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Avocado Breeding Program Continues to Evolve

In 2014, faced with budget constraints, the Production Research Committee (PRC) reviewed all of the California Avocado Commission's (CAC) research funding. At the time, the industry was facing a still largely-unknown threat from the invasive shot hole borers (SHB), and growers were struggling with salinity issues magnified by two years of drought. After carefully considering all the projects that were being funded, difficult decisions were made, including reducing the funding for the scion breeding program to maintenance levels (about \$50,000 annually) so that a greater level of funding could be allocated to rootstock breeding.

Now, the drought has ended and we know that SHBs are not posing the threat we initially feared (although, we are still watching the situation carefully). Additionally, there has been increasing interest from all sectors of the industry in the GEM avocado variety. Brokaw Nursery tells us that by the end of 2017, they will have propagated about 180,000 GEM trees. Because GEMs are being planted at varying spacings (anywhere from the traditional 20x20 to as high as 6x10) it is difficult to estimate how many acres this equates to, but it is probably around 500 acres.

This seemingly significant interest in a new variety did not escape the attention of the PRC or the CAC Board and both have had discussions recently about whether CAC should look to increase its investment in the scion breed-

Tree characteristics for promising avocado varieties selected by Dr. Mary Lu Apraia, Eric Focht and David Stottlemeyer at UC Riverside, and currently under consideration for release.

Variety Code	Tree Growth	Tree Architecture	Flower Type	Heat Tolerance	Cold Tolerance	Alternate Bearing	High Density Potential*	Fruit Bearing
DS1	Large	Weeping, mounding sprawling	A	Unknown	Unknown	Consistent	Moderate	Inside
DS2	Small	Vase Shaped, open canopy	B	Unknown	Unknown	Similar to Hass?	High	Outside
DS3	Large	Upright	A	Unknown	Unknown	Consistent	High	Inside
DS4	Large	Rangy somewhat upright sprawling	A	Unknown	Unknown	Moderately consistent	Moderate	Outside
DS5	Small	Compact	A	Unknown	Unknown	Consistent	High	Somewhat Inside

*High density potential includes adaptability to heavy pruning.
Adapted from Platt, R. 1975. California Avocado Society 1974-75 Yearbook. 58:49-53.

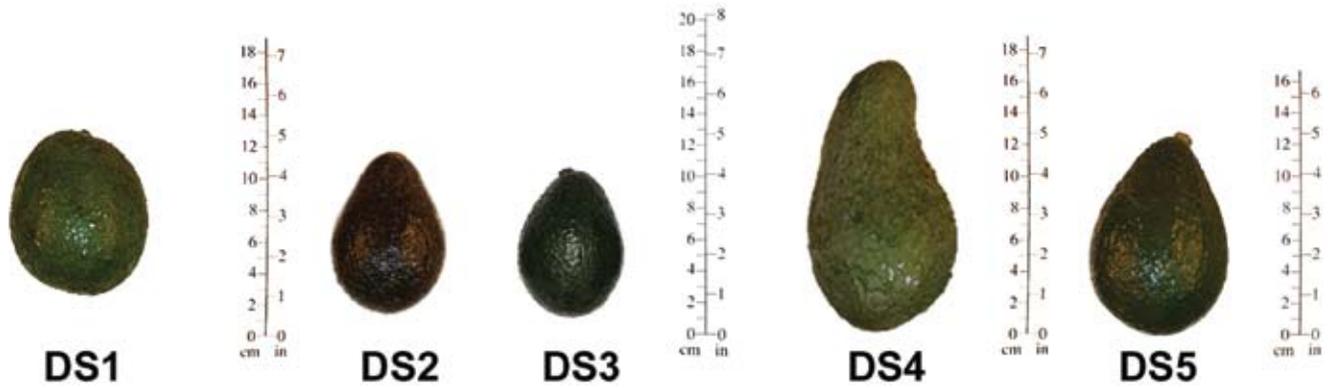
ing program. In addition, word has gotten back to CAC that the University of California, Riverside may be entertaining offers from interested parties in other countries to fund the scion breeding program, which could hinder California growers' access to future material released from the program.

California avocado growers, through CAC, have invested more than \$8.3 million in the avocado breeding program just since 1991 — although the program and growers' investment have been ongoing for many decades. Despite California — and the world — being a 'Hass'-dominated industry today, the thought of the California industry's long-term investment in the breeding program and our access to new varieties being usurped for the promise of future funding does not sit well with anyone. At its meeting on May 9, the PRC discussed how to ensure this doesn't happen.

The easy answer is for California's avocado industry to continue fully

funding the scion breeding program to ensure our continued access to new varieties. But that is easier said than done. First, as already mentioned, the California industry grows 'Hass' avocados and it's unlikely that 'Hass' will stop being the dominant variety anytime soon. Thus, how much should our industry invest in developing new varieties that will likely remain niche products for the foreseeable future? Second, CAC has long strived to live within its means and maintain a balanced budget, while funding all necessary programs and maintaining a steady assessment rate. Therefore, for CAC to fully fund the scion breeding program, one of two things — neither of which is appealing — would need to happen: 1) funding to other research projects would need to be reduced; or 2) the production research budget would need to increase, which would mean shifting funds from somewhere else in the CAC budget or increasing the overall CAC budget.

A third option, which is appeal-



Promising avocado varieties currently under consideration for release by UC Riverside.

ing, would be for CAC to find partners who believe in our goal of maintaining the California industry’s access to new varieties and could share the cost of the program. Although a new idea to our industry, there are examples of such partnerships in other industries. In 2005, faced with similar issues, Florida’s citrus packers got together and formed the New Varieties Development and Management Corporation (NVDMC: <http://nvdmc.org/>). NVDMC was set up as a non-profit corporation to help ensure Florida growers’ access to new patented citrus varieties, manage new

varieties and direct resources to citrus breeding research.

A poll of the PRC members at their May 9 meeting showed overwhelming support for exploring the development of some form of partnership to fund the scion breeding program going forward. The CAC Board, at its May 18 meeting, also supported this idea. CAC staff will be working to flesh out some details for the PRC and Board to review at future meetings.

Who may be interested in such a partnership? That remains to be determined, but a starting point would be

the California avocado handlers. All our handlers are heavily invested in the California industry and want to ensure our growers remain profitable and sustainable. New varieties can be viewed as somewhat of an insurance policy that — come what may with ‘Hass’ or the world industry — can allow our growers and our industry to remain relevant. And, depending on the details of what can be negotiated with the University of California, the partnership could be a source of future revenues through royalties, especially if we could control the world’s access to those new varieties. 🥑

Fruit characteristics for promising avocado varieties selected and evaluated by Dr. Mary Lu Apraia, Eric Focht and David Stottlemeyer at UC Riverside, and currently under consideration for release.

Variety Code	Harvest Season*	Average Size (ounces)	Fruit Shape	Peel Color	Peel Texture	Peel Thickness	Peelability	Relative Seed Size	Flavor	Eating Quality
DS1	Late winter/Spring	4.1	Round	Green to Dark Green	Somewhat pebbly	Medium	Very good to excellent	Medium	Rich, smooth	Very good to excellent
DS2	Later Spring/Summer	6.3	oval	Black	Somewhat pebbly	Medium thick	Very good to excellent	Medium	Rich, smooth	Very good to excellent
DS3	Late Spring/Summer	6.3	Pear	Black	Somewhat pebbly	Medium	Very good to excellent	Medium	Rich, smooth, yielding flesh	Very good to excellent
DS4	Winter/spring	6.2	Pear	Reddish Black to Black	Rough	Medium	Excellent	Small	Clean smooth taste, firm flesh for slicing	Very good to excellent
DS5	Summer/early Fall	9.3	Pear	Green	Somewhat pebbly	Medium	Excellent	Medium	Rich, smooth	Very good to excellent

*Harvest Season depends on where in California the variety is grown. What is provided is an estimate of the statewide harvesting window.