UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2004

SAMPLE COSTS TO PRODUCE GRAPES FOR CONCENTRATE

THOMPSON SEEDLESS VARIETY

SAN JOAQUIN VALLEY - South

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(Thompson Seedless Variety)
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INTRODUCTION

Sample costs to produce Thompson Seedless grapes for concentrate are presented in this study. The information in the report is derived from interviews with growers who produce grapes mainly for wine and raisins with concentrate as an option. Wine production that goes to concentrate is often decided by the winery, whereas raisin growers often have until some time around the end of June to make the decision to convert from raisins to concentrate. At that point, the growers will modify the remaining cultural practices such as irrigation, pest and disease control, and harvest. Practices described are compiled from grower interviews based on what-if scenarios for concentrate production. California does not have varieties available for planting that are bred specifically for concentrate production, but uses white and red varieties grown for wine and raisin production. For concentrate production, growers should consider the varieties that are adaptable to mechanical pruning and mechanical harvest to reduce labor costs. Cane pruned varieties such as Thompson Seedless appear to not be readily adaptable to mechanical pruning, but is the variety grown in the San Joaquin Valley for either table grapes, raisin, and/or wine. Cultural practices, especially in canopy management vary by the type of production.

The study is intended as a guide only and can be used to make production decisions, determine potential returns, prepare budget, and evaluate production loans. The hypothetical farm operation, production practices, overhead and calculations are described under the assumptions. For additional information, contact the Department of Agricultural and Resource Economics at 530-752-3589.

Sample Cost of Production Studies are available for many commodities and can be downloaded from the department website http://coststudies.ucdavis.edu or requested by calling 530-752-1517.

ASSUMPTIONS

The assumptions refer to Tables 1 to 6 and pertain to sample costs to produce Thompson Seedless grapes for concentrate in the San Joaquin Valley. The cultural practices described are based on grower interviews, and represent suggested production operations and materials to be considered when producing grapes for concentrate. 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.**

Land. The hypothetical vineyard, owned and operated by the grower, is located on previously farmed land in the San Joaquin Valley. The farm is comprised of 120 acres, 40 acres of concentrate grapes being established and 75 acres of raisin grapes. Roads, irrigation systems, and farmstead occupy the remaining five acres.

PRODUCTION YEARS OPERATING COSTS

Trellis System. No specific trellis system is used in this study. Common trellis systems are variations of the vertical two wire design with and without cross braces. Trellis repairs are done annually and the cost is not taken from any specific data. For various reasons such as trellis type, age, and mechanical damage, the repair costs will vary from year to year. Repair labor hours are estimated and are not a representative sample of grower costs. The repair materials are assumed to be included in Investment Repairs under Cash Overhead Costs.

Vines. The Thompson Seedless vines are planted on a 7-ft. x 12-ft (vine x row) spacing at 519 vines per acre. The life of the vineyard at planting is expected to be 25 years. In January/February of each year, sick vines are replaced by layering.

Pruning. Pruning is done during the winter months – December and/or January. The vines are cane pruned and the prunings are placed in the row middles and shredded during the first mowing, then incorporated into the soil with the April discing. Suckers are removed from the vine trunks in April.

Fertilization. Forty pounds per acre of nitrogen (N) as UN-32 is divided and applied in equal amounts in May and June. Neutral zinc at five pounds of material per acre is applied in May with the disease and insect application.

Irrigation. Water costs plus labor, which includes checking the drip lines, constitute the irrigation cost. Irrigation labor also includes servicing the clock and filters, set-up and injection of chemicals, checking, replacing, and repairing drip lines and laterals. In this study, water is calculated to cost $5.67 per acre-inch or $68.00 per acre-foot. Water costs vary considerably among districts and the water cost in this report represents a cost within that range. Thirty acre-inches are applied during the growing season from April through late September. No assumption is made about effective rainfall and runoff.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Grapes.* For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. Information and pesticide use permits are available through the local county agricultural commissioner's office. Pesticides mentioned in this

study are used to calculate rates and costs. Although growers commonly use the pesticides mentioned, many other pesticides are available. Adjuvants are recommended for use with many pesticides for effective control, but the adjuvants and their costs are not included in this study. Pesticide costs may vary by location, brand, and grower volume. Pesticide costs in this study are taken from a single dealer and shown as full retail.

Pest Control Adviser (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisers. In addition the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. No costs for a PCA are included in this report.

Weeds. The row middles are mowed four times – March for frost control and to shred prunings, May, June, and August prior to harvest. The row middles are disced in April for weed control and to incorporate the vine prunings. Vine row weeds are controlled with three Roundup spot sprays – April, June, July.

Insects. Kryocide insecticide for worm control (grape leaffolder, omnivorous leafroller, western grapeleaf skeletonizer) is applied in early May at bloom with the powdery mildew and foliar fertilizer spray. Provado insecticide is applied in July to control leafhoppers.

Diseases. The major diseases considered in this report are powdery mildew, and Phomopsis cane and leaf spot. Wettable sulfur is applied soon after budbreak in late March or early April. A second application is made in April. Dusting sulfur is applied once in April, in May, and in June. A sterol inhibitor, Rubigan, is applied in May at early bloom (with the worm and zinc spray) and a strobilurin fungicide, Flint, in June, two weeks after bloom.

Harvest. A custom operator mechanically harvests the crop. Harvest costs in this report are $225 per acre, which is a mid-range of costs provided by the growers. A commercial trucker hauls the grapes to the processor for $10 per ton. Hauling costs will vary depending upon the hauling distance.

Yields. An average yield of 12-tons per acre is assumed over the 25-year life of the vineyard, beginning in the fourth year.

Returns. The market price in this report, based on grower inputs for 2004, is $200 per acre for both white and red grape varieties. A range of returns over various yields are shown in Table 4.

Pickup/ATV. It is assumed that the grower uses the pickup for business and personal use. Estimated business mileage for the ranch is 3,300 miles. The all terrain vehicle (ATV) is used for spot spraying weeds and is included in that cost. It is assumed that the ATV will be used another two-hours per acre for checking the vineyards including the irrigation system.

Labor. Labor rates of $12.73 per hour for machine operators and $11.05 for general labor includes payroll overhead of 34%. The basic hourly wages are $9.50 for machine operators and $8.25 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for vineyards (code 0040), and a percentage for other possible benefits. Workers' compensation insurance costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2004 (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 the American Society of Agriculture Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $1.45 and $1.88 per gallon, respectively. The fuel prices are averaged based on four California delivery locations plus $0.24 per gallon, which is one-half the difference between the high and low price for regular gasoline in 2003 from the California State Automobile Association Monthly Survey. The cost includes a 2.25% sales tax (effective September 2001) on diesel fuel and 7.25% sales tax on gasoline. Gasoline also includes federal and state excise tax, which can be refunded 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 6.89% 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. The risks associated with crop production 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 profitability and economic viability. Growers may purchase Federal crop insurance to reduce the production risk associated with specific natural hazards. Insurance policies vary and range from a basic catastrophic loss policy to one that insures losses for up to 75% of a crop. Crop insurance is not included in this report, but insurance costs will depend on the type and level of coverage.

Cash Overhead Costs

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, equipment repairs, and management.

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 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $645 for the entire farm.

Office Expense. Office and business expenses for 120 acres are estimated at $75 per producing acre or $8,625 annually for the ranch. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc. The cost is assumed and not taken from any specific data.

Management/Supervisor Wages. Salary is not included. Returns above costs are considered a return to management.

Investment Repairs. Annual maintenance on investments (Non-Cash Overhead) are calculated as 2% of the purchase price for the irrigation system, building, tools, fuel tanks and establishment costs.

Non-Cash Overhead Costs

Non-cash overhead is calculated as the annual capital recovery cost for ownership of 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 Table 5.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

Interest Rate. The interest rate of 6.25% used to calculate capital recovery cost is the USDA-ERS's 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 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.

Establishment Cost. Costs to establish the vineyard are used to determine capital recovery expenses on investment for the production years. Establishment cost is the sum of the costs for land preparation, trellis system, planting, vines, cash overhead and production expenses for growing the vines through the first year that grapes are harvested minus any returns from production. The vineyard is expected to produce in the third year; therefore the Total Accumulated Net Cash Cost in the third year represents the establishment cost. For this study the estimated cost is $6,956 per acre or $278,240 for the 40-acre vineyard. The establishment cost is spread over the remaining 22 years of the 25 years the vineyard is in production.

Irrigation System. The previous vineyard is assumed to have an irrigation system that has been refurbished. The drip line is laid on the ground prior to planting. After the trellis system is installed, the drip line is clipped to the bottom trellis wire. The system includes the installation labor, filters, fertilizer injector, time clock, and valves. Although the materials will have a useful life equivalent to the vineyard, the irrigation system can be included in the vineyard establishment costs or as in this case an improvement to the property with a 25-year life.

Land. The land was formerly a vineyard, but has been out of production for two years. The open land was planted to grain crops. Land in the San Joaquin Valley for grape production ranges from $4,500 to $6,500 per acre (CA Association of Farm Manager and Real Estate Appraisers). For this report, a land value was of $5,800 per acre or $6,052 per producing acre is used (five of the 120 acres are not planted). It is assumed the grower originally purchased the land with an established vineyard. The annual cost of land is interest only since land does not depreciate.

Building. The metal buildings are on a cement slab and comprise 2,400 square feet.

Tools. This includes shop tools, hand tools, and miscellaneous field tools such as pruning tools.

Fuel Tanks. Two 250-gallon fuel tanks using gravity feed are on metal stands. The tanks are setup in a cement containment pad that meets federal, state, and county regulations.

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 Table 5. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in a previous section. 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.

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

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Table 1. COSTS PER ACRE TO PRODUCE GRAPES FOR CONCENTRATE – Thompson Seedless

SAN JOAQUIN VALLEY - 2004

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre				
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost
Cultural:						
Prune: (hand)	11.00	122	0	0	0	122
Prune: Tie Vines	5.00	55	0	11	0	67
Vines: Layer to replace missing vines	1.00	11	0	0	0	11
Trellis: Repair (labor only, see text)	2.00	22	0	0	0	22
Weed: Winter Strip Spray (Roundup, Goal, Surflan)	0.54	8	4	67	0	79
Irrigate: (water & labor)	3.05	34	0	170	0	204
Weed: Mow 4X (includes shred prunings)	0.96	15	10	0	0	25
Prune: Sucker Trunks	1.25	14	0	0	0	14
Weed: Spot Spray 20% acres 3X (Roundup)	1.59	24	2	13	0	39
Weed: Disc	0.29	4	2	0	0	7
Disease: Mildew (Wettable Sulfur)	1.53	23	15	1	0	40
Disease: Mildew (Dusting Sulfur)	0.92	14	7	5	0	26
Fertilize: through drip (UN32)	0.10	1	0	16	0	17
Insect: Skeletonizer (Kryocide). Disease: Mildew (Rubigan). Fertilizer: (Zn)	0.76	12	8	33	0	52
Disease: Mildew (Flint)	0.76	12	8	25	0	44
Insect: Leaf Hopper (Provado)	0.76	12	8	33	0	52
Pickup: Business use for vineyard	1.50	23	18	0	0	41
ATV 4WD: Miscellaneous vineyard use	2.00	31	2	0	0	33
TOTAL CULTURAL COSTS	35.01	436	83	374	0	893
Harvest:						
Harvest: Machine Harvest & Haul	0.00	0	0	0	345	345
TOTAL HARVEST COSTS	0.00	0	0	0	345	345
Interest on operating capital @ 6.89%						25
TOTAL OPERATING COSTS/ACRE		436	83	374	345	1,264
Cash Overhead:						
Office Expense						75
Liability Insurance						6
Sanitation						19
Property Taxes						106
Property Insurance						31
Investment Repairs						171
TOTAL CASH OVERHEAD COSTS						408
TOTAL CASH COSTS/ACRE						1,671
Non-Cash Overhead:		Per producing Acre		Annual Cost Capital Recovery		
Land		6,052		377		377
Drip Irrigation System		950		76		76
Buildings		522		46		46
Tools-Shop/Field		104		10		10
Fuel Tanks		30		2		2
Vineyard Establishment		6,956		589		589
Equipment		437		59		59
TOTAL NON-CASH OVERHEAD COSTS		15,052		1,160		1,160
TOTAL COSTS/ACRE						2,832

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Table 2. COSTS AND RETURNS to PRODUCE GRAPES FOR CONCENTRATE – Thompson Seedless

SAN JOAQUIN VALLEY - 2004

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Grapes for Concentrate	12.00	ton	200.00	2,400	
OPERATING COSTS					
Vine Aids:					
Tying Materials	1.00	acre	11.50	11	
Custom:					
Machine Harvest	1.00	acre	225.00	225	
Haul to Crusher	12.00	ton	10.00	120	
Herbicide:					
Roundup Ultra Max	2.16	pint	8.56	18	
Goal 2XL	1.00	pint	16.21	16	
Surflan 4 AS	2.64	pint	16.96	45	
Irrigation:					
Water	30.00	acin	5.67	170	
Fungicide:					
Wettable Sulfur	6.00	lb	0.21	1	
Dusting Sulfur	30.00	lb	0.18	5	
Rubigan EC	4.00	floz	2.50	10	
Flint	1.50	oz	16.49	25	
Fertilizer:					
UN 32	40.00	lb N	0.41	16	
Neutral Zinc 50%	5.00	lb	0.92	5	
Insecticide:					
Kryocide	6.00	lb	3.00	18	
Provado 1.6 Solupak	0.75	oz	43.96	33	
Labor (machine)	13.93	hrs	12.73	177	
Labor (non-machine)	23.40	hrs	11.05	259	
Fuel - Gas	8.08	gal	1.88	15	
Fuel - Diesel	21.12	gal	1.45	31	
Lube				7	
Machinery repair				30	
Interest on operating capital @ 6.89%				25	
TOTAL OPERATING COSTS/ACRE				1,264	
NET RETURNS ABOVE OPERATING COSTS				1,136	
Cash Overhead:					
Office Expense				75	
Liability Insurance				6	
Sanitation				19	
Property Taxes				106	
Property Insurance				31	
Investment Repairs				171	
TOTAL NON-CASH OVERHEAD COSTS				408	
TOTAL COSTS/ACRE				1,671	
Non-Cash Overhead:					
Land				377	
Drip Irrigation System				76	
Buildings				46	
Tools-Shop/Field				10	
Fuel Tanks				2	
Vineyard Establishment				589	
Equipment				59	
TOTAL NON-CASH OVERHEAD COSTS				1,160	
TOTAL COSTS/ACRE				2,832	
NET RETURNS ABOVE TOTAL COSTS				-432	

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Table 3. MONTHLY CASH to PRODUCE GRAPES FOR CONCENTRATE – Thompson Seedless

SAN JOAQUIN VALLEY - 2004

Beginning JAN 04 Ending DEC 04	JAN 04	FEB 04	MAR 04	APR 04	MAY 04	JUN 04	JUL 04	AUG 04	SEP 04	OCT 04	NOV 04	DEC 04	TOTAL
Cultural:													
Prune: (hand)	122												122
Prune: Tie	67												67
Vines: (Layer canes to replace missing vines)	11												11
Trellis: Repair	22												22
Weed: Winter Strip Spray (Roundup, Goal, Surflan)		79											79
Irrigate: (water & labor)			11	15	22	46	52	32	26				204
Weed: Mow 4X (includes shred prunings)			6		6	6		6					25
Prune: Sucker Trunks				14									14
Weed: Spot Spray 20% acres (Roundup)				13		13	13						39
Weed: Disc				7									7
Disease: Mildew (Wettable Sulfur)				40									40
Disease: Mildew (Dusting Sulfur)				9	9	9							26
Fertilize: through drip (UN32)					9	9							17
Insect: Skeletonizer (Kryocide). Disease: Mildew (Rubigan). Fertilizer: (Zn)					52								52
Disease: Mildew (Flint)						44							44
Insect: Leaf Hopper (Provado)							52						52
Pickup: Business use for vineyard	3	3	3	3	3	3	3	3	3	3	3	3	41
ATV 4WD: Miscellaneous vineyard use	3	3	3	3	3	3	3	3	3	3	3	3	33
TOTAL CULTURAL COSTS	228	85	24	103	104	133	123	44	32	6	6	6	893
Harvest:													
Harvest: Machine Harvest & Haul								345					345
TOTAL HARVEST COSTS								345					345
Interest on operating capital	1	2	2	3	3	4	5	7	0	0	0	0	25
TOTAL OPERATING COSTS/ACRE	229	86	25	105	107	137	128	396	32	6	6	6	1,264
Cash Overhead:													
Office Expense	6	6	6	6	6	6	6	6	6	6	6	6	75
Liability Insurance	6												6
Sanitation	2	2	2	2	2	2	2	2	2				19
Property Taxes	53						53						106
Property Insurance	15						15						31
Investment Repairs	14	14	14	14	14	14	14	14	14	14	14	14	171
TOTAL CASH OVERHEAD COSTS/ACRE	97	23	23	23	23	23	91	23	23	21	21	21	408
TOTAL CASH COSTS/ACRE	326	109	48	128	129	160	219	418	55	27	27	27	1,671

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Table 4. RANGING ANALYSIS

SAN JOAQUIN VALLEY - 2004

COSTS PER ACRE AT VARYING YIELD TO PRODUCE GRAPES FOR CONCENTRATE – Thompson Seedless

	YIELD (ton/acre)						
	9.00	10.00	11.00	12.00	13.00	14.00	15.00
OPERATING COSTS:							
Cultural Cost	893	893	893	893	893	893	893
Harvest Cost	315	325	335	345	355	365	375
Interest on operating capital	25	25	25	25	25	26	26
TOTAL OPERATING COSTS/ACRE	1,233	1,243	1,253	1,263	1,273	1,284	1,294
Total Operating Costs/ton	137	124	114	105	98	92	86
CASH OVERHEAD COSTS/ACRE	408	408	408	408	408	408	408
TOTAL CASH COSTS/ACRE	1,641	1,651	1,661	1,671	1,681	1,692	1,702
Total Cash Costs/ton	182	165	151	139	129	121	113
NON-CASH OVERHEAD COSTS/ACRE	1,160	1,160	1,160	1,160	1,160	1,160	1,160
TOTAL COSTS/ACRE	2,801	2,811	2,821	2,831	2,841	2,852	2,862
Total Costs/ton	311	281	256	236	219	204	191

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD (ton/acre)						
$/ton	9.00	10.00	11.00	12.00	13.00	14.00	15.00
140.00	27	157	287	417	547	676	806
160.00	207	357	507	657	807	956	1,106
180.00	387	557	727	897	1,067	1,236	1,406
200.00	567	757	947	1,137	1,327	1,516	1,706
220.00	747	957	1,167	1,377	1,587	1,796	2,006
240.00	927	1,157	1,387	1,617	1,847	2,076	2,306
260.00	1,107	1,357	1,607	1,857	2,107	2,356	2,606

NET RETURNS PER ACRE ABOVE CASH COST

PRICE	YIELD (ton/acre)						
$/ton	9.00	10.00	11.00	12.00	13.00	14.00	15.00
140.00	-381	-251	-121	9	139	268	398
160.00	-201	-51	99	249	399	548	698
180.00	-21	149	319	489	659	828	998
200.00	159	349	539	729	919	1,108	1,298
220.00	339	549	759	969	1,179	1,388	1,598
240.00	519	749	979	1,209	1,439	1,668	1,898
260.00	699	949	1,199	1,449	1,699	1,948	2,198

NET RETURNS PER ACRE ABOVE TOTAL COST

PRICE	YIELD (ton/acre)						
$/ton	9.00	10.00	11.00	12.00	13.00	14.00	15.00
140.00	-1,541	-1,411	-1,281	-1,151	-1,021	-892	-762
160.00	-1,361	-1,211	-1,061	-911	-761	-612	-462
180.00	-1,181	-1,011	-841	-671	-501	-332	-162
200.00	-1,001	-811	-621	-431	-241	-52	138
220.00	-821	-611	-401	-191	19	228	438
240.00	-641	-411	-181	49	279	508	738
260.00	-461	-211	39	289	539	788	1,038

UC COOPERATIVE EXTENSION

Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,

SAN JOAQUIN VALLEY - 2004

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
04	60HP 4WD NarrowTractor	36,000	15	7,009	3,467	145	215	3,827
04	ATV 4WD	6,700	5	3,003	1,070	33	49	1,152
04	Disc - Tandem 8'	6,800	10	1,203	844	27	40	911
04	Duster - 3 Pt	5,000	5	1,629	907	22	33	962
04	Mower-Flail 8'	9,600	15	922	964	36	53	1,053
04	Orch/Vine Sprayer 500 gal	20,378	5	6,638	3,696	91	135	3,922
04	Pickup Truck 1/2 Ton	26,000	7	9,863	3,529	121	179	3,829
04	Sprayer ATV 20 gal	350	10	62	43	1	2	47
04	Weed Spray 3PT 100 gal	3,500	10	619	434	14	21	469
	TOTAL	114,328		30,948	14,954	490	727	16,172
	60% of New Cost *	68,597		18,569	8,972	295	436	9,703

* 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
Building 2,400 sqft	60,000	20		5,329	203	300	1,200	7,032
Drip Irrigation System	38,000	25		3,038	128	190	760	4,116
Vineyard Establishment	278,240	22		23,571	940	1,391	5,564	31,466
Fuel Tanks 2-300 gal	3,500	30	350	256	13	19	70	359
Land	696,000	25	696,000	43,361	0	6,960	0	50,321
Tools: Shop/Field	12,000	15	1,133	1,206	44	66	240	1,556
TOTAL INVESTMENT	1,087,740		697,483	76,761	1,328	8,926	7,834	94,850

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	115	acre	5.60	644
Office Expense	115	acre	75.00	8,625
Sanitation Fee	115	acre	18.96	2,180

UC COOPERATIVE EXTENSION

Table 6. HOURLY EQUIPMENT COSTS

SAN JOAQUIN VALLEY - 2004

		COSTS PER HOUR						
	Actual		Cash Overhead		Operating			
Yr Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
04 60HP 4WD NarrowTractor	1,066.10	1.95	0.08	0.12	0.88	4.91	5.79	7.95
04 ATV 4WD	400.20	1.60	0.05	0.07	0.50	0.72	1.22	2.94
04 Disc - Tandem 8'	199.50	2.54	0.08	0.12	1.10	0.00	1.10	3.84
04 Duster - 3 Pt	239.70	2.27	0.06	0.08	0.73	0.00	0.73	3.13
04 Mower-Flail 8'	133.40	4.34	0.16	0.24	4.31	0.00	4.31	9.04
04 Orch/Vine Sprayer 500 gal	400.60	5.54	0.14	0.20	3.58	0.00	3.58	9.46
04 Pickup Truck 1/2 Ton	285.00	7.43	0.26	0.38	1.91	9.91	11.82	19.88
04 Sprayer ATV 20 gal	150.20	0.17	0.01	0.01	0.10	0.00	0.10	0.28
04 Weed Spray 3PT 100 gal	200.40	1.30	0.04	0.06	0.61	0.00	0.61	2.01