The ABCs of ABC
1. INTRO: VISION, MISSION, GOALS
2. GLOBAL TECHNICAL AND REGULATORY AFFAIRS DEPARTMENTS
   – Julie Adams
3. SCIENTIFIC AFFAIRS DEPARTMENT
   – Karen Lapsley
4. GLOBAL MARKETING DEPARTMENT
   – Emily Fleischmann
5. GLOBAL COMMUNICATIONS DEPARTMENT
   – Daren Williams
6. AG AFFAIRS
   – Josette Lewis
7. Q&A
Vision
California Almonds make life better by what we grow and how we grow.

Mission
Expand global consumption of California almonds through leadership in strategic market development, innovative research, and accelerated adoption of industry best practices.
REDUCE THE AMOUNT OF WATER USED TO GROW A POUND OF ALMONDS BY 20%

ACHIEVE ZERO WASTE IN OUR ORCHARDS BY PUTTING EVERYTHING WE GROW TO OPTIMAL USE

REDUCE DUST DURING ALMOND HARVEST BY 50%

INCREASE ADOPTION OF ENVIRONMENTALLY FRIENDLY PEST MANAGEMENT TOOLS BY 25%

ACHIEVE ZERO WASTE IN OUR ORCHARDS BY PUTTING EVERYTHING WE GROW TO OPTIMAL USE
JULIE ADAMS
Global Technical and Regulatory Affairs
HOW TO BE SUCCESSFUL WHEN EVERYTHING IS SO COMPLEX!
EXPORT OR DOMESTIC: THE ISSUES ARE DIVERSE

FSMA
Prop 65
Production Practices
Plant-based Foods
Labeling
Right to Farm
WATER

Import controls
Pesticide MRLs
Trade Agreements
Hazard vs Risk
Supply Chain & Sustainability

Food Safety Legislation
Bulk Labeling
Tariff Barriers
Market Access
Quality vs Safety Standards
Certification Requirements
KEY ISSUES IN OUR MAIN MARKETS

India:
- 35→42 rps on inshell on 4/1
- GSP suspension
- No Objection Certificates
- Grades/Standards

China:
- 60% tariff on kernel/inshell U.S. almonds
- 20% tariff on preserved nuts (in cans)
- 40% tariff on processed or preserved

Japan:
- Aflatoxin rejections

E.U.:
- Aflatoxin rejections
- EU cut off criteria
- Brexit
HOW ARE WE ENGAGING AND SUCCEEDING?

Grades/Standards:
Food safety vs quality parameters

Pelletized hulls:
Market access for export feed use

Pesticides:
Hazard vs risk criteria; global MRL harmonization

Rejections in EU/Japan:
Reduced controls, equivalent systems

Sustainability:
Supply chain project, benchmarking
WHO KNOWS WHAT WILL BE ON THE HORIZON

- Stay engaged
- Build relationships
- Be an authoritative resource for technical, science-based data
- Support industry and ABC priorities – from producer to customer
- Understand solutions may need to be “creative” but are usually not immediate.
KAREN LAPSLEY
Scientific Affairs
ALMOND BIOMASS WORK GROUP NOW THREE YEARS OLD

First projects funded now in print!

ATTEND conference sessions and posters for more information

Seeking Optimal Uses

Almonds grow in a shell, protected by a hull, on a tree. Traditionally, these coproducts have been used as livestock bedding, dairy feed and transformed into electricity. However, changing markets and increased production have led the almond industry to investigate new uses.

Guided by ABC’s Biomass Workgroup, new research is exploring a variety of options for these materials, aiming to identify optimal uses that will bring both environmental and economic benefits. While some possibilities, like feed-grade applications, will take longer to research and develop, others are already well on their way to becoming viable options.

WHOLE ORCHARD RECYCLING

MATERIAL WOODY BIOMASS

At the end of their productive lives, whole almond trees are ground into small chips and discarded into the soil. Preliminary research has found benefits like increased soil organic matter, water infiltration and carbon sequestration.

FEEDSTOCK PRODUCTION

MATERIAL SHELLS

Almonds’ sugary, fibrous hulls can feed animals big and small, particularly in the emerging world of insect farming. Black soldier fly larvae, a feedstock for poultry and aquaculture, can be raised on an almond hull diet.

RECYCLED PLASTICS

MATERIAL SHELLS

When transformed into a charcoal-like powder through combustion, almond shells can serve as a strengthening agent and catalyst for post-consumer recycled plastics. Applications include pallets, gardening pots and more.
ALMOND QUALITY
ALMOND SENSORY ATTRIBUTES — WHAT DOES THE FOOD INDUSTRY WANT?
WHY AND WHERE IS FLAVOR IMPORTANT?

Consistent consumer experience is important

**Food Categories**
- **Low almond flavor desired**
  1. Almond Milk
  2. Almond flour/meal, for baking and gluten free cooking

**Food Categories**
- **Strong almond flavor/aroma desired**
  1. Snacking
  2. Chocolate
  3. Almond butter
  4. Baking
WHAT DIFFERENTIATES VARIETIES – BENZALDEHYDE FLAVOR

Amaretto flavor key flavor differentiator between varieties

* 90% Confidence Level
** 95% Confidence Level
NSD: Not Significantly Different
TWO YEAR SHELF LIFE STUDY OF RAW AND ROASTED NONPAREIL ALMONDS
MAJOR FINDINGS FROM SHELF LIFE STUDY

Approximate Increases (in months) until Expected Sensory Failure$^{2,4}$

- Packaging Material$^{1,5}$: 17.5
  - Polypropylene Bags (rather than cardboard boxes): 7.2
  - High Barrier Bags (rather than cardboard boxes)

- Temperature and RH%:
  - Reduce Temp. by 10°C: 5.9
  - Reduce RH by 10%: 4.2

RAW ALMONDS in CARDBOARD BOXES at 10°C and 65% RH should last: ~15.8 Months

TRADITIONAL STORAGE RECOMMENDATIONS$^1$
- Store under cool and dry conditions (<10°C/50°F and <65% relative humidity).
- Almond moisture should be maintained at 6% or less.
- Avoid exposure to strong odors as almonds can absorb odors of other materials if exposed for prolonged periods.
NUTRITION AND HEALTH
ONGOING ABC HUMAN CLINICAL STUDIES TO SUPPORT GLOBAL MARKETS (16)

- Glucose Regulation (7)
- Weight Management/ Satiety & Gut Health (5)
- Cognition (2)
- Skin Health (2)
Experimental Design:

- College Freshmen on a food-desert campus
- ALL lived on campus with cafeteria meal plan
- Ate almonds/control for 8 weeks

<table>
<thead>
<tr>
<th>ALMOND</th>
<th>CONTROL</th>
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<tbody>
<tr>
<td>n=38</td>
<td>n=35</td>
</tr>
<tr>
<td>2 ounces (57 g, 325 kcal) whole unsalted almonds</td>
<td>Isocaloric graham crackers (5 sheets) No nuts or nut products</td>
</tr>
<tr>
<td>Consistent dietary patterns</td>
<td>Consistent physical activity</td>
</tr>
<tr>
<td>Consistent supplement use</td>
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</tbody>
</table>

Results

Almonds had a protective effect on HDL-C levels

Almonds increased the total number of species of gut bacteria

UC MERCED MILLENNIAL RESEARCH: ALMONDS AS A HEALTHY SNACK
INFLUENCE OF ALMONDS ON APPETITE CONTROL – STUDY UNIV. OF LEEDS, UK

Sample
N=42
Women
Age = 26±7.9
BMI = 22.0±2.0

Almonds, crackers and water compared for effects on satiety quotient, hunger and food reward

Almonds more satiating than crackers per unit of digestible energy

Lower hunger with almonds compared to crackers or water

Reduced hedonic wanting for HF foods after almonds compared to water

Hollingworth et al. 2019 Nutrients
THE EFFECTS OF ALMONDS AND SKIN LIPIDS AND WRINKLES

Pilot Study at UC Davis

28 middle aged women ate approx. 2 oz almonds daily for 4 months

Results: Wrinkles

![Graph showing the percentage change in overall wrinkle severity and width over 8 and 16 weeks for control and almond groups.](image)
what's behind natural beauty?
The Miami Herald

Eating almonds daily can reduce wrinkles: Study

Researchers from University of Califor-nia at Davis examined how daily con-sumption of almonds impacts skin. Subjects who ate 1.3 ounces of almonds daily for 1 year had signifi-cantly reduced wrinkles, according to a new study. The study found that almonds contain high levels of vitamins, minerals, and antioxidants, which help to improve skin health.

Beat ageing with almonds

A new US study has shown that a daily snack of almonds improves wrinkles in postmenopausal women. A portion is 28 grams (or 23 almonds) and provides zinc, niacin, and riboflavin that help maintain our skin, explains nutritionist Rhannon Lambert.

Skin Regimen

New Study Shows Almonds Decrease Wrinkles

The Times of India
NOVEMBER 2019
PEOPLE’S SEXIEST
MAN ALIVE ISSUE

HAVE YOU EVER
SEEN A SEXIER BOWL
OF ALMONDS?

Didn’t think so.
NEW ADVERTISING
SUSTAINABILITY IS PART OF THE BROADER CONVERSATION

Shifting consumer concerns

THE PROTEIN FLIP
A DELICIOUS STRATEGY FOR CHANGE

Transforming protein menu concepts for the health of our customers and our planet
Meeting the female California almond farmer who’s grabbing the stereotype by the nuts

by Daniel Falconer | 4 March 2019

2nd-gen #almond farmer Christine Gemperle has planted extra blooming plants near the orchard to promote #bee health. ow.ly/N67a30h5mCx
How We Grow

Global Communications is dedicated to providing targeted resources to those involved in growing and processing almonds, as well as help the public understand what goes into producing them.

The Almond Board’s field and outreach program, industry communications program, and industry relations program assist our growers and handlers with what they need to make key decisions to be successful. One key element of our program is leveraging learnings from agricultural research to drive industry best practices related to the Almond Orchard 2025 Goals—leaders in agriculture who have the Almond Board’s commitment to research and development toward sustainable orchards.

We also share our story with people outside of agriculture. ABC has a sustainability communications program dedicated to educating the public on almonds’ orchard-to-table story, the forward-thinking research and farming practices that continuously improve how almonds are grown, and highlighting California’s almond community.

The Global Communications program is focused on our farm-to-table story.

SUSTAINABILITY COMMUNICATIONS

How We Grow

The Almond Board and its sustainability communications program are committed to sharing information about almond production, research, and best practices with the public.

Resources

- Almond Board Sustainability Communications
- Almond Board’s social media
- Almond Board’s YouTube channel

INDUSTRY COMMUNICATIONS

Special Events and Programs

- The Almond Board’s Leadership Program
- The Almond Board’s sustainability education programs
- The Almond Board’s research and development programs

Workplaces

The Almond Board’s workplace focuses on sustainability, with initiatives such as the Almond Board’s sustainability leadership program.

NAVIGATING THE WATER

The Almond Board is committed to ensuring that water is available for all almond farmers and almond processors.

How to Help

ABC has partnered with local organizations to support almond farming and processors.

Did You Know?

Since 2016, participants of ABC’s Almond Leadership Program have worked together to raise more than $180,000 for the California FFA Foundation’s scholarship program.

Telling Our Sustainability Story

A century ago, 30% of Americans lived on farms. Today it's less than 2%.

This shift has decreased awareness of agriculture, but recent trends are motivating consumers to reconnect with their food. In fact, 70% of U.S. consumers surveyed want to learn more about how almonds are grown.

While health and wellness are core to consumers' health, sharing the responsible practices used to produce them is a key opportunity. The Almond Board’s sustainability communications program is just that through integration with the global marketing region as well as communicating directly with key U.S. and California consumers.

CONNETCTING FARM TO FORK

While many consumers live far from the farms where their food is grown, they have a strong connection to agriculture and its role in their daily lives. To bridge this gap, we collaborate with local media and influencers to share stories about California almonds and almond farming.

Did You Know?

2018 marks year three of Growing Good, ABC’s annual sustainability publication. Find it online at almonds.com/GrowingGood.

WANT TO HELP SPREAD THE WORD? FOLLOW WANDA BROWN ON TWITTER FOR THE LATEST.
ABC Welcomes Tom Devol to Field Outreach Team

The Almond Board welcomes Tom Devol as its new Senior Manager of Field Outreach and Education. Devol will lead a team that engages directly with growers to help them tackle inner-orchard challenges and create efficiencies.

READ MORE
Industry Events

JOIN US FOR
NAVIGATING THE WATERS
Helping Almond Growers Make Informed Decisions

AGENDA

<table>
<thead>
<tr>
<th>Topic</th>
<th>Speaker</th>
<th>Time</th>
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<tbody>
<tr>
<td>Registration</td>
<td>Richard Waycott</td>
<td>8:30 – 9 a.m.</td>
</tr>
<tr>
<td>Welcome</td>
<td>Richard Waycott</td>
<td>9:00 – 9:15 a.m.</td>
</tr>
<tr>
<td>The SGMA Big Picture</td>
<td>Eric Avendt</td>
<td>9:15 – 9:30 a.m.</td>
</tr>
<tr>
<td>Opportunities to move forward</td>
<td>Eric Avendt</td>
<td>9:30 – 9:50 a.m.</td>
</tr>
<tr>
<td>TBD</td>
<td>Paul Yeadley</td>
<td>9:50 – 10:10 a.m.</td>
</tr>
<tr>
<td>TBD</td>
<td>Paul Yeadley</td>
<td>10:10 – 10:30 a.m.</td>
</tr>
<tr>
<td>Keynote</td>
<td>Paul Yeadley</td>
<td>10:30 – 10:50 a.m.</td>
</tr>
<tr>
<td>CV SALS and What It Means to</td>
<td>Daniel Coit</td>
<td>10:50 – 11:10 a.m.</td>
</tr>
<tr>
<td>Almond Growers</td>
<td>Daniel Coit</td>
<td>11:10 – 11:30 a.m.</td>
</tr>
<tr>
<td>Creating a Pilot Monitor</td>
<td>Richard Sorensen</td>
<td>11:30 – 11:50 a.m.</td>
</tr>
<tr>
<td>Management Zone in Turlock</td>
<td>Richard Sorensen</td>
<td>11:50 – 12:10 a.m.</td>
</tr>
<tr>
<td>County: How It Helps Growers</td>
<td>Brian Treado</td>
<td>Noon – 12:30 p.m.</td>
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<tr>
<td>While Providing Safe Drinking</td>
<td>Brian Treado</td>
<td>12:30 – 1:15 p.m.</td>
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<tr>
<td>Water</td>
<td>David Guy</td>
<td>1:15 – 1:30 p.m.</td>
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<tr>
<td>Panel Discussion: ABC Programs</td>
<td>David Guy</td>
<td>1:30 – 2:15 p.m.</td>
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<tr>
<td>to Assist Growers</td>
<td>David Guy</td>
<td>2:15 – 2:30 p.m.</td>
</tr>
<tr>
<td>Salinization Water</td>
<td>Brian Treado</td>
<td>2:30 – 2:45 p.m.</td>
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<tr>
<td>Legislation and Other News</td>
<td>Brian Treado</td>
<td>2:45 – 3:00 p.m.</td>
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<tr>
<td>From Sacramento</td>
<td>Brian Treado</td>
<td>3:00 – 3:15 p.m.</td>
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<tr>
<td>BREAK AND LUNCH SERVICE</td>
<td>Brian Treado</td>
<td>3:15 – 3:30 p.m.</td>
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<tr>
<td>Building Alliances Between</td>
<td>Brian Treado</td>
<td>3:30 – 3:45 p.m.</td>
</tr>
<tr>
<td>Growers, Regs and Government:</td>
<td>Brian Treado</td>
<td>3:45 – 4:00 p.m.</td>
</tr>
<tr>
<td>What Can We Do?</td>
<td>Brian Treado</td>
<td>4:00 – 4:15 p.m.</td>
</tr>
<tr>
<td>Closing Remarks</td>
<td>Brian Treado</td>
<td>4:15 – 4:30 p.m.</td>
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Water use in the Central Valley continues to be a prominent issue impacting your business. To help you make informed decisions, this event will feature leading experts on critical issues facing California agriculture, including the Sustainable Groundwater Management Act (SGMA), groundwater recharge and other challenges affecting storage and management of water.

May 14, 2019
8:30 a.m. to 1:30 p.m.
Lunch provided
International Agri-Center
4500 S. Lassen St.
Tulelake, CA 95687

Please RSVP to Ann Friedrich at annfriedrich@almondboard.com by Friday, May 3

JOIN US FOR
NAVEL ORANGEWORM SUMMIT
June 18, 2019
6:30 a.m. – 2:30 p.m. lunch provided
MJC Ag Pavilion
2901 Blue Gau Ave, Modesto, CA 95356

Naval orange worm, resistance and resistance, mealybug management of breed damage is critical to protecting the produce quality and enjoyment of California walnuts. Join us for this special event as we look at the cost of NRM damage to 100 million acres of NRM control and the potential for improved prevention and control for NRM management. Expect to leave Navy worm infestations.

For details, visit Almonds.com/upcomingevents

Please RSVP to Ann Friedrich at annfriedrich@almondboard.com

the Almond Conference 2019
DECEMBER 10-12
Cal Expo, Sacramento
HONEY BEE BEST MANAGEMENT PRACTICES
FOR CALIFORNIA ALMONDS

FORAGE YOUR WAY TO BETTER HONEY BEE HEALTH

The grower and refiner of almonds in California has a unique opportunity to impact honey bee health. Honey bees are a critical part of our ecosystem and our economy. Almond growers and refiners who capitalize on this opportunity are likely to see a win-win in honey bee health and a healthier crop.

By maintaining forage in almond orchards, growers and refiners can help bees maintain a healthy diet and reduce stress, which can lead to healthier and more productive hives. This, in turn, results in better-quality almonds and a sustainable honey bee population for future generations.

Here are some best management practices for forage in almond orchards:

1. Provide a range of floral resources: Almonds bloom from late February to early April, making it a crucial period for bees. Non-almond pollinators and nectar-rich flowering plants can provide additional food sources for bees throughout the season.
2. Create diverse habitats: Natural nesting sites, such as rocks or logs, and diverse nesting materials (e.g., nest boxes, tree cavities) can support the growth of wild bee populations in almond orchards.
3. Rotate crops: Regularly rotating crops in almond orchards can help maintain soil health and provide a variety of floral resources for bees.
4. Minimize pesticide use: Pesticides can be harmful to bees, so it's essential to minimize their use in almond orchards. Choose pesticides that selectively target pests and minimize harm to beneficial insects.
5. Monitor and manage: Regular monitoring of honey bee health and orchard conditions can help identify issues early and implement effective solutions.

By implementing these best management practices, almond growers and refiners can help improve honey bee health and contribute to a more sustainable agricultural system.
Growing Almonds
Room 3
Thank you
Join the Conversation!

Use #AlmondConf to share highlights from The Almond Conference
The ABCs of ABC