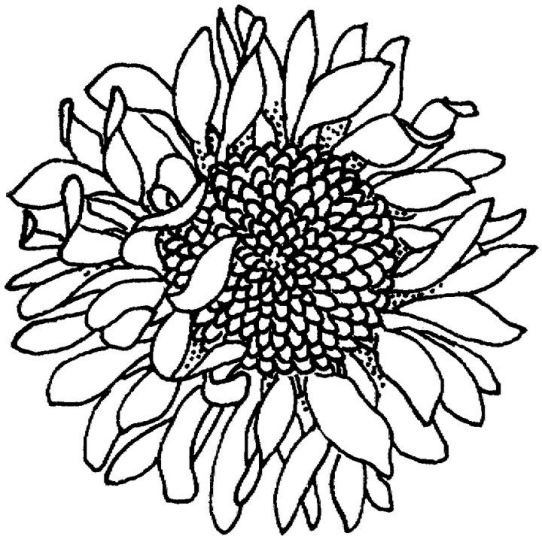
2004

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

Sunflowers



For Seed
In the SACRAMENTO VALLEY

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INTRODUCTION

Sample costs to produce sunflower seed in the Sacramento Valley are presented in this study. The hypothetical farm used in this report is 1,500 acres, with 100 acres of sunflowers in production. This study is intended as a guide only and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on those production procedures considered typical for this crop and area, but will not apply to every situation. Sample costs for labor, materials, equipment, and custom services are based on current figures. Some costs and practices presented in this study may not be applicable to your situation. A blank column, "*Your Costs*", is provided in Table 1 to enter your costs.

The hypothetical farm operation, 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, 530-752-2414.

STUDY CONTENTS

Sample Cost of Production studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-4424. Current studies, those produced during the last five years, can be obtained from selected county UC Cooperative Extension offices or downloaded from the department website http://coststudies.ucdavis.edu.

ASSUMPTIONS

The following are assumptions pertaining to sample costs to produce sunflower seed in the Sacramento Valley. Practices described are not recommendations by the University of California, but rather represent production procedures considered typical of a well managed farm for the Sacramento Valley. Costs and practices detailed in this study may not be applicable to all situations. Cultural practices for the production of sunflowers vary by grower, region, and variety, so 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.*

CULTURAL PRACTICES AND MATERIAL INPUTS

Land and Share Rent. This report is based on a 1,500 acre field and row crop farm of which 100 acres are producing sunflower seed. Rotational crops that might be planted on the remaining 1,400 acres include alfalfa hay, corn, safflower, dry beans, other seed crops, processing tomatoes, and wheat.

Land in this study is leased on a share-rent basis with the landowner receiving 17% of the gross returns from sunflower seed. Based on the yield and price assumed in this study, land rent is $110.50 per acre. The land rented includes developed wells and irrigation systems. The grower owns a shop and an equipment yard to repair and store equipment.

Labor. Basic hourly wages for workers are $9.87 and $6.81 per hour for machine operators and non-machine workers (irrigators) respectively. Adding 45% for SDI, FICA, insurance and other benefits raises the total labor costs to $14.31 per hour for machine operators and $9.87 per hour for non-machine labor. The labor for operations involving machinery are 20% higher than the operation time to account for the additional time involved in equipment set up, moving, maintenance and repair. Any returns above total costs are considered returns to investment.

Land Preparation. Primary tillage begins by stubble discing, then deep chiseling to help open soil structure. For efficient water use the field is leveled twice with a landplane. In this study, six rows of 30 inch of beds are listed per pass in November. Some growers in this region may also use three beds 60 inches wide for planting. Fields are again cultivated in April for weed control and to incorporate an herbicide. All of these operations are done prior to planting on 100% of the acres unless otherwise noted.

The fields are disced in the fall with a stubble disc to mix in any plant residue. Spraying an herbicide for winter bed weed control is usually done in January.

Stand Establishment. Sunflower seed is planted at a rate of approximately 3 pounds per acre in April with a starter fertilizer, depending on the variety. Because these are hybrid varieties, 25% of the plants are male and the remaining 75% are females for cross pollination. The male plants are destroyed and will not be harvested for seed. There are usually different planting times for each variety.

Seeds are planted into moist soil and begin to emerge in five to seven days depending on soil temperature. Companies contracting sunflower plantings in the Sacramento Valley will normally specify and provide the variety seed to be used by the grower so yields and prices will vary. Growers are not charged for the seed as it is part of the contract for seed production. Hybrid sunflower seeds need good pollination, so growers generally rent and place 1-1/2 hives per acre in their fields in June depending on the variety and planting date. In this study the cost is $19 per hive.

Stand Isolation. Open pollinated hybrid sunflower varieties require at least a one mile isolation around each field to avoid cross-pollination with other varieties. Companies may also specify different planting dates to isolate fields in time, in order to avoid cross-pollination from other varieties. Check with contracting companies for specific requirements.

Fertilization. A starter fertilizer of 8-24-6 is applied during planting at the rate of 15 gallons per acre. Later in the season UN-32 is sidedressed (injected) at 80 pounds of nitrogen per acre during the final cultivation.

Irrigation. Sunflowers are furrow irrigated with up to six irrigations during the growing season, depending on soil type. A total of 29 acre-inches of water is applied. Some growers may use an additional post-harvest irrigation to germinate sunflower seed so they can be destroyed by cultivation or use of an herbicide.

Weed Management. Both chemical and cultural practices are used for weed control in this study. During the winter, a fallow herbicide (usually Roundup) is used for weed control. Weeds are again controlled during preplant by mechanically mixing the herbicide Treflan in the soil with a cultivator. Two mechanical cultivations are the used during the year to manage weeds. The first cultivation is done when applying an herbicide prior to planting and the second when applying liquid fertilizer post-plant.

Insect Management. The main pest of sunflower is the sunflower head moth, is generally controlled with Asana in July, by air on 75% of the acreage, as this pest does not necessarily require treatment every year

Written recommendations are required for most pesticides and are made by licensed pest control advisors. For information and pesticide use permits, contact the local county Agricultural Commissioner's office.

Harvest. Male sunflower rows are destroyed in July with a tractor and chopper to avoid weed seed contamination in the field. At maturity the female plants are sprayed with sodium chlorate to dry them down in preparation for harvest. Only the female plant rows are harvested. Harvesting is done by the grower using their own combine with a sunflower header loaned by the seed company at no charge. The seeds are hauled to the warehouse at a cost of $0.33 per hundredweight where further cleaning, also referred to as scalping, is performed by the contracting seed company at no charge.

Yields. The net crop yield used in this study is 1,300 pounds per acre. The gross yield before cleaning is 1,750 pounds per acre. Approximately twenty six percent of the gross yield is lost when the seeds are cleaned in the scalping process. Six counties reported growing sunflowers for certified seed in the Sacramento Valley. The harvested acreages of certified seed by county from 1999 through 2003 are shown in Table A. Yields will vary considerably by variety planted.

Table A. Sunflower seed harvested acres by county for the Sacramento Valley [§]

	Harvested Acres					
Year	**Colusa**	**Glenn**	**Solano**	**Sutter**	**Tehama**	**Yolo**
1999	1,910	10,053	4,491	1,370	828	10,381
2000	1,110	6,799	1,233	1,765	318	4,377
2001	475	3,612	1,191	2,008	NA	4,540
2002	390	4,772	1,246	2,103	NA	3,372
2003	790	4,427	2,474	3,685	NA	9,294
Average	**935**	**5,933**	**2,127**	**2,186**	**573**	**6,393**

[§] Data from California State Crop Reports, 1999-2003.

Returns. Due to the different hybrid sunflower seeds grown in the Sacramento Valley, prices will vary. A selling price of $650 per acre or $0.50 per pound for dry, scalped seed is used to estimate income from the sale of these seeds in this study. Prices vary considerably on a per pound basis as most contracts are made in dollars per acre. Depending on yield, per pound prices can differ significantly. The average prices for sunflower seed for the past five years are shown in Table B for five counties in the Sacramento Valley. Yolo County does not state prices received in its annual crop report.

Table B. Average sunflower seed prices by county for the Sacramento Valley [§]

Year	**Colusa**	**Glenn**	**Solano**	**Sutter**	**Tehama**
			$/Lb		
1999	0.60	0.46	0.74	0.60	0.61
2000	0.40	0.42	0.61	0.50	0.50
2001	0.42	0.51	0.57	0.57	NA
2002	0.70	0.47	0.54	0.55	NA
2003	0.90	0.55	0.55	0.70	NA
Average	**0.60**	**0.48**	**0.60**	**0.58**	**0.55**

[§] Data from California State Crop Reports, 1999-2003.

Risk. Risks associated with sunflower seed production are not assigned a production cost. While this study makes an 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 sunflower seed production. Though, not used in this study, crop insurance is a risk management tool available to growers.

CASH OVERHEAD COSTS

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.

Equipment Cash Costs. Equipment costs are composed of three parts; capital recovery, cash overhead, and operating costs. The operating costs consist of fuel, lubrication, and repairs.

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower (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 5 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time for a given operation to account for setup time. Prices for on-farm delivery of diesel and gasoline are $1.45 and $1.88 per gallon, respectively.

Property Taxes. Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

Interest On Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 6.89% 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 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,245 for the entire farm or $0.83 per acre.

Office Expense: Office and business expenses are estimated at $10 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc. Cash overhead costs are found in Tables 1, 2, 3 and 4.

NON-CASH OVERHEAD COSTS

Capital Recovery Costs. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment on farms in the Sacramento Valley might 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 1-3, 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 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 calculation for the annual capital recovery costs is as follows.

$$\left[\left(\begin{matrix}\text{Purchase}\\ \text{Price}\end{matrix} - \begin{matrix}\text{Salvage}\\ \text{Value}\end{matrix}\right) \times \left(\begin{matrix}\text{Capital}\\ \text{Recovery}\\ \text{Factor}\end{matrix}\right)\right] + \left[\begin{matrix}\text{Salvage}\\ \text{Value}\end{matrix} \times \begin{matrix}\text{Interest}\\ \text{Rate}\end{matrix}\right]$$

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 (Boehlje and Eidman). The life in years is estimated by dividing the wear-out life, as given by ASAE by the annual use in hours. Salvage value is calculated 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. Salvage value for investments can vary. The purchase price and salvage value for certain equipment and investments are shown in Table 4.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. It is the function of the interest rate and years of life of the equipment or investment.

Interest Rate. The interest rate of 6.23% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten year average of California's agricultural sector long-run real rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Acknowledgment. Appreciation is expressed to SeedTec International, Inc. and other cooperators who provided support and information for this study.

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

U.C. COOPERATIVE EXTENSION

Table 1 COSTS PER ACRE TO PRODUCE SUNFLOWER SEED
SACRAMENTO VALLEY – 2004

Labor Rate: $13.43/hr. machine labor
$ 9.87/hr. non-machine labor

Interest Rate: 6.89%
Yield per Acre: 1,300 Pounds

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Stubble Disc	0.25	4	7	0	0	12	
Chisel	0.16	3	5	0	0	7	
Landplane Fields 2X	0.30	5	9	0	0	14	
Laser Level (1 In 10 Years)	0.00	0	0	0	8	8	
List Beds	0.20	3	5	0	0	9	
Weed Control - Fallow Herbicide	0.20	3	3	11	0	17	
Weed Control - Preplant Herbicide	0.20	3	3	7	0	13	
Plant & Starter Fertilizer	0.33	6	6	21	0	32	
Make Ditches 2X	0.02	0	1	0	0	1	
Irrigate 6X	1.20	12	0	51	0	63	
Close Ditches 2X	0.02	0	0	0	0	1	
Cultivate & Apply 80 Lbs N	0.20	3	3	32	0	39	
Pollinate Sunflowers	0.00	0	0	28	0	28	
Insect Control - Moths 75% of	0.00	0	0	7	7	13	
Knock Down Males 25% of Acreage	0.10	2	1	0	0	3	
Defoliate 75% of Acreage	0.00	0	0	8	9	17	
Pickup Use	0.18	6	3	0	0	9	
ATV Use	0.18	3	0	0	0	3	
TOTAL CULTURAL COSTS	3.54	55	45	165	23	288	
Harvest:							
Harvest	0.33	6	12	0	0	17	
Haul	0.00	0	0	0	4	4	
TOTAL HARVEST COSTS	0.33	6	12	0	4	22	
Postharvest:							
Stubble Disc	0.20	3	6	0	0	9	
TOTAL POSTHARVEST COSTS	0.20	3	6	0	0	9	
Interest on operating capital @ 6.89%						10	
TOTAL OPERATING COSTS/ACRE		64	62	165	28	329	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						10	
Share Rent @ 17% of Gross Returns						110	
Property Taxes						8	
Property Insurance						5	
Investment Repairs						1	
TOTAL CASH OVERHEAD COSTS						136	
TOTAL CASH COSTS/ACRE						465	
NON-CASH OVERHEAD:							
Investment		Per producing Acre		-- Annual Cost -- Capital Recovery			
Fuel Tanks & Pumps		11		1		1	
Fuel Wagon		1		0		0	
Shop Building		46		4		4	
Shop Tools		9		1		1	
Siphon Tubes		2		0		0	
Tool Carrier		10		1		1	
Equipment		1,334		142		142	
TOTAL NON-CASH OVERHEAD COSTS		1,413		149		149	
TOTAL COSTS/ACRE						614	

U.C. COOPERATIVE EXTENSION

Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE SUNFLOWER SEED
SACRAMENTO VALLEY – 2004

Labor Rate: $13.43/hr. machine labor
$ 9.87/hr. non-machine labor

Interest Rate: 6.89%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Sunflower Seed	1,300	Pounds	0.50	650	
Total Gross Returns for Sunflower Seed				650	
OPERATING COSTS					
Custom:					
Laser Level	0.10	Acre	75.00	8	
Air Application	1.75	Acre	9.00	16	
Hauling - Sunflower seed	13.00	Cwt	0.33	4	
Herbicide:					
Roundup	2.00	Pint	5.55	11	
Treflan HFP	1.50	Pint	4.74	7	
Fertilizer:					
8-24-6	15.00	Gal	1.39	21	
UN-32	80.00	Lb N	0.405	32	
Irrigation:					
Water	29.00	AcIn	1.76	51	
Pollination:					
Bee Hives - Rental	1.50	Hive	19.00	28	
Insecticide:					
Asana XL	4.35	Oz	1.52	7	
Desiccant:					
Sodium Chlorate5SE	1.00	Gal	7.70	8	
Labor (machine)	3.66	Hrs	14.31	52	
Labor (non-machine)	1.20	Hrs	9.87	12	
Fuel - Gas	1.16	Gal	1.88	2	
Fuel - Diesel	24.11	Gal	1.45	35	
Lube				6	
Machinery repair				19	
Interest on operating capital @ 6.89%				10	
TOTAL OPERATING COSTS/ACRE				329	
NET RETURNS ABOVE OPERATING COSTS				321	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				10	
Share Rent @ 17% of Gross Returns				110	
Property Taxes				8	
Property Insurance				5	
Investment Repairs				1	
TOTAL CASH OVERHEAD COSTS/ACRE				136	
TOTAL CASH COSTS/ACRE				465	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):					
Fuel Tanks & Pumps				1	
Fuel Wagon				0	
Shop Building				4	
Shop Tools				1	
Siphon Tubes				0	
Tool Carrier				1	
Equipment				142	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				149	
TOTAL COSTS/ACRE				614	
NET RETURNS ABOVE TOTAL COSTS				36	

Table 3. U.C. COOPERATIVE EXTENSION
MONTHLY COSTS PER ACRE TO PRODUCE SUNFLOWER SEED
SACRAMENTO VALLEY – 2004

Beginning OCT 04 Ending OCT 05	OCT 03	NOV 03	DEC 03	JAN 04	FEB 04	MAR 04	APR 04	MAY 04	JUN 04	JUL 04	AUG 04	SEP 04	OCT 04	TOTAL
Cultural:														
Stubble Disc	12													12
Chisel	7													7
Landplane Fields 2X	14													14
Laser Level (1 In 10 Years)	8													8
List Beds		9												9
Weed Control - Fallow Herbicide				17										17
Weed Control - Preplant Herbicide							13							13
Plant & Starter Fertilize							32							32
Make Ditches 2X								0	0					1
Irrigate 6X								11	11	21	21			63
Close Ditches 2X								0			0			1
Cultivate & Apply 80 Lbs of N								39						39
Pollinate Sunflowers									28					28
Insect Control - Head Moths 75% of Acreage										13				13
Knock Down Males 25% of Acreage											3			3
Defoliate 75% of Acreage											17			17
Pickup Use	1	1	1	1	1	1	1	1	1	1	1	1		9
ATV Use	0	0	0	0	0	0	0	0	0	0	0	0		3
TOTAL CULTURAL COSTS	41	10	1	18	1	1	46	51	41	35	42	1		289
Harvest:														
Harvest											9	9		17
Haul											2	2		4
TOTAL HARVEST COSTS											11	11		22
Postharvest:														
Stubble Disc													9	9
TOTAL POSTHARVEST COSTS													9	9
Interest on Operating Capital @ 6.89%	0	0	0	0	0	0	1	1	1	1	2	2	0	10
TOTAL OPERATING COSTS/ACRE	41	10	1	19	1	1	47	52	42	36	54	14	9	329
OVERHEAD:														
Liability Insurance					1									1
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1		10
Share Rent @ 17% of Gross Returns												110		110
Property Taxes				8										8
Property Insurance				5										5
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0		1
TOTAL CASH OVERHEAD COSTS	1	1	1	14	2	1	1	1	1	1	1	111		136
TOTAL CASH COSTS/ACRE	42	11	2	33	3	2	48	53	43	37	55	125	9	465

U.C. COOPERATIVE EXTENSION

Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SACRAMENTO VALLEY – 2004

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead - Insurance	Taxes	Total
04	200 HP Crawler	165,579	10	48,909	19,072	725	1,072	20,869
04	90 HP 2WD Tractor	62,968	10	18,600	7,253	276	408	7,936
04	ATV	4,500	5	2,017	719	22	33	773
04	Chisel - Heavy Duty 16'	7,500	15	750	752	28	41	821
04	Combine - No Header	160,483	15	16,435	16,079	598	885	17,562
04	Cultivator - 6 Row	8,897	12	1,232	1,003	34	51	1,087
04	Disc - Stubble 16'	18,320	10	3,240	2,273	73	108	2,454
04	Ditcher - V	7,956	12	1,102	897	31	45	972
04	Lister - 6 Row	1,455	12	202	164	6	8	178
04	Mower - Flail 5'	2,935	20	153	257	10	15	283
04	Pickup - 1/2 Ton	21,396	5	9,589	3,418	105	155	3,678
04	Pickup - 3/4 Ton	25,840	5	11,581	4,128	126	187	4,441
04	Planter - 6 Row	16,890	10	2,987	2,096	67	99	2,262
04	Rear Blade - 8'	2,545	20	133	223	9	13	245
04	Saddle Tank - 300 Gal	3,379	10	598	419	13	20	453
04	Triplane - 16'	18,500	12	2,562	2,085	71	105	2,261
	TOTAL	529,143		120,090	60,835	2,194	3,246	66,276
	60% of New Cost *	317,486		72,054	36,501	1,317	1,948	39,766

* Used to reflect a mix of new and used equipment.

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	-------- Cash Overhead -------- Insurance	Taxes	Repairs	Total
INVESTMENT	16,859	20	1,686	1,453	63	93	227	1,835
Fuel Tanks & Pumps	2,045	10	205	265	8	11	40	324
Fuel Wagon	68,327	25	6,833	5,342	254	376	922	6,894
Shop Building	13,072	20	1,307	1,126	49	72	131	1,378
Shop Tools	3,690	20	369	318	14	20	92	444
Siphon Tubes	15,118	15	1,512	1,516	56	83	350	2,006
Tool Carrier	119,111		11,912	10,021	443	655	1,762	12,881
TOTAL INVESTMENT	16,859	20	1,686	1,453	63	93	227	1,835

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	1,500	Acre	0.83	1,245
Office Expense	1,500	Acre	10.00	15,000
Share Rent @ 17% of Gross Returns	100	Acre	110.50	11,050

Table 5.

U.C. COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
SACRAMENTO 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	200 HP Crawler	1,601.3	7.15	0.27	0.40	4.30	19.35	23.65	31.47
04	90 HP 2WD Tractor	1,150.5	3.78	0.14	0.21	2.86	7.37	10.23	14.37
04	ATV	17.8	24.23	0.74	1.10	0.29	2.16	2.45	28.52
04	Chisel - Heavy Duty 16'	158.0	2.86	0.11	0.16	2.36	0.00	2.36	5.48
04	Combine - No Header	36.7	263.06	9.78	14.47	10.87	20.81	31.68	318.99
04	Cultivator - 6 Row	60.0	10.03	0.34	0.51	1.80	0.00	1.80	12.67
04	Disc - Stubble 16'	200.0	6.82	0.22	0.32	2.96	0.00	2.96	10.33
04	Ditcher - V	166.0	3.24	0.11	0.16	2.15	0.00	2.15	5.67
04	Lister - 6 Row	20.0	4.92	0.17	0.25	0.29	0.00	0.29	5.63
04	Mower - Flail 5'	100.0	1.54	0.06	0.09	1.11	0.00	1.11	2.81
04	Pickup - 1/2 Ton	284.8	7.20	0.22	0.33	1.39	5.40	6.79	14.53
04	Pickup - 3/4 Ton	284.8	8.70	0.27	0.39	1.67	6.49	8.16	17.52
04	Planter - 6 Row	33.0	38.10	1.22	1.81	4.53	0.00	4.53	45.66
04	Rear Blade - 8'	150.0	0.89	0.04	0.05	0.37	0.00	0.37	1.35
04	Saddle Tank - 300 Gal	150.0	1.68	0.05	0.08	0.90	0.00	0.90	2.71
04	Triplane - 16'	250.0	5.00	0.17	0.25	2.79	0.00	2.79	8.22

Table 6.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SACRAMENTO VALLEY - 2004

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE SUNFLOWER SEED

	YIELD (POUNDS/ACRE)						
	400	700	1,000	1,300	1,600	1,900	2,200
OPERATING COSTS/ACRE:							
Cultural Cost	288	288	288	288	288	288	288
Harvest Cost	7	12	17	22	27	32	37
Postharvest Cost	9	9	9	9	9	9	9
Interest on operating capital	10	10	10	10	10	10	10
TOTAL OPERATING COSTS/ACRE	314	319	324	329	334	339	344
TOTAL OPERATING COSTS/POUND	0.78	0.46	0.32	0.25	0.21	0.18	0.16
CASH OVERHEAD COSTS/ACRE	136	136	136	136	136	136	136
TOTAL CASH COSTS/ACRE	450	455	460	465	470	475	480
TOTAL CASH COSTS/POUND	1.12	0.65	0.46	0.36	0.29	0.25	0.22
NON-CASH OVERHEAD COSTS/ACRE	149	149	149	149	149	149	149
TOTAL COSTS/ACRE	599	604	609	614	619	624	629
TOTAL COSTS/POUND	1.50	0.86	0.61	0.47	0.39	0.33	0.29

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR SUNFLOWER SEED

PRICE (DOLLARS/LBS)	YIELD POUNDS/ACRE						
SUNFLOWER SEED	400	700	1,000	1,300	1,600	1,900	2,200
	---------- $/acre ----------						
0.35	-174	-74	26	126	226	326	426
0.40	-154	-39	76	191	306	421	536
0.45	-134	-4	126	256	386	516	646
0.50	-114	31	176	321	466	611	756
0.55	-94	66	226	386	546	706	866
0.60	-74	101	276	451	626	801	976
0.65	-54	136	326	516	706	896	1,086

NET RETURNS PER ACRE ABOVE CASH COSTS FOR SUNFLOWER SEED

PRICE (DOLLARS/LBS)	YIELD POUNDS/ACRE						
SUNFLOWER SEED	400	700	1,000	1,300	1,600	1,900	2,200
	---------- $/acre ----------						
0.35	-310	-210	-110	-10	90	190	290
0.40	-290	-175	-60	55	170	285	400
0.45	-270	-140	-10	120	250	380	510
0.50	-250	-105	40	185	330	475	620
0.55	-230	-70	90	250	410	570	730
0.60	-210	-35	140	315	490	665	840
0.65	-190	0	190	380	570	760	950

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR SUNFLOWER SEED

PRICE (DOLLARS/LBS)	YIELD POUNDS/ACRE						
SUNFLOWER SEED	400	700	1,000	1,300	1,600	1,900	2,200
	---------- $/acre ----------						
0.35	-459	-359	-259	-159	-59	41	141
0.40	-439	-324	-209	-94	21	136	251
0.45	-419	-289	-159	-29	101	231	361
0.50	-399	-254	-109	36	181	326	471
0.55	-379	-219	-59	101	261	421	581
0.60	-359	-184	-9	166	341	516	691
0.65	-339	-149	41	231	421	611	801

Table 7.

U.C. COOPERATIVE EXTENSION
COSTS AND RETURNS / BREAKEVEN ANALYSIS
SACRAMENTO VALLEY – 2004

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Sunflower Seed	650	329	321	465	185	614	36

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Sunflower Seed	65,000	32,890	32,110	46,487	18,513	61,368	3,632

BREAKEVEN PRICES PER YIELD UNIT

			-------- Breakeven Price To Cover --------		
CROP	Base Yield (Units/Acre)	Yield Units	Operating Costs	Cash Costs	Total Costs
			---------- $ per Yield Unit ----------		
Sunflower Seed	1,300	Lb	0.25	0.36	0.47

BREAKEVEN YIELDS PER ACRE

			-------- Breakeven Yield To Cover --------		
CROP	Yield Units	Base Price ($/Unit)	Operating Costs	Cash Costs	Total Costs
			---------- Yield Units /Acre ----------		
Sunflower Seed	Lb	0.50	657.8	929.7	1,227.4

Table 9.

UC COOPERATIVE EXTENSION
OPERATIONS BY MONTH
SACRAMENTO VALLEY - 2004

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Stubble Disc	October	200 HP Crawler	Disc - Stubble 16'			
Chisel	October	200 HP Crawler	Chisel - Heavy Duty 16'			
Landplane Fields 2X	October	200 HP Crawler	Triplane - 16'			
Laser Level (1 In 10 Years)	October			Custom	0.10	Acre
List Beds	November	90 HP 2WD Tractor	Lister - 6 Row			
Weed Control - Fallow Herbicide	January	90 HP 2WD Tractor	Cultivator – 6 Row	Roundup	2.00	Pint
			Saddle Tank - 300 Gal			
Weed Control - Preplant Herbicide	April	90 HP 2WD Tractor	Cultivator – 6 Row	Treflan HFP	1.50	Pint
			Saddle Tank - 300 Gal			
Plant Sunflowers & Apply Fertilizer	April	90 HP 2WD Tractor	Planter - 6 Row	Sunflower Seed	3.00	Lb
			Saddle Tank - 300 Gal	8-24-6	15.00	Gal
Open Ditch - 2X	May	200 HP Crawler	Ditcher - V			
	June	200 HP Crawler	Ditcher - V			
Irrigate - 6X	May	Labor		Water	4.50	AcIn
	June	Labor		Water	4.50	AcIn
	July	Labor		Water	10.00	AcIn
	August	Labor		Water	10.00	AcIn
Close Ditch - 2X	May	90 HP 2WD Tractor	Rear Blade - 8'			
	August	90 HP 2WD Tractor	Rear Blade - 8'			
Cultivate & Apply 80 Lbs of N	May	90 HP 2WD Tractor	Cultivator – 6 Row	UN-32	80.00	Lb N
Pollinate Sunflowers	June			Bee Hives	1.50	Hive
Insect Control - Head Moths	July			Asana XL	5.80	Oz
- 75% of Acreage				Air Application	1.00	Acre
Knock Down Males 25% of Acreage	August	90 HP 2WD Tractor	Mower - Flail 5'			
Defoliate 75% of Acreage 2X	August			Sodium Chlorate	0.38	Gal
				Air Application	0.50	Acre
	September			Sodium Chlorate	0.37	Gal
				Air Application	0.50	Acre
Harvest	August	Combine w/No Header	Borrowed Header			
	September	Combine w/No Header	Borrowed Header			
Haul	August			Hauling		
	September			Hauling		
Postharvest - Disc Stubble	September	200 HP Crawler	Disc - Stubble 16'			
Pickup Truck Use	Annual	Pickup 1/2 Ton				
		Pickup 3/4 Ton				
ATV	Annual	ATV				