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SPECIAL GEM EDITION

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The history of the GEM Avocado

Gray E. Martin spent a career in the field experimenting with avocado varieties through a breeding program at UC Riverside. He was determined to find a viable alternative to the Hass for California growers— to extend the season, allow denser planting and better withstand the elements. The program produced the Gwen, the Lamb Hass and then, the GEM, all caps for Martin's initials.

GEM checked all the boxes for researchers. Dimply dark skin



makes GEM recognizable to consumers of the dominant Hass variety. GEM fruit grows inside the tree's canopy, protecting it from harsh weather. The tree is more compact and can be more densely planted, thus producing more fruit per acre. It appeared GEM could be the one variety to break through and provide options for California avocado growers to diversify.

The same UC Riverside team had found appealing qualities in the Gwen and Lamb Hass varieties before GEM. When Gwen had looked promising in the 1980s, California growers dabbled in it, but the new variety didn't catch steam and faded out of the mainstream, partly due to its green skin. Then came Lamb, named after grower Bob Lamb. The new variety was intentionally marketed as Lamb Hass both because it's related to Hass and for familiarity with consumers. Still Lamb Hass never became the variety that would complement the dominant Hass in the California market.

When GEM came around in the mid 1990s, it was originally named the JWYL (pronounced Jewel), but to avoid a confusing name, Martin swapped his initials in. "Because that fruit looks like a gem or a jewel. When it's fully mature and has those little gold speckles," he said.

Martin had begun working in nurseries when he was an engineering student at Pierce College. He liked plants so much that he transferred to Cal Poly Pomona to study plant science. Eventually Martin was taken under the wing



of Bob Berg, professor at UC Riverside, and Berg's specialty was avocados. Berg had developed an avocado breeding program that selected parent trees, grafted them and collected seeds. The objective being to produce and identify new commercially viable avocado varieties.

When the California Avocado Commission discontinued its marketing of greenskins in the early 1990s, the quest for new varieties focused on black skins. "It was a dead-end road to go down with greenskins," Martin said of the breeding program at the time. "I just didn't want to put much effort into it" without CAC backing greenskins.

Martin worked with small batches of trees in orchards that he'd graft with proven varieties like Gwen, which was a parent to GEM. From experimental plantings of as few as two to three hundred trees per ranch, researchers selected for fruit quality and tree health. Then Martin would graft the new specimen into the UC Irvine test orchard. Variety 3-29-5 became a promising option.

Right away, Martin said, he and the team noticed the GEM block as a "precocious child," meaning the tree produces fruit a year or two earlier than a Hass planting. The skin was beautiful and pliable for ease of peeling, and the fruit had as good or better flavor than optimal Hass. It also proved to be less alternate bearing than the Hass.



GRAY E. MARTIN AND JOSE AVINA, INDEX FRESH FIELD REP.

"The flavor of the GEM is maybe half a notch higher than quality Hass, and in season, the GEM is comparable to Reed's late season," Martin said. "I wrote a declaration of invention in 1998, which means selection and breeding likely began in 1991."

Now in production, GEM is fulfilling the promise that researchers first observed over 25 years ago. Almost 2 million pounds of GEMs have already been harvested in 2021. Martin's philosophy on growing does not lend itself to easy instructions about the GEM tree — when to harvest, how closely to plant, how to prune and care for the tree. There's no one size fits all, and growers are now leading the way in establishing cultural practices around the GEM.

Martin has a couple of his own GEM plantings that are still too young to produce. He has been out of the industry for 20 years but remains a source of knowledge and connection to lived experience in avocado breeding.



LA PATERA RANCH

In the foothills of Goleta in Southern Santa Barbara County, **LA PATERA RANCH** expects a productive future with the GEM avocado. The Ranch was purchased in 1871 by WW Stow and his son, Sherman, who started to develop the Ranch in 1872. Sherman started out with walnuts, then quickly moved into lemons. WW and Sherman's descendants (5th, 6th and 7th generation) continue on the family legacy today at La Patera farming lemons and avocados. The first avocados (Hass and Macarthurs) were planted on La Patera in the early 1970s. The potential for higher yields, larger fruit and more compact trees enticed them into planting 2,000 GEM trees on 6.5 acres in 2016, followed by a further 4,400 trees on 17 acres in 2017. So far, so good. There's a learning curve, but early results look promising. "We are very excited about the GEM," said Zach Rissel, General Manager. "The fruit size is great, and the tree is very compact and protected from the wind."

They've found that friends and family approve of the GEM and believe consumers could be primed to celebrate the GEM season as an exclusively California-grown harvest. It could also prove to be an attractive option for the foodservice sector, because GEM's are easier to peel than Hass and have a distinctive yet comparable look, flavor and texture.



ZACH RISSEL

The 2016 planting bore fruit just two years in and hasn't looked back, but the 2017 planting is producing its first crop in 2021. "It's going to be a good one," according to Rissel. The 2017 planting suffered a setback in 2019 during a super bloom that caused the leaves to drop off. "It was a bit nerve-racking, but the trees rebounded," Rissel said.



La Patera Ranch has around 280 total planted acres and just over 90 acres of avocados. All of the 23.5 GEM acres are planted 15-by-9 feet, a higher density than the Hass. At full production, Rissel thinks they will easily produce 20,000 pounds per acre, and with GEM a size 60 is a small fruit. The GEM's potential for higher yields per acre are providing some increased efficiencies of farming practices and could also help improve sustainability for growers.

"I think growers need to be a bit more patient with the GEM to allow the trees to get established," Rissel said.

In any case, he sees GEM as a way for California growers to diversify into a new season, save on pruning and other costs and rely on the protection offered by the condensed tree against the elements, particularly in light of recent severe wind and heat events. Rissel sees this variety becoming established, particularly if handlers like Index Fresh are effective in educating consumers about the novel, yet familiar, fruit that's fresh from Golden State trees.

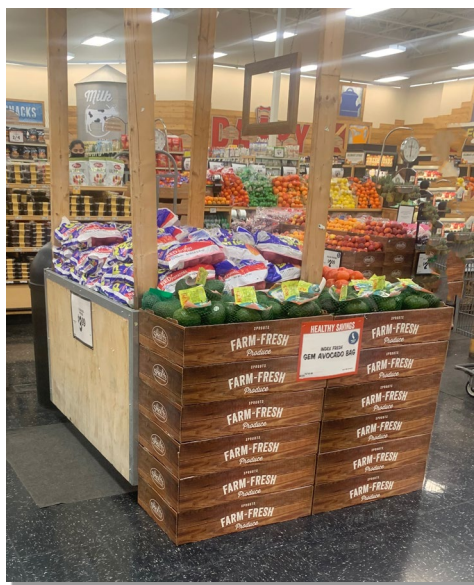
ZACH RISSEL, LA PATERA RANCH
GIUSEPPE BONFIGLIO, INDEX FRESH FIELD
REPRESENTATIVE



STORE DISPLAY AND BAG MATERIAL



SPROUTS FARMER'S MARKETS DISPLAYING
GEM AVOCADO BAGS FROM INDEX FRESH



HAGGEN'S MARKETS DISPLAYING GEM
LOOSE FROM INDEX FRESH



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HASS DREAMS Ranch

The Rogers Family

THE ROGERS FAMILY fulfilled a long-held goal of living on an avocado ranch by purchasing Hass Dreams Ranch in Valley Center in 2016. Even though it was a dream acquisition, the ranch needed extensive rehab right away to make the orchard commercially productive. Rows of Hass avocados and Ruby Red grapefruit had been planted at the 15-acre ranch in the 1980s, and the Rogers family saw an opportunity to plant more densely with GEM and Hass.

They walked into a 20'x20' layout with 40-year-old, 40-foot-tall Hass, and within a year cleared the old grove to build a system that would support high density planting. "We wanted to plant high density and were very attracted to the characteristics of the GEM tree," Mr.

MR. ROGERS

Rogers said. "Its ability to grow in an upright pattern and generally not exceed 15-to-20 feet is ideal."

The new layout is split between GEM and Hass at 7'x14' and 7.5'x15'. Upon first planting, the Rogers family found that the Hass trees took off with more aggressive initial growth rate than the GEM. They suspect the Dusa rootstock on the Hass are both aggressive growers and was responsible for the trees leaping off the starting block, where the GEM does not share the same aggressive growth characteristics.

"Regardless, within a year, the GEM trees were healthy, strong and growing very well," Mr. Rogers said. "I have been very impressed with the trees' upright and condensed growth pattern, the size and quality of the fruit and yield, and of the trees' ability to hold fruit and protect the fruit within the canopy of leaves, not to mention it's great taste!"

Mr. Rogers recommends that San Diego County growers plant GEM in the October time frame in order to give the trees some lead time ahead of the summer heat. Also, in hindsight, Mr. Rogers thinks the

GEMs could have handled an even tighter layout. Pruning needs are less with GEM, and the more compact trees requires less water. Costs have been down, and the yield per acre is better. If the market recognizes the superior attributes in the fruit, it could potentially fetch a higher price than Hass.

In addition to the Rogers family's high praise of their GEM production — large, high quality fruit that's gorgeous and delicious — their GEMs have passed the friends and family focus group with flying colors. "I have not had a single person prefer my Hass over my GEM," Rogers said.

THE ROGER FAMILY RANCH: HASS DREAMS



As GEM frontrunners, Mr. Rogers predicts that given adequate availability, visibility and promotion, consumers should catch on to GEM and carve out a lasting place in the California avocado market. They are close enough in appearance to Hass for it to be an easy choice for regular avocado consumers, and attractive packaging through Index Fresh should let the fruit stand out at grocers.

"Anything we can do to make people see this fruit as better, bigger and more appealing is a good move," Rogers said. "From there, GEM will sell itself."

MR. ROGERS, HASS DREAMS RANCH
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