

Almond industry leads the way in food safety

By **TIM HEARDEN**
For the Capital Press

Almond industry leaders are hailing the apparent success of their decade-old mandatory pasteurization program as there have been no food-borne illness outbreaks attributed to the nuts.

The USDA-empowered Almond Board of California established the rule in 2007 for nuts sold domestically, and many believe the safeguard has played a key role in almonds' explosion in popularity and production since it went into effect.

"Pasteurization is a good way to control against a hazard while allowing you to utilize the product," said Kathryn Foster, the quality director at Vann Family Orchards' processing plant in Williams, Calif. "I'm sure it must have had a little significance to (almonds' popularity).

"I know where it is going is huge," she said of the growth of the industry. "We're seeing an increase yearly in the volume of our output. It's amazing."

Pasteurization — the process of using heat to kill microbes in food and beverages — has enabled processors to maintain almonds' unique texture and flavor while all but eliminating the safety risk.

Before the early 2000s, conventional wisdom suggested that low-moisture foods, such as nuts and seeds, didn't pose a threat because harmful microorganisms couldn't grow in them, explained Tim Bir-



Tim Hearden/for the Capital Press

Tim Birmingham, the Almond Board of California's director of quality assurance and industry services, speaks during the annual Almond Conference in Sacramento. Birmingham said the Almond Board's decade-old mandatory pasteurization program proves the industry isn't afraid to tackle food safety concerns.

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But that changed when salmonella outbreaks were traced to raw almonds in 2001 and 2004, the latter of which led to a widespread international recall of the nut as well as granola-type bars, cereals and other products.

The Almond Board responded by working with food safety experts, researchers and the USDA to develop the mandatory pasteurization program and best-practices guidelines for growers and packers.

On Sept. 1, 2007, under a USDA order, it became illegal to manufacture and sell unpasteurized almonds in the U.S. unless they're sold directly to customers on a small scale or shipped outside North America.

Processors can use other methods of treating raw almonds if they can show it meets a minimum reduction of salmonella bacteria on the nut, Birmingham said.

"The industry knew the crop was growing, and if we had more of these issues it would be hard to sustain the growth that was happening," Birmingham said. "And nobody

wants to put out a product that will make people sick."

Today more than 200 treatment processes have been validated for use on almonds following specific guidelines and review by an Almond Board technical review team, according to the organization.

Among the most common methods is steam processing, in which a short burst of 200-degree steam treats the surface of the nut meat. Almond Board officials assert the process meets the USDA's organic standards without diminishing the nuts' nutritional value and sensory attributes.

"Steam is very efficient ... and very effective in killing microorganisms," Birmingham said. "A number of these processes can be used and maintain the raw characteristics of almonds."

Another technique is fumigation with propylene oxide, which treats the surface of the nuts and rapidly dissipates. It, too, is credited with preserving the nuts' nutrition and flavor but has been a target of natural-food enthusiasts, as the chemical is listed by the U.S. Environmental Protection Agency as a potential carcinogen.

Traditional oil roasting, dry roasting and blanching have also been shown to adequately reduce contamination levels, according to the Almond Board.

While there are many differences among treatments, generally lower temperatures require more time of exposure while hotter treatments take

less time, Birmingham said.

"There's not a one-size-fits-all," he said.

Birmingham acknowledged there was concern within the industry that pasteurization would lessen nut quality. But "we really did a lot of research," he said, "and at the end of the day it was determined that certain processes don't impact the raw characteristics of the almonds, and they definitely do not impact the nutritional profile."

Now some almond producers in Europe are validating their equipment using the Almond Board's standards, he said. Other processes such as washing the almonds wouldn't have been an option, he said.

"If you introduce water, all bets are off," he said, noting that it would allow salmonella pathogens to grow. "We absolutely want to avoid that."

In the decade since the rule was put in place, the Almond Board has spent more than \$5 million on additional food quality and safety research and uses its findings to set guidelines for growers and processors. The work has positioned the industry well to comply with the Food Safety Modernization Act, as many of the board's programs are already in line with the new federal requirements, industry leaders said.

The rule has also led to a new industry of businesses that specialize in pasteurizing almonds sent to them by processors as well as vendors who provide pasteurization equipment to handlers.



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