



Economics of Orchard Establishment and Almond Production

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ECONOMICS OF ORCHARD ESTABLISHMENT & ALMOND PRODUCTION

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Cost Studies – Data Collection Process



Contributors

- Growers and Packers
- UC Extension Cooperative Advisors and Specialists
- Industry Representatives
 - Agricultural Lenders
 - Chemical Companies
 - Equipment Manufacturers
 - Labor Contractors
 - Custom Services Providers

Cost Study Components

- Cultural Costs
- Harvest Costs
- Cash Overhead
- Non-cash Overhead

Cost Study Components – Cultural Costs

- **Cultural Costs**
 - Pruning
 - Disease and Pest Control
 - Floor Management
 - Irrigation
 - Fertilization
- Harvest Costs
- Cash Overhead
- Non-cash Overhead

Cost Study Components – Harvest Costs

- Cultural Costs
- **Harvest Costs**
 - **Shake, Sweep & Rake**
 - **Pick up and Haul**
 - **Hull and Shell Nuts**
- Cash Overhead
- Non-cash Overhead

Cost Study Components – Cash Overhead

- Cultural Costs
- Harvest Costs
- **Cash Overhead**
 - **Office Expenses**
 - **Liability Insurance**
 - **Property Taxes and Insurance**
 - **Sanitary Services**
 - **Environmental Fees**
 - **Repairs on Buildings and Irrigation System**
- Non-cash Overhead

Cost Study Components – Non-Cash Overhead

- Cultural Costs
- Harvest Costs
- Cash Overhead
- **Non-cash Overhead (Capital Recovery)**
 - **Buildings, Shop and Field Tools**
 - **Irrigation System**
 - **Fuel Tanks**
 - **Equipment**
 - **Trees**
 - **Land**

Cost Study Components - Example: Equipment

- Cultural Costs
 - **Fuel and Lube**
 - **Repairs**
- Cash Overhead
 - **Insurance**
 - **Taxes**
- Non-cash Overhead (Capital Recovery)
 - **Principle & Interest or Ownership Costs**

Cost Studies - Disclaimer

- Benchmark/Sample – not statistical average
- Specific to assumptions listed in the study:
 - Orchard size
 - Crop variety & Organic vs. Conventional
 - Outsourcing practices (i.e. custom operator harvest)
 - Pest pressures at the time
 - Environmental factors(i.e. drought).
 - Economic conditions(i.e. crop prices).

Cost Study Example

- San Joaquin Valley South – 2016
 - 16' x 22' tree spacing, 124 trees per acre
 - 100 acre orchard
 - Double Line Drip Irrigation
 - Grower Harvest
 - 23 year orchard life

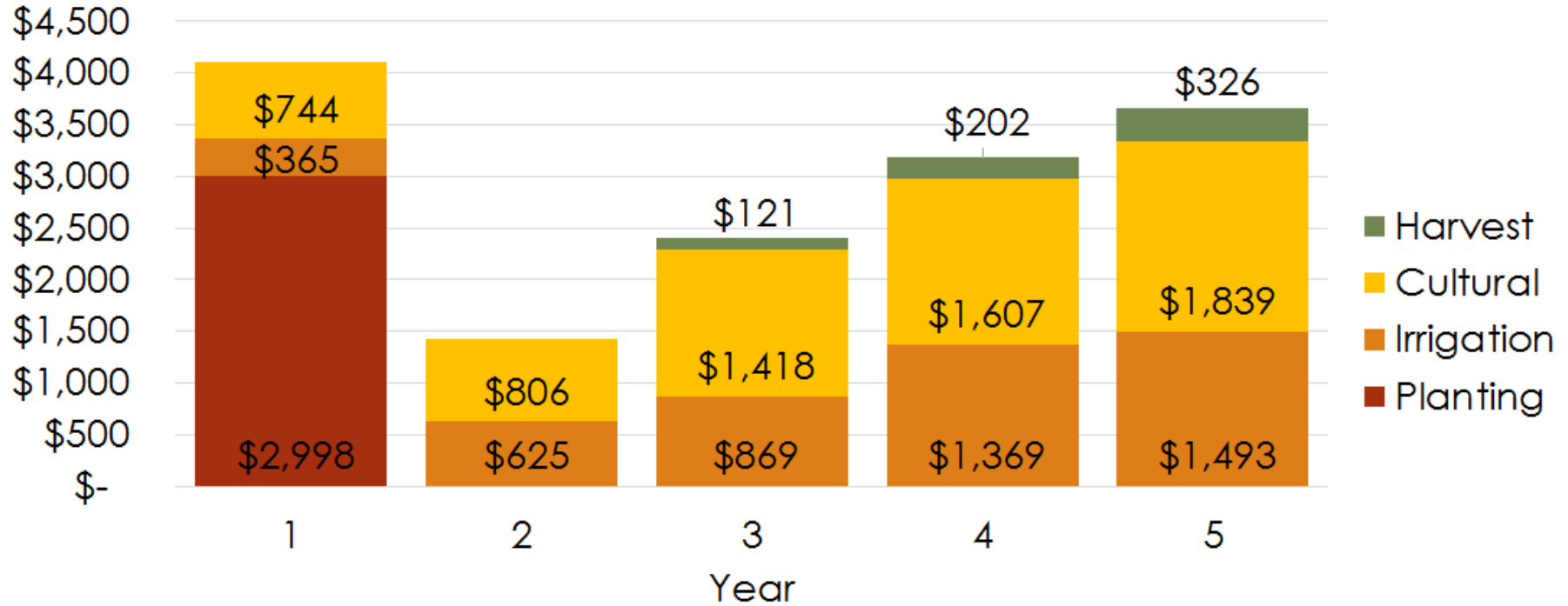
Cost Study Example –San Joaquin Valley South - 2016

- Authors:

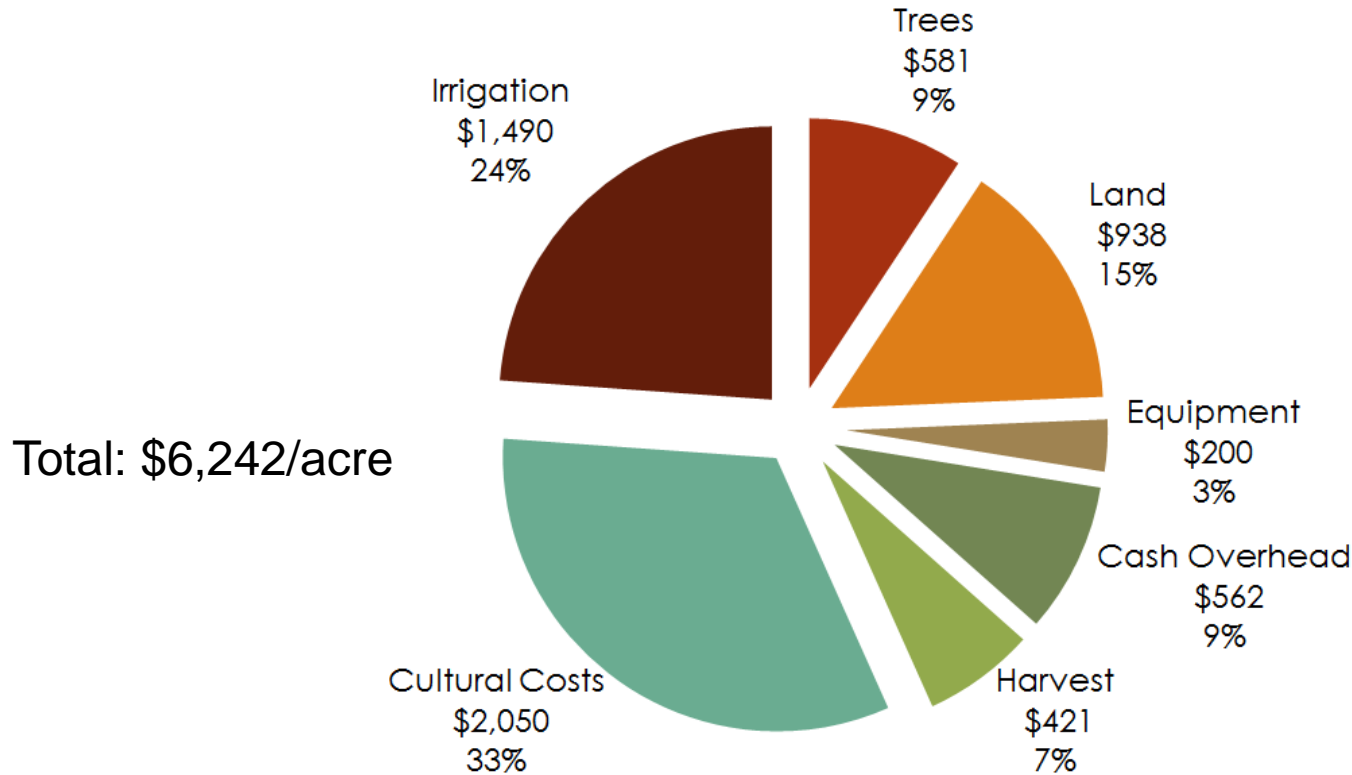
- Mohammad Yaghmour – UCCE Orchard Systems Advisor, Kern County
- David R. Haviland – UCCE Farm Advisor, Kern County
- Elizabeth J. Fichtner – UCCE Farm Advisor, Tulare County
- Blake L. Sanden- UCCE Farm Advisor, Kern County
- Mario Viveros- UCCE Farm Advisor Emeritus, Kern County
- Daniel A. Sumner- Director, UC Agricultural Issues Center,
- Donald Stewart - Research Associate, UC Agricultural Issues Center
- Christine A. Gutierrez- Research Associate, UC Agricultural Issues Center

Almond Orchard Establishment - Operating Cost per Acre

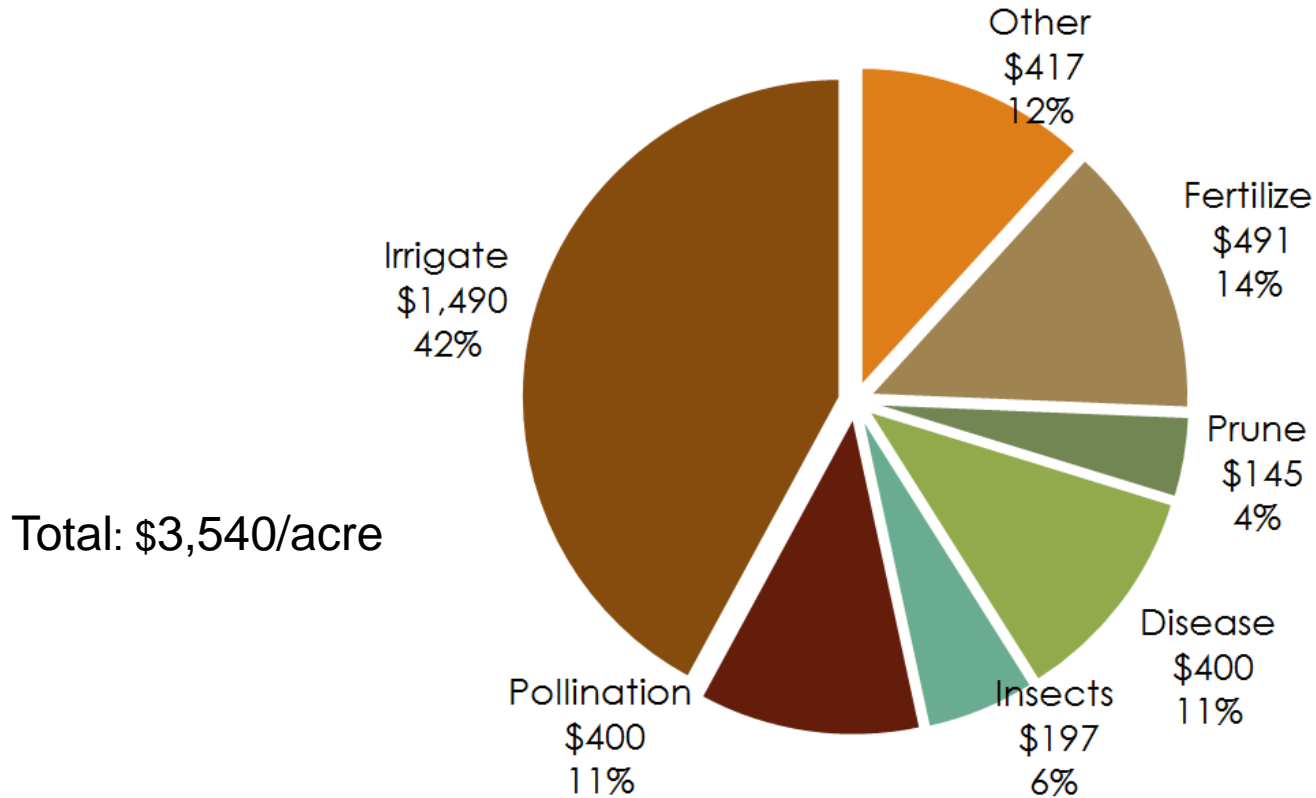
Total Investment - \$14,782



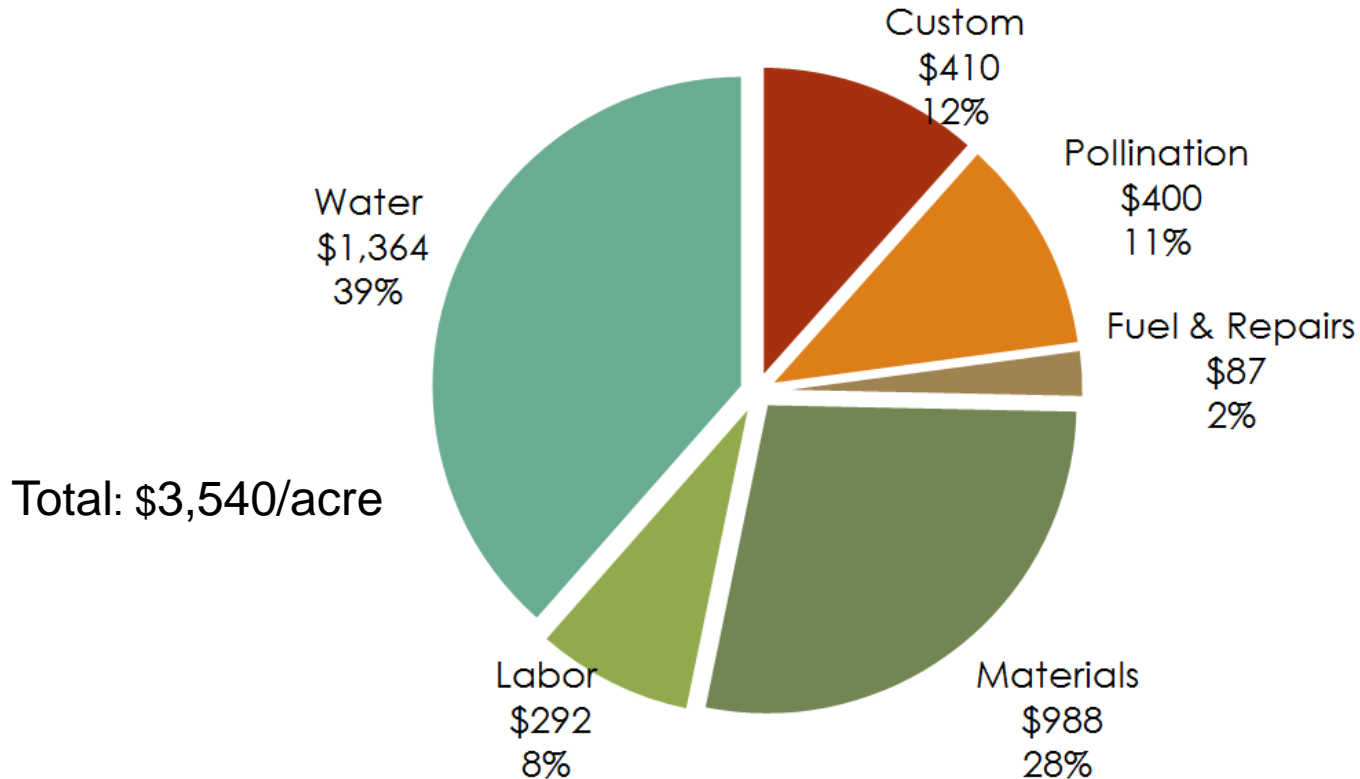
Almond Production – Total Cost per Acre



Almond Production – Cultural Costs

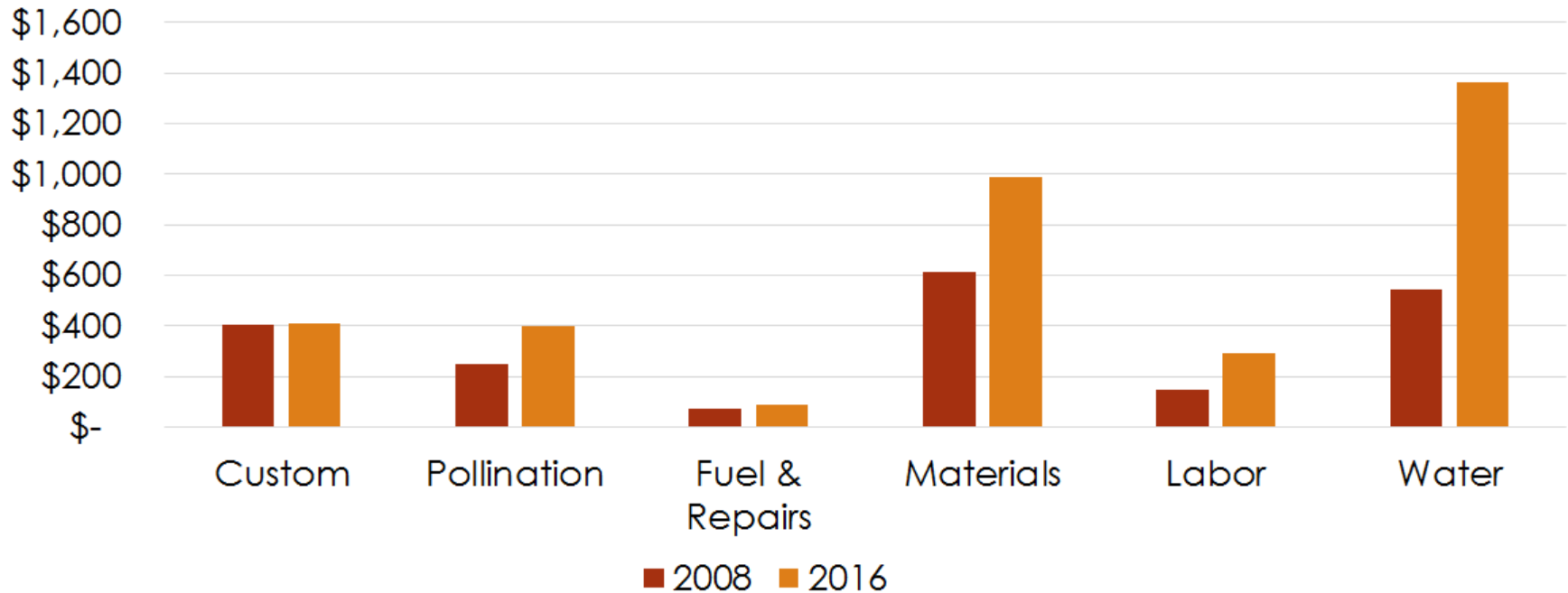


Almond Production – Cultural Costs (cont.)



Comparison of Cultural Costs – 2008 to 2016

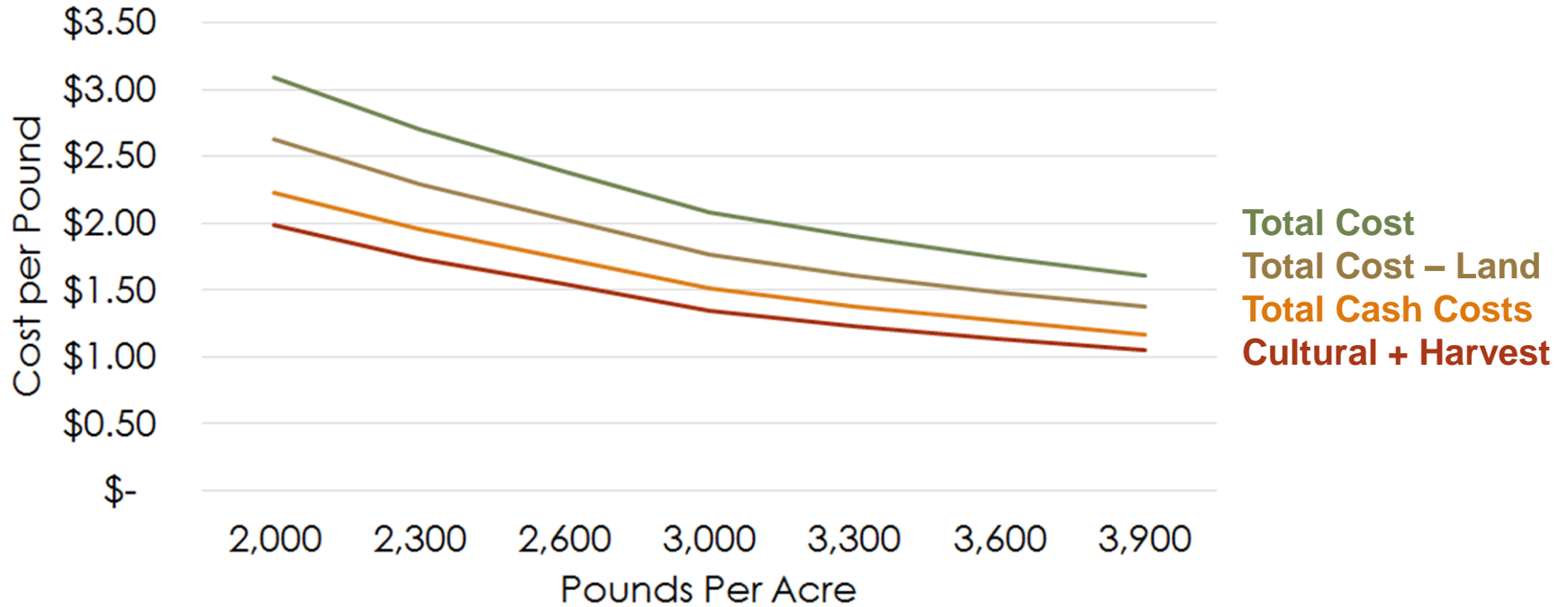
2008 (\$2,029/acre) to 2016 (\$3,540/acre)



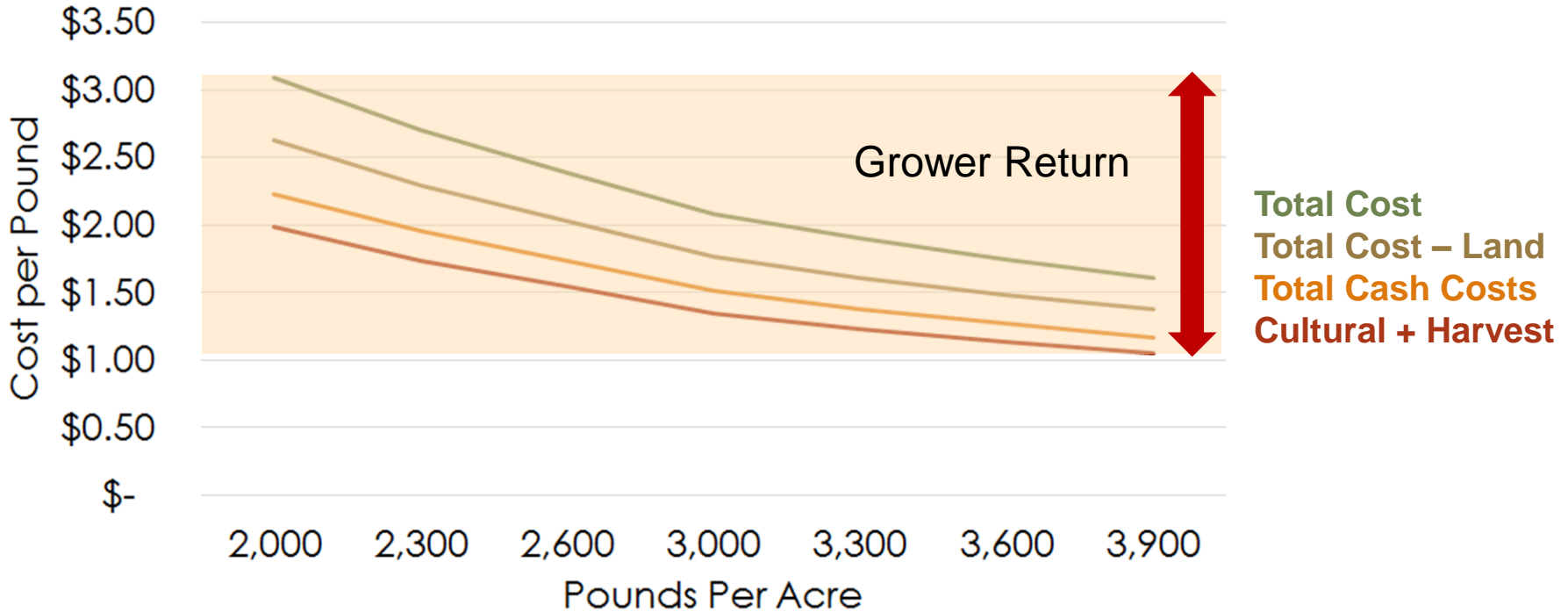
Risk Analysis - Cost per Pound at Varying Yields

- Expected Yield Range: 2,000 – 3,900 lbs. per acre
 - Yields will vary by location, grower, year, and age of orchard, among other factors.
- Expected Grower Farm Price Range: \$1.00- \$4.00/lb.
 - Prices will vary depending on market condition, almond variety and quality, among other factors.

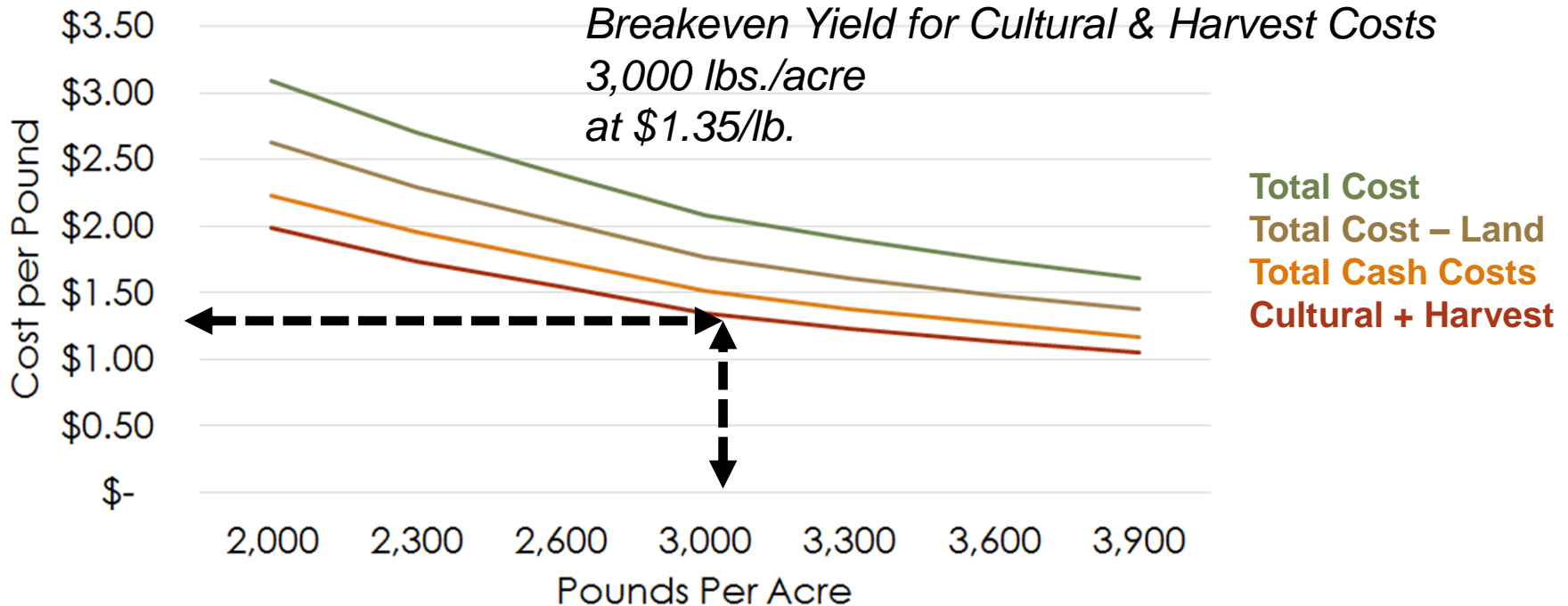
Risk Analysis – Cost per Pound at Varying Yields



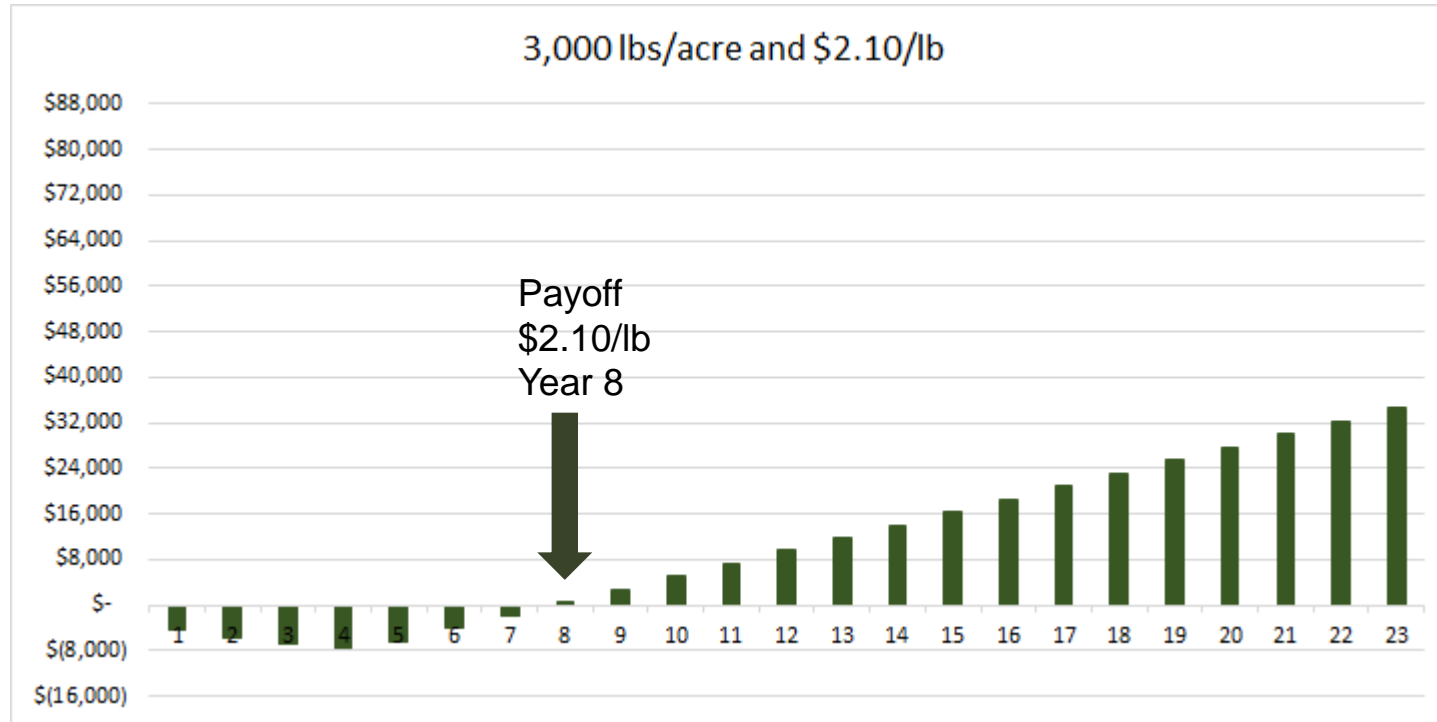
Risk Analysis – Cost per Pound at Varying Yields



Risk Analysis – Cost per Pound at Varying Yields

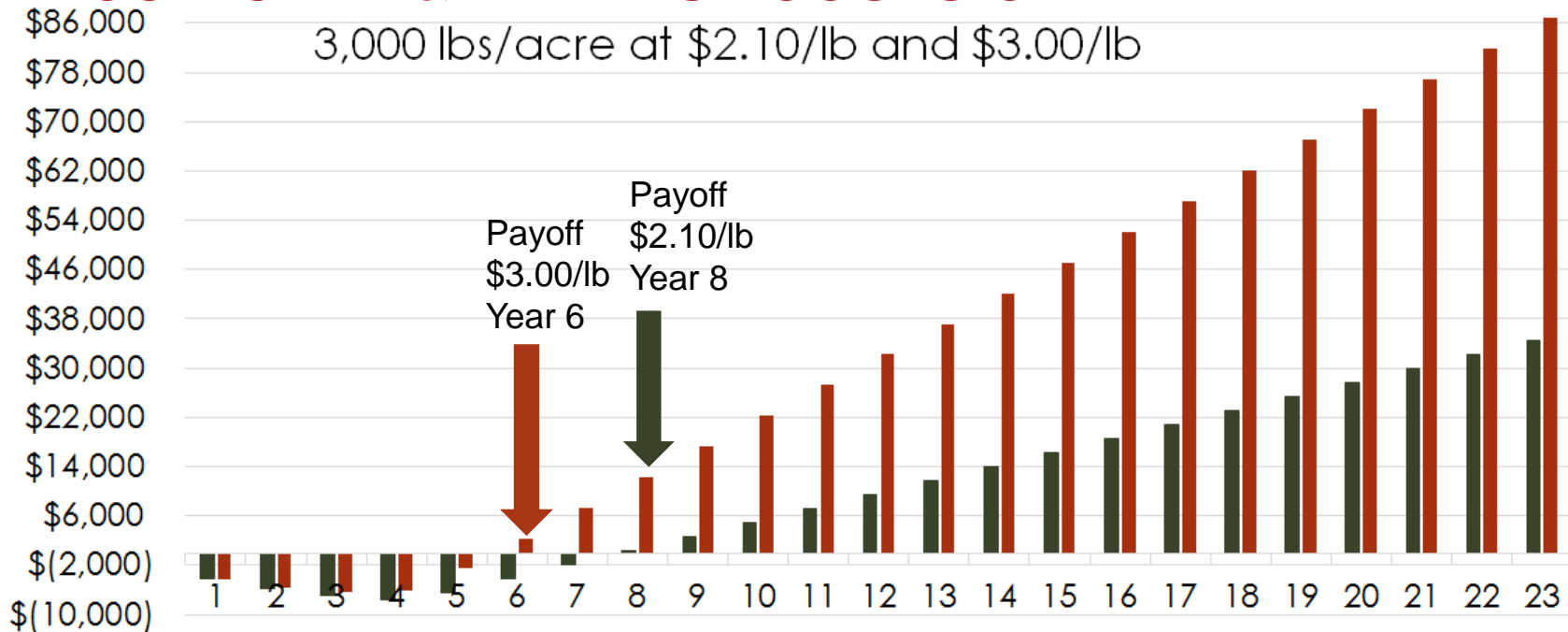


Accumulated Net Return per Acre - CULTURAL & HARVEST COSTS ONLY



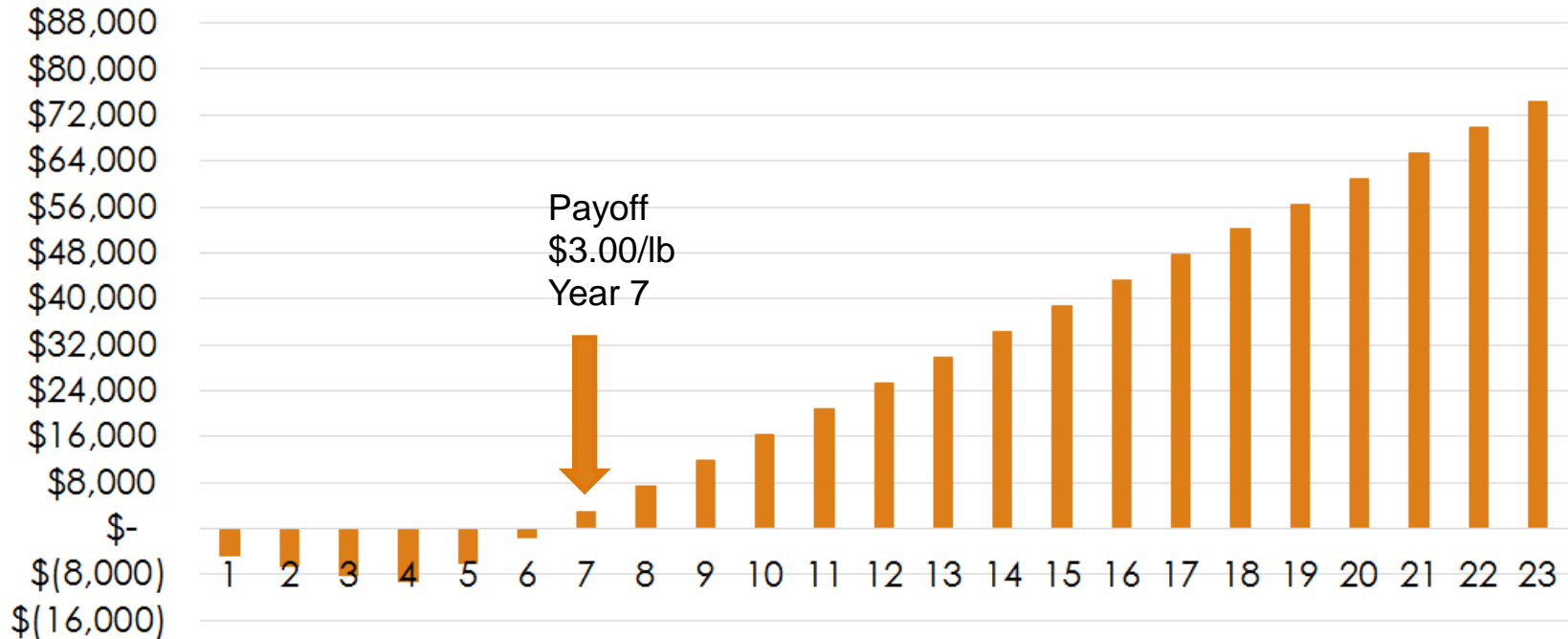
Accumulated Net Return per Acre - CULTURAL & HARVEST COSTS ONLY

3,000 lbs/acre at \$2.10/lb and \$3.00/lb



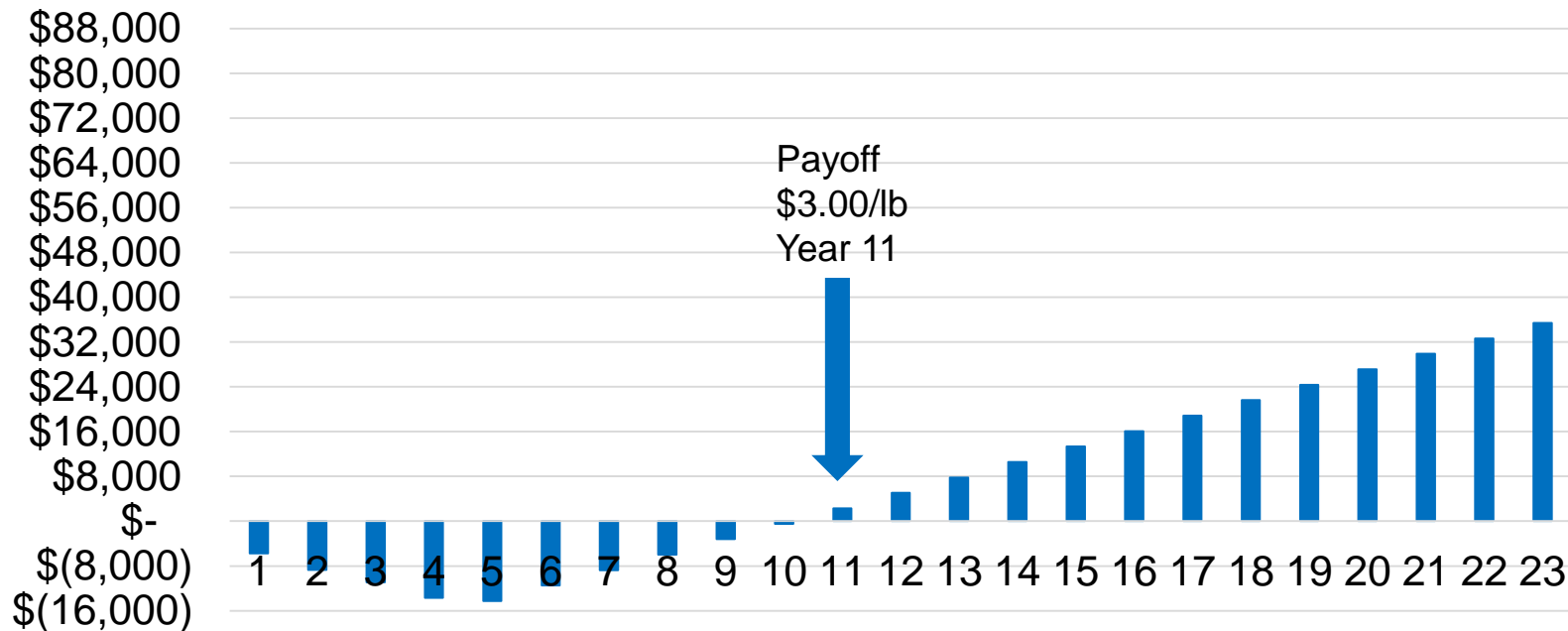
Accumulated Net Return per Acre - TOTAL CASH COSTS (incl. Cash Overhead)

3,000 lbs/acre at \$3.00/lbs



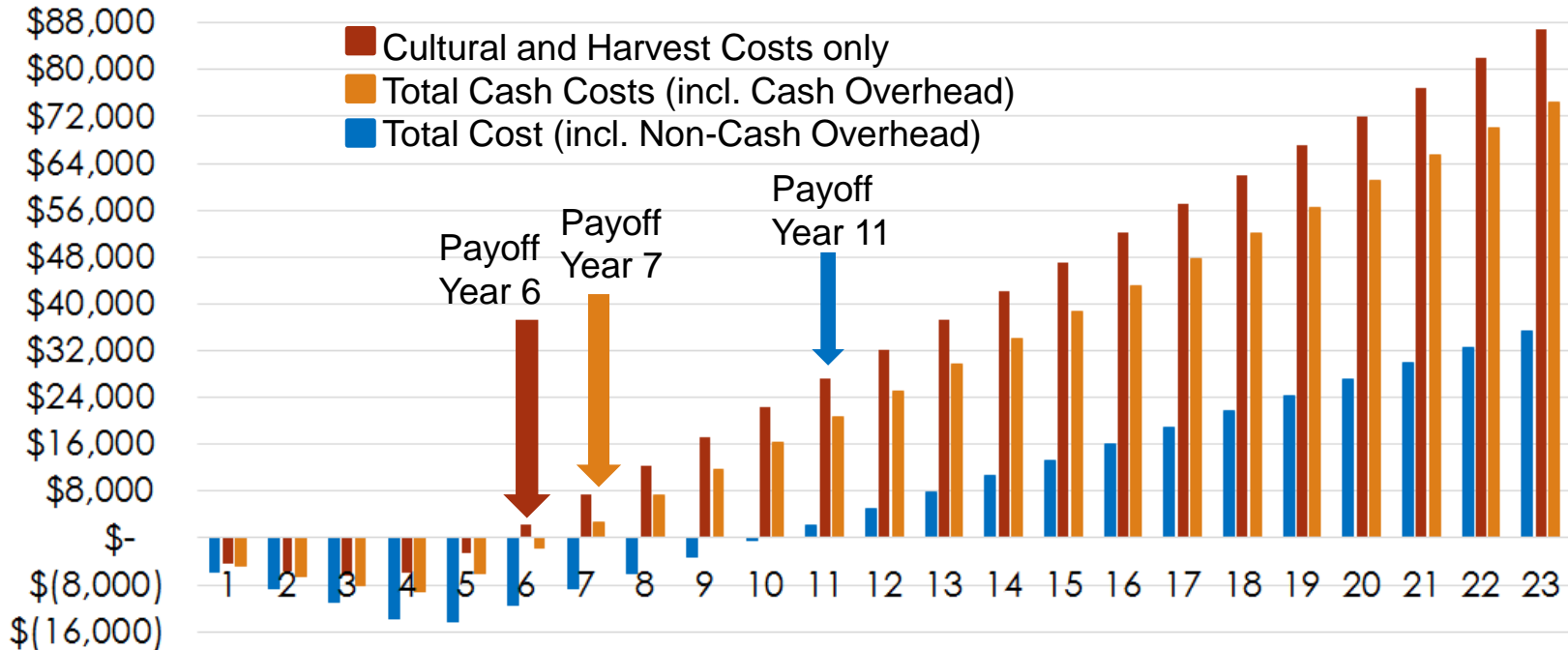
Accumulated Net Return per Acre - TOTAL COSTS (incl. Non-Cash Overhead)

3,000lbs/acre at \$3.00/lb



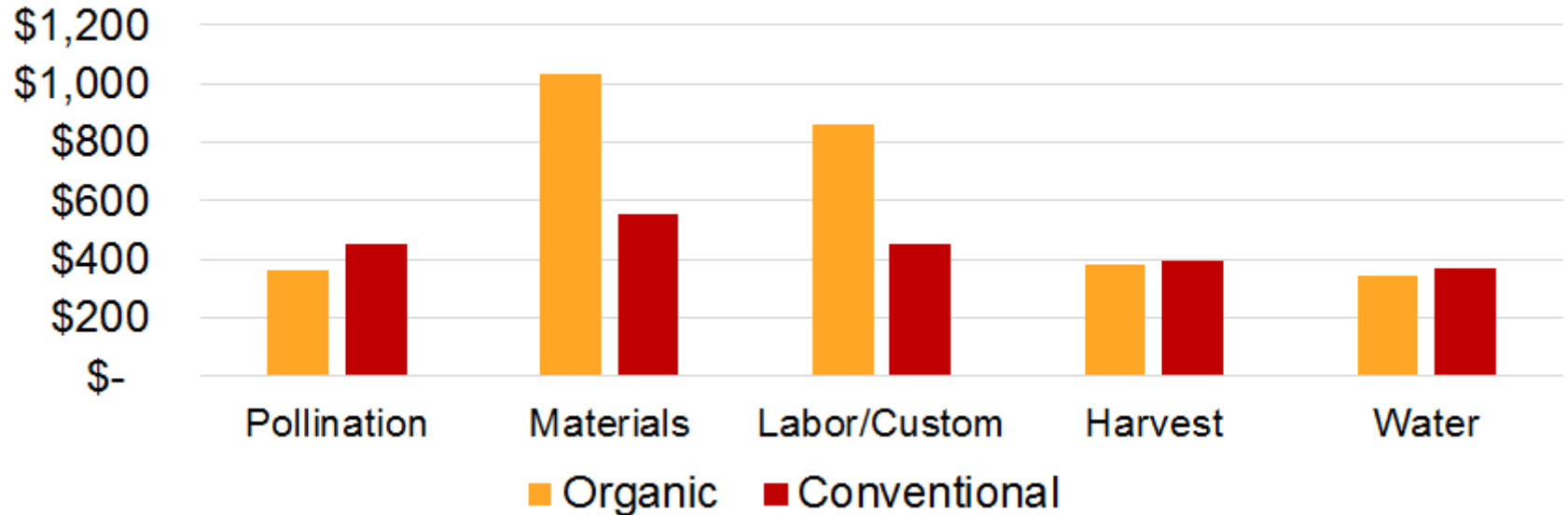
Accumulated Net Return per Acre - COST COMPARISON

3.000 lbs/acre at \$3.00/lb



Organic vs. Conventional - Comparison of Operating Cost

San Joaquin Valley North – 2016



Source:
"Sample Costs to Establish an Orchard and Produce Almonds - San Joaquin Valley North - 2016."
"Sample Costs to Produce Organic Almonds - San Joaquin Valley North - 2016."
University of California Cooperative Extension Agriculture and Natural Resources Center Agricultural Issues Center (2016)

Organic vs. Conventional - Comparison of Net Returns

Study	Organic	Conventional	Comment
Estimated Yield (lbs/acre)	1,800	2,200	~20% yield reduction
Estimated Returns (\$/lb)	3.50	2.50	~\$1/lb. premium
Gross Returns (\$/acre)	6,300	5,500	~15% higher returns
Less Operating Costs (\$/acre)	2,971	2,225	~25% higher costs
Net Returns above Op. Costs (\$/acre)	3,329	3,275	(Cultural & Harvest Costs)

Users of Cost Studies

- Growers
 - Crop Commissions/Associations/Cooperatives
 - Industry Representatives
 - University of California
 - Government Agencies
 - Foreign entities
-
- Cost Studies Website: 1.2 Million downloads in 2015

Interactive Cost Study Tool

- Template to estimate costs to produce almonds
- Pre-loaded with cost study data
- Output Tables:
 - Costs per Acre
 - Costs per Month
 - Ranging Analysis
- Challenges:
 - Complexity of data points
 - Interactive cost modeling
 - Funding for software development

Agricultural Issues Center - Cost Studies Website

- Link : <http://coststudies.ucdavis.edu/>
- Search Options:

Filter Current Studies by Commodity, Location, or Year:

Commodity		Region		County		Year
All commodities	Show Organic	All regions		All counties		All years

- Tools: Tree Loss Calculator
 - Replacement Costs
 - Loss of Income
 - Value of Tree lost @ Age



Questions?