



Q&A Almonds

Part Two

Getting to know California almond varieties

In part two of this two-part Q&Almonds series, we continue our conversation with Sebastian Saa, Ph.D., associate director, agricultural research at the Almond Board of California (ABC) looking ahead to the future of California almond varieties. Saa discussed the different California almond varieties including details on their characteristics. Check out part one where Saa discussed classifications and uses as well as what growers look for in varieties for when building their orchard.



with

SEBASTIAN SAA, Ph.D.

Associate Director, Agricultural Research at the Almond Board of California

ABC: We're seeing California almond varieties change and new ones appear. Why is that and what new varieties are gaining traction today?

ABC: What is the industry doing to further develop the self-compatible varieties?

SAA: As almonds continue to be a popular ingredient in products, we continue to discover new uses and new demands that require new varieties. Additionally, as supply and competition increase globally, we're innovating to problem solve and have more ability to develop new solutions and more sustainable almond varieties.

Independence is perhaps the best-known recently developed cultivar in California. It was selected as a seedling in 2001 and patented in 2009 by Zaiger Genetics in Modesto. The adoption of this cultivar by growers in California has been quite fast, and within 10 years of its arrival, Independence ranks fourth in terms of 2019-20 receipts by variety.

Independence has a high crack-out percentage (kernel to shell ratio), good productivity and is self-compatible, which lets our growers simplify their horticultural operations significantly. In terms of physical characteristics, it has a smooth-surfaced, light-colored kernel, which is attractive. So, this cultivar is a good example of a variety that answers to a huge grower need and is then adopted quickly. In fact, I'm convinced that our growers will soon have several self-compatible varieties to choose from.

SAA: The almond industry is working cohesively to ensure that California almonds meet the needs of consumers, manufacturers and the growing community both now and into the future.

This includes facilitating the development of better varieties with self-compatibility traits. We're doing more horticultural screenings and field evaluations of new varieties developed by public, private, national and even international research groups. And we're considering almond quality and sensory characteristics as part of the stepwise process to picking the best variety.

ABC: *Since it takes roughly 15 years to develop a new almond variety, are we trying to speed that up?*

We've increased our level of outreach in all these areas and will continue playing a leading role in helping our industry make informed decisions about what to plant. One example is the "Crack-Out Event" ABC hosted in November 2019. It was an opportunity for the industry to sample more than 70 almond varieties from around the world—from UC Davis and USDA breeding programs, private breeders and nurseries in California, and the new leading varieties in Australia, Israel and Spain.

We displayed the almonds with their shells and without. More than 75 participants sampled and scored them for flavor quality using a standardized rubric, discussing the different characteristic from various points of view, covering inputs from the breeder to the manufacturer.

It was an opportunity to connect people across the almond landscape and express perspectives of what having a good variety means for each. It was the first we've done, and I expect more events like that coming down the pipeline.

SAA: Yes, but while it takes 15 years to develop a new almond variety, it takes another 15 to evaluate its performance. This process is a marathon, not a sprint. It is a beautiful long-term process that uses a classic breeding approach, without any type of genetic engineering techniques (non-GMO), and it aligns with our consumer desires around the globe.

Similar to deciding which variety to plant, developing a new variety must be a very well-thought-out process as well. And the more people we have working on this process, the faster it can go and the smarter it can be.

One of the actions we're taking, in conjunction with the holistic approach I mentioned, is developing a strategic breeding and evaluation portfolio that includes research projects from the best institutions around the world, strategic alliances with the UC system and a lot of interactions with the Strategic Agricultural Innovation Committee, the Almond Quality, and Food Safety and Services Committee, and our Orchard Tree Rootstock workgroup. Together, these three entities offer a great set of technical knowledge and overall industry perspective.

And in breeding, we just launched a request-for-proposal for new projects that'll speedup our ability to identify self-compatibility and other important characteristics.

But once you develop a variety, you need to see how it performs under differing weather and environmental conditions—and there's only one harvest per year. So we need to test during multiple harvests across the valley to be confident in a new variety, but we're trying to do this faster than ever. To that end, we're currently in the third generation of regional-variety trials of 30 different varieties that we're conducting analysis on in three locations across the valley. The University of California is in charge of them and generating very useful data each year, with multilocation and statistical repetitions to generate a robust, and extrapolated data set.

As almonds continue to remain the number one ingredient in global new product introductions¹, we need to continue evolving to fit consumer interests and ensure we're growing the best crop. Different almond varieties have different needs and each variety offers its own set of characteristics for product manufacturers. Developing new varieties helps provide a healthy and sustainable ingredient for future product innovations.

To learn more about California almond varieties classifications and characteristics, check out Part 1!

References

1. Innova Market Insights. Global New Product Introductions Report. 2019.

ALDRICH			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Soft shell, good shell integrity, fair suture opening	NUT Medium, narrow shape, slightly wrinkled surface							
	CLASSIFICATION California type, Carmel type	CHARACTERISTICS Long and flat							
BUTTE			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Semi-hard shell, light color, smooth surface, low suture opening	NUT Small, short plump shape, wrinkled surface							
	CLASSIFICATION California type, Mission type	CHARACTERISTICS Short and plump/round							
CARMEL			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Soft shell, good shell integrity, fair suture opening	NUT Medium, narrow shape, slightly wrinkled surface							
	CLASSIFICATION California type	CHARACTERISTICS Long and flat							
FRITZ			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Semi-hard shell, good shell integrity, low suture opening	NUT Small, medium plump shape, fairly wrinkled surface							
	CLASSIFICATION California type, Mission type	CHARACTERISTICS Short and plump/round							
INDEPENDENCE			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Soft shell, light color, high suture opening	NUT Medium, flat shape, smooth surface							
	CLASSIFICATION Nonpareil type, California type	CHARACTERISTICS Long and flat							
MARCONA			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Hard shell, very thick, dark color, no suture opening	NUT Medium, short and plump shape, smooth surface							
	CLASSIFICATION Mission type, Other type	CHARACTERISTICS Short and plump							
MONTEREY			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Hard shell, smooth surface, low suture opening	NUT Large, long narrow shape, deeply wrinkled surface							
	CLASSIFICATION California type	CHARACTERISTICS Long and flat							
NONPAREIL			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Soft shell, light color, high suture opening	NUT Medium, flat shape, smooth surface							
	CLASSIFICATION Nonpareil type	CHARACTERISTICS Long and flat							
PADRE			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Hard shell, good shell integrity, no suture opening	NUT Small, short wide shape, wrinkled surface							
	CLASSIFICATION California type, Mission type	CHARACTERISTICS Short and plump/round							
PRICE			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Soft shell, dark brown color, rough surface, high suture opening	NUT Small, short narrow shape, fairly wrinkled surface							
	CLASSIFICATION California type	CHARACTERISTICS Long and flat							
SONORA			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Soft shell, dark brown color, rough surface, high suture opening	NUT Large, long narrow shape, light color, smooth surface							
	CLASSIFICATION California type, Nonpareil type	CHARACTERISTICS Long and flat							
WOOD COLONY			18/20	20/22	23/25	25/27	27/30	30/32	32/34
	SHELL Soft shell, good shell integrity, fair suture opening	NUT Medium, narrow shape, slightly wrinkled surface							
	CLASSIFICATION California type, Carmel type	CHARACTERISTICS Long and flat							

Size, color and/or shape varies by year.