



Economics of Almond Production



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The Almond Conference



Economics of Almond Production

Moderator: Bill Harp, ABC Board Director

Presenters:

Bill Harp, The Fabbri Group/Grower

Karen Klonsky, UC Davis

Terry Withrow, Ciccarelli & Withrow

Rob Geis, A Grower

Dan Cummings, A Grower



**Almond Grower ROA Basics with a Review of
2001-2010 and an Outlook for 2011-2016**
Bill Harp, The Fabbri Group/Grower



Bill Harp, An Almond Grower



Bill Harp, COO of The Fabbri Group

- Independent Grower Director – California Almond Board
- Arkansas “born, raised, and educated”, but California “enlightened”
- Licensed Professional Engineer
- Food Plant Designer and Entrepreneur
- A California Almond Grower

Grower Return by Region for 2010 CY



	Almond Growing Region			
	Northern	Central	Southern	State
Yield Per Acre	1,698	1,853	2,762	2,200
Bearing Acres	130,869	318,129	291,002	740,000
Total Reported Production	222,198,895	586,123,982	819,869,378	1,628,192,255
Inedible %:	0.8%	1.2%	1.2%	1.1%
Inedible Lbs:	1,733,151	6,835,378	9,561,317	18,129,846
Total Paid Weight:	220,465,744	579,288,604	810,308,061	1,610,062,409
Total Paid Weight/Acre:	1,685	1,821	2,785	2,176
Grower Return/Lb: (Wtd avg. based on Variety) *1	\$1.80	\$1.77	\$1.79	\$1.78
Calculated Paid Grower Return/Acre:	\$3,030	\$3,215	\$4,974	\$3,874
Growing Costs/Acre SJ Valley: (Based on 2010 UC Davis Study excludes land and trees @ \$1,106/acre)	\$2,700	\$2,700	\$2,700	\$2,700
Discounted Growing Cost per Acre: (Due to Cheaper Water)	\$400	\$200	\$0	\$157
Net Estimated Grower Cost:	\$2,300	\$2,500	\$2,700	\$2,543
Net Grower Return/Acre:	\$730	\$715	\$2,274	\$1,331

*1 - Based on the Grower Returns per pound by Variety as reported by the the States top 5 Processors.

Almond Grower ROA Definition:

Almond Grower ROA (Return on Asset) is defined as the yearly percentage of the net average marginal grower return in dollars of one acre of bearing almonds divided by the average asset value of one acre of bearing almonds in dollars.

Grower Return (ROA) History



Analysis of the most recent past 10 Years: 2001 - 2010

	Crop Year Grouping				10 Yr History
	2001-2003	2004 - 2007	2008 - 2010	2010	2001 - 2010
Wtd. Avg Yield/Acre	1,810	1,830	2,172	2,200	1,943
Wtd. Avg Net Return/Acre	\$545	\$1,854	\$981	\$1,331	\$1,207
Wtd. Avg Value of 1 Mature Acre *1	\$7,500	\$14,000	\$17,300	\$18,000	\$13,500
Pre-Tax Return on Asset *2	7.3%	13.2%	5.7%	7.4%	8.9%

*1 Value of 1 Mature Acre - Source from the "Trends" in Agricultural Land and Lease Values Annual Report & cross checked with local land appraisers records.

*2 ROA = based on weighted average market value of 1 acre of mature almonds for given period.

Almond Grower ROA Target Range



Almond Grower ROA Target Range

(A Grower's Perspective):

As an independent California Almond Grower and Investor, my opinion of an acceptable (“fair and reasonable”) Almond Grower ROA is the following range:

- **10-20% Yearly Return on Asset**
- **Supported by the expectations of other growers knowledgeable of the risks associated with Almonds Orchards based on at least a 20-25 year life.**
- **Use 10% as a minimum target ROA.**

Return on Asset Analysis vs. Target



Analysis of the most recent past 10 Years: 2001 - 2010

	Crop Year Grouping				10 Yr History
	2001-2003	2004 - 2007	2008 - 2010	2010	2001 - 2010
<u>State-wide average per Acre</u>					
<u>Target Average Net Return @ 10% pre-tax ROA</u>	\$750	\$1,400	\$1,730	\$1,800	\$1,350
<u>Actual Average Net Return more/(less) than Target:</u>	(\$205)	\$454	(\$749)	(\$469)	(\$143)

State-wide total \$ more/(less) than Target (in millions)

<u>Average Annual Net Revenue vs. Target:</u>	(\$111)	\$273	(\$472)	(\$347)	(\$88)
<u>Crop Year Grouping Net Revenue vs. Target:</u>	(\$334)	\$1,094	(\$1,415)	(\$347)	(\$883)

Projection of Bearing Acreage Increase Based Known & Estimated Plantings and Removals



	Projected Bearing Acres 2011 - 2016					
2010	2011	2012	2013	2014	2015	2016
Actual	Already Reported Plantings			Estimated Plantings		

Forecasted Bearing Acres	740,000	750,000	764,222	770,601	779,601	812,601	845,601
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Acres Planted 3 years prior: (as originally Reported)		21,678	18,264	13,362	15,000	30,000	30,000
Adj. Planted Acreage: 60% more than Orig. Reported		34,850	29,222	21,379	24,000	48,000	48,000
Expected Removals (average of 2004-2010)		24,850	15,000	15,000	15,000	15,000	15,000
Net Increase in Bearing Acres (estimated) vs prior year:		10,000	14,222	6,379	9,000	33,000	33,000

Acres Planted and are Standing as of 2010 that are more than 20 years old (1989 or earlier planting):	102,475
Acres Planted and are Standing as of 2010 that are more than 17 to 20 years old (1990-1992 plantings):	40,255

California Almond Demand History



Demand Growth History - California Almond Industry





	Recent Demand Growth Averages				Period when Target ROA Achieved
	3 Year	5 Year	10 Year	15 Year	
	'08-'10	'06-'10	'01 - '10	'96 - '10	
<u>Actual Demand Growth</u>					
Domestic	7.5%	10.2%	9.1%	10.0%	4.8%
Export	10.9%	14.2%	8.8%	9.7%	8.2%
Total	9.8%	12.9%	8.8%	9.7%	7.0%

It Appears Future Demand Growth will be Restricted by Acreage Growth



2011 - 2016 Demand Growth based on Projected Bearing Acres

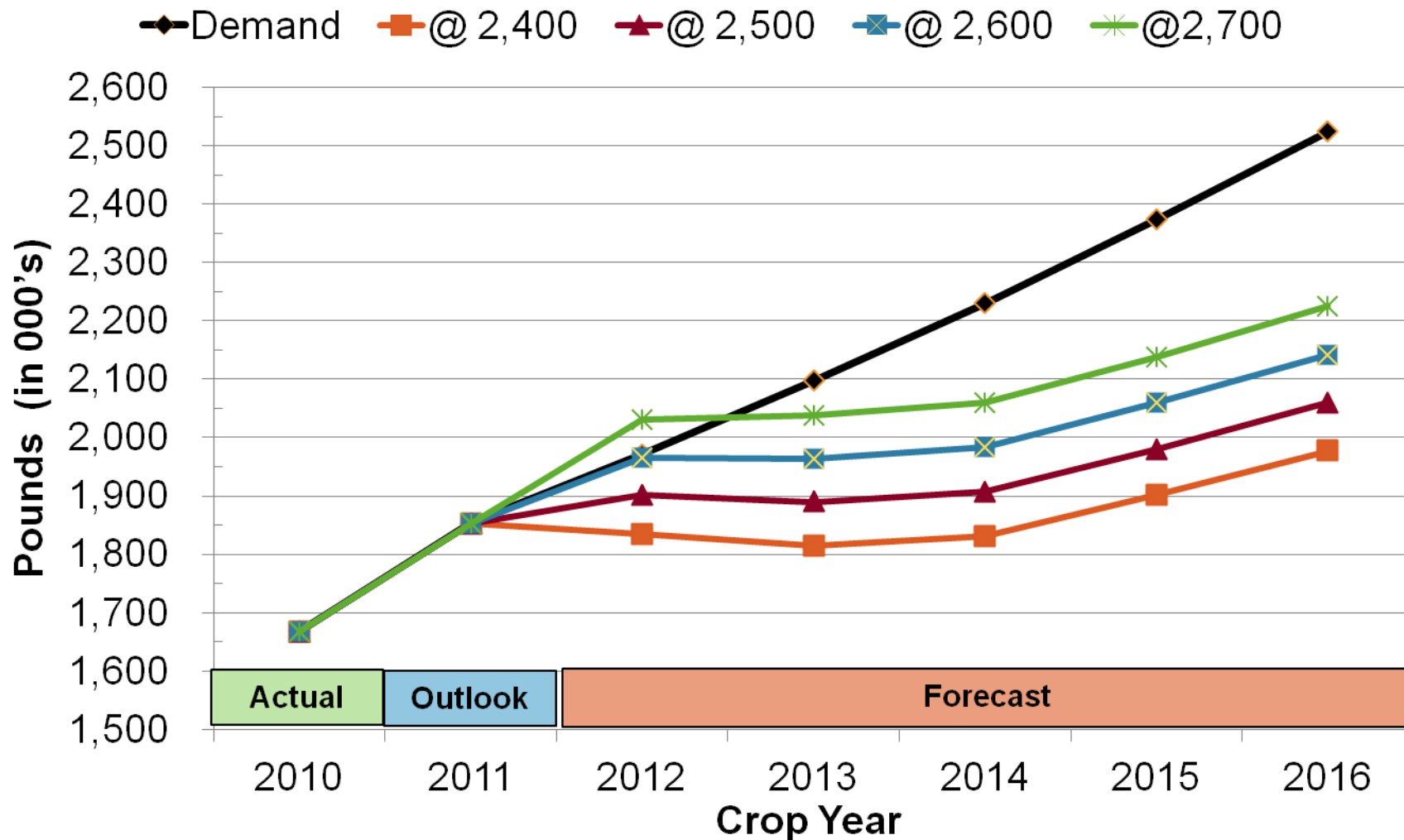
	Restricted Growth Based on Projected Bearing Acres @ Random Yield/Acre Averages 2012 - 2016				Unrestricted Conservative Demand Growth
	2,400	2,500	2,600	2,700	
Projected Demand Growth					
Domestic	3.1%	3.9%	4.7%	5.5%	7.5%
Export	3.1%	3.9%	4.7%	5.5%	7.3%
Total	3.1%	3.9%	4.7%	5.6%	7.3%

-  = Conservative Demand Growth Forecast based on Research & Recent History
-  = Actual Avg. 2008 - 2010
-  = Deloitte 2011 Study
-  = Assumes Industry must carry-out 14% of Total Supply each year.

Acreage Restricted Supply (Available to Ship) vs. Conservative Unrestricted Demand Growth @ 7.3%



Available Supply at Yield/Acre Scenario

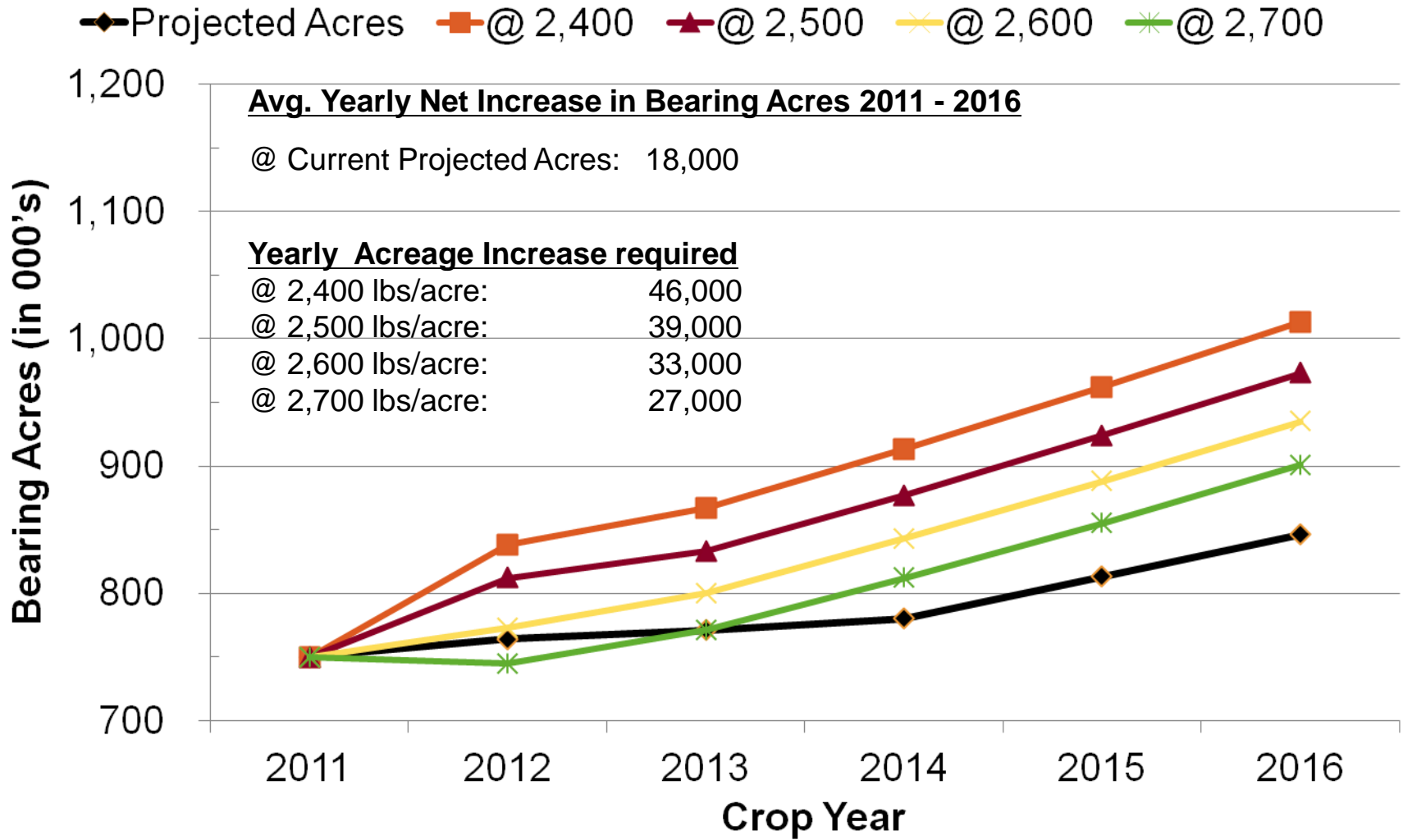


Acreage Restricted Supply = Net Edible Production + carry-in supply - (less: required carryout supply)
 Required carryout = 14% of Total Supply for a given CY.

Bearing Acreage Required to Meet Projected Avg. Demand of 7.3% (2011 – 2016)



Acreage at Yield/Acre Scenario



Model assumes 15% of Total Current Demand must be carried-out each crop year (=13% of Total Supply)



Outlook for 2011-2016

Bill Harp, The Fabbri Group, A Grower



Optimism for Grower Returns for 2011-2016

(A Grower's Perspective):

- **10-20 % Grower ROAs are possible with projected almond supply and demand fundamentals.**
- **Growers need to become informed, aware, and involved to support our capable Almond Handlers**
- **Grower Regional Informational Meetings in February.**
- **Challenge to Growers to “Grower-Up” and “Git-R-Done”**



Economics of Almond Production

Karen Klonsky
Dept. of Agricultural & Resource Economics
University of California, Davis



Outline of Presentation



- **Costs to establish and produce almonds**
- **Risk analysis – breakeven yields and prices**
- **Return on investment – internal rate of return**
- **Payback period for investment**
- **Almond acres planted by year and variety**
- **Cost factors impacting net returns**

Cost and Return Study Almond Orchard Assumptions



San Joaquin Valley North, 2011

16' x 22' spacing, 124 trees per acre

40 contiguous acres

Microsprinkler irrigation

Custom harvest

25 year orchard life

Cost and Return Study Authors



Roger Duncan, UCCE Stanislaus County

Paul Verdegaal, UCCE San Joaquin County

Brent Holtz, UCCE San Joaquin County

David Doll, UCCE Merced County

Rich DeMoura, Dept. of Ag. & Resource Econ. UCD

Karen Klonsky, Dept. of Ag. & Resource Econ. UCD

Cost Components



Cultural Costs

Harvest Costs

Cash Overhead

Noncash Overhead

Costs of Production



Cultural Costs

- Pruning
- Floor management
- Disease and pest control
- Irrigation and fertilization
- ATV and pickup use

Harvest Costs

Cash Overhead

Noncash Overhead

Costs of Production



Cultural Costs

Harvest Costs

- Shake, sweep, rake
- Pick up and haul
- Hull and shell nuts

Cash Overhead

Noncash Overhead

Costs of Production



Cultural Costs

Harvest Costs

Cash Overhead

- **Office expenses**
- **Liability Insurance**
- **Sanitary Service**
- **Property Taxes and Insurance**
- **Repairs on Buildings and Irrigation System**

Noncash Overhead

Costs of Production



Cultural Costs

Harvest Costs

Cash Overhead

Noncash Overhead (Capital Recovery)

- **Buildings, Shop, and Field Tools**
- **Irrigation System**
- **Fuel Tanks**
- **Equipment ownership**
- **Trees**
- **Land**

Equipment Costs



Cultural costs

- Fuel and lube
- Repairs

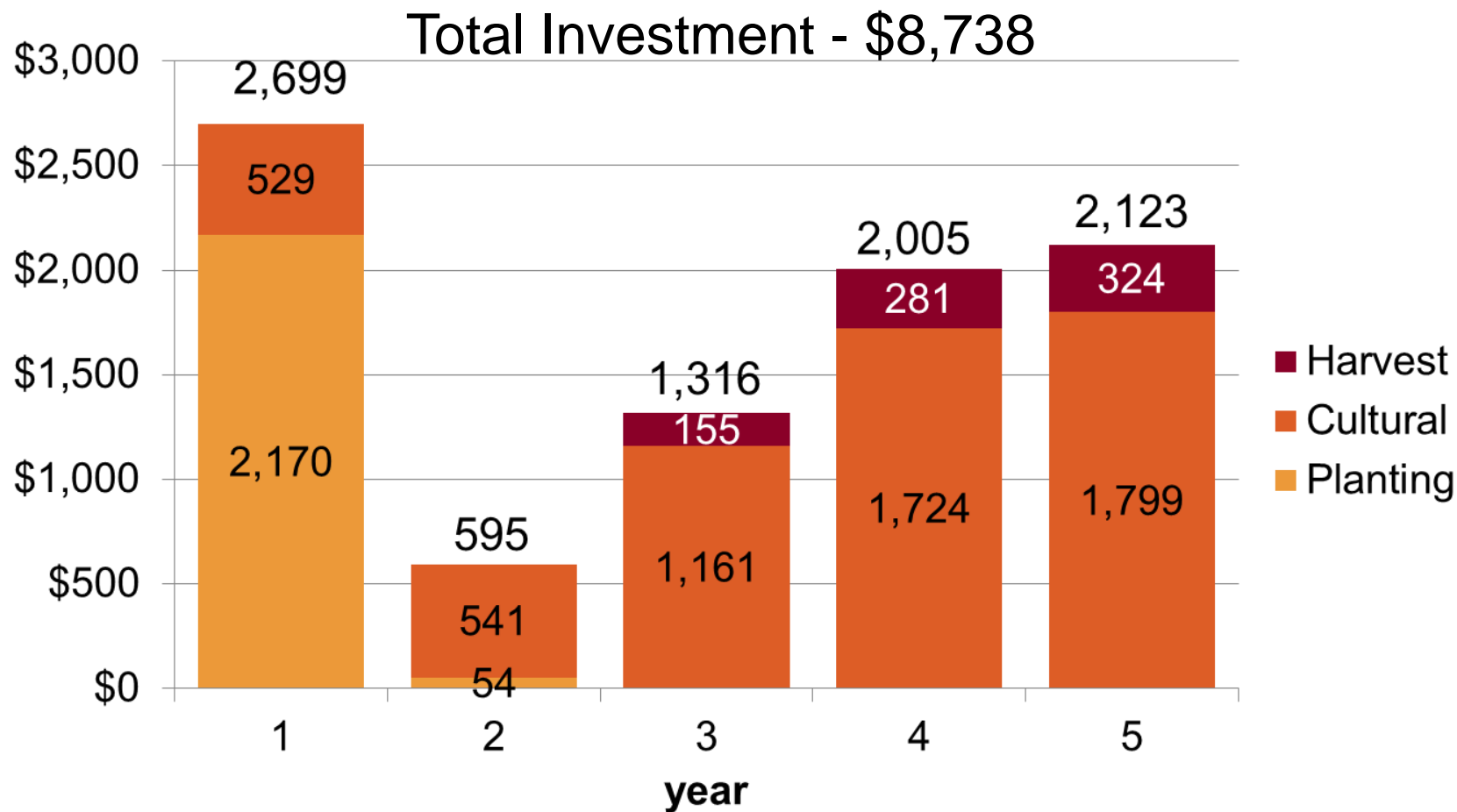
Cash overhead

- Insurance
- Taxes

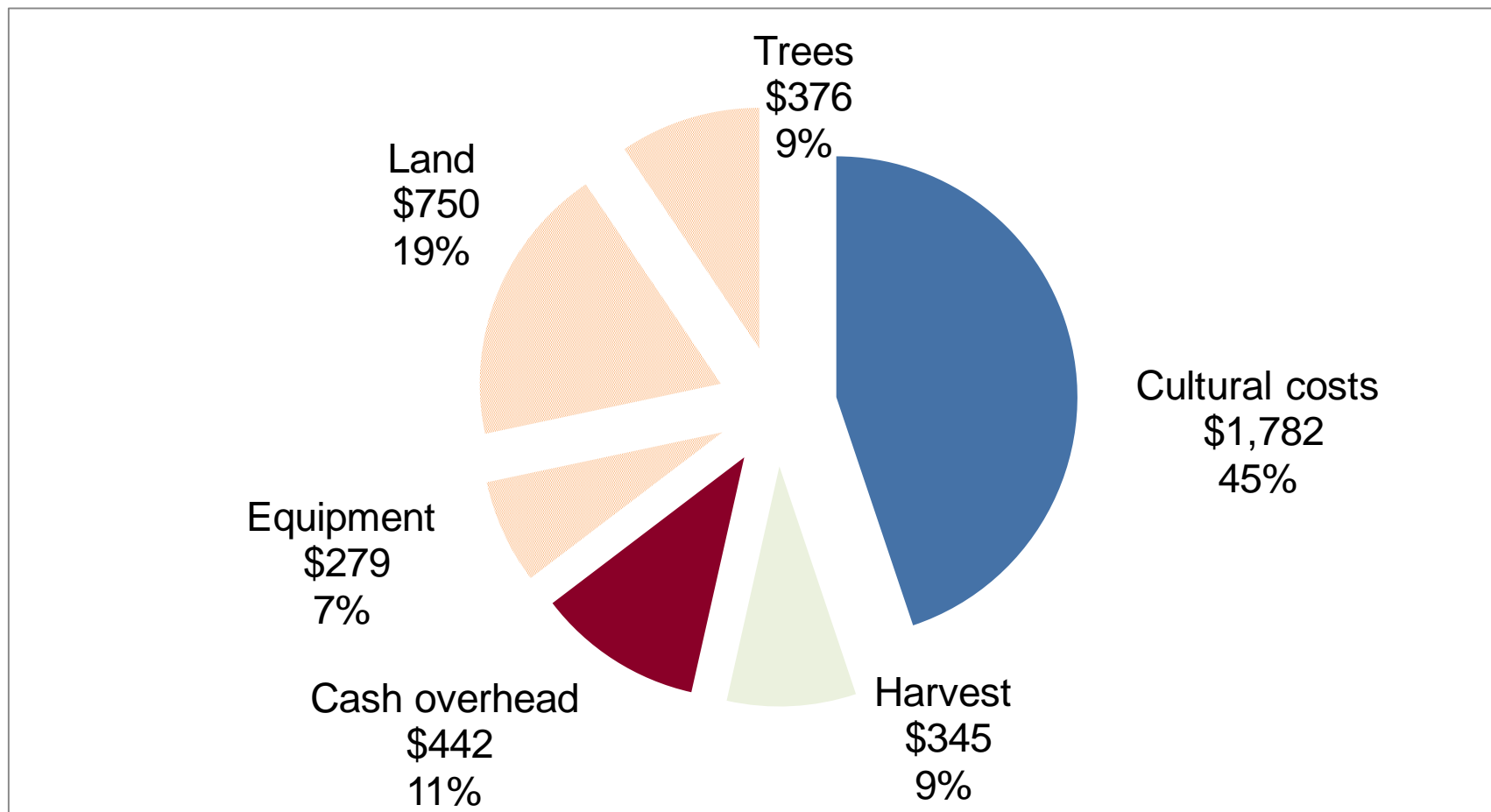
Noncash Overhead (Capital recovery)

- Principle and interest or ownership costs

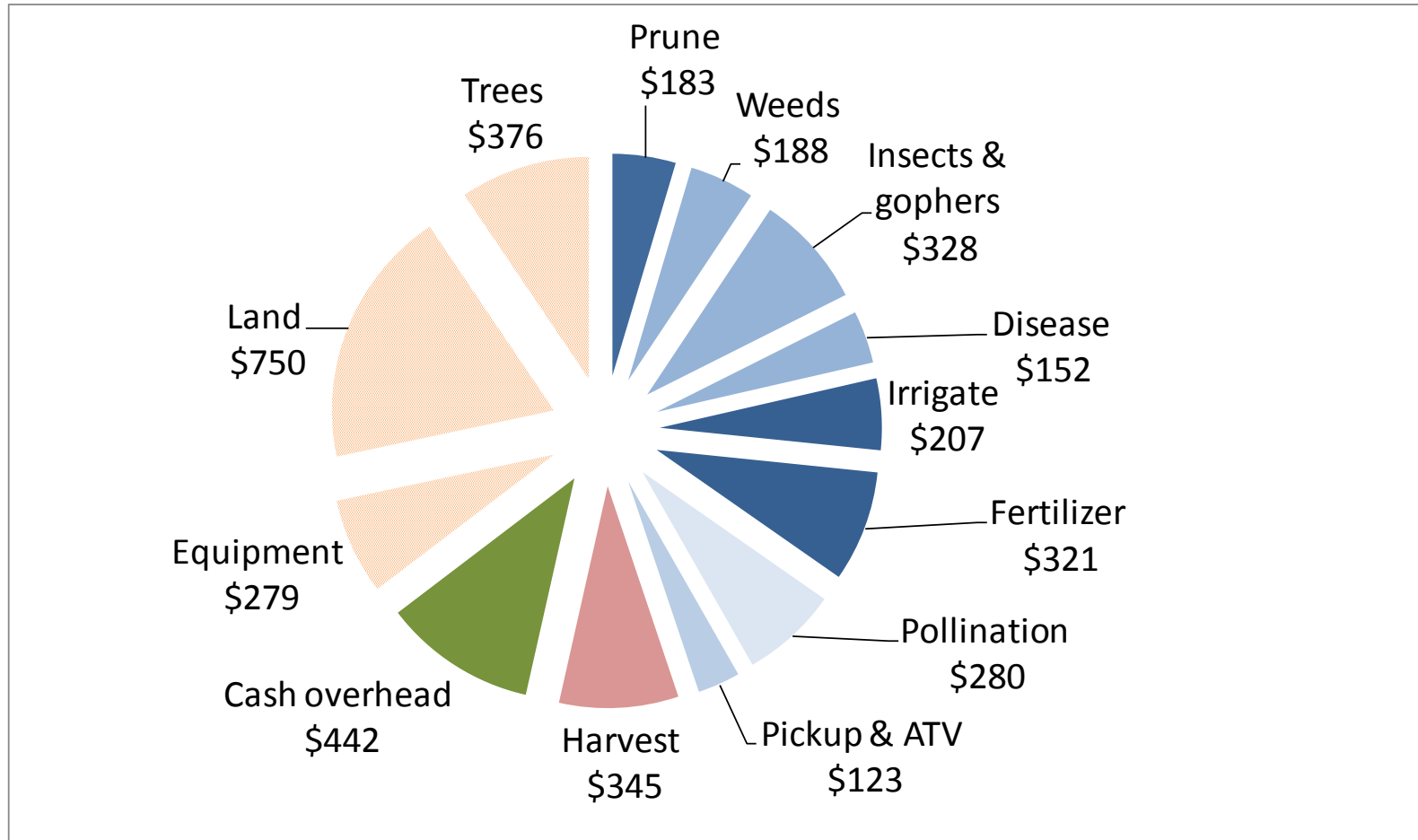
Almond Orchard Establishment Cost per Acre



Almonds Total Cost of Production, \$3,974 per acre

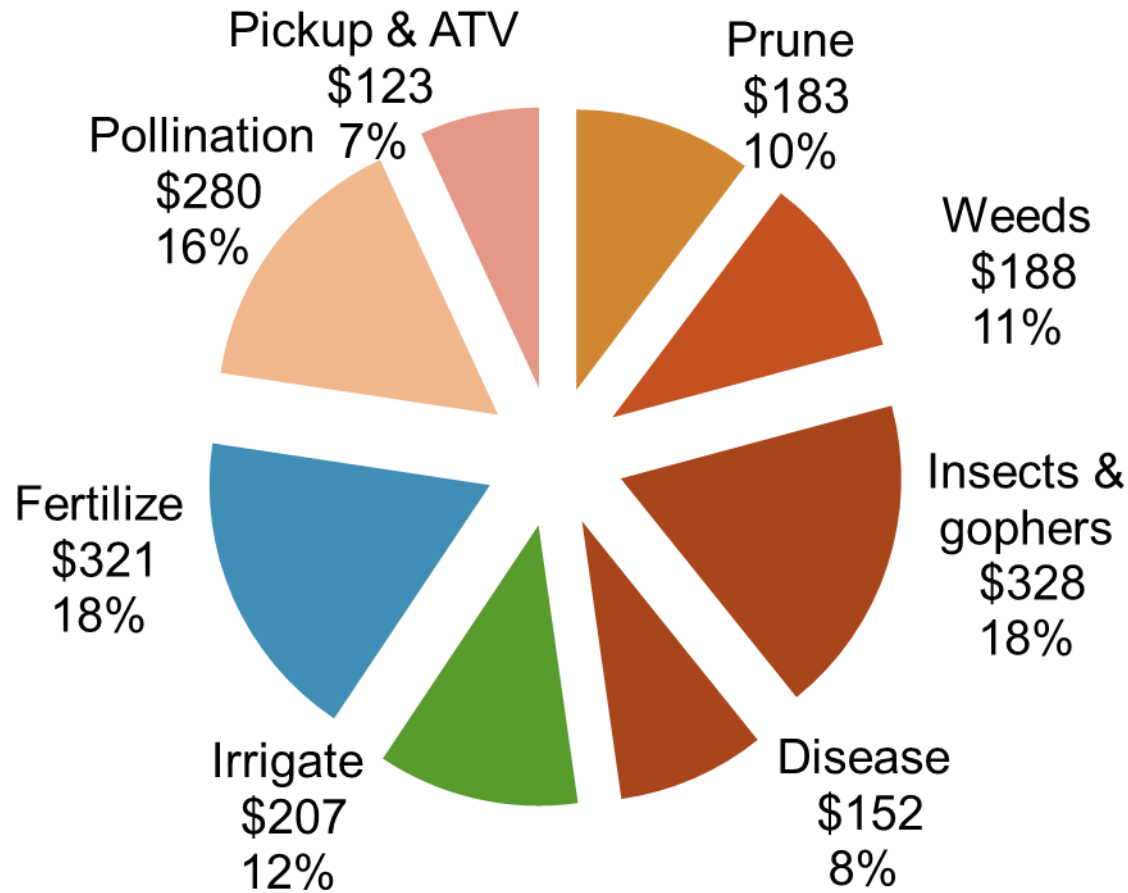


Almonds Total Cost of Production, \$3,974 per acre



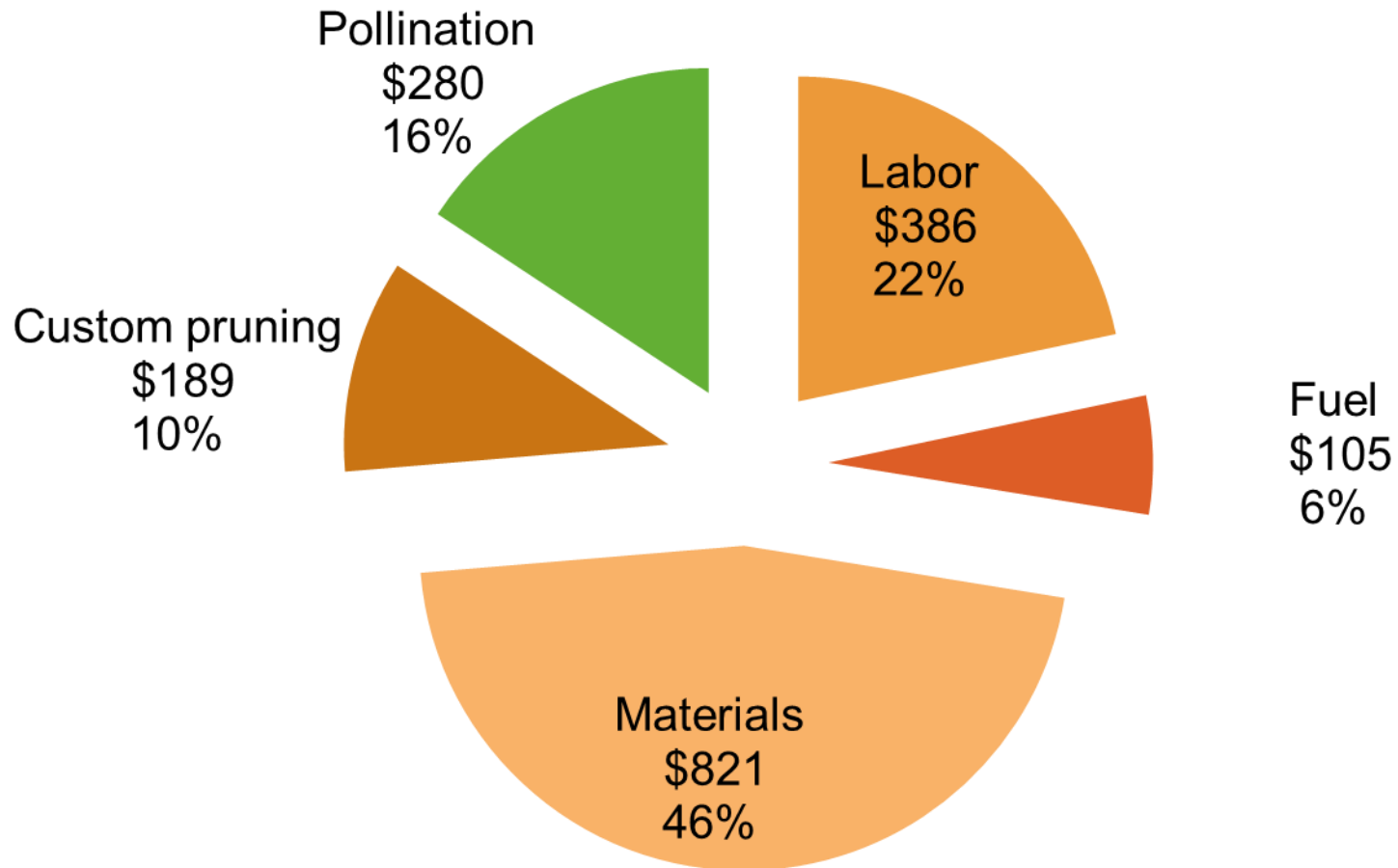
Almonds

Cultural Costs \$1,782 per Acre



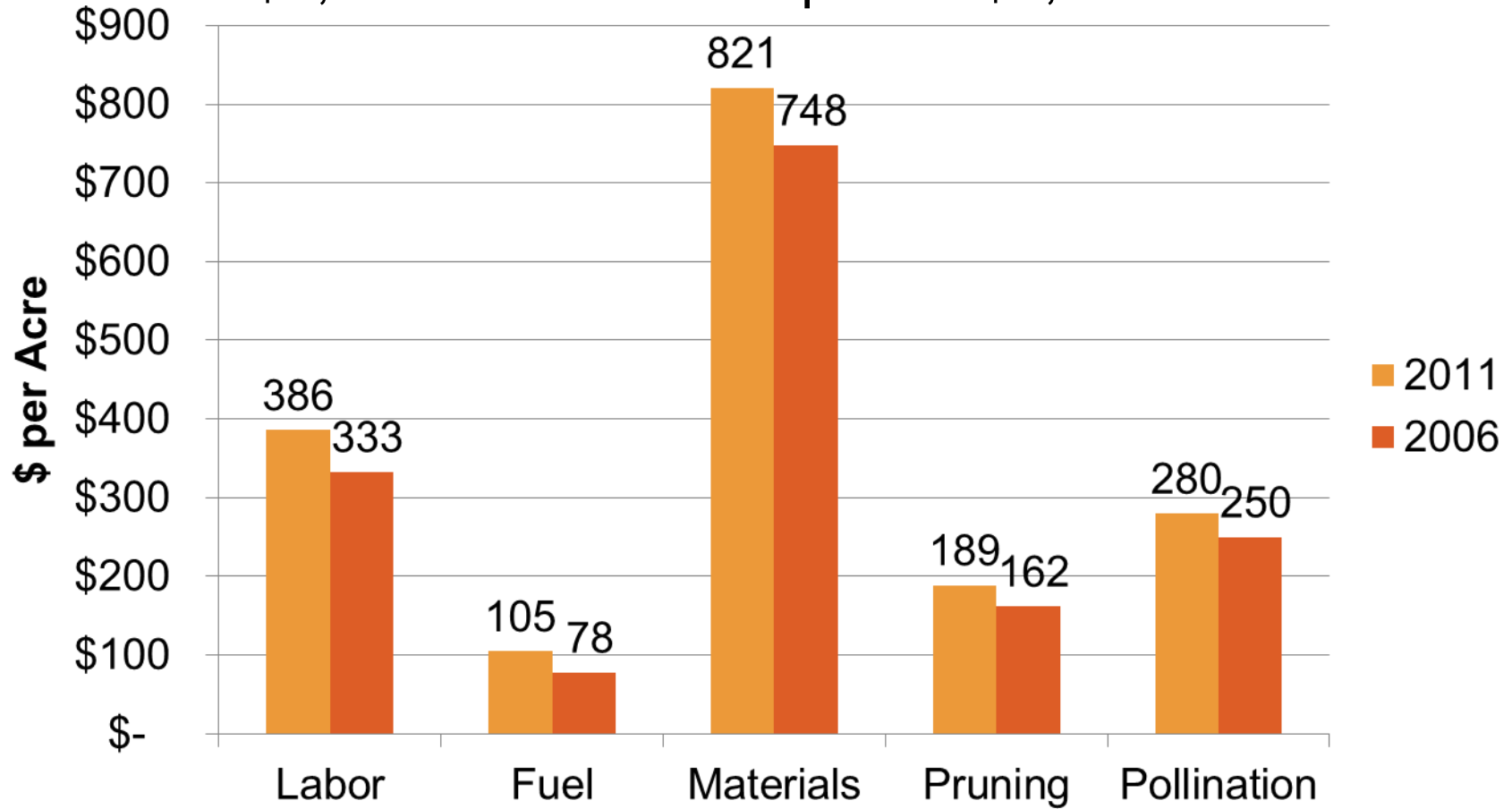
Almonds

Cultural Costs \$1,782 per Acre



Comparison of 2011 and 2006 Cultural Costs

\$1,782/acre in 2011 up from \$1,578 in 2006



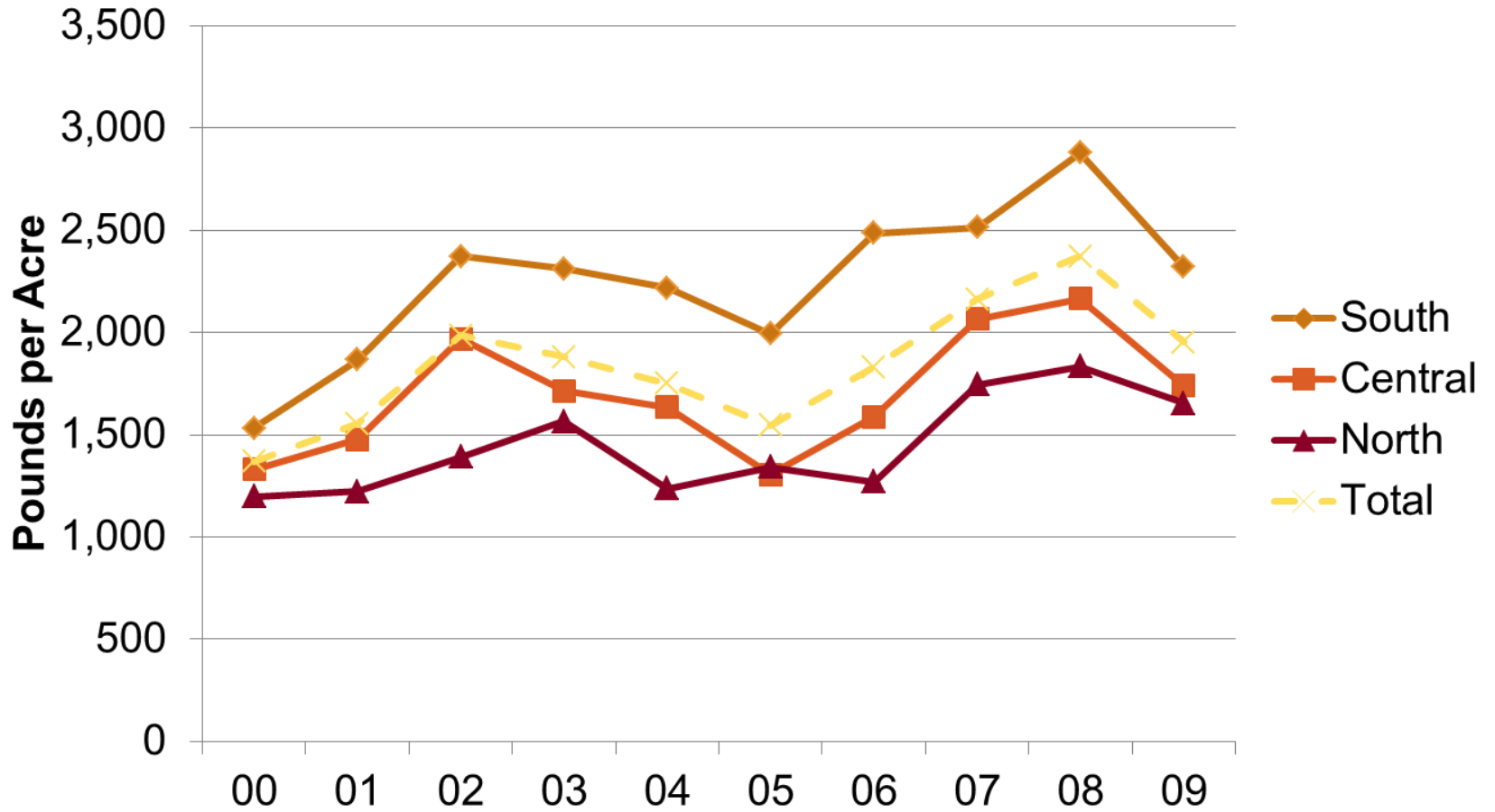
Risk analysis



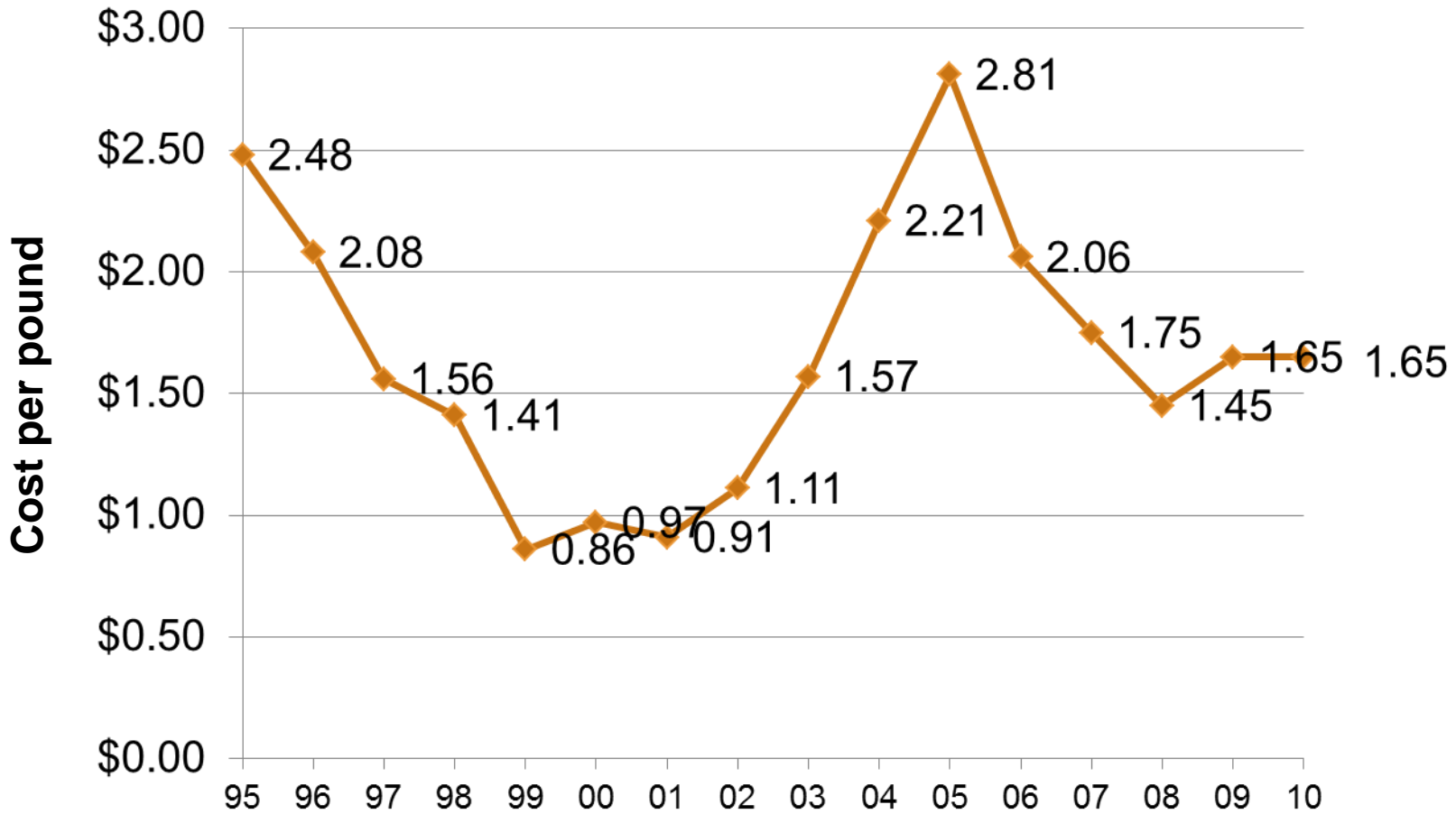
**Expected yield range: 1,400 – 2,600 lbs.
per acre**

Expected price range: \$.90 - \$2.10

Historic Yields



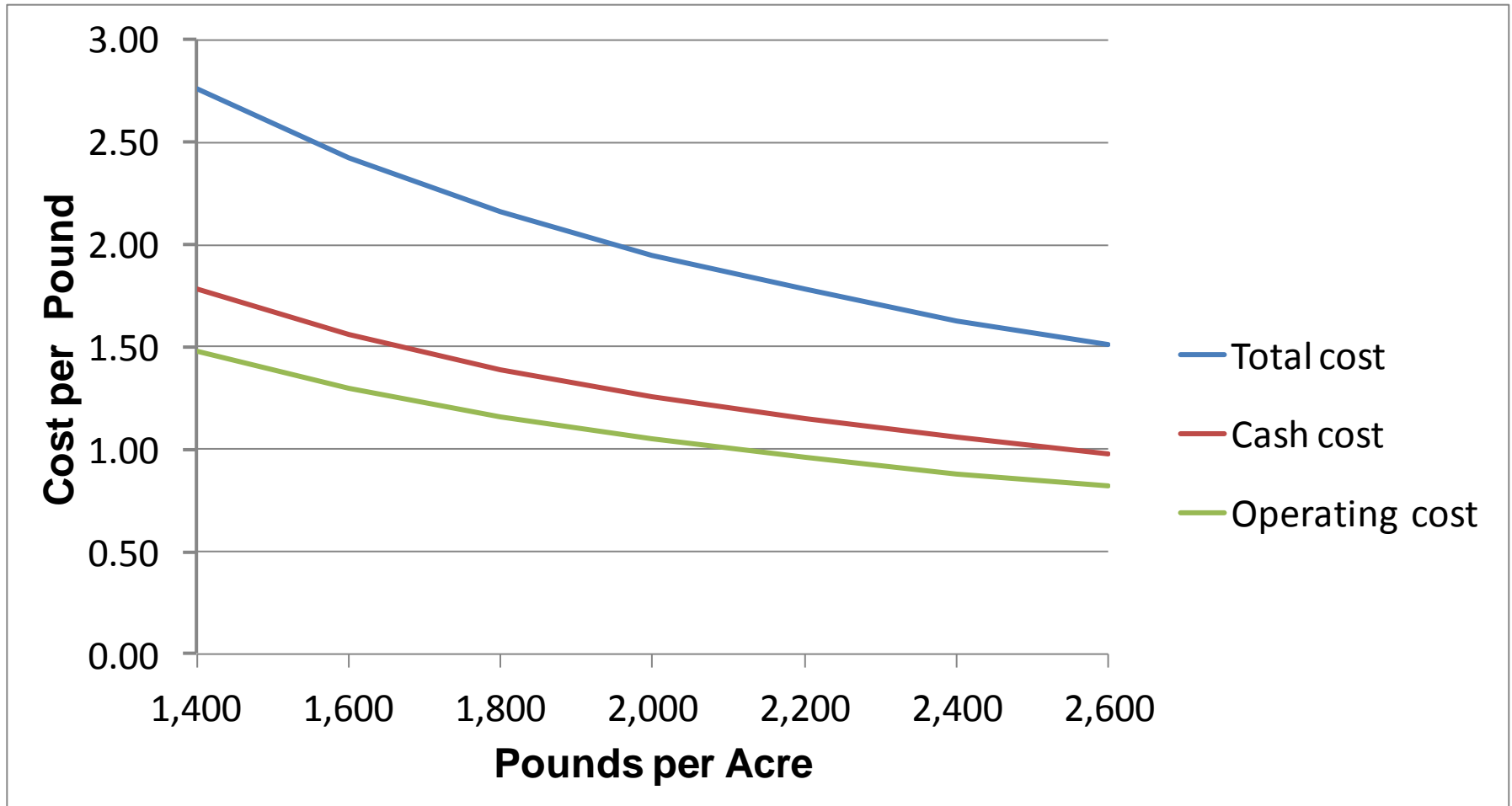
Average Annual Prices



Source: NASS. 2010 California Acreage Report

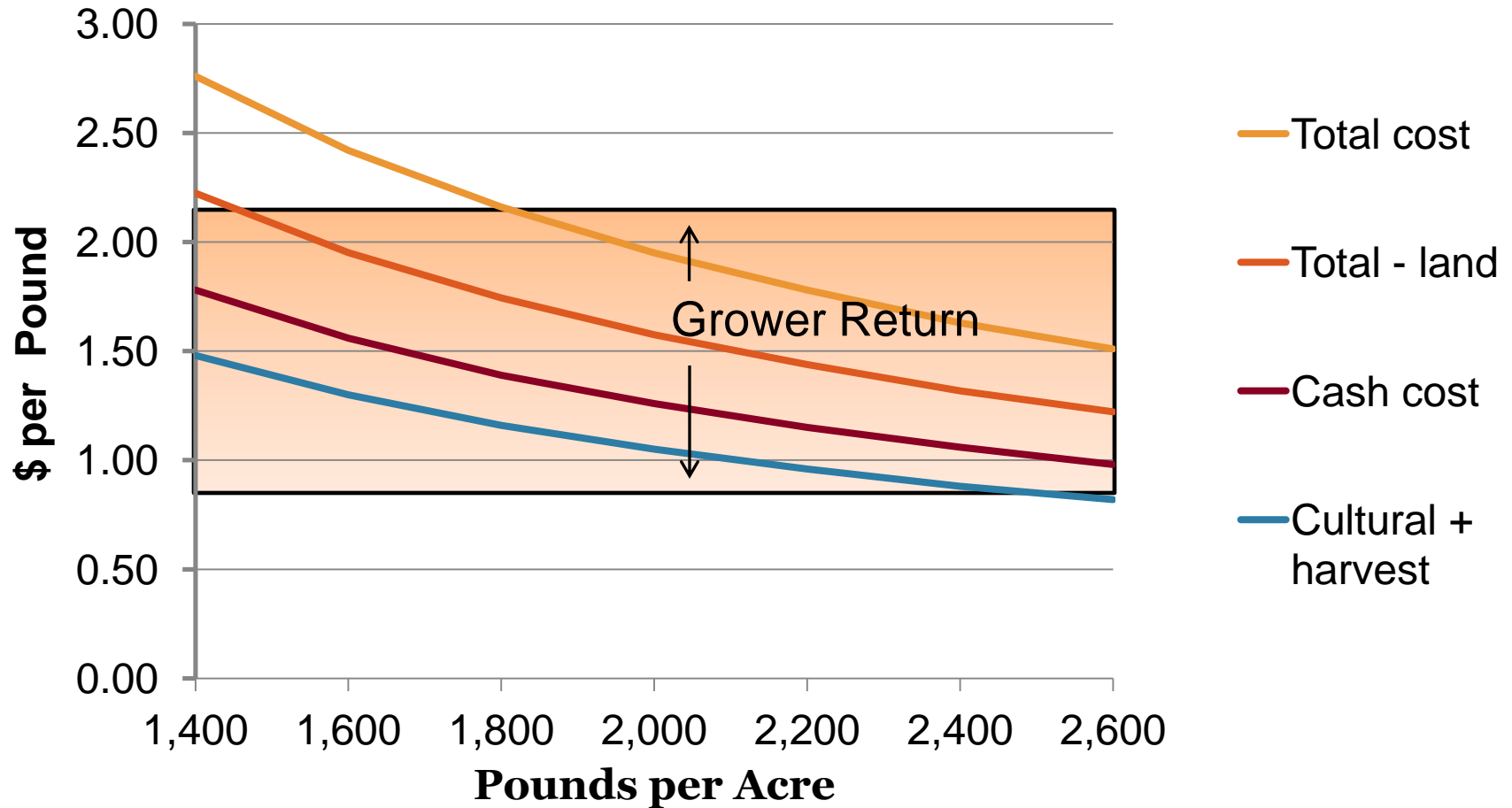
Almonds

Cost Per Pound at Varying Yields



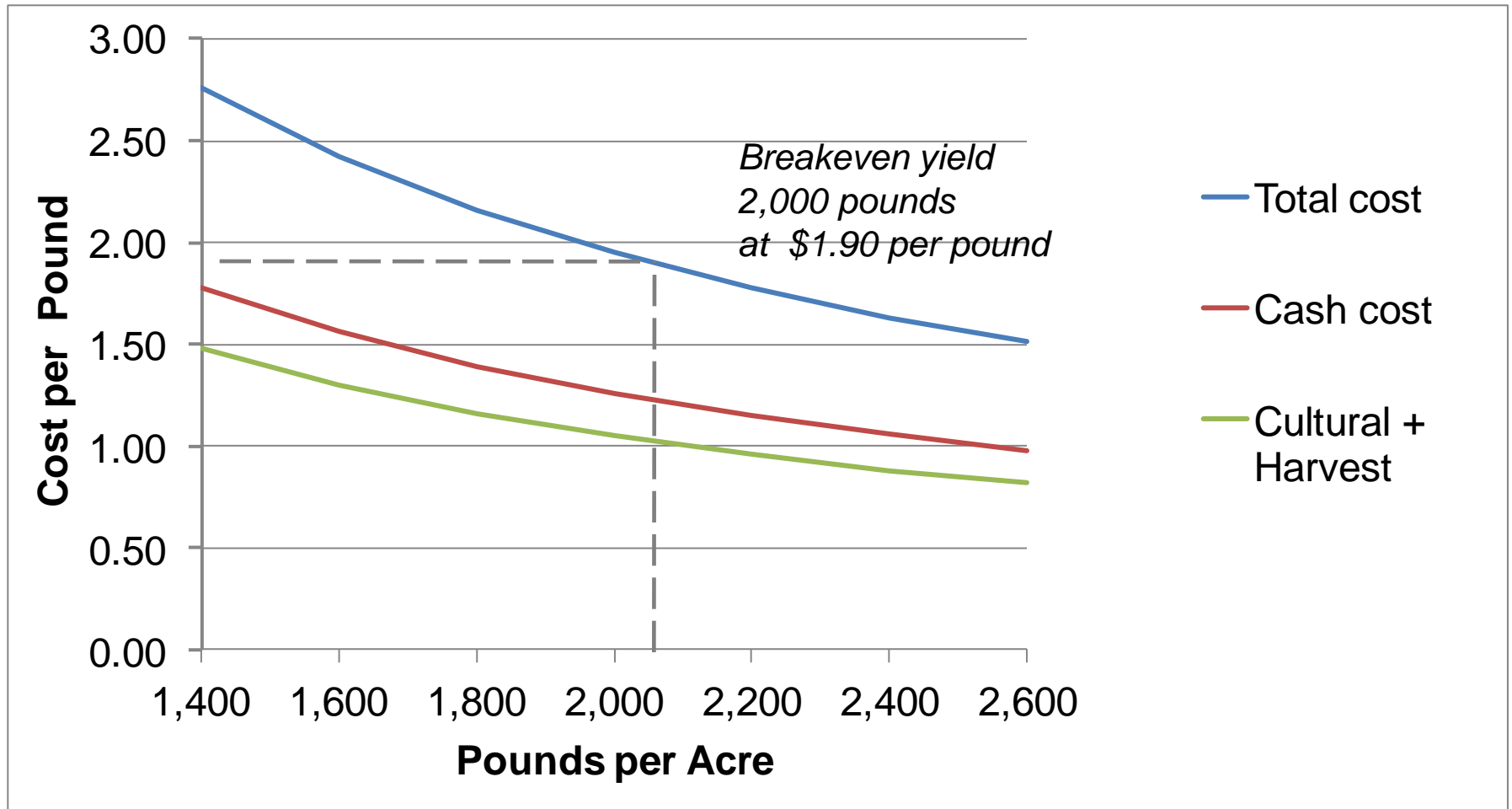
Almonds

Cost Per Pound at Varying Yields

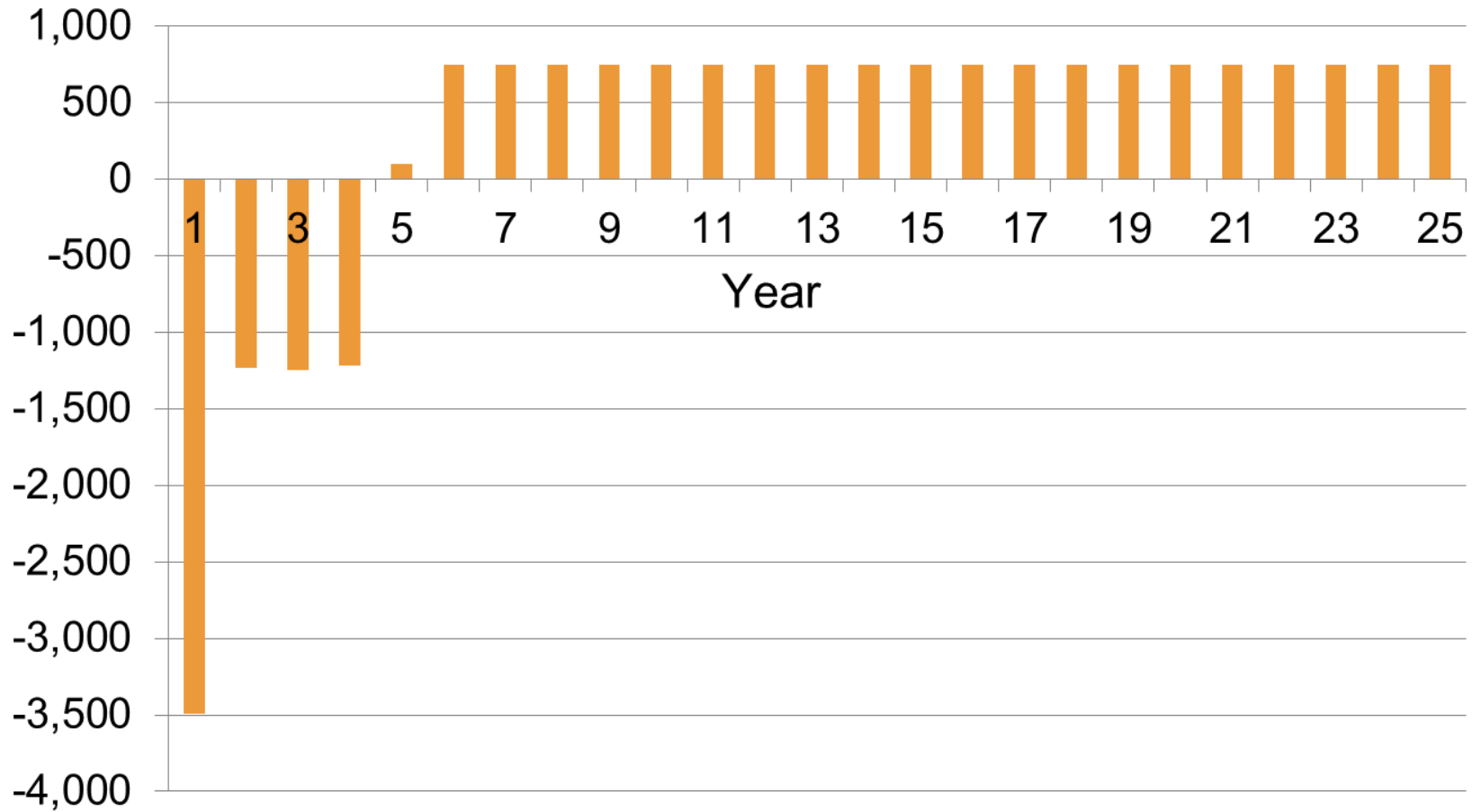


Almonds

Cost Per Pound at Varying Yields



Annual Net Returns Excluding Land Cost 2,000 Pounds, Per Acre, \$1.80 Per Pound

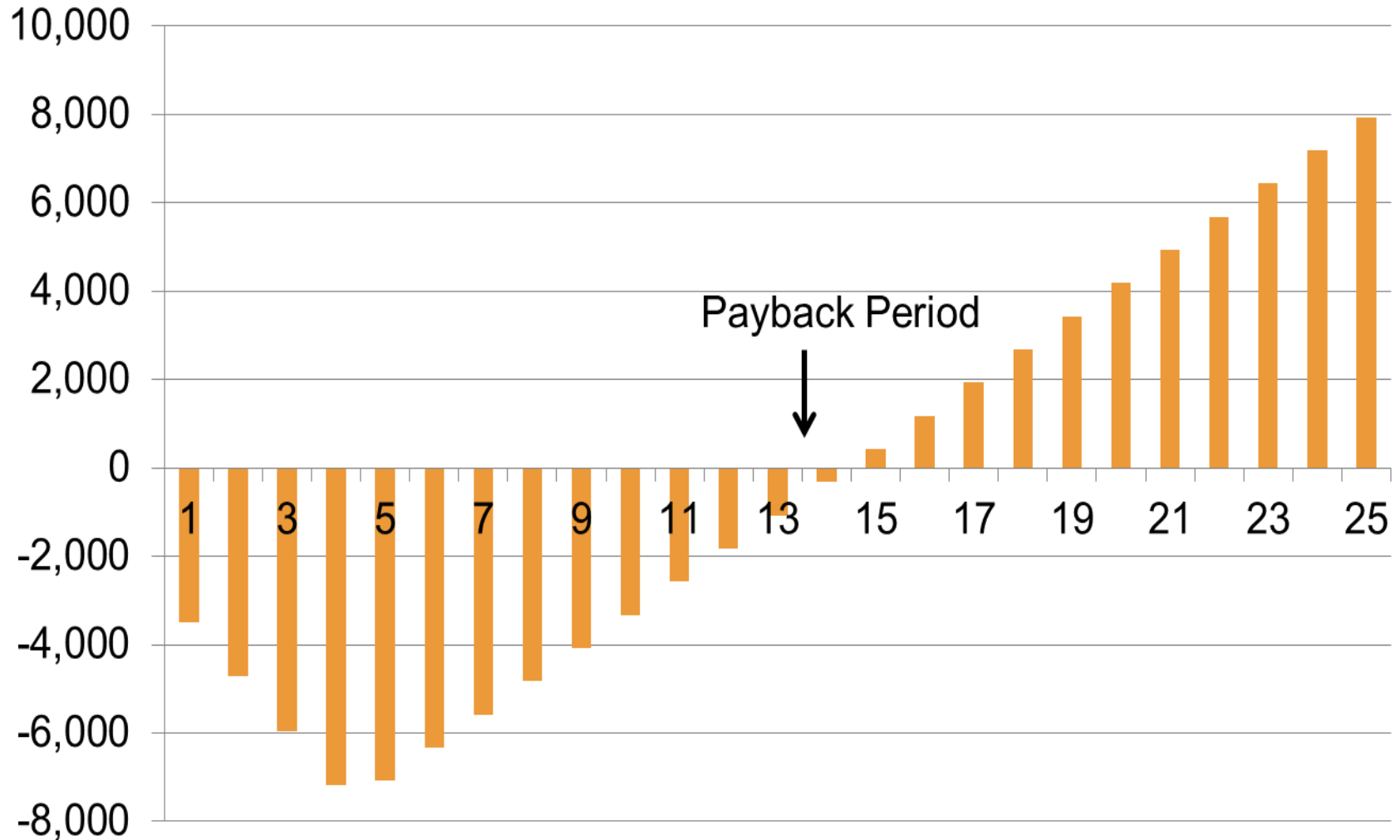


Internal Rate of Return at Varying Yields and Prices



Lbs. /A	1,800	1,900	2,000	2,100	2,200	2,300	2,400
\$1,50	---	---	-7%	-2%	1%	3%	5%
\$1.60	-13%	-5%	-1%	2%	4%	6%	8%
\$1.70	-4%	0%	3%	5%	7%	9%	11%
\$1.80	1%	4%	6%	8%	10%	11%	13%
\$1.90	4%	7%	9%	11%	12%	14%	15%
\$2.00	7%	9%	11%	13%	14%	16%	17%

Accumulated Net Return per Acre 2,000 lbs. per acre and \$1.80/lb.

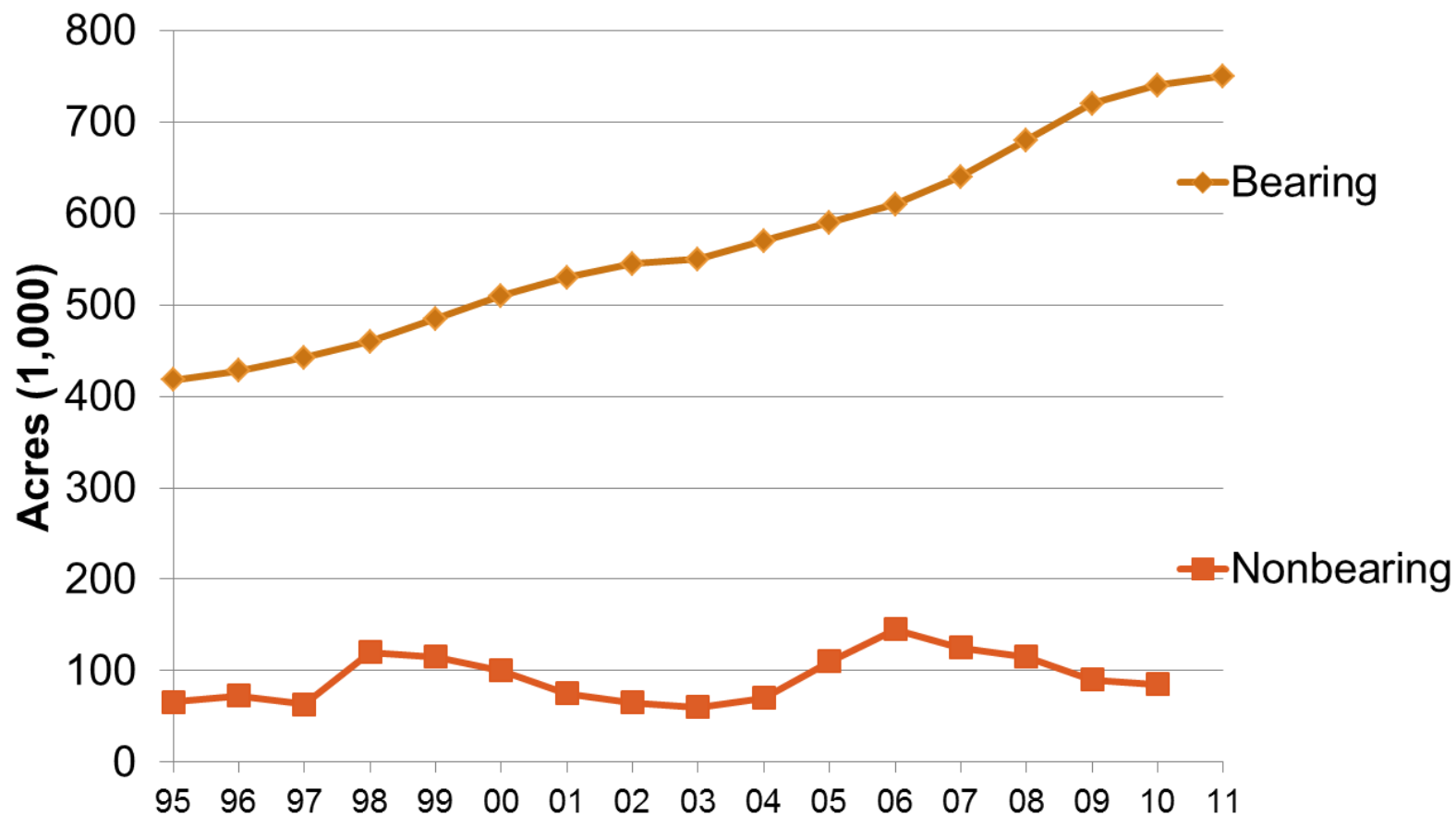


Payback Period for Investment (Years) Varying Yields and Prices



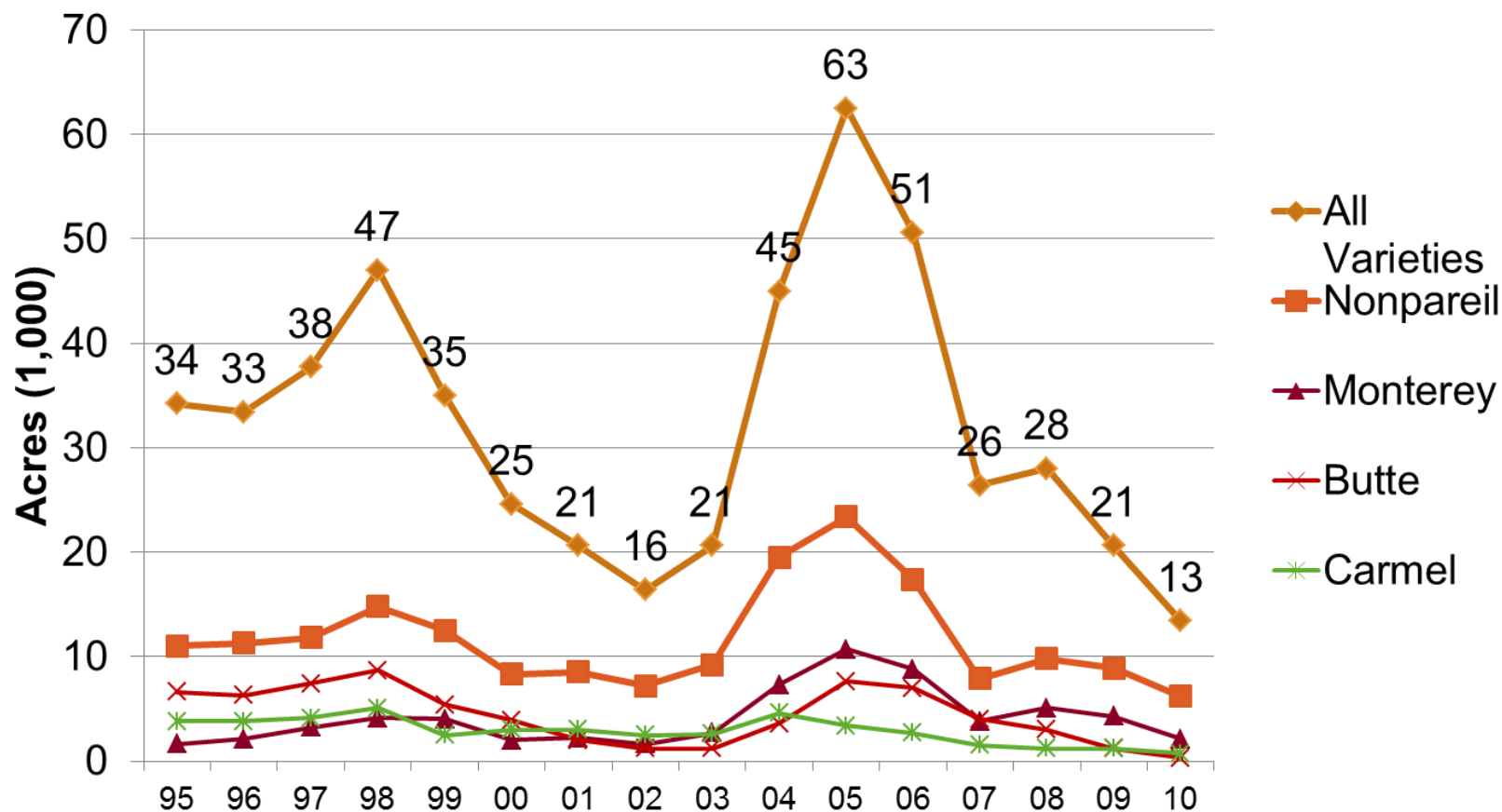
Lbs. /A	1,800	1,900	2,000	2,100	2,200	2,300	2,400
\$1.50	---	---	---	---	23	19	16
\$1.60	---	---	---	21	17	15	13
\$1.70	---	25	19	16	14	13	12
\$1.80	23	18	15	13	12	11	10
\$1.90	17	14	13	11	11	10	10
\$2.00	14	12	11	10	10	9	9

Almond Acres



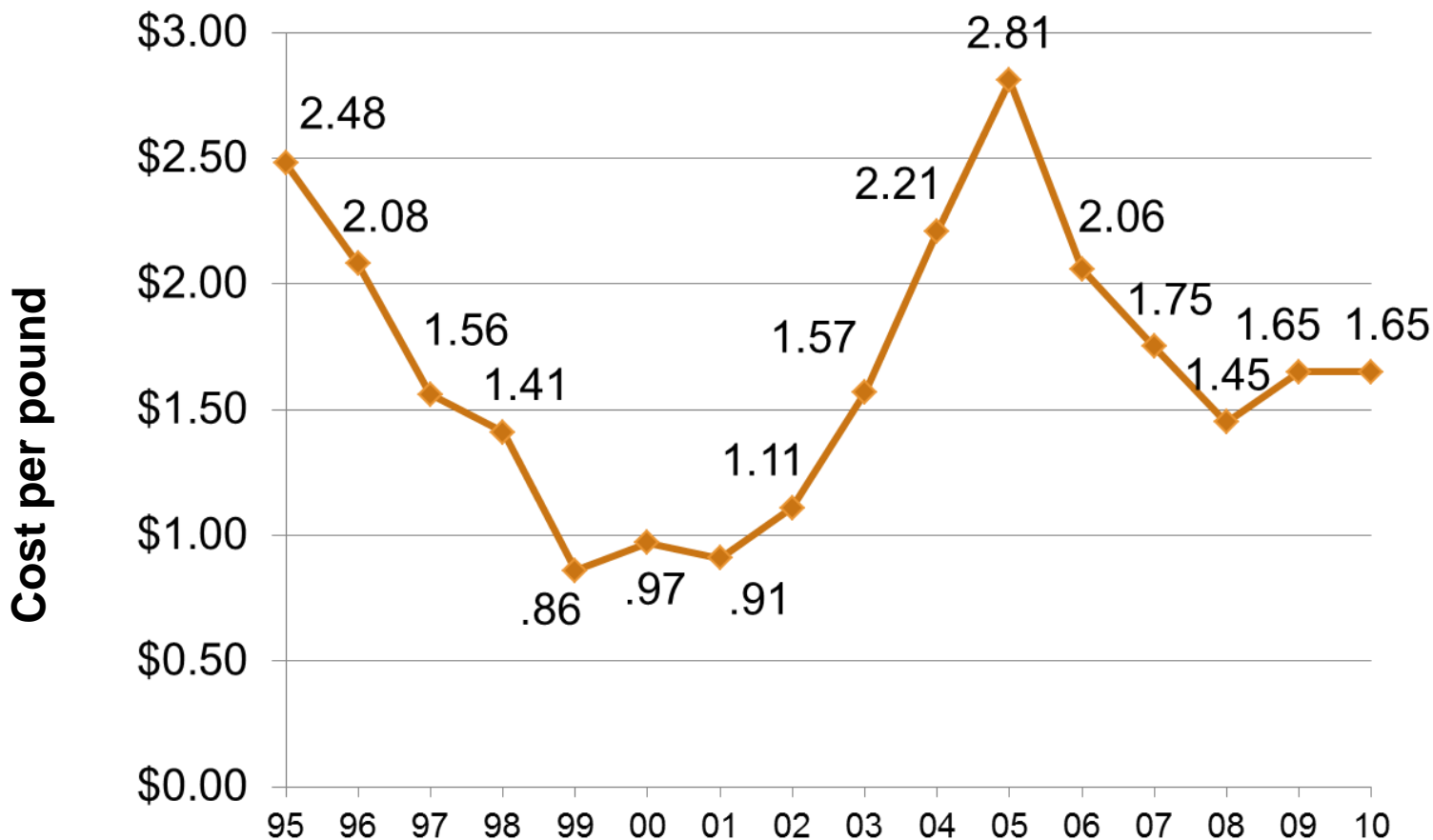
Source: NASS. 2010 California Acreage Report

Almond Acres Planted by Year and Variety



Source: NASS. 2010 California Acreage Report

Almond Price Per Pound



Source: NASS. 2010 California Acreage Report

**Agricultural &
Resource Economics**

UCDAVIS

<http://coststudies.ucdavis.edu>





Tax Planning Today for Tomorrow's Operation

Terry Withrow, Accountant



Return on Investment



Risk

Taxes

Return on Assets



Opportunity Cost

Land Appreciated Value



What's New for 2011



2011 Self-employment Tax

Maximum limit on earnings subject to Social Security tax remains \$106,800

Social Security part of the self-employment tax decreases from 12.4% to 10.4%

S/E tax is reduced from 15.3% to 13.3%

Section 179 expense

The maximum amount you can elect to deduct for most section 179 property you place in service in 2011 is:

- **Federal \$500,000**
- **California \$25,000**

Special Depreciation Allowance

50% January 1, 2008 - September 8, 2010

100% September 9, 2010 – December 31, 2011

50% January 1, 2012 – December 31, 2012

Qualified Property



Acquired by purchase

Acquired NEW



Estate Tax 2011-2012



Estate Tax Details

**Exemption \$5 million (\$10 million if married)
Unused portion transferred to surviving
spouse**

Tax rate 35%



Cicarelli & Withrow CPA's
Modesto, CA
(209)525-8050

Tax Planning Today for Tomorrow's Operation





A Grower's Perspective

Rob Geis, A Grower



Almond Growing Costs



Sample Data Summary

- **6,061 acres of mature almonds in Kern County**
- **Aged 6 years to 25 years old**
- **Fan jet irrigation with reservoir storage**
- **90% well water with electric pumps**
- **10% Federal surface water**
- **Equipment usage is 100% custom farming**

Almond Growing Costs

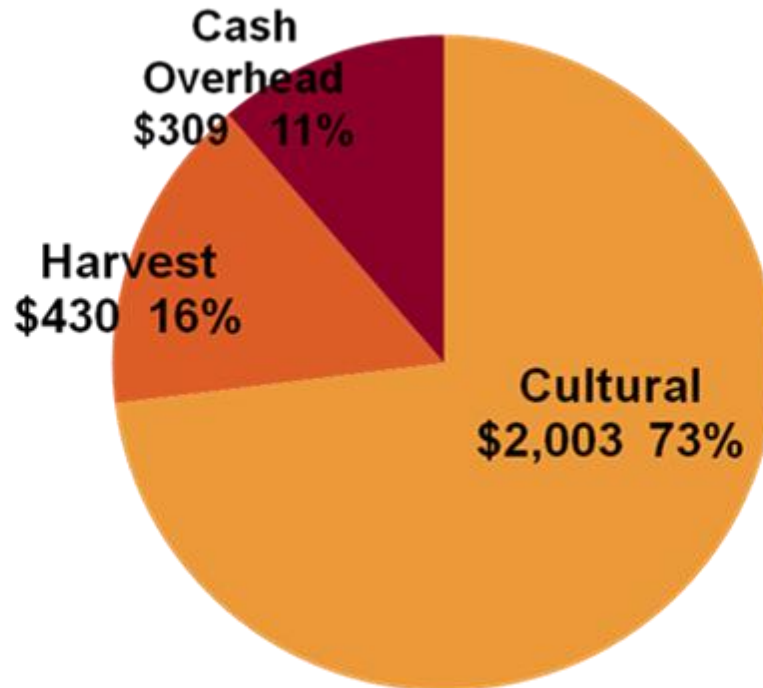


Accounting for Costs

- **Cost accounting software AG Star – Crop Specific & Overhead**
- **Detailed line item budgets**
- **Budget vs. Actual Monthly Reporting**
- **Annual CPA reviewed accrual based Financial Statements**

Almonds - Cost of Production

Cultural, Harvest & Cash Overhead \$2,742



Almonds: Return on Asset



- We use ROA as an indicator for how profitable an investment is relative to its total asset value. $\text{Net Income/Total Assets}$
- Calculation is performed before interest expense or rent to determine operating returns before cost of servicing debt.

\$2,700 lbs. x \$1.70	\$4,590
Costs of Production	<u>(\$2,742)</u>
Net Income	\$1,848

Ground	\$10,000
Development	<u>\$6,000</u>
Total Asset	16,000

Net Income/Total Asset = 12% ROA

Almonds: Pricing Decisions



- **We work very closely with our Processor/Handler on timing of sales for all our processed and brown skin almonds. We have the ability to increase or decrease sales volume based on current market data; shipping numbers, supply & demand changes, general market news, specific product demands. We stay informed and aware.**
- **Make every effort to avoid making sales in a downward trending market or slow buyer activity period**



A Grower's Perspective

Dan Cummings, A Grower



430 Acres; Planted 1999; Glenn County, Road



	<u>Actual</u>	<u>Actual/Acre</u>	<u>Budget</u>	<u>Difference</u>
<u>Revenue</u>				
Almond Revenue	\$1,807,570	\$ 4,204	\$ 1,659,647	\$ 147,923
<u>Expense</u>				
Labor	\$ 108,264	\$ 252	\$ 93,565	\$ 14,699
Farm Mgt & Prof. Services	\$ 59,407	\$ 138	\$ 55,776	\$ 3,631
Supplies/Replants	\$ 5,793	\$ 13	\$ 2,981	\$ 2,812
Pollination	\$ 147,576	\$ 343	\$ 151,000	\$ (3,424)
Chemicals	\$ 99,427	\$ 231	\$ 120,455	\$ (21,028)
Fertilizer	\$ 199,673	\$ 464	\$ 195,528	\$ 4,145
Hulling & Trucking	\$ 62,300	\$ 145	\$ 69,841	\$ (7,541)
Equipment	\$ 136,696	\$ 318	\$ 123,150	\$ 13,546
Property Tax/Insurance	\$ 25,011	\$ 58	\$ 25,073	\$ (62)
Utilities/Irrigation	\$ 26,137	\$ 61	\$ 35,297	\$ (9,160)
Total Expense	\$ 870,284	\$ 2,024	\$ 872,666	\$ (2,382)
Total Gross Profit	\$ 937,286	\$ 2,180	\$ 786,981	\$ 150,305

Investment Considerations



ROI/ROA

Portfolio Diversification

Inflation Hedge

Global Commodity

Tax Planning

Estate Planning

Crop Selection



Ag Real Estate

Tree Crops

Highest & Best Use

Optimal Mix: 2/3 Almonds, 1/3 Walnuts

Marketing Strategy



Handler Mix: Philosophy & Performance

Custom Pack

LT Fixed Rate Contracts

BDG Pool Deferral

Discipline