Sustainability and Almonds: From the Orchard to the Shelf

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Sustainability and Almonds: From the Orchard to the Shelf

• Julie Adams, Almond Board of California (Introduction)
• Gabriele Ludwig, Almond Board of California (Introduction)
• Jeff Dlott, SureHarvest
• Tess Wilkins, Costco Wholesale
• Daniel Sonke, Campbell Soup Company
• Craig Duerr, Campos Brothers Farms
Gabriele Ludwig and Julie Adams, Almond Board of California
What is the California Almond Sustainability Program?

Gabriele Ludwig, Director, Sustainability & Environmental Affairs
The CASP Approach

• Established in 2009, CASP encourages almond grower and handler self-assessment to track adoption of responsible farming practices

• Current CASP modules
  – Irrigation management
  – Nutrient and soil management
  – Air quality
  – Energy efficiency
  – Ecosystem management
  – Financial management
  – Pest management
  – Workplace and communities
  – NEW: Bee Health and Pollination
Self-Assessment of Practices

• Jump in acres assessed since 2013 season
  – Doubled from 11% to 22%

• More than 50% of managed acres
  – Managed acres are the total acres under management by companies that have completed an assessment
Self-Assessment of Practices

- Significant increase in the percentage of assessments completed online
Self-Assessment of Practices

• 2016-2017: Investment in next generation online experience
  – New look and feel, improved user experience for phone, tablet, & desktop
A Data Gathering Tool

• A Tool to have Data on grower and handler practices
  – CASP participation and the data to inform stakeholders and media

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Through the California Almond Sustainability Program, we’ve achieved:

449,553
ACRES OF CALIFORNIA ALMONDS REPRESENTED BY ASSESSMENTS COMPLETED

3,173
SELF-ASSESSMENT MODULES COMPLETED

120
EDUCATIONAL WORKSHOPS WITH OVER 1,600 PARTICIPANTS

8
EDUCATIONAL SELF-ASSESSMENT MODULES

2
RESEARCH-BASED CALCULATORS:
  • IMPROVING IRRIGATION
  • FINE-TUNING FERTILIZER

1
PROGRAM DEVOTED TO CONTINUOUS IMPROVEMENT
A Tool for Grower/Handler Feedback

- Confidential, customized benchmark reports by module and individual practice
- Hold outreach events on grower relevant topics

Weed ID event

<table>
<thead>
<tr>
<th>Practice or Metric</th>
<th>Your Selection</th>
<th>Use Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORCHARD ESTABLISHMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Were you involved in this orchard's establishment?</td>
<td></td>
<td>82.7 %</td>
</tr>
<tr>
<td>2. Soil maps (e.g., NRCS soil series or web soil survey) were used to identify</td>
<td></td>
<td>61.8 %</td>
</tr>
<tr>
<td>potential variations in soil texture, salinity, water holding capacity, or other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>factors.</td>
<td></td>
<td></td>
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<tr>
<td>3. Aerial or satellite photos (e.g., Google Earth) were used to identify</td>
<td></td>
<td>46.0 %</td>
</tr>
<tr>
<td>potential variations in soil texture, salinity, or other factors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Yield maps from the previous crop (almonds or another crop) were used to</td>
<td></td>
<td>46.4 %</td>
</tr>
<tr>
<td>identify potential variations in soil texture, salinity, or other factors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. A GPS map of soil characteristics using sensing technology (e.g., EC, Vedit,</td>
<td></td>
<td>15.2 %</td>
</tr>
<tr>
<td>FMS) was made and used to identify potential variations in soil texture,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>salinity, or other factors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Backhoe pits were dug or deep auger/core samples were taken (guided by the</td>
<td></td>
<td>67.4 %</td>
</tr>
<tr>
<td>above and other observed factors) in strategic places to determine:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6a. texture (percent sand, clay, silt) or saturation percentage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6b. compaction layers or other soil stratification</td>
<td></td>
<td>70.9 %</td>
</tr>
<tr>
<td>6c. salinity</td>
<td></td>
<td>63.0 %</td>
</tr>
<tr>
<td>6d. pH</td>
<td></td>
<td>68.3 %</td>
</tr>
<tr>
<td>6e. soil organic matter</td>
<td></td>
<td>60.2 %</td>
</tr>
</tbody>
</table>
A Tool to Assist in Meeting Regulatory Requirements for Growers

• Tools to simplify ILRP compliance and optimize N use
A Tool to Support AIM Initiatives

- Irrigation calculator and revised irrigation module in support of Irrigation Improvement Continuum
A Tool to tell Our Story – with Facts

Through Almond Board research programs, almond farmers have been funding **water efficiency research since 1982** with over *90 projects* funded to date.

• Over the past 20 years, almond growers have improved their **water use efficiency by 33%**, producing **more crop per drop**.

• **70% of almond orchards use micro-irrigation**, applying water directly in the root zone, and allowing for precise timing and rate of irrigation.

• **83% of growers practice demand-based irrigation** using a combination of weather data, tree demand data, and/or soil moisture data.
Telling our Story with CASP is Supported by the Research at the Almond Board of California

- Consistently funding and executing initiatives since 1973

- Total investment since 1973 of more than $50 million to date.

➢ Tradition of Continuous Improvement
A Tool to Help Meet Buyers Interest & Concerns

• Have more questions from almond buyers about sustainability
  – Over last 2 years multiple meetings/webinars with key almond buyers re sustainability

• Simply having a program that has been in place since 2009 impresses

• Having data re certain practices helpful
  – E.g. how widespread is micro irrigation adoption?

• Working now to see how can leverage the CASP further for individual handlers
  – At the industry Round up this morning, we heard that documenting sustainable practices is a way to build confidence with buyers and consumers
  – Jeff Dlott will be presenting next on creating opportunities to leverage CASP in the supply chain
CASP Connecting with the Supply Chain

Jeff Dlott, President/CEO
SureHarvest
The Almond Supply Chain

Flow of goods and services
• Value generation at each link
• Value attributes
  – Inherent: taste, nutrition, safety
  – Added: transparency, sustainability, assurance
The Almond Supply Chain

Value attributes based on information and flow
- Bi-directional, clearly linking demand and supply

How produced?
Where from?
Other attributes
CASP’s Core Information Attributes

• Breadth and Depth?
• Credibility and Rigor?
• Supply Chain Relative Importance?
• Assurance?
Breadth and Depth

<table>
<thead>
<tr>
<th>Sustainability Areas Covered by Practices and/or Metrics</th>
<th>CASP Self-Assessment Program</th>
<th>Global GAP</th>
<th>Rainforest Alliance - SAN</th>
<th>SCS Certified Sustainably Grown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land: Soil Management</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Land: Nutrient Management</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Land: Conversion/Degradation</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Atmosphere: GHGs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Atmosphere: Air Quality</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Water: Use</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Water: Quality</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Integrated Pest Management</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Energy Use</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>People: Human Resources</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>People: Communities</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Increase Revenue</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Total No. of Areas Covered</td>
<td>13</td>
<td>8</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>% Total No. of Areas Covered</td>
<td>100%</td>
<td>62%</td>
<td>85%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Credibility and Rigor

ISEAL Credibility Principles

<table>
<thead>
<tr>
<th>ISEAL Principle</th>
<th>CASP Self-Assessment Program</th>
<th>Global GAP</th>
<th>Rainforest Alliance - SAN</th>
<th>SCS Certified Sustainably Grown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability</td>
<td>92%</td>
<td>100%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Improvement</td>
<td>83%</td>
<td>100%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Relevance</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Total Rigor</td>
<td>83%</td>
<td>75%</td>
<td>50%</td>
<td>61%</td>
</tr>
<tr>
<td>Engagement</td>
<td>92%</td>
<td>75%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Impartiality</td>
<td>100%</td>
<td>100%</td>
<td>83%</td>
<td>100%</td>
</tr>
<tr>
<td>Transparency</td>
<td>83%</td>
<td>67%</td>
<td>44%</td>
<td>56%</td>
</tr>
<tr>
<td>Accessibility</td>
<td>89%</td>
<td>78%</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>Truthfulness</td>
<td>100%</td>
<td>100%</td>
<td>83%</td>
<td>83%</td>
</tr>
<tr>
<td>Efficiency</td>
<td>100%</td>
<td>67%</td>
<td>83%</td>
<td>100%</td>
</tr>
<tr>
<td>% of Total Points</td>
<td>92%</td>
<td>85%</td>
<td>74%</td>
<td>82%</td>
</tr>
</tbody>
</table>
Supply Chain Relative Importance: Bee Health & Pollination?

• Critical to production, high interest by consumers
  – Opportunity to ask our panel members

• Expert content & best practices captured in new CASP module

• Next generation CASP technology to simplify information management
Supply Chain Confidence: Assurance

• Range of approaches each with benefits & costs
  – Assessment
  – Verification of implementation
  – Certification to a standard

• Key value propositions
  – Creating enough value at each link in the supply chain to be economically sustainable
  – Driving out costs, e.g. reducing redundancy

• Next steps are to engage supply chain partners to collaborate on assurance solutions

• We are very fortunate to get started today
  – Our panel members coming up next!
Tess Wilkins,
Costco Wholesale
Costco’s Approach to Responsible Buying
The Relationship

GROWER

Responsibility & Investment

PROCESSOR SUPPLIER

COSTCO WHOLESALE

Costco PhD Scholar - $150,000
- 1st MSU
- 2nd U of Minn

Tech Transfer Teams - $585,000 + BeeKeeper Funds
- Real time national data made available electronically.
- Most robust data base globally
  • 96 Keepers
  • 491,000 hives
  • Reduced colony loss by 6% (29,500)
  • $7.4M in savings @ $250/hive

Long Term Stock Improvement (breeding program) - $420,000
- World’s 1st Honey Bee Germplasm Repository w/cryopreservation protocols & repository techniques
- New bee genetic material in the US in 90 years
- Recognized as a National Treasure by USDA
Traceability is the ability to verify the history, location, or application of an item by means of documented recorded identification.

Verified by Third Party As Needed
Daniel Sonke, Campbell Soup Company
Diverse Portfolio

12 Brands with Sales Exceeding $100 Million
We make real food for real people. They trust us to provide food and drink that is good, honest, authentic, and flavorful—made from ingredients that are grown, prepared, cooked, or baked with care.

People love that our food fits their real lives, fuels their bodies, and feeds their souls.
Real food that matters for life's moments
Craig Duerr, Campos Brothers Farms
ABC Sustainability and Almonds

“As farmers we consider ourselves the original stewards of the environment. Our livelihood depends on the sustainability of our land and our ability to harness and responsibly use all that Mother Nature provides”

Tony Campos

*As with Food Safety, documentation ………
Questions?