

# Updating Cost and Return Studies for California Prunes

Brittney Goodrich

Assistant Cooperative Extension Specialist

2023 California Prune Research Conference

December 13, 2023

**UC DAVIS**  
AGRICULTURAL AND RESOURCE ECONOMICS

**UC**  
**CE** | UNIVERSITY OF CALIFORNIA  
Agriculture and Natural Resources | Cooperative Extension

# Cost Studies Team



Brittney Goodrich  
Assistant Professor of Cooperative Extension  
Dept. of Agricultural and Resource  
Economics [bkgoodrich@ucdavis.edu](mailto:bkgoodrich@ucdavis.edu)



Jeremy Murdock  
Staff Research Associate  
530-752-4651  
[jmmurdock@ucdavis.edu](mailto:jmmurdock@ucdavis.edu)

Paul Long  
Staff Research Associate  
530-752-4651  
[pmlong@ucdavis.edu](mailto:pmlong@ucdavis.edu)

Laura Tourte  
Farm Management Advisor-Emeritus and  
Temporary Staff Research Associate  
[ljtourte@ucanr.edu](mailto:ljtourte@ucanr.edu)



Donald Stewart  
Retired Staff Research Associate  
[destewart@ucdavis.edu](mailto:destewart@ucdavis.edu)

# Cost studies website: <https://coststudies.ucdavis.edu/>

Home > Current Studies


**Current Cost and Return Studies**

Cost and return studies for fruit, vegetable, field, tree and vine crops, and animal commodities are available. To view the studies you may need to [download Adobe Reader](#) for free.

Join our mailing list to receive notice of new cost study releases. To subscribe, send email to [cost\\_studies-subscribe@primal.ucdavis.edu](mailto:cost_studies-subscribe@primal.ucdavis.edu). To unsubscribe, send email to [cost\\_studies-unsubscribe@primal.ucdavis.edu](mailto:cost_studies-unsubscribe@primal.ucdavis.edu).

**Filter Current Studies by Commodity, Location, or Year:**

Commodity:  Region:  County:  Year:

 [Filter current studies using the map of California](#)

Commodity	Region	County	Year	Production Conditions
<a href="#">Alfalfa [pdf]</a>	Sacramento Valley, San Joaquin Valley North	<a href="#">see map</a>	2020	Establish and produce; flood irrigation
<a href="#">Alfalfa [pdf]</a>	Intermountain	Siskiyou	2020	Establishment and production, Scott Valley - Mixed Irrigation
<a href="#">Alfalfa [pdf]</a>	San Joaquin Valley South, Sacramento Valley, San Joaquin Valley North, Intermountain	<a href="#">see map</a>	2020	Organic, Establish and Production, Flood Irrigation
<a href="#">Alfalfa [pdf]</a>	San Joaquin Valley South	Tulare	2016	50 acre study; Small #125 bales, custom harvested
<a href="#">Alfalfa [pdf]</a>	San Joaquin Valley South	Tulare	2016	300 acre study; #1300 bales, custom & grower harvested
<a href="#">Alfalfa [pdf]</a>	Sacramento Valley - Northern Delta	<a href="#">see map</a>	2014	Sub-surface drip irrigation
<a href="#">Almonds [pdf]</a>	San Joaquin Valley North	<a href="#">see map</a>	2019	Establish and Produce Almonds, Micro-Sprinkler Irrigation
<a href="#">Almonds [pdf]</a>	San Joaquin Valley South	<a href="#">see map</a>	2019	Establish and Produce Almonds, Double-line Drip Irrigation
<a href="#">Almonds [pdf]</a>	Sacramento Valley	<a href="#">see map</a>	2019	Establish and Produce Almonds, Micro-Sprinkler Irrigation
<a href="#">Almonds [pdf]</a>	San Joaquin Valley North	<a href="#">see map</a>	2016	Organic, solid set sprinkler irrigation
<a href="#">Apples [pdf]</a>	Central Coast	Santa Cruz	2014	Various varieties, organic
<a href="#">Apples [pdf]</a>	Central Coast	Santa Cruz	2014	Various varieties, conventional
<a href="#">Avocados [pdf]</a>	South Coast	San Diego	2020	High Density Planting
<a href="#">Beans [pdf]</a>	Sacramento Valley, San Joaquin Valley North	<a href="#">see map</a>	2018	Garbanzo (Chickpeas), Sub-surface drip irrigation, fall planted
<a href="#">Beans [pdf]</a>	San Joaquin Valley South	<a href="#">see map</a>	2018	Garbanzo (Chickpeas), Sub-surface drip irrigation, winter planted



Scan with  
smartphone camera  
to visit cost studies  
website

## Cost and Return Studies: The Process

- Meetings with UCCE advisors, specialists, growers, and UC ARE research staff to discuss production operations
  - Timing and materials for operations, custom services, etc.
- Define hypothetical farm
  - Use a “Typical, Well Managed” farm based on Best Management Practices for that region
- Interest rates, fuel costs, material costs, hourly wages, payroll overhead, and land price are updated
- Narrative section is written in collaboration with UCCE advisors and specialists
- Data is entered into Budget Planner Computer Program
  - Calculates cost and return totals and summary data
- Drafts exchanged with advisors, specialists and others for review

## Cost studies directly impact California's agricultural producers

- Cost studies are used by:
  - USDA RMA to determine crop insurance policies (premiums, indemnities, etc.)
  - USDA NRCS to determine amounts to pay growers for conservation programs, e.g., EQIP
  - USDA FSA to determine payment amounts for disaster programs, loans, etc.
  - Lenders to determine whether loans should be approved
  - Researchers to conduct research, provide policy recommendations, assess the economic viability of new practices, etc.
  - The list goes on and on...

## Current Status of Prune Cost and Returns Studies

- 2022 Sacramento Valley:
  - Funded by CA Prune Board
  - Published online in April 2023
  - Excel version available
- 2023 Southern San Joaquin Valley:
  - Funded through USDA Risk Management Agency contract
  - Draft undergoing final reviews-will be published in January 2024
  - Excel version available shortly after posting
  - Last SJV Prune study: 1997

# Cost Study Downloads

## 2023 Totals:

Downloads: 35,063

Users: 17,004

## 2023 Studies

---

Commodity	Downloads	Users
Apples	103	94
Broccoli	310	256
Lettuce	518	402
Table Olives	323	235
Processing Tomatoes	641	486
Sac Valley Prunes	219	157

---



# Draft Results

## 2023 Southern San Joaquin Valley Prunes French Variety



## 2023 San Joaquin Valley Prune Study Assumptions

- 40 Acres
- Planting 151 trees per acre (18'x16')
  - 'Improved French' on Krymsk-86 rootstock
- Flood irrigation
- Life of orchard at planting: 25 years
- Production year yield: 9 green/3 dry tons per acre
  - Cost of drying 9 green tons: \$1860
- Price: \$2,200 per dry ton
- Labor costs:
  - Equipment operator: \$25.38/hour
  - Non-equipment: \$22.48/hour
- Interest rates:
  - Operating: 8.5%
  - Long-term: 7%

# First Year of Establishment

	Year:	1st
	Dry Tons Per Acre:	0
<b>Pre-Planting Costs:</b>		
Orchard Removal/Grind/Spread		1,500
Rip, Disk, Float		600
Fumigate: Telone II (Full)		1,800
Build Berms		79
<b>TOTAL PRE-PLANTING COSTS</b>		<b>3,979</b>
<b>Planting Costs:</b>		
Layout Orchard: Dig, Plant, Wrap, Paint		485
Trees: 151 Per Acre, M-40 (2% replant in 2nd year)		1,661
Weeds: Strip Spray post-planting (Roundup)		22
<b>TOTAL PLANTING COSTS</b>		<b>2,168</b>

## Total Establishment Costs

- Pre-plant and planting costs
- Accumulated net cash costs for non-bearing years (Years 1-4)
- 2023 Total Establishment Costs: \$14,832/acre
  - Amortize over rest of useful life of orchard (21 years) at 7% interest
  - Annual establishment costs: \$1,369 /acre

## Sac Valley and SJV Comparison-Operating Costs

	2022 Sac Valley			2023 SJV			Difference (Sac-SJV)
	Qty/Acre	Unit	\$/Unit \$/Acre	Qty/Acre	Unit Cost/Unit \$/Acre		
<b>TOTAL GROSS RETURNS</b>	3.5Ton	2000	7,000	3Ton	2200	6,600	6%
<b>OPERATING COSTS</b>							
Herbicide			98			190	-48%
Insecticide			96			41	134%
Fungicide			122			69	77%
Rodenticide			17			150	-89%
Fertilizer			449			447	0%
Pollination Fee	1 Hive	30	30			0	
Water - Pumped	30.11AcIn	16.67	502	42.1AcIn	12.5	532	-6%
Pruning and Thinning (Custom)			451			600	-25%
Harvest (Shake, Size, Haul and Dry)			2414			2391	1%
Cal Prune Board Assessment			151			130	16%
PCA/CCA & Custom Application			30			320	-91%
Labor			388			251	55%
Machinery			189			75	152%
Other			31			25	24%
Interest on Operating Capital	at 7.00%		70	at 8.5%		98	-29%
<b>TOTAL OPERATING COSTS/ACRE</b>			5,038			5,319	-5%
<b>TOTAL OPERATING COSTS/TON</b>			1,439			1,773	-20%
<b>NET RETURNS ABOVE OPERATING COSTS</b>			1,962			1,281	53%

## SJV Cash Overhead

**Cash overhead:** various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation.

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>CASH OVERHEAD COSTS</b>					
Liability Insurance				16	
Office Expense				100	
Sanitation Fee				9	
Regulatory Fees				20	
Crop Insurance (65% Coverage)				114	
Property Taxes				311	
Property Insurance				22	
Investment Repairs				138	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				<b>730</b>	
<b>TOTAL CASH OVERHEAD COSTS/TON</b>				<b>243</b>	

## SJV Non-cash Overhead

**Non-cash overhead:** Capital recovery cost for equipment and other farm investment (depreciation and interest)

---

### NON-CASH OVERHEAD COSTS (Capital Recovery)

Fuel Storage Tanks & Pumps	22
Well/Pumps/Filters	501
Land-Prunes	1,400
Shop/Field Tools	35
Orchard Establishment	1,369
Pressure Chamber Instrument	4
Equipment	42
<b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b>	<b>3,373</b>
<b>TOTAL NON-CASH OVERHEAD COSTS/TON</b>	<b>1,124</b>

---

## SJV Net Returns Per Acre

Per Acre	2023 SJV	
	Value	Net Returns
Gross Returns	\$6,600	
Operating Costs	\$5,319	
Above Operating Costs		\$ 1,281
Cash Overhead Costs	\$ 730	
Above Cash Costs		\$ 551
Non-Cash Overhead Costs	\$3,373	
Total Costs	\$9,421	
Above Total Costs		\$ (2,822)

# SJV Ranging Analysis

## Net Returns Per Acre Above Total Costs

PRICE (\$/ton)	YIELD (ton/acre)						
	1.50	2.00	2.50	3.00	3.50	4.00	4.50
Dried Plums							
1600.00	-5,752	-5,381	-4,992	-4,621	-4,250	-3,861	-3,490
1800.00	-5,452	-4,981	-4,492	-4,021	-3,550	-3,061	-2,590
2000.00	-5,152	-4,581	-3,992	-3,421	-2,850	-2,261	-1,690
2200.00	-4,852	-4,181	-3,492	-2,821	-2,150	-1,461	-790
2400.00	-4,552	-3,781	-2,992	-2,221	-1,450	-661	110
2600.00	-4,252	-3,381	-2,492	-1,621	-750	139	1,010
2800.00	-3,952	-2,981	-1,992	-1,021	-50	939	1,910





# Excel Revenues and Operating Costs

Revenues																		
	Yield (Quantity/Acre)	Unit	Price (\$/Unit)		Total Revenue (\$/Acre)													
	3.5 Tons		2000		7,000													
Cash and Labor Costs per Acre																		
Operation	Labor Cost	Fuel Costs	Lube & Repairs	Material Cost	Custom/Rent	Total Annual Cost	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Cultural:</b>																		
Irrigation Operation	67	0	0	500	0	567	0.00	0.00	0.00	2.86	4.38	5.98	6.79	5.71	4.29	0.00	0.00	0.00
Well Test/Water Analysis	0	0	0	0	6	6		6										
Pruning & Sucker (Alt. Years)	0	0	0	0	378	378		1										
Prune: Top Mechanical (Alt. Years)	0	0	0	0	30	30		1										
Brush Disposal	13	10	5	0	0	28		1										
Disease: Cytosporia/BOT Canker	13	10	5	37	0	65		1										
Insects/Disease: Aphids/Mites/BO	8	6	3	23	0	40		1										
Disease: Green tip/Brot/PTB & Zinc	16	12	5	44	0	77			1									
Disease: Bloom/Brot/Scab/PTB	16	12	5	49	0	82			1									
Pollinate:Hives	0	0	0	30	0	30			1									
Vertebrate Pests: (bait) 5x	13	0	0	17	0	30			1		1	1			1	1		
Fertigate: (UAN 32) 3x	0	0	0	146	0	146				1	1	1						
Fertigate: Potassium 3x	0	0	0	294	0	294				1	1	1						
Weeds: Mow Middle 5x	29	22	10	0	0	61			1		1	1	1	1				
Thin Fruit: Shake Trees (Alt. Years)	0	0	0	0	43	43					1							
Weeds: Strip Spray Summer	8	1	1	24	0	34					1							
Disease: Rust (Sulfur) (Alt. Years)	16	12	5	12	0	45				1								
Pressure Chamber Monitoring	0	0	0	0	15	15						1						
Insect Mites (Alt. Years)	8	6	3	19	0	36						1						
Leaf Analysis (1/40 ac)	0	0	0	0	4	4							1					
Disease: Fruit BR (1X5 Yrs.)	4	3	1	40	0	48								1				
Vetebrate Pests: Golpher Trapping	30	0	0	0	0	30										1		
Irrigate: Acid Flush	6	0	0	7	0	13										1		
Weeds: Strip Spray Dormant	10	1	1	74	0	86												1
Insect: Aphid (Alt. Years)	8	6	3	3	0	20												1
Pickup Truck Use	47	20	7	0	0	74		1	1	1	1	1	1	1	1	1	1	1
ATV Use	63	7	2	0	0	72		1	1	1	1	1	1	1	1	1	1	1
PCA/CCA Services	0	0	0	0	30	30										1		

Inputs:

- Expected Revenues
  - Yield
  - Price
- Operations
  - Labor
  - Fuel
  - Lube, Repairs
  - Materials
  - Custom
- Month when operation takes place

# Excel Cash Overhead

CASH OVERHEAD:	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Liability Insurance	7		1									
Office Expense	100	1	1	1	1	1	1	1	1	1	1	1
Sanitation Fee	9								1			
Property Taxes	301		1			1						
Property Insurance	26		1			1						
Investment Repairs	56	1	1	1	1	1	1	1	1	1	1	1
<i>Additional Operation</i>												
<i>Additional Operation</i>												
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>499</b>											
<b>TOTAL CASH COSTS/ACRE</b>	<b>5,537</b>											

# Excel Investments

INPUT TABLE

INPUT TABLE											
<b>No. of Total Farm Producing Acres</b>		100									
<b>Interest on Operating Capital (Short- Term)</b>		7.00%									
<b>Capital Recovery Interest Rate (Long-Term)</b>		6.50%									
<b>Select Harvest Month</b>		8									
Description	Price	Years Life	Salvage Value	Capital Recovery Factor	Capital Recovery	Producing Acres	Other Acres^	Acres^	Capital Recovery Per Acre		
<b>INVESTMENT</b>											
Fuel Storage Tanks & Pumps	10,975	30	768	0.08	832	100	0		8		
Well/Pumps/Filters - 100 acres	248,800	30	0	0.08	19,052	100	0		191		
Land - Prunes	2,000,000	25	2,000,000	0.08	130,000	100	0		1,300		
Shop/Field Tools	15,000	20	1,050	0.09	1,324	100	0		13		
Orchard Establishment	1,667,100	16	0	0.10	170,674	100	0		1,707		
Pressure Chamber Instrument	1,000	20	112	0.09	142	100	0		1		
<i>Additional Investment</i>				#DIV/0!	#DIV/0!	100			0		
<b>TOTAL INVESTMENT</b>	<b>3,943,475</b>		<b>2,001,930</b>		<b>322,034</b>				<b>3,220</b>		

^Other Acres includes include acres that can be allocated to the rest of the farm. For example, if a specific investment serves multiple crops, enter additional crop acreage under Other Acres.

- Inputs:
- Price
  - Years useful life
  - Interest rates
  - Salvage value
  - If used on other acres

# Excel Equipment

Description	Price	Yrs Life	Salvage Value	Capital Recovery Factor	Capital Recovery	Capital Recovery Per Acre	60% of Cost*	Total Hours	Crop Hours	Capital Recovery Per Crop
<b>EQUIPMENT</b>										
75 HP 4WD Tractor	78,450	15	15,273	0.11	7,712	77	46.271	800	456	26
ATV 4WD	9,350	6	3,855	0.21	1,386	14	8.314	333	258	6
Mower - Flail 16'	13,900	10	2,458	0.14	1,751	18	10.508	200	134	7
Air Blast - PTO 500 Gal	32,000	6	9,225	0.21	5,304	53	31.825	330	281	27
Weed Sprayer 100 Gal	3,400	10	601	0.14	428	4	2.5705	150	58	1
Pickup Truck 1/2 Ton	35,000	8	12,215	0.16	4,536	45	27.217	250	150	16
Forklift	42,500	15	2,100	0.11	4,433	44	26.599	200	42	6
<i>Insert Equipment</i>				#DIV/0!	#DIV/0!	#####	#####	100	100	#####
<i>Insert Equipment</i>				#DIV/0!	#DIV/0!	#####	#####	100	100	#####
<b>TOTAL</b>	<b>214,600</b>		<b>45,727</b>		<b>25,551</b>					<b>90</b>
<b>EQUIPMENT (60% of Cost)*</b>	<b>128,760</b>		<b>27,436</b>							

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

## Inputs:

- Price
- Years useful life
- Salvage value
- Interest rates
- Annual hours used
  - Prunes specifically
  - Total

# Excel Outputs

UC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS AND UC COOPERATIVE EXTENSION						
Sacramento Valley Prunes						
2022						
	Quantity/Acre	Unit	Price/Unit	Total Returns		
GROSS RETURNS						
Dried Plums	3.5	Tons	2000		7,000	
TOTAL GROSS RETURNS					7,000	
Cash and Labor Costs per Acre						
Operation	Labor Cost	Fuel Costs	Lube & Repairs	Material Cost	Custom/Rent	Total Annual Cost
Cultural:						
Irrigation Operation	67	0	0	500	0	567
Well Test/Water Analysis	0	0	0	0	6	6
Pruning & Sucker (Alt. Years)	0	0	0	0	378	378
Prune: Top Mechanical (Alt. Years)	0	0	0	0	30	30
Brush Disposal	13	10	5	0	0	28
Disease: Cytosporia/BOT Canker	13	10	5	37	0	65
Insects/Disease: Aphids/Mites/BO	8	6	3	23	0	40
Disease: Green tip/Brot/PTB & Zinc	16	12	5	44	0	77
Disease: Bloom/Brot/Scab/PTB	16	12	5	49	0	82
Pollinate:Hives	0	0	0	30	0	30
Vertebrate Pests: (bait) 5x	13	0	0	17	0	30
Fertigate: (UAN 32) 3x	0	0	0	146	0	146
Fertigate: Potassium 3x	0	0	0	294	0	294
Weeds: Mow Middle 5x	29	22	10	0	0	61
Thin Fruit: Shake Trees (Alt. Years)	0	0	0	0	43	43
Weeds: Strip Spray Summer	8	1	1	24	0	34
Disease: Rust (Sulfur) (Alt. Years)	16	12	5	12	0	45
Pressure Chamber Monitoring	0	0	0	0	15	15
Insect Mites (Alt. Years)	8	6	3	19	0	36
Leaf Analysis (1/40 ac)	0	0	0	0	4	4
Disease: Fruit BR (1X5 Yrs.)	4	3	1	40	0	48
Vertebrate Pests: Golpher Trapping	30	0	0	0	0	30
Irrigate: Acid Flush	6	0	0	7	0	13
Weeds: Strip Spray Dormant	10	1	1	74	0	86
Insect: Aphid (Alt. Years)	8	6	3	3	0	20
Pickup Truck Use	47	20	7	0	0	74
ATV Use	63	7	2	0	0	72
PCA/CCA Services	0	0	0	0	30	30
Additional Operation	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0
TOTAL CULTURAL COSTS	375	128	56	1319	506	2384

UC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS AND UC COOPERATIVE EXTENSION													
Sacramento Valley Prunes													
2022													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Beginning JAN													
Ending DEC	1	2	3	4	5	6	7	8	9	10	11	12	
Cultural:													
Irrigation Operation	0	0	0	54	83	113	128	108	81	0	0	0	567
Well Test/Water Analysis	6	0	0	0	0	0	0	0	0	0	0	0	6
Pruning & Sucker (Alt. Years)	378	0	0	0	0	0	0	0	0	0	0	0	378
Prune: Top Mechanical (Alt. Years)	30	0	0	0	0	0	0	0	0	0	0	0	30
Brush Disposal	28	0	0	0	0	0	0	0	0	0	0	0	28
Disease: Cytosporia/BOT Canker	65	0	0	0	0	0	0	0	0	0	0	0	65
Insects/Disease: Aphids/Mites/BO	40	0	0	0	0	0	0	0	0	0	0	0	40
Disease: Green tip/Brot/PTB & Zinc	0	0	77	0	0	0	0	0	0	0	0	0	77
Disease: Bloom/Brot/Scab/PTB	0	0	82	0	0	0	0	0	0	0	0	0	82
Pollinate:Hives	0	0	30	0	0	0	0	0	0	0	0	0	30
Vertebrate Pests: (bait) 5x	0	0	6	0	6	6	6	6	6	6	0	0	30
Fertigate: (UAN 32) 3x	0	0	0	49	49	49	0	0	0	0	0	0	146
Fertigate: Potassium 3x	0	0	0	98	98	98	0	0	0	0	0	0	294
Weeds: Mow Middle 5x	0	0	12	0	12	12	12	12	0	0	0	0	61
Thin Fruit: Shake Trees (Alt. Years)	0	0	0	0	43	0	0	0	0	0	0	0	43
Weeds: Strip Spray Summer	0	0	0	0	34	0	0	0	0	0	0	0	34
Disease: Rust (Sulfur) (Alt. Years)	0	0	0	0	45	0	0	0	0	0	0	0	45
Pressure Chamber Monitoring	0	0	0	0	0	15	0	0	0	0	0	0	15
Insect Mites (Alt. Years)	0	0	0	0	0	36	0	0	0	0	0	0	36
Leaf Analysis (1/40 ac)	0	0	0	0	0	0	4	0	0	0	0	0	4
Disease: Fruit BR (1X5 Yrs.)	0	0	0	0	0	0	0	48	0	0	0	0	48
Vertebrate Pests: Golpher Trapping	0	0	0	0	0	0	0	0	30	0	0	0	30
Irrigate: Acid Flush	0	0	0	0	0	0	0	0	13	0	0	0	13
Weeds: Strip Spray Dormant	0	0	0	0	0	0	0	0	0	0	86	0	86
Insect: Aphid (Alt. Years)	0	0	0	0	0	0	0	0	0	0	20	0	20
Pickup Truck Use	7	7	7	7	7	7	7	7	7	7	7	7	74
ATV Use	7	7	7	7	7	7	7	7	7	7	7	7	72
PCA/CCA Services	0	0	0	0	0	0	0	0	30	0	0	0	30
Additional Operation	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Operation	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL CULTURAL COSTS	560	13	220	214	383	342	158	181	173	19	119	0	2,384
Harvest:													

# Questions/Comments?

Brittney Goodrich

Assistant Professor of Cooperative Extension

[bkgoodrich@ucdavis.edu](mailto:bkgoodrich@ucdavis.edu)



Thanks to our sponsors!



Want more cost studies?

Scan with smartphone camera to visit:

<https://coststudies.ucdavis.edu/>

