

INSIDE: HONEY BEE HEALTH DEPENDS ON COMMUNICATION, WINTER SANITATION AND FOOD SAFETY, INTERNATIONAL TRADE, WATER AND FARM BILL DISCUSSED WITH FEDERAL REPS, ALMOND CONFERENCE PRESENTATIONS, AND MORE

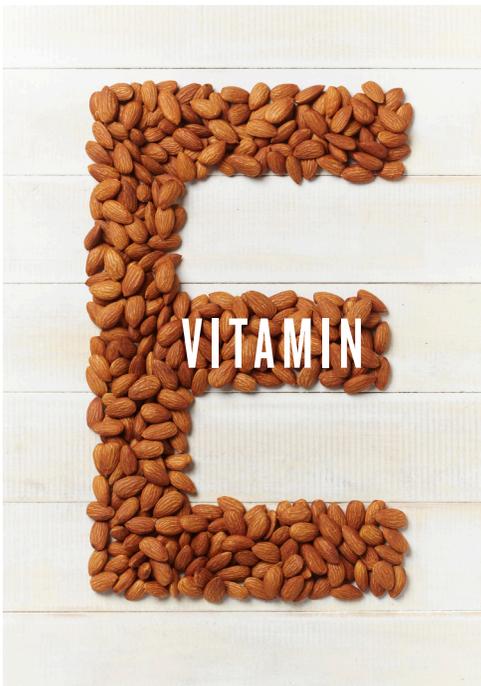


Outlook

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Almonds Declared “Healthy” by FDA; Provide Half of Daily Vitamin E Needs



Until recently, the U.S. Food and Drug Administration (FDA) did not allow almonds to be called “healthy” on food labels, due to the agency’s regulatory definition of the term that considered a food’s total fat content rather than distinguishing among different types of fat. As of September, that has changed. Almonds can officially be declared a healthy food.

Building on this announcement from FDA about new guidance on the term healthy and how almonds — which are full of naturally good fats¹ — now meet the updated definition, there’s more good nutrition news to share. A 1-ounce serving of almonds now provides half of the daily needs for vitamin E and is a significant source of magnesium and riboflavin, too.

As a result of changes to the Nutrition Facts panel that went into effect earlier this year, many of the Dietary Reference Intake Values for vitamins, minerals and other nutrients were also updated. The Dietary Reference Intake Values are used to calculate the percent Daily Values (%DV) seen on food packages. Several of those that changed are key nutrients found naturally in almonds. The result of all this is that a healthy handful of

almonds is now a good source of fiber (13% DV) and an excellent source of riboflavin (25% DV), magnesium (20% DV) and vitamin E (50% DV).

Each of these nutrients play an important role in good health:

- Vitamin E is an antioxidant that helps protect cells from damage, helps boost the body’s immune system and helps to widen blood vessels and keep blood from clotting within them.
- Magnesium helps regulate muscle and nerve function, blood sugar levels and blood pressure.
- Riboflavin is a B vitamin that helps convert food into fuel. It’s important for cellular function, growth and development and helps maintain normal levels of homocysteine, an amino acid, in the blood.
- Ounce for ounce, almonds are the tree nut highest in protein, fiber, calcium, vitamin E, riboflavin and niacin. Besides being a nutrient powerhouse, almonds are also gluten-free and low on the glycemic index.

Consumers will start to see these %DV changes on food packages soon, as well as changes to the rest of the Nutrition Facts panel. The final rule includes numerous design and formatting modifications, intended to ensure consumers have access to information they need to make informed decisions about their food choices. These include increasing the type size for Calories, Servings per Container and Serving Size declaration, the addition of Added Sugar content on the label, and including the amount, in addition to the percent Daily Value, of vitamin D, calcium, iron, and potassium in a food. Vitamins A and C are no longer required to be declared, but can be voluntarily listed, along with other vitamins and minerals.

1. Good news about almonds and heart health. Scientific evidence suggests, but does not prove, that eating 1.5 ounces of most nuts, such as almonds, as part of a diet low in saturated fat and cholesterol may reduce the risk of heart disease. One serving on almonds (28g) has 13g of unsaturated fat and only 1g of saturated fat.

Focus on Winter Sanitation



With winter right around the corner, it is important to take the time to reduce overwintering populations of

navel orangeworm (NOW).

If you or your parents were growing almonds in California 40 years ago, you could have experienced an average harvest of fewer than 985 pounds per acre, of which more than 8% was lost as a result of damage by navel orangeworm (NOW). Today, yields have more than doubled, and NOW damage is currently running at 1% or less.

Improvements in yield and quality over these past years are no coincidence. In 1972, the Federal Marketing Order for almonds was revised so that Almond Board of California could establish and fund production research projects. By the next year, a cooperative research program was started. At the time, the focus was on managing NOW.

Ongoing research shows that for winter sanitation, mummy nut removal is key. Mummy nuts should be removed down to two or fewer per tree, depending on location.

It takes commitment and dedication to orchard practices to increase yields and keep NOW damage below 1%. I encourage you to review the “Winter Sanitation Essential to Food Safety” article on page 3 in this issue.

Sincerely,

Joel MacIvaine
Chairman, Production Research Committee

Equipment Options Increase Feasibility of Whole-Orchard Recycling

Five pieces of equipment rumbled through an old almond orchard in Manteca recently to demonstrate an alternative process for whole-orchard recycling. An excavator uprooted trees, a front-end loader transported the trees to a horizontal chipper, and a spreader and rototiller then spread the chips on the ground and incorporated them into the soil.

The process of spreading and incorporating the chipped trees was demonstrated at a field day held at Tallerico Farms and conducted by San Joaquin County farm advisor Dr. Brent Holtz, who has been studying the feasibility of whole-orchard recycling for eight years.

Equipment Comparison

According to Dr. Holtz, the five pieces of equipment could outperform the IronWolf, a single, giant machine that pulls, grinds and incorporates the trees in place. The IronWolf costs about \$1,500 an acre to operate, and recycles trees at the rate of 2 acres a day. The five different machines together cost about \$1,000 per acre to operate and cover 15 to 20 acres a day. Moreover, the horizontal wood chipper grinds

the trees more evenly and into finer particles than the IronWolf, which left some sizeable chunks behind. This brings the whole-orchard recycling option closer to economic feasibility for growers facing the process of replacing old orchards.

The chipping, spreading and rototiller equipment was operated by Randy Fondse of G&F Agricultural Service in Ripon.

Soil, Tree Effects

In addition to researching a practical equipment option, Dr. Holtz, whose work is funded by Almond Board of California, continues to look at the effects of incorporating the biomass of an entire orchard on soil characteristics as well as the growth and productivity of second-generation almond trees planted in the orchard.

According to Dr. Holtz, his research results suggest that the trees will do just as well or better in the presence of additional organic matter, which increases water infiltration and water holding capacity. In addition, as the woody material breaks down over time, it releases nutrients, including up to

1,500 pounds of potassium and 800 pounds of nitrogen per acre.

“The results of this work are really promising,” said Almond Board of California’s (ABC’s) Dr. Gabriele Ludwig, director of Sustainability and Environmental Affairs. “At the moment, I think it is the next best alternative to cogeneration, if that is not an option, especially if you have sandier soils.” However, she cautions, more research needs to be done. “The work so far is really only one trial, and we don’t have a lot of data yet,” she said, adding that she would encourage growers to conduct simple experiments by doing whole-tree incorporation in one part of an orchard to show comparisons.

Observing the demonstration was almond grower Matt Visser, of Ripon. “When we took out an orchard 15 years ago and replanted it, I had an intuition that it would be good to incorporate that back into the soil, but that just wasn’t an option back then,” he recalled. “Whole-orchard recycling meant you burned everything, or cut up the trees and sold them for firewood and burned the brush, or you chipped it all up and hauled it away for cogeneration plants.”

Favorable Option

With burning less of an option because of air quality concerns, and cogeneration plants shutting down, incorporating the whole orchard seems like a good direction to take, Visser said. “If you are getting a cumulative yield bump, at \$2.50 a pound, and if you get 200 more pounds per acre to pay for incorporation, it sounds like it would pencil out.”

With the support of Almond Board of California and a generous grant through USDA’s Specialty Crop Block Grant Program, Dr. Holtz and his colleagues will continue to evaluate the short- and long-term impact of whole-orchard recycling on the health and growth of second-generation trees planted in the orchard, soil health, the orchard’s carbon footprint and nitrogen dynamics, as well as yield response to periods of reduced irrigation.



San Joaquin County farm advisor Dr. Brent Holtz, who has been studying the feasibility of whole-orchard recycling for eight years, describes the process of using a horizontal wood chipper (in background) to grind up an orchard’s worth of trees, then spreading and incorporating the chips back into the ground in which they grew.



Dr. Holtz (left) and farm owner Louie Tallerico discuss the feasibility of whole-orchard recycling at Tallerico Farms.



A modified spreader and a rototiller spread and incorporate chips from an entire orchard at a field demonstration that took place at Tallerico Farms in Manteca in October.

Winter Sanitation Essential to Food Safety

Mummy nuts should be reduced to an average of two or fewer per tree by Feb. 1, depending on orchard location, and mummies on the ground should be destroyed by flail mowing by March 15.



Of the many postharvest food safety programs developed by Almond Board of California (ABC) and implemented by almond processors, just as important is orchard winter sanitation carried out by almond growers.

Winter sanitation involves the removal and destruction of mummy nuts to prevent overwintering populations of navel orangeworm, the primary insect pest in almonds. NOW is a dual threat to crop quality: In addition to the direct damage NOW causes the kernel, this damage can open the door to fungal infections and contaminants, particularly *Aspergillus* spp. and the aflatoxin contaminant it produces. Aflatoxin, a known carcinogen and mutagen, is regulated globally, meaning that in-orchard management of NOW is essential, in addition to being the first and best step to prevent contamination from occurring.

Cultural Control of NOW

A well-balanced NOW management program includes a variety of steps, all of which can be found on the UC IPM website at <http://bit.ly/UCIPMAlmond>. One of the most important steps, however, is cultural control through winter sanitation, which reduces overwintering NOW populations.

According to standard recommendations, mummy nuts should be reduced to an average of two or fewer per tree by Feb. 1, and mummies on the ground should be destroyed by flail mowing by

March 15. However, mummy thresholds can vary by region due to climatic differences, and by year if limited rainfall or continued drought is an issue. For instance, in the drier southern almond-growing region, mummy thresholds are lower than the current standard due to more ideal NOW overwintering conditions, while the wetter northern-growing region has a higher threshold because rainfall is a dominant NOW mortality factor.

NOW Predictor

A model developed by Wonderful Orchards entomologist Brad Higbee and USDA Agricultural Research Service, Parlier, researcher Joel Siegel predicts NOW damage for the drier southern region based on different winter sanitation and harvest-timing scenarios.

This model can be found at Almonds.com/NOWPredictor. Even though this version is specific to the southern San Joaquin Valley, it underscores and reaffirms a number of long-standing basics: in particular, that sanitation — removal and destruction of both tree and ground mummies — is a priority. After this, harvest timing — early versus later — is important.

Other factors that have an impact on NOW damage include the previous year's NOW damage, peach twig borer damage during the current season, and in the southern San Joaquin Valley, proximity to pistachios, which harbor higher NOW populations.

GOVERNMENT AFFAIRS

INTERNATIONAL TRADE, WATER ISSUES AND FARM BILL DISCUSSED WITH FEDERAL REPRESENTATIVES

Almond Board of California (ABC) often facilitates opportunities for stakeholders to meet with industry members in an effort to initiate a dialogue on issues important to the California Almond industry. Recently, ABC hosted two events with representatives of the U.S. government.

First, U.S. Department of Agriculture Undersecretary Jonathan Cordone met with industry members to discuss trade issues, including the Trans Pacific Partnership (TPP) and its chance of passage. While optimistic, he agreed it would be difficult due to current opposition. He also praised ABC and the almond industry for their efforts made to resolve labeling issues with India.

ABC hosted a seminar for the Food Safety and Standards Authority of India (FSSAI), which provided Indian officials with a better understanding of why adding details about importers on the bulk container packaging is unnecessary when the information can be provided in accompanying documentation.

In October, U.S. Representative Jeff Denham visited with industry members and provided an update on current and future legislative activity. He provided an overview of drought legislation to be considered during the November session, noting drought language will be added to the Water Resources Development Act, which must be passed before the end of the year. He also discussed the 2018 farm bill and the importance of specialty-crop accomplishments in the 2014 Agricultural Act of 2014. Representative Denham commented on the fact that many legislators are not familiar with the almond industry, its economic impact or its contributions to export trade. He encouraged industry members to expand efforts to explain the scope of the almond industry and its research initiatives, particularly the achievements we have made.

THE ALMOND CONFERENCE GROWS WITH SUPPORT FROM EXHIBITORS, SPONSORS

The Almond Conference would not be possible without the generous support of exhibitors and sponsors. As a result of the perpetual support of these big-hearted sponsors, the Conference is able to continue to grow and expand each year.



Honey Bee Health Depends on Almond Grower, Beekeeper Communication

Before the first almond tree bursts into bloom in late January or early February, almond growers and beekeepers have already been in communication regarding the expectations of each during the upcoming pollination season.

Communication is the first, and most vital, step to setting the stage for a successful season, which includes a strong pollination of the almond crop and careful consideration of the health of visiting honey bee hives.

Establishing a clear chain of communication in advance of each season can help ensure responsibilities are met and information is reported accurately. That chain starts with the direct link between grower and beekeeper/bee broker, as well as with others in the chain: farm managers, PCAs and pesticide applicators. Agricultural commissioners also own a vital link in the communication chain, since they retain information on hive locations within their respective counties. All of these stakeholders have responsibilities in terms of maintaining honey bee health.

Pesticide Plan

A key to successful pollination is that agreements are made ahead of bloom, and should include a pesticide plan that outlines which pest control materials



Bees carrying pollen with pesticide residues back to the hive can risk the health of the next generation of foragers.

may be used. Aspects of this include:

- Avoid applying insecticides, with the exception of *Bacillus thuringiensis* (Bt), during bloom until more is known about the impact on immature developing bee brood; and
- Any fungicide applications deemed necessary during bloom should occur in the late afternoon or evening, when bees and pollen are not present.

The Almond Board has directed significant resources toward understanding the issues surrounding honey bee health and communicating to growers the steps they can take to avoid contributing to hives losses. It has published "Honey Bee Best Management Practices for California Almonds" and related quick guides that outline bee best management practices for growers. To access these vital documents, go to Almonds.com/BeeBMPs. Over the last few years, Almond Board staff, in collaboration with the University of California, California Department of Pesticide Regulation, county ag commissioners, beekeepers and other partners, have given well over 70 presentations on Bee BMPs to stakeholders along the bee communication chain.

Pesticide Protection

Proactive communication throughout the communication chain, from applicators to growers to beekeepers, is especially essential for reducing risk to honey bees from unintended exposure to pesticides. If treatment is deemed necessary, growers/PCAs/applicators should contact their beekeepers as well as county ag commissioners so that beekeepers with nearby managed

CALENDAR

January

18	Technical and Regulatory Affairs Committee	9:00 am
conference call		
26	Almond Quality and Food Safety Committee	9:30 am

All meetings take place in the Almond Board of California Conference Room unless otherwise noted. For more information: Almonds.com/UpcomingEvents.

hives are notified 48 hours in advance. Beekeepers should register their hives with county agricultural commissioner offices and request notifications for pesticide applications.

Communication should also include details about hive removal timing, as well as reporting to county ag commissioners should a suspected pesticide-related incident occur.

Hive Losses on the Decline

Recent downward trends in hive losses indicate that this outreach, increased communication and resulting voluntary steps by growers, PCAs and applicators to implement best management practices that go beyond label requirements for safeguarding against accidental pesticide exposure are working.

In fact, hive losses in 2015 dropped precipitously from the 2014 season. While early data shows that hive losses were sustained in 2016 with similar symptoms to 2014 losses, the numbers are still significantly less than the 2014 season.

The Almond Board will continue to work to get the word out on honey bee health and related best management practices through workshops, communication vehicles and presentations at the annual Almond Conference, Dec. 6-8, in Sacramento.

Nomination Deadline Approaching: Three Reasons to Join the Board of Directors

Basic duties of the Almond Board of California (ABC) involve a handful of meetings a year and exchanges via phone and email. And for many Board members, it provides just the right amount of activity to feel involved and relevant, deepen friendships and broaden networks.

But perhaps the top reasons are:

1. Influence the strategic direction of Almond Board.
2. Opportunity to give back by sharing expertise.
3. Enrich your life by being a leader in the industry you love.

Jan. 20, 2017, is the deadline for

filing nomination petitions for one independent grower member position and one independent grower alternate position on the Board of Directors for ABC. Each candidate must be a grower and must submit a petition signed by at least 15 independent growers of almonds (verified by Almond Board) in order to be considered.

The petition must state the position for which the candidate is nominated, and must be filed with Almond Board of California, 1150 9th Street, Suite 1500, Modesto, CA 95354.

Additionally, two independent handler member positions and

two independent handler alternate positions are available. Handlers must declare their candidacy, in writing, to Almond Board no later than Jan. 20, 2017, in order for their name to be placed on the ballot for these positions.

A cooperative grower member and alternate nominee, as well as a cooperative handler member and alternate nominee, will be selected through their respective cooperative associations.

For further information, call Sue Olson, associate director, Marketing Order Services, at (209) 343-3224.