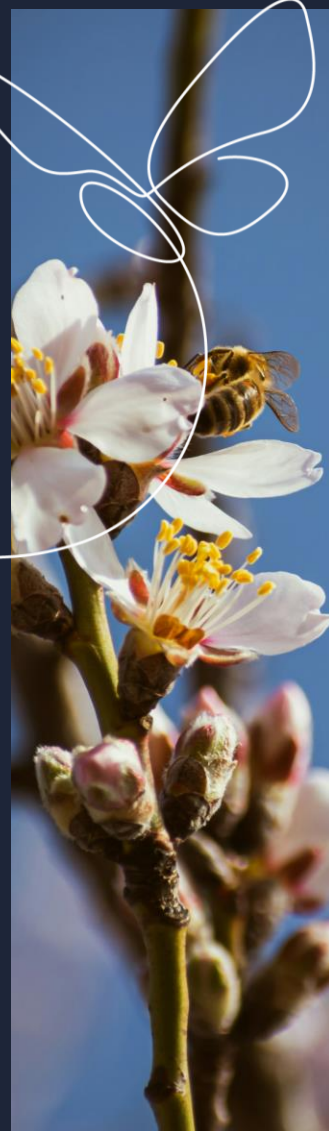




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Economics of Almond Production

Moderator

Sebastian Saa, ABC, Ag. Research

Speakers

Sullivan Grosz, Pearson Realty

Brittney Goodrich, University of Illinois Urbana-Champaign

Mel Machado, Blue Diamond Growers

Wes Asai, Pomology Consultant and Almond Grower



ALMOND BOARD OF CALIFORNIA



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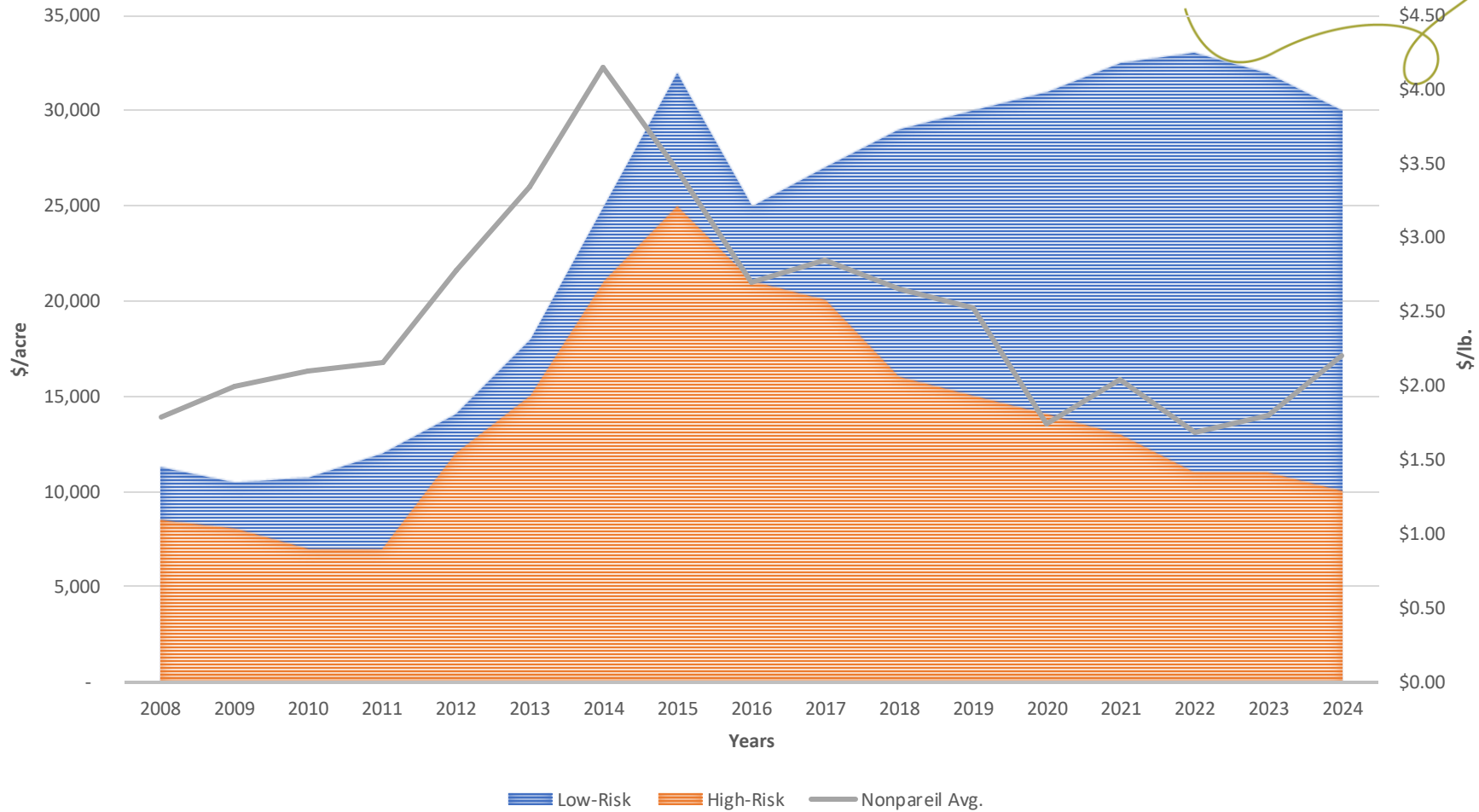
Economics of Almond Production

Speaker: Sullivan Grosz (Pearson Realty)



LOW-RISK DISTRICT VS. HIGH-RISK (GROUNDWATER ONLY)

GOOD SOILS AND OPEN LAND

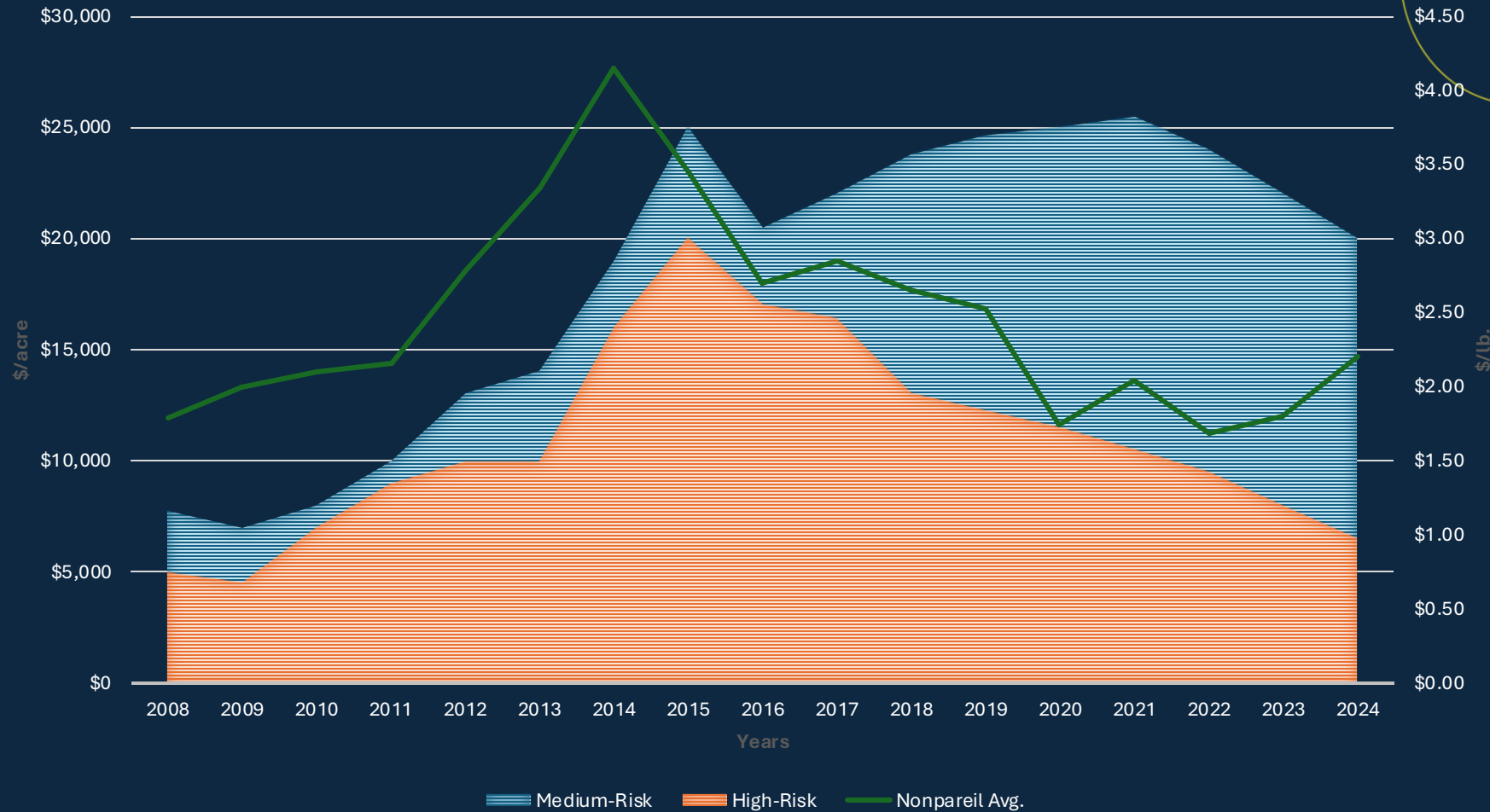


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MEDIUM-RISK DISTRICT VS. HIGH-RISK (GROUNDWATER ONLY)

GOOD SOILS AND OPEN LAND



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2024 Almond Cost and Returns Studies

Brittney Goodrich
Assistant Professor
Agricultural and Consumer Economics



**College of Agricultural,
Consumer &
Environmental Sciences**
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

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



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- Tree and Vine Loss Calculators
- Cow/Calf Budget Calculators
- Pest Management Calculators

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 Blackberries	 Blue Elderberry	 Broccoli	 Cherries	 Corn	 Cover Crops
 Grapes-Raisins	 Grapes-Table	 Grapes-Wine	 Lemons	 Lettuce	 Olive Oil

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Almonds

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Current Studies

Study	Regions	Counties	Year	Production conditions
Almonds (xism) Almonds (pdf)	Sacramento Valley		2024	Establish and Produce Almonds, Micro-Sprinkler Irrigation
Almonds (pdf) Almonds (xism)	San Joaquin Valley North		2024	Establish and produce almonds, micro-sprinkler irrigation
Almonds (pdf) Almonds (xism)	San Joaquin Valley North		2024	Establish and produce self fertile almonds, micro-sprinkler irrigation
Almonds (pdf)	San Joaquin Valley South		2019	Establish and Produce Almonds, Double-line Drip Irrigation
Almonds (pdf)	San Joaquin Valley North		2016	Organic, solid set sprinkler irrigation

Filter Current Studies

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Counties

Year

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2024

SAMPLE COSTS TO ESTABLISH AN ORCHARD AND PRODUCE ALMONDS



(Photo courtesy of Luke Milliron)

SACRAMENTO VALLEY

Micro-Sprinkler Irrigation

Franz Niederholzer
Jaime Ott
Katherine S. Jarvis-Shean
Becky Wheeler-Dykes
Curt Pierce

UCCE, Farm Advisor, Colusa and Butte Counties
UCCE, Farm Advisor, Tehama and Butte Counties
UCCE, Farm Advisor, Sacramento and Glenn Counties
UCCE, Farm Advisor, Glenn, Butte, and Yuba Counties
UCCE, Area Irrigation and Water Management, Yuba and Shasta Counties

Sudan Gyawaly
Luke Milliron
Domena Agyeman

UCCE, Area IPM Advisor, Sacramento and Butte Counties
UCCE, Farm Advisor, Butte, Colusa, and Glenn Counties
UCCE, Agriculture and Natural Resources, Glenn Counties

Jeremy Murdock

Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis

Paul Long

Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis

Sam Davison

Student Research Associate, Department of Agricultural and Resource Economics, UC Davis

Brittney Goodrich

UCCE Specialist, Assistant Professor, Department of Agricultural and Resource Economics, UC Davis

Funding Source:

This cost study was funded by the Almond Board of California.

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COOPERATIVE EXTENSION
UC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS
2024

SAMPLE COSTS TO ESTABLISH AN ORCHARD AND PRODUCE ALMONDS



SAN JOAQUIN VALLEY

Micro-Sprinkler Irrigation

Roger A. Duncan
Phoebe E. Gordon
Brent A. Holtz
Cameron Zuber
Jhalendra Rijal
Jeremy Murdock
Paul Long

UCCE Farm Advisor, Stanislaus County
UCCE Farm Advisor, Madera and Merced Counties
UCCE Farm Advisor / County Director, Merced County
UCCE Farm Advisor, Merced & Madera Counties
UCCE Farm Advisor, San Joaquin & Stanislaus Counties
Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis
Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis

Brittney Goodrich

Assistant Professor, Department of Agricultural and Resource Economics, University of Illinois Urbana-Champaign

Funding Source: This study was funded by the Almond Board of California.

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2024

SAMPLE COSTS TO ESTABLISH AN ORCHARD AND PRODUCE ALMONDS



SAN JOAQUIN VALLEY SOUTH

Double-line Drip Irrigation

David R. Haviland
Mohammad Yaghmour
Elizabeth J. Fichtner
Raymond Mireles
Mae Culumber
Jeremy Murdock

UCCE Farm Advisor, Kern County
UCCE Area Orchard Systems Advisor, Kern County
UCCE Farm Advisor, Tulare County
UCCE Farm Advisor, Fresno & Tulare Counties
UCCE Farm Advisor, Fresno County
Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis
Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis

Paul Long

Brittney Goodrich

Assistant Professor, Department of Agricultural & Consumer Economics, University of Illinois Urbana-Champaign

Funding Source: This study was funded by the Almond Board of California.

Cost Study Assumptions

Sac Valley and San Joaquin Valley-North



- 100 Acre Orchard
- Planting 130 trees per acre (16'x22')
- Assuming traditional varieties
- Micro-sprinkler irrigation
- Life of orchard at planting: 25 years
- Production year yield: 2,200 lbs per acre
- Interest rates:
 - Operating: 9%
 - Long-term: 8.25%
- Water cost: \$16.66/Acre-inch
- Labor costs (including additional 43% for taxes and worker's comp):
 - Equipment operator: \$31.46/hour
 - Non-equipment: \$28.60/hour
- Fuel:
 - Gas: \$4.40/gal
 - Diesel: \$4.80/gal
- Harvest and winter sanitation by custom operator
- Pesticides (except herbicides) applied by custom applicator

	Sac Valley			San Joaquin Valley North			Difference
	Qty/Acre Unit	\$/Unit	\$/Acre	Qty/Acre Unit	\$/Unit	\$/Acre	
TOTAL GROSS RETURNS	2200lbs	\$1.60	3,520	2200lbs	\$ 1.60	3,520	0%
OPERATING COSTS							
Herbicide			135			64	111%
Insecticide			301			308	-2%
Fungicide			77			66	17%
Rodenticide			21			17	24%
Fertilizer			403			321	26%
Pollination	2hives @	\$210	420	2hives @	\$210	420	0%
Water - Pumped	38.25ac in @	\$16.67	638	42.25ac in @	\$16.67	704	-9%
Winter Sanitation (Shake, Sweep, Mow)			174			159	9%
Harvest (Shake, Sweep, Pickup, Haul)			465			465	0%
Harvest (Hull/Shell)	2200lbs @	\$0.10	220	2200lbs @	\$0.08	176	25%
Custom Pesticide Application			160			240	-33%
Prune			92			216	-57%
Labor			405			448	-10%
Machinery			95			88	8%
Other			53			14	279%
Interest on Operating Capital		at 9%	63		at 9%	101	-38%
TOTAL OPERATING COSTS/ACRE			3,722			3,807	-2%
TOTAL OPERATING COSTS/LB			1.69			1.73	-2%
NET RETURNS ABOVE OPERATING COSTS			(202)			(287)	-30%

Comparison to 2019 Cost and Returns Studies

	Sac Valley	San Joaquin Valley North
	Net Change 2019 to 2024	
TOTAL GROSS RETURNS	-36%	-36%
OPERATING COSTS		
Herbicide	15%	-30%
Insecticide	103%	150%
Fungicide	-10%	-11%
Rodenticide	133%	143%
Fertilizer	14%	0%
Pollination	5%	5%
Water - Pumped	90%	91%
Winter Sanitation (Shake, Sweep, Mow)	-36%	-37%
Harvest (Shake, Sweep, Pickup, Haul)	77%	64%
Harvest (Hull/Shell)	43%	14%
Custom Pesticide Application	N/A	N/A
Prune	59%	69%
Labor	28%	31%
Machinery	-19%	-25%
Other	8%	0%
Interest on Operating Capital	152%	166%
TOTAL OPERATING COSTS/ACRE	38%	40%
TOTAL OPERATING COSTS/LB	38%	40%
NET RETURNS ABOVE OPERATING COSTS	-107%	-110%

Cash Overhead Expenses

Various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation



	Sacramento Valley		San Joaquin Valley North	
	2024 \$/Acre	Net Change 2019 to 2024	2024 \$/Acre	Net Change 2019 to 2024
CASH OVERHEAD COSTS				
Liability Insurance	8	0%	8	0%
Office Expense	100	67%	100	67%
Environmental/Regulatory Fees	40	300%	40	300%
Sanitation Fee	11	22%	9	0%
Miscellaneous	20	0%	20	0%
Crop Insurance (70% Coverage)	42		44	
Property Taxes	290	14%	352	16%
Property Insurance	21	-9%	25	-7%
Investment Repairs	130	37%	142	39%
TOTAL CASH OVERHEAD COSTS/ACRE	662	38%	740	37%
TOTAL CASH OVERHEAD COSTS/LB	0.30	38%	0.34	37%

Non-cash Overhead

Capital recovery cost for equipment and other farm investment (depreciation and interest)

- Opportunity cost: capital could be invested elsewhere
- Need to replace equipment over time
- Heavily influenced by interest rate



	Sacramento Valley		San Joaquin Valley North	
	2024	Net Change	2024	Net Change
NON-CASH OVERHEAD COSTS (Capital Recovery)	\$/Acre	2019 to 2024	\$/Acre	2019 to 2024
Fuel Tanks 2-1,000 gal	12	20%	12	20%
Shop/Field Tools	14	27%	14	27%
Well/Pumps/Filters 100Ac	209	386%	209	386%
Land	1,650	38%	2,063	43%
Orchard Establishment	1,489	88%	1,729	89%
Equipment	44	-17%	42	-18%
TOTAL NON-CASH OVERHEAD COSTS/ACRE	3,418	62%	4,069	65%
TOTAL NON-CASH OVERHEAD COSTS/LB	1.55	62%	1.85	65%

Breakeven Prices (\$/lb) to Cover Costs



Sacramento Valley

	2024	2019	Net Change
Operating Costs \$	1.69	\$ 1.20	41%
Operating+Cash Costs \$	1.99	\$ 1.42	40%
Total Costs \$	3.55	\$ 2.30	54%

San Joaquin Valley South-Prelim

	2024	2019	Net Change
Operating Costs \$	1.87	\$ 1.33	41%
Operating+Cash Costs \$	2.11	\$ 1.50	41%
Total Costs \$	3.46	\$ 2.30	50%

San Joaquin Valley North

	2024	2019	Net Change
Operating Costs \$	1.73	\$ 1.24	40%
Operating+Cash Costs \$	2.07	\$ 1.48	40%
Total Costs \$	3.92	\$ 2.60	50%

Organic San Joaquin Valley North-Prelim

	2024	2016	Net Change
Operating Costs \$	2.17	\$ 1.65	31%
Operating+Cash Costs \$	2.62	\$ 1.92	37%
Total Costs \$	5.06	\$ 2.43	108%

Change in Gross Domestic Product (GDP)
Implicit Price Deflator 2019 to 2024: 20.45%



Cost & Return Studies

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- Organics
- Tree and Vine Loss Calculators
- Cow/Calf Budget Calculators
- Pest Management Calculators



Almonds

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Current Studies

Study	Regions	Counties	Year	Production conditions
Almonds (xism)	Sacramento Valley		2024	Establish and Produce Almonds, Micro-Sprinkler Irrigation
Almonds (xism)	San Joaquin Valley		2024	Establish and produce almonds, micro-sprinkler irrigation
Almonds (xism)	North		2024	Establish and produce self fertile almonds, micro-sprinkler irrigation
Almonds (pdf)	San Joaquin Valley South		2019	Establish and Produce Almonds, Double-line Drip Irrigation
Almonds (pdf)	San Joaquin Valley North		2016	Organic, solid set sprinkler irrigation

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JC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS AND UC COOPERATIVE EXTENSION
SAMPLE COSTS TO PRODUCE ALMONDS SAN JOAQUIN VALLEY NORTH
2024

The yellow shaded areas are user input fields. If you choose to change them to reflect your own enterprise, total costs in blue shading on this sheet and monthly costs on the next sheet will automatically be recalculated. If you wish to add additional operations, click in a cell labeled "Additional operation", type the name of the new operation and enter costs in the appropriate columns. Note: Blue shaded cells are protected and cannot be changed.

The calendar below shows how many times each operation is performed in each month. For irrigation, it shows the number of acre-inches applied. If you choose to change these numbers to reflect your own enterprise, the monthly costs on the next sheet will automatically be recalculated. A blank cell counts as a zero.

Revenues	Yield (Quantity/Acre)	Unit	Price (\$/Unit)	Total Revenue (\$/Acre)
	2200 Lb		1.6	3,520

Operation	Cash and Labor Costs per Acre					Total Annual Cost	Calendar											
	Labor Cost	Fuel Costs	Lube & Repairs	Material Cost	Custom/ Rent		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cultural:																		
Irrigation Operation	0	0	0	700	0	700	0.00	0.00	1.00	3.25	5.25	7.25	9.00	7.75	5.50	3.00	0.00	0.00
Prune-Dormant/Tie Ropes	57	0	0	20	0	77	1											
Stack Brush	29	0	0	0	0	29		1										
Shred Brush	0	0	0	0	110	110		1										
Pollination: Bee Hives (2 per acre)	0	0	0	0	420	420		1										
Disease 2x	0	0	0	39	80	119		1		1								
Frost Protection-Irrigate	0	0	0	0	0	0		1	1									
Disease/Fertilize (Zn)	0	0	0	36	40	76			1									
Vertebrate: Gophers 2x	29	0	0	17	0	46			1	1	1	1	1		1			
Weeds: Mow Middles 6x	42	24	12	0	0	78			1	1	1	1	1	1				
Fertigate: UAN32 4x	0	0	0	124	0	124			1	1	1	1	1				1	
Irrigation labor	137	0	0	0	0	137			1									
Irrigation: Well/Water-Test/Analysis	0	0	0	0	5	5			1									
Vertebrate: Squirrels 6x	86	0	0	0	0	86			1	1	1	1			1	1		
Insects: NOW Mating Disruption	0	0	0	120	0	120				1								
Pest: Mites	0	0	0	44	40	84				1								
Fertilize: Leaf Analysis	0	0	0	0	1	1							1					
Insects: NOW 2x	0	0	0	133	80	213							1					
Insects: Ants	7	0	0	10	0	17							1					
Weeds: Broadcast Spray Pre-Harvest	8	1	0	19	0	28								1				
Fertilizer: Hull Analysis	0	0	0	0	2	2									1			

Disclaimer INTRODUCTION COSTS PER ACRE - USER INPUT COSTS PER ACRE - OUTPUT MONTHLY COSTS - OUTPUT +

Ready Accessibility: Investigate

JC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS AND UC COOPERATIVE EXTENSION
 SAMPLE COSTS TO PRODUCE ALMONDS SAN JOAQUIN VALLEY NORTH

2024

	Quantity/Acre	Unit	Price/Unit	Total Returns
GROSS RETURNS				
ALMONDS	2200	Lb	1.6	3,520
TOTAL GROSS RETURNS				3,520

Operation	Cash and Labor Costs per Acre					Total Annual Cost
	Labor Cost	Fuel Costs	Lube & Repairs	Material Cost	Custom/ Rent	
Cultural:						
Irrigation Operation	0	0	0	700	0	700
Prune-Dormant/Tie Ropes	57	0	0	20	0	77
Stack Brush	29	0	0	0	0	29
Shred Brush	0	0	0	0	110	110
Pollination: Bee Hives (2 per acre)	0	0	0	0	420	420
Disease 2x	0	0	0	39	80	119
Frost Protection-Irrigate	0	0	0	0	0	0
Disease/Fertilize (Zn)	0	0	0	36	40	76
Vertebrate: Gophers 2x	29	0	0	17	0	46
Weeds: Mow Middles 6x	42	24	12	0	0	78
Fertigate: UAN32 4x	0	0	0	124	0	124
Irrigation labor	137	0	0	0	0	137
Irrigation: Well/Water-Test/Analysis	0	0	0	0	5	5
Vertebrate: Squirrels 6x	86	0	0	0	0	86
Insects: NOW Mating Disruption	0	0	0	120	0	120
Pest: Mites	0	0	0	44	40	84
Fertilize: Leaf Analysis	0	0	0	0	1	1
Insects: NOW 2x	0	0	0	133	80	213
Insects: Ants	7	0	0	10	0	17
Weeds: Broadcast Spray Pre-Harvest	8	1	0	19	0	28
Fertilizer: Hull Analysis	0	0	0	0	2	2
Fertilize: Foliar (Boron)	9	6	3	17	0	35
Fertigate: K2SO4	0	0	0	172	0	172
Weeds: Strip Spray Dormant	8	1	0	45	0	54
Insects: NOW Winter Sanitation	5	3	1	0	150	159
Irrigation: System Flush	7	0	0	10	0	17
Pickup Truck Use	63	20	9	0	0	92
ATV Use	53	9	2	0	0	64
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	540	64	27	1506	928	3065
Harvest:						
Shake/Sweep/Pick up/Haul Nuts	0	0	0	0	465	465
Hull/Shell Nuts	0	0	0	0	176	176
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 HARVEST COSTS	0	0	0	0	641	641
Interest on operating capital				Interest rate=	9.00%	101
TOTAL OPERATING COSTS/ACRE	540	64	27	1,506	1,569	3,807
NET RETURNS ABOVE OPERATING COSTS/ACRE						-287
CASH OVERHEAD:						
Environmental/Regulatory Fees	0	0	0	0	0	40

UC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS AND UC COOPERATIVE EXTENSION
SAMPLE COSTS TO PRODUCE ALMONDS SAN JOAQUIN VALLEY NORTH
2024

Beginning JAN	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC	1	2	3	4	5	6	7	8	9	10	11	12	
Cultural:													
Irrigation Operation	0	0	17	54	88	121	150	129	92	50	0	0	700
Prune-Dormant/Tie Ropes	77	0	0	0	0	0	0	0	0	0	0	0	77
Stack Brush	0	29	0	0	0	0	0	0	0	0	0	0	29
Shred Brush	0	110	0	0	0	0	0	0	0	0	0	0	110
Pollination: Bee Hives (2 per acre)	0	420	0	0	0	0	0	0	0	0	0	0	420
Disease 2x	0	60	0	60	0	0	0	0	0	0	0	0	119
Frost Protection-Irrigate	0	0	0	0	0	0	0	0	0	0	0	0	0
Disease/Fertilize (Zn)	0	0	76	0	0	0	0	0	0	0	0	0	76
Vertebrate: Gophers 2x	0	0	23	0	0	0	0	23	0	0	0	0	46
Weeds: Mow Middles 6x	0	0	13	13	13	13	13	13	0	0	0	0	78
Fertigate: UAN32 4x	0	0	31	31	31	0	0	0	0	31	0	0	124
Irrigation labor	0	0	137	0	0	0	0	0	0	0	0	0	137
Irrigation: Well/Water-Test/Analysis	0	0	5	0	0	0	0	0	0	0	0	0	5
Vertebrate: Squirrels 6x	0	0	14	14	14	14	0	0	14	14	0	0	86
Insects: NOW Mating Disruption	0	0	0	120	0	0	0	0	0	0	0	0	120
Pest: Mites	0	0	0	0	84	0	0	0	0	0	0	0	84
Fertilize: Leaf Analysis	0	0	0	0	0	0	1	0	0	0	0	0	1
Insects: NOW 2x	0	0	0	0	0	0	213	0	0	0	0	0	213
Insects: Ants	0	0	0	0	0	0	17	0	0	0	0	0	17
Weeds: Broadcast Spray Pre-Harvest	0	0	0	0	0	0	0	28	0	0	0	0	28
Fertilizer: Hull Analysis	0	0	0	0	0	0	0	0	2	0	0	0	2
Fertilize: Foliar (Boron)	0	0	0	0	0	0	0	0	0	35	0	0	35
Fertigate: K2SO4	0	0	0	0	0	0	0	0	0	172	0	0	172
Weeds: Strip Spray Dormant	0	0	0	0	0	0	0	0	0	0	54	0	54
Insects: NOW Winter Sanitation	0	0	0	0	0	0	0	0	0	0	159	0	159
Irrigation: System Flush	0	0	0	0	0	0	0	0	0	17	0	0	17
Pickup Truck Use	8	8	8	8	8	8	8	8	8	8	8	0	92
ATV Use	6	6	6	6	6	6	6	6	6	6	6	0	64
<i>Additional Operation</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Additional Operation</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Additional Operation</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL CULTURAL COSTS	91	633	330	306	244	162	408	207	122	334	227	0	3,065
Harvest:													
Shake/Sweep/Pick up/Haul Nuts	0	0	0	0	0	0	0	0	465	0	0	0	465
Hull/Shell Nuts	0	0	0	0	0	0	0	0	176	0	0	0	176
Additional Operation	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Additional Operation</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	0	641	0	0	0	641
Interest on Operating Capital	1	5	8	10	12	13	16	18	24	-4	-2	0	101
TOTAL OPERATING COSTS/ACRE	92	638	338	316	256	176	424	225	787	329	225	0	3,807
OVERHEAD:													
Environmental/Regulatory Fees	0	0	0	0	0	0	0	0	40	0	0	0	40
Liability Insurance	1	1	1	1	1	1	1	1	1	1	1	0	8
Office Expense	9	9	9	9	9	9	9	9	9	9	9	0	100
Sanitation Fee SJV	0	0	0	0	0	0	0	0	9	0	0	0	9
Crop Insurance (70% Coverage)	0	0	0	0	0	0	0	0	44	0	0	0	44

Revenues and Operating Costs



Revenues																									
	Yield (Quantity/Acre)	Unit	Price (\$/Unit)	Total Revenue (\$/Acre)																					
	2200 Lb		1.6	3,520																					
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							
Cultural:																									
Irrigation Operation	0	0	0	700	0	700	0.00	0.00	1.00	3.25	5.25	7.25	9.00	7.75	5.50	3.00	0.00	0.00							
Prune-Dormant/Tie Ropes	57	0	0	20	0	77	1																		
Stack Brush	29	0	0	0	0	29	1																		
Shred Brush	0	0	0	0	110	110	1																		
Pollination: Bee Hives (2 per acre)	0	0	0	0	420	420	1																		
Disease 2x	0	0	0	39	80	119	1	1																	
Frost Protection-Irrigate	0	0	0	0	0	0	1	1																	
Disease/Fertilize (Zn)	0	0	0	36	40	76	1																		
Vertebrate: Gophers 2x	29	0	0	17	0	46	1																		
Weeds: Mow Middles 6x	42	24	12	0	0	78	1	1	1	1	1	1	1												
Fertigate: UAN32 4x	0	0	0	124	0	124	1	1	1																
Irrigation labor	137	0	0	0	0	137	1																		
Irrigation: Well/Water-Test/Analysis	0	0	0	0	5	5	1																		
Vertebrate: Squirrels 6x	86	0	0	0	0	86	1	1	1	1	1														
Insects: NOW Mating Disruption	0	0	0	120	0	120	1																		
Pest: Mites	0	0	0	44	40	84	1																		
Fertilize: Leaf Analysis	0	0	0	0	1	1	1																		
Insects: NOW 2x	0	0	0	133	80	213	1																		
Insects: Ants	7	0	0	10	0	17	1																		
Weeds: Broadcast Spray Pre-Harvest	8	1	0	19	0	28	1																		
Fertilizer: Hull Analysis	0	0	0	0	2	2	1																		

Inputs:

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

Equipment



96					Capital		Capital				Capital
97			Yrs	Salvage	Recovery	Capital	Recovery	60% of	Total	Crop	Recovery
98	Description	Price	Life	Value	Factor	Recovery	Per Acre	Cost*	Hours	Hours	Per Crop
99	EQUIPMENT										
100	Air-Blast PTO 500Gal	31,000	8	6,999	0.18	4,794	48	28.762	250	25	3
101	Flail Mower 16'	13,900	10	2,458	0.15	1,927	19	11.564	200	123	7
102	ATV-4WD	9,350	8	3,263	0.18	1,338	13	8.031	625	182	2
103	Pickup Truck 1/2 Ton	48,000	5	21,512	0.25	8,453	85	50.716	400	167	21
104	85HP4WD Low-Profile Tractor	79,000	15	15,380	0.12	8,815	88	52.892	1066	163	8
105	ATV Sprayer System 100 Gal	3,850	10	681	0.15	534	5	3.2028	150	40	1
106	<i>Insert Equipment</i>				#DIV/0!	#DIV/0!	#####	#####			#####
107	<i>Insert Equipment</i>				#DIV/0!	#DIV/0!	#####	#####			#####
108	<i>Insert Equipment</i>				#DIV/0!	#DIV/0!	#####	#####			#####
109	TOTAL	185,100		50,293		25,861					42
110	EQUIPMENT (60% of Cost)*	111,060		30,176							
111	*Used to reflect a mix of used and new equipment										
112											

Inputs:

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

Investments

ANNUAL INVESTMENT & EQUIPMENT COSTS TO PRODUCE ALMONDS

INSTRUCTIONS: Fill in the yellow shaded areas in the INPUT TABLE to change default values for the total number of producing acres that use these investments and for the interest rates. The purchase price, years of life, and salvage value can also be changed.

INPUT TABLE

No. of Total Farm Producing Acres		100							
Interest on Operating Capital (Short-Term)		9.00%							
Capital Recovery Interest Rate (Long-Term)		8.25%							
Select Harvest Month		9							
Description	Price	Years Life	Salvage Value	Capital Recovery Factor	Capital Recovery	Producing Acres	Other Acres^	Capital Recovery Per Acre	
Land SJV	2,625,000	30	2,625,000	0.09	216,563	100	5	2,063	
Fuel Tanks 2-1,000Gal	12,500	25	875	0.10	1,185	100	5	11	
Well/Pump Refurbish	248,775	50	0	0.08	20,921	100	0	209	
Shop/Field Tools	15,000	25	1,500	0.10	1,416	100	0	14	
Establishment Costs SJV-north	1,729,200	22	0	0.10	172,882	100	0	1,729	
Additional Investment				#DIV/0!	#DIV/0!	100	0	0	
Additional Investment				#DIV/0!	#DIV/0!	100	0	0	
TOTAL INVESTMENT	4,630,475		2,627,375		412,966			4,026	

^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

Interest Rates and Capital Recovery

74						
75	ANNUAL INVESTMENT & EQUIPMENT COSTS TO PRODUCE ALMONDS					
76	<i>INSTRUCTIONS: Fill in the yellow shaded areas in the INPUT TABLE to change</i>					
77	<i>default values for the total number of producing acres that use these investments and for the</i>					
78	<i>interest rates. The purchase price, years of life, and salvage value can also be changed.</i>					
79	INPUT TABLE					
80	No. of Total Farm Producing Acres	100				
81	Interest on Operating Capital (Short- Term)	9.00%			5.00%	
82	Capital Recovery Interest Rate (Long-Term)	5.00%				8.25%
83	Select Harvest Month	9				Capital
84			Years		Salvage	Recovery
85	Description	Price	Life		Value	Per Acre
86	INVESTMENT					
87	Land SJV	2,625,000	30		2,625,000	1,250
88	Fuel Tanks 2-1,000Gal	12,500	25		875	8
89	Well/Pump Refurbish	248,775	50		0	136
90	Shop/Field Tools	15,000	25		1,500	10
91	Establishment Costs SJV-north	1,729,200	22		0	1,314
92	<i>Additional Investment</i>					0
93	<i>Additional Investment</i>					0
94	TOTAL INVESTMENT	4,630,475			2,627,375	2,719

Capital
Recovery
Per Acre
2,063
11
209
14
1,729
0
0
4,026

Land Appreciation and Capital Recovery

74						
75	ANNUAL INVESTMENT & EQUIPMENT COSTS TO PRODUCE ALMONDS					
76	<i>INSTRUCTIONS: Fill in the yellow shaded areas in the INPUT TABLE to change</i>					
77	<i>default values for the total number of producing acres that use these investments and for the</i>					
78	<i>interest rates. The purchase price, years of life, and salvage value can also be changed.</i>					
79	<i>INPUT TABLE</i>					
80	No. of Total Farm Producing Acres	100				
81	Interest on Operating Capital (Short- Term)	9.00%				
82	Capital Recovery Interest Rate (Long-Term)	8.25%				
83	Select Harvest Month	9				
84			Years		Capital	
85	Description	Price	Life	Salvage Value	Recovery Per Acre	
86	INVESTMENT					
87	Land SJV	2,625,000	30	7,875,000	1,641	

300% appreciation

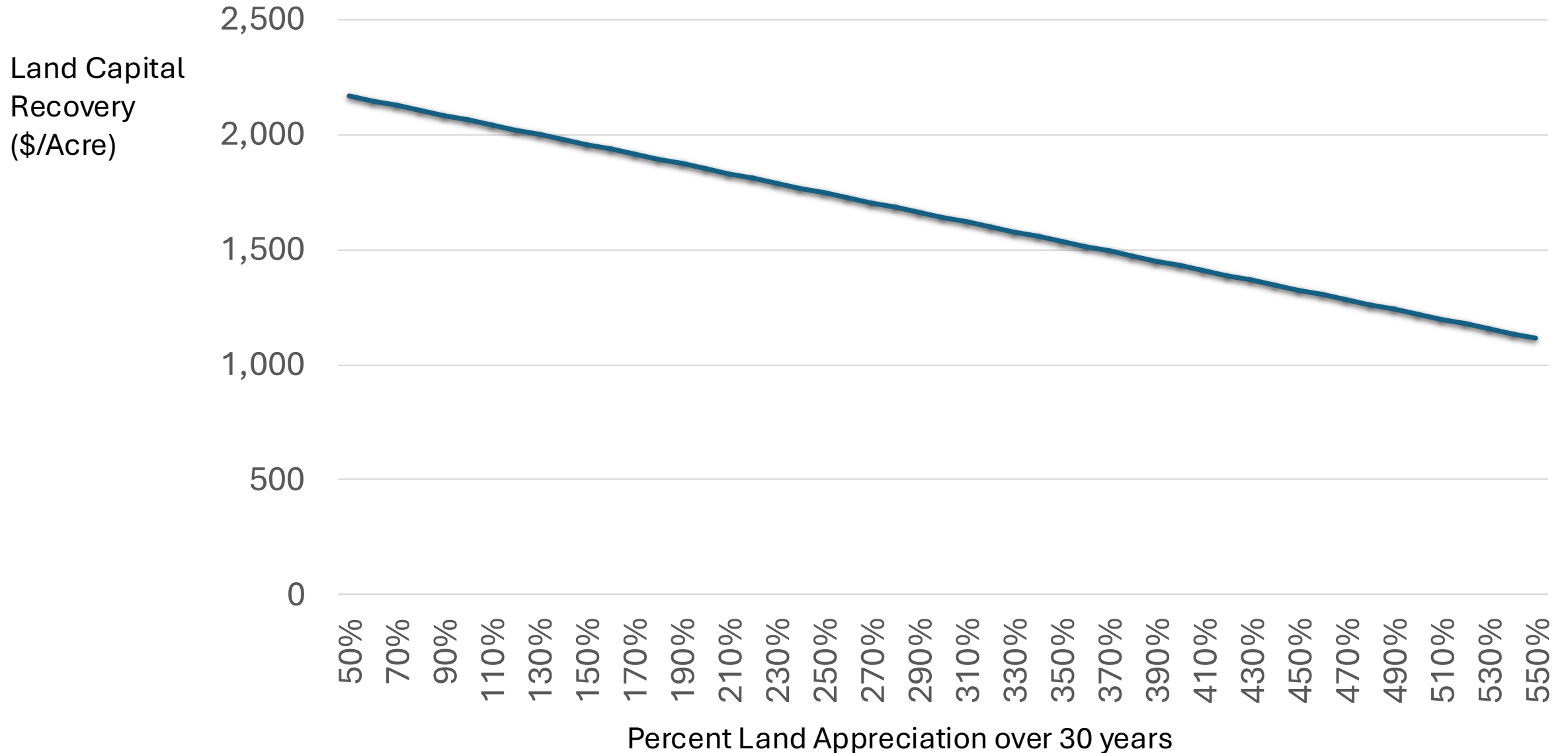


No land value appreciation

Capital
Recovery
Per Acre
2,063

- Kishore et al. (2023) found farmland sales price in CA increased by 538% between 2001-2021

Land Appreciation and Capital Recovery



Breakeven Prices (\$/lb) to Cover Costs



Sacramento Valley

	<u>2024</u>	<u>Long-Term Interest 5% and Land Appreciation 300%</u>
Operating Costs \$	1.69	\$ 1.69
Operating+Cash Costs \$	1.99	\$ 1.99
Total Costs \$	3.55	\$ 2.78

San Joaquin Valley North

	<u>2024</u>	<u>Long-Term Interest 5% and Land Appreciation 300%</u>
Operating Costs \$	1.73	\$ 1.73
Operating+Cash Costs \$	2.07	\$ 2.07
Total Costs \$	3.92	\$ 2.98



Thanks to the Almond Board of California for funding the 2024 almond cost studies!

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AGRICULTURAL AND RESOURCE ECONOMICS



ALMOND BOARD OF CALIFORNIA

Cost & Return Studies website:
<https://coststudies.ucdavis.edu/>

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ROOTED TOGETHER: THE ALMOND CONFERENCE 2024



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THE ALMOND CONFERENCE

Economics of Almond Production

Speaker: Mel Machado (Blue Diamond Growers)



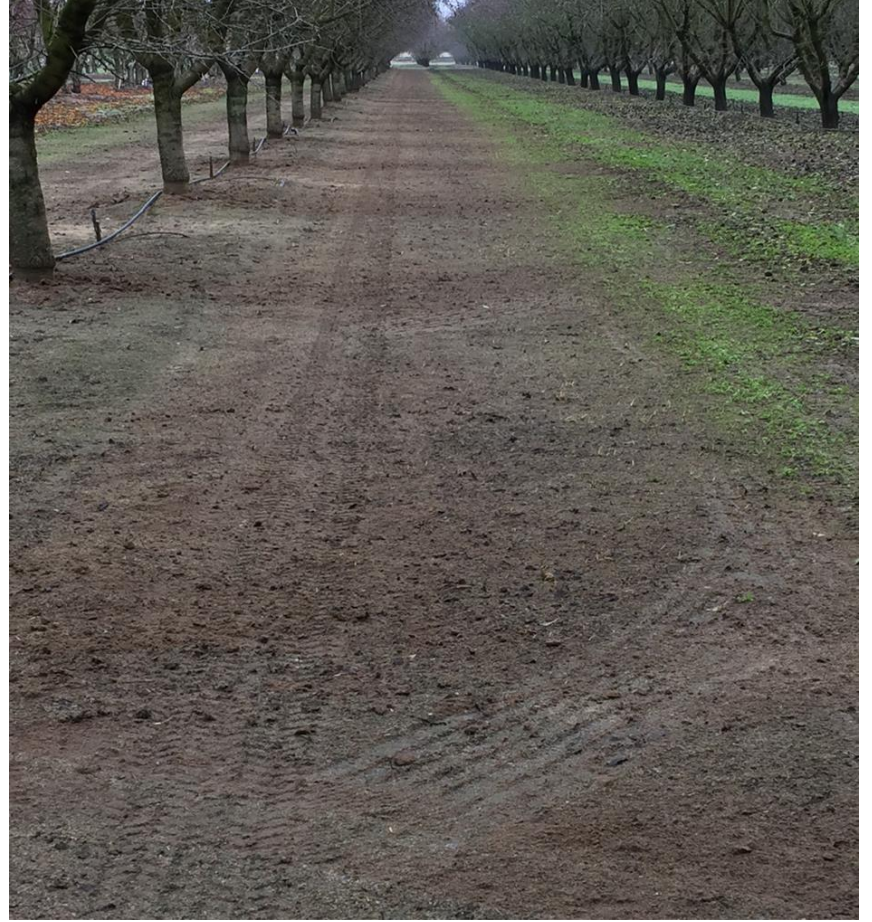


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THE ALMOND CONFERENCE

**Reducing Input Costs and
Improving Efficiency By
Adopting Production Research**

Wes Asai Pomology Consulting



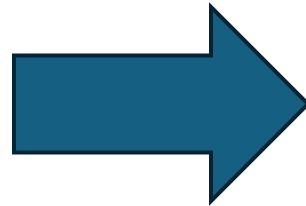






Organo-phosphates

Carbamates



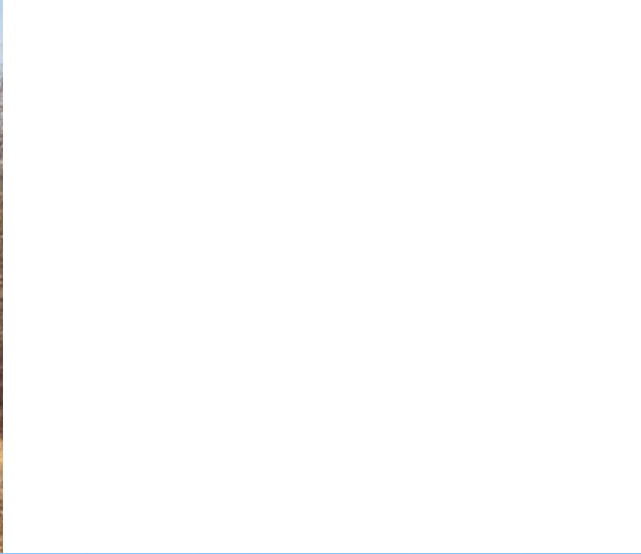
Diamides
Spinosyns
Diacylhydrazines































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Q&A



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THANK YOU

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