Economics of Almond Production
Almond Board Webinar
Agenda

Welcome and Overview
  • Sustainable Almond Industry

Grower Economic Modeling

Analysis of Industry Financial Returns

Market Dynamics
  • Q&A Session

Wrap-Up
Growing Advantage: The California Almond Industry

Richard Waycott, ABC President/CEO
The Scope of the California Almond Industry

Spanning 500 miles throughout Central Valley
6,000+ growers, 100 “handlers”
100% of U.S. production
$2.8 billion in farm value
  • 3rd most valuable California crop
75% of worldwide production
$2.4 billion export value (FY 10/11)
  • California’s #1 ag export*
  • 33,000+ jobs created
  • Top U.S. horticultural export crop

* Value Basis
Source: Agricultural Issues Center, University of California 2010-2011
The California Almond crop is growing!
- Fastest growing tree nut crop...by far
- Largest tree nut crop in the world

Almonds influence is growing!
- An important California crop
- An important export crop
- An important food product to manufacturers and consumers
- An important dietary solution for manufacturers, health professionals and consumers
- Leader in tree nut food safety

*We are on the world’s stage...big time*
We Sustain Our Growth with Focus

- Maximized Return on Investment
- Best Use of Resources
- Food Safety is Non-Negotiable
- Best Production and Process Management
- Almonds in Sync with Global Consumers/Customers
- Long Term Sustained Growth as a Preferred Product
Almond Board Strategic Planning Priorities

• Board consensus on 3 Strategic Priorities
  11 supporting objectives

  Invest in programs, research that make almonds a Crop of Choice for California

  Invest in programs, research that build market demand for almonds, making them the Nut of Choice

  Build an Almond Board organization that optimizes its effectiveness in establishing and executing goals

• ABC Sustainability Program at the Heart of Economic Performance

• Have to be Able to Tell Our Story - Our Global Customers Expect No Less

• Regulatory Community Awards our Kind of Leadership

• It’s a No-Brainer – Continuous Improvement has Always been a Great Thing for this Industry
Sustainable almond farming utilizes production practices that are economically viable and are based upon scientific research, common sense and a respect for the environment, neighbors and employees.

The result is a plentiful, healthy and safe food product.
We Must Do This for the Right Reasons

Tell the Truth – Only the Truth

Need for transparency of production practices in the marketplace

Need for conveying *real* production information to public policy makers
Sustainability Process, Product and Pride
The Benefit is Yours

Self-Assessment (practices per management area)

- Irrigation, Nutrient Management, Air, Energy, Pest Management

Grower (confidential) & Statewide Reports

- Grower reports enable comparison to statewide averages

Statewide reports benchmark industry strengths and areas for potential improvement

Customers will give preference to almonds over other nuts

This will earn our industry the coveted Nut of Choice designation
How to Take Action….It’s Easy

Online www.sustainablealmondgrowing.org

Email CASP@Sureharvest.com for login instruction

Upcoming workshops:

Wednesday, July 25 3:00-4:00p.m.

Webinar tutorial on how to navigate new online system

Contact Kendall Barton at kbarton@almondborder.com or 209-343-3245 for details

So where do we stand….

- 781 participants
- 480 submitted assessments
- Covering 70,754 acres
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

Total Investment - $8,738
Almonds
Total Cost of Production  $3,974 per acre

- Trees $376 9%
- Cultural costs $1,782 45%
- Harvest $345 9%
- Cash overhead $442 11%
- Equipment $279 7%
- Land $750 19%
Almonds

Total Cost of Production  $3,974 per acre

- Land $750
- Equipment $279
- Cash overhead $442
- Prune $183
- Weeds $188
- Insects & gophers $328
- Irrigate $207
- Fertilizer $321
- Disease $152
- Pollination $280
- Harvest $345
- Pickup & ATV $123
Almonds
Cultural Costs  $1,782 per Acre

- Pickup & ATV: $123 (7%)
- Fertilize: $321 (18%)
- Pollination: $280 (16%)
- Prune: $183 (10%)
- Irrigate: $207 (12%)
- Disease: $152 (8%)
- Weeds: $188 (11%)
- Insects & gophers: $328 (18%)
Almonds
Cultural Costs  $1,782 per Acre

- Pollination: $280 (16%)
- Custom pruning: $189 (10%)
- Labor: $386 (22%)
- Fuel: $105 (6%)
- Materials: $821 (46%)
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 grower farm price range: $.90 - $2.81
Historic Yields

Pounds per Acre

South
Central
North
Total
Average Annual Prices

Source: NASS. 2010 California Acreage Report
Almonds
Cost Per Pound at Varying Yields

- Total cost
- Total cost - land
- Cash cost
- Operating cost
Almonds
Cost Per Pound at Varying Yields

Pounds per Acre

$ per Pound

Grower Return

Total cost
Total - land
Cash cost
Cultural + harvest
Almonds

Cost Per Pound at Varying Yields

Breakeven yield
2,000 pounds
at $1.90 per pound

Cost per Pound
Pounds per Acre
Total cost
Total cost - land
Cash cost
Cultural + Harvest

Total cost
Total cost - land
Cash cost
Cultural + Harvest
Annual Net Returns Excluding Land Cost*
2,000 Pounds Per Acre, $1.80 Per Pound

* This would be below breakeven with land costs INCLUDED
# Internal Rate of Return at Varying Yields and Prices*

<table>
<thead>
<tr>
<th>Lbs. /A</th>
<th>1,800</th>
<th>1,900</th>
<th>2,000</th>
<th>2,100</th>
<th>2,200</th>
<th>2,300</th>
<th>2,400</th>
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<tbody>
<tr>
<td>$1.50</td>
<td>---</td>
<td>---</td>
<td>-7%</td>
<td>-2%</td>
<td>1%</td>
<td>3%</td>
<td>5%</td>
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<tr>
<td>$1.60</td>
<td>-13%</td>
<td>-5%</td>
<td>-1%</td>
<td>2%</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>$1.70</td>
<td>-4%</td>
<td>0%</td>
<td>3%</td>
<td>5%</td>
<td>7%</td>
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<td>11%</td>
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<tr>
<td>$1.80</td>
<td>1%</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
<td>10%</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>$1.90</td>
<td>4%</td>
<td>7%</td>
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<td>11%</td>
<td>12%</td>
<td>14%</td>
<td>15%</td>
</tr>
<tr>
<td>$2.00</td>
<td>7%</td>
<td>9%</td>
<td>11%</td>
<td>13%</td>
<td>14%</td>
<td>16%</td>
<td>17%</td>
</tr>
</tbody>
</table>

* Land Costs are EXCLUDED in the calculation of Internal Rate of Return
Accumulated Net Return per Acre*
2,000 lbs. per acre and $1.80/lb.

* EXCLUDING Land Costs
# Payback Period for Investment (Years)

## Varying Yields and Prices*

<table>
<thead>
<tr>
<th>Lbs. /A</th>
<th>1,800</th>
<th>1,900</th>
<th>2,000</th>
<th>2,100</th>
<th>2,200</th>
<th>2,300</th>
<th>2,400</th>
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<tbody>
<tr>
<td>$1.50</td>
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<td>---</td>
<td>23</td>
<td>19</td>
<td>16</td>
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<td>$1.90</td>
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<td>10</td>
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<tr>
<td>$2.00</td>
<td>14</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

* Land costs are EXCLUDED in this payback period calculation
Almond Acres

Source: NASS. 2010 California Acreage Report
Almond Acres Planted by Year and Variety

Source: NASS. 2010 California Acreage Report
Almond Grower Farm Price Per Pound

Source: NASS. 2010 California Acreage Report
http://coststudies.ucdavis.edu
Economics of Almond Production

Bill Harp – Almond Grower
## Grower Return by Region for 2010 CY

<table>
<thead>
<tr>
<th>Almond Growing Region</th>
<th>Northern</th>
<th>Central</th>
<th>Southern</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Per Acre</td>
<td>1,698</td>
<td>1,853</td>
<td>2,762</td>
<td>2,200</td>
</tr>
<tr>
<td>Bearing Acres</td>
<td>130,869</td>
<td>318,129</td>
<td>291,002</td>
<td>740,000</td>
</tr>
<tr>
<td>Total Reported Production</td>
<td>222,198,895</td>
<td>586,123,982</td>
<td>819,869,378</td>
<td>1,628,192,255</td>
</tr>
<tr>
<td>Total Paid Weight¹:</td>
<td>220,465,744</td>
<td>579,288,604</td>
<td>810,308,061</td>
<td>1,610,062,409</td>
</tr>
<tr>
<td>Total Paid Weight/Acre:</td>
<td>1,685</td>
<td>1,821</td>
<td>2,785</td>
<td>2,176</td>
</tr>
<tr>
<td>Grower Price/Lb²:</td>
<td>$1.80</td>
<td>$1.77</td>
<td>$1.79</td>
<td>$1.78</td>
</tr>
<tr>
<td>Paid Grower Revenue/Acre³:</td>
<td>$3,030</td>
<td>$3,215</td>
<td>$4,974</td>
<td>$3,874</td>
</tr>
<tr>
<td>Growing Costs/Acre SJ Valley:</td>
<td>$2,700</td>
<td>$2,700</td>
<td>$2,700</td>
<td>$2,700</td>
</tr>
<tr>
<td>Discounted Growing Cost per Acre⁴:</td>
<td>$400</td>
<td>$200</td>
<td>$0</td>
<td>$157</td>
</tr>
<tr>
<td>Net Estimated Grower Cost:</td>
<td>$2,300</td>
<td>$2,500</td>
<td>$2,700</td>
<td>$2,543</td>
</tr>
<tr>
<td>Net Grower Return/Acre:</td>
<td>$730</td>
<td>$715</td>
<td>$2,274</td>
<td>$1,331</td>
</tr>
</tbody>
</table>

1. Excludes inedibles
2. Based on the grower returns per pounds by Variety as reported by the State top 5 processors
3. Based on 2010 UC Davis Study. Excludes land and trees at $1,106/acre.
4. Due to cheap water
Almond Grower ROA Definition

• The yearly return of one bearing acre divided by the market value of one bearing acre

\[
\frac{\text{Grower Return} \$}{\text{Market Value} \$} = \frac{\$1,331}{\$18,000} = 7.4\%
\]

Grower Return = Revenue - Cost
Grower Return (ROA) History

Almond Grower Return - Return on Asset Analysis
Analysis of the most recent past 10 Years: 2001 - 2010

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</thead>
<tbody>
<tr>
<td>Wtd. Avg Yield/Acre</td>
<td>1,810</td>
<td>1,830</td>
<td>2,172</td>
<td>2,200</td>
<td>1,943</td>
</tr>
<tr>
<td>Wtd. Avg Net Return/Acre</td>
<td>$545</td>
<td>$1,854</td>
<td>$981</td>
<td>$1,331</td>
<td>$1,207</td>
</tr>
<tr>
<td>Wtd. Avg Market Value of 1 Acre$1</td>
<td>$7,675</td>
<td>$13,956</td>
<td>$17,187</td>
<td>$18,000</td>
<td>$13,423</td>
</tr>
<tr>
<td>Pre-Tax Return on Asset$2</td>
<td>7.1%</td>
<td>13.3%</td>
<td>5.7%</td>
<td>7.4%</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

| Wtd. Avg Asset Appreciation | $669 | $1,849 | $673 | $1,000 | $1,131 |
| Asset Appreciation % | 8.7% | 13.2% | 3.9% | 5.6% | 8.4%  |
| Pre-Tax Return on Asset$2 incl Asset Appreciation | 15.8% | 26.5% | 9.6% | 12.9% | 17.4% |

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 Range¹

• 10-20% Yearly Return on Asset (excluding asset appreciation)

• 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

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¹ Grower’s Perspective: As an independent California Almond Grower and Investor, my opinion of an acceptable (“fair and reasonable”) Almond Grower ROA is as follows.
## Almond Grower Return - Return on Asset Analysis vs. Target

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

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</thead>
<tbody>
<tr>
<td><strong>State-wide average per Acre</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Target</strong> Average Net Return @ 10% pre-tax ROA</td>
<td>$768</td>
<td>$1,396</td>
<td>$1,719</td>
<td>$1,800</td>
<td>$1,342</td>
</tr>
<tr>
<td><strong>Actual</strong> Average Net Return more/(less) than <strong>Target</strong>:</td>
<td>($223)</td>
<td>$458</td>
<td>($737)</td>
<td>($469)</td>
<td>($135)</td>
</tr>
<tr>
<td><strong>State-wide Total ($ millions)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average Annual</strong> Net Revenue vs. Target:</td>
<td>($121)</td>
<td>$276</td>
<td>($465)</td>
<td>($347)</td>
<td>($84)</td>
</tr>
<tr>
<td><strong>Crop Year Grouping</strong> Net Revenue vs. Target:</td>
<td>($362)</td>
<td>$1,104</td>
<td>($1,394)</td>
<td>($347)</td>
<td>($836)</td>
</tr>
</tbody>
</table>
# Projection of Bearing Acreage Increase based Known & Estimated Plantings and Removals

<table>
<thead>
<tr>
<th>Actual</th>
<th>Already Reported Plantings</th>
<th>Estimated Plantings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2012</td>
<td>2013</td>
</tr>
<tr>
<td>Actual</td>
<td>Forecasted Bearing Acres</td>
<td>760,000</td>
</tr>
<tr>
<td>2012</td>
<td>780,000</td>
<td>794,797</td>
</tr>
<tr>
<td>2013</td>
<td>803,733</td>
<td>844,733</td>
</tr>
<tr>
<td>2014</td>
<td>885,733</td>
<td>926,733</td>
</tr>
<tr>
<td>2015</td>
<td>2016</td>
<td>2017</td>
</tr>
</tbody>
</table>

**Forecasted Bearing Acres**

- **Acres Planted 3 years prior: (as originally Reported)**
  - 2011: 22,832
  - 2012: 18,623
  - 2013: 14,960
  - 2014: 35,000
  - 2015: 35,000
  - 2016: 35,000

- **Adj. Planted Acreage: 60% more than Orig. Reported**
  - 2011: 36,696
  - 2012: 29,797
  - 2013: 23,936
  - 2014: 56,000
  - 2015: 56,000
  - 2016: 56,000

- **Expected Removals (average of 2004-2011)**
  - 2011: 16,696
  - 2012: 15,000
  - 2013: 15,000
  - 2014: 15,000
  - 2015: 15,000
  - 2016: 15,000

- **Net Increase in Bearing Acres (estimated) vs prior year:**
  - 2011: 20,000
  - 2012: 14,797
  - 2013: 8,936
  - 2014: 41,000
  - 2015: 41,000
  - 2016: 41,000

**Acres Planted and are Standing as of 2011**

- that are more than 20 years old (1990 or earlier planting): 110,337
- that are more than 17 to 20 years old (1991-1993 plantings): 38,584

**Average Net Increase in Bearing Acres 2004-2012:** 26,250 acres

**Largest Net Increase in Bearing Acres from one crop year to the next:** 40,000 acres (In 2008 & 2009 Crop Years).
# California Almond Demand History

<table>
<thead>
<tr>
<th>Actual Demand Growth</th>
<th>3 Year</th>
<th>5 Year</th>
<th>10 Year</th>
<th>15 Year</th>
<th>Achieved</th>
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</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>10.2%</td>
<td>8.4%</td>
<td>9.0%</td>
<td>10.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Export</td>
<td>12.1%</td>
<td>14.7%</td>
<td>9.5%</td>
<td>9.2%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Total</td>
<td>11.5%</td>
<td>12.7%</td>
<td>9.3%</td>
<td>9.3%</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period when Target ROA Achieved</th>
<th>'04 - '07</th>
</tr>
</thead>
</table>

**Recent Crop Year Demand Growth Averages**

**Outlook 2011 Crop Year Demand Growth = 15.3%**
**Actual 2010 Crop Year Demand Growth = 13.3%**
It Appears Future Demand Growth will be Restricted by Acreage Growth

2012 - 2017 Demand Growth based on Projected Bearing Acres

<table>
<thead>
<tr>
<th>Projected Demand Growth</th>
<th>Domestic</th>
<th>Export</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.8%</td>
<td>2.5%</td>
<td>2.0%</td>
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<tr>
<td></td>
<td>2.6%</td>
<td>3.3%</td>
<td>2.8%</td>
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<tr>
<td></td>
<td>3.3%</td>
<td>4.1%</td>
<td>3.6%</td>
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<tr>
<td></td>
<td>4.1%</td>
<td></td>
<td>4.3%</td>
</tr>
</tbody>
</table>

Unrestricted
Conservative

<table>
<thead>
<tr>
<th>Demand Growth</th>
<th>2,400</th>
<th>2,500</th>
<th>2,600</th>
<th>2,700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>1.8%</td>
<td>2.6%</td>
<td>3.3%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Export</td>
<td>2.5%</td>
<td>3.3%</td>
<td>4.1%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Total</td>
<td>2.0%</td>
<td>2.8%</td>
<td>3.6%</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

(CAGR = 6.3%)

- Conservative Demand Growth Forecast based on Research & Recent History
- Actual Avg. 2008 - 2010
- Deloitte 2011 Study
- Assumes Industry must carry-out 13% of Total Supply each year.
Acreage Restricted Supply (Available to Ship) vs. Conservative Unrestricted Demand Growth @ 6.3% CAGR

Available Supply at Yield/Acre Scenario

Acreage Restricted Supply = Net Edible Production + carry-in supply – (less: required carryout supply)
Required carryout = 13% of Total Supply for a given CY.
Bearing Acreage Required to Meet Projected Average Demand of 7.3% (2012 – 2017)

Acreage at Yield/Acre Scenario

- Projected Acres
- @ 2,400
- @ 2,500
- @ 2,600
- @ 2,700

Avg. Yearly Net Increase in Bearing Acres 2012 - 2017

@ Current Projected Acres: 28,000

Yearly Acreage Increase required

- @ 2,400 lbs/acre: 68,000
- @ 2,500 lbs/acre: 60,000
- @ 2,600 lbs/acre: 53,000
- @ 2,700 lbs/acre: 46,000

Model assumes 15% of Total Current Demand must be carried-out each crop year (=13% of Total Supply)
Caution: Do not RUSH to Overplant

• Be Humble, Be Wise – Use the 4 S’s
  • Slow (Study Costs and ROA before Planting)
  • Steady in Planting
  • Stable Price and Supply for Growers and Customers from Supply Management
  • Sustainable ROA and Health of Almond Industry

Remember

DO Not Rush to Overplant
Grower Price Range that Achieves Target ROA

State Wide Average for CY 2010
- Grower Price: $1.78/lb
- Yield/Acre: 2,200
- ROA: 7.4%

10% ROA 20% ROA 2010 Outlook

Grower Price per Lb

Net Yield/Acre
Outlook for 2011-2016

Optimism for Grower Returns for 2011-2016¹:

• 10-20% Grower ROAs are possible with projected almond supply and demand fundamentals

• Asset Appreciation may be minimal for 2011-2016

• Growers need to become informed, aware, and involved to support our capable Almond Handlers

• Review Monthly information and reports from Almond Board

• Research and study Almond Market Dynamics and apply principles to practice on regular basis

• Get involved and communicate with growers statewide

1. Grower’s Perspective: As an independent California Almond Grower and Investor,
Price Elasticity ($E_d$) measures the change in quantity demanded in response to a change in price.

\[
\frac{\% \Delta \text{Quantity Demanded (shipments)}}{\% \Delta \text{Price}} = E_d
\]

- **Moderately Elastic ($E_d = -1$)**: A 10% increase in price will likely cause a 10% decrease in quantity.
- **Perfectly Inelastic ($E_d = 0$)**: A 10% increase in price will likely cause no change in quantity.
Price Elasticities of Select Consumer Goods

Goods that are more essential to everyday living and that have fewer substitutes are typically inelastic

- Almonds: -0.48
- Eggs: -0.10
- Cotton: -0.67
- Walnuts: -0.25
- Gasoline: -0.09
- Rice: -0.55
- Wine: -1.0
- TVs: -1.2
- Liquor (Spirits): -1.5
- Airline Travel: -2.4
- Coca-Cola: -3.8
-风电: -1.0
- Ford Compact Car: -2.8

Inelastic: $-1 < E_d \leq 0$
Moderately Elastic: $-2 < E_d \leq -1$
Very Elastic: $E_d \leq -2$

Source: Mackinac Center for Public Policy, U.C. Davis, Dept of Agriculture and Resource Economics, June 2008 Working Paper
Almond Price Elasticity

Almonds have become more **inelastic** over the last 40 years

1970s

\[ E_d = -1.74 \]

1990s

\[ E_d = -1.05 \]

Today

\[ E_d = -0.48 \]

Over last 3 years, both prices and demand (shipments) have gone up!

Proof of inelasticity

**US Almond Industry**
*Actuals 2008-2010*

<table>
<thead>
<tr>
<th>Year</th>
<th>Shipments (million lbs)</th>
<th>Grower Price ($/lb)</th>
<th>Revenue (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1,389</td>
<td>$1.45</td>
<td>$2.0</td>
</tr>
<tr>
<td>2009</td>
<td>1,472</td>
<td>$1.65</td>
<td>$2.4</td>
</tr>
<tr>
<td>2010</td>
<td>1,668</td>
<td>$1.75</td>
<td>$2.9</td>
</tr>
</tbody>
</table>

Source: USDA NASS
What does this imply?

A change in price of almonds will likely not create significant change in demand.

- This has been proven over the last 3 years, where almond prices went up from $1.45 to $1.75 / lb and shipments increased from 1.4 billion lbs to 1.7 billion lbs.
1. **10-20% Grower ROAs are possible** and can be achieved consistently due to the price inelasticity of almonds

2. **Effective supply management can reduce price volatility**

3. **Growers and handlers should work together** to achieve an improved ROA
ROA Planning Tool

Worksheet
Economics of Almond Production
Almond Board Webinar