			50.00	Boxes	125.00	ea
	July			100.00	Boxes	250.00	ea
	August			100.00	Boxes	250.00	ea
	September			100.00	Boxes	250.00	ea
	October			50.00	Boxes	125.00	ea
Haul	June	Pickup	Trailer				
	July	Pickup	Trailer				
	August	Pickup	Trailer				
	September	Pickup	Trailer				
	October	Pickup	Trailer				