

By John Clark
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The other day I was having dinner in a restaurant in Aptos, California. The waitress was describing the evening's specials, and I am not sure how this came up, but she mentioned that she had the most amazing table grape earlier that day, called Cotton Candy. I perked up pretty quick.

"Do you have any idea where that grape and its flavor came from?" I asked.

She said no. She suspected it was some sort of GMO, but she liked it anyway. I had to hold myself back as she was working and we needed to eat, but I could not resist telling her just a little of how she came to eat a grape that tasted like cotton candy. Here is the story.

James Moore returned to his native Arkansas in 1964, leaving one of the top small-fruit breeding jobs with USDA in Beltsville, Maryland. He had a vision of improving a range of fruit crops in his native state working at the University of Arkansas, and one of these was table grapes. Moore gathered a breadth of breeding material for the improvement effort, including a wide range of varieties and breeding selections from Cornell University, plus some other public and private breeding varieties and selections, a few California grapes and some French-American hybrids. His goal was to develop seedless varieties that would provide the foundation for an Eastern U.S. table grape industry. He thought, "Why not grow the grapes closer to much of the U.S. population, not haul the grapes from California?"

When I joined Moore in 1980 at the University of Arkansas, he had made substantial progress in improving table grapes. I remember that almost all were still largely "slipskin," a texture (think Concord) that is not very attractive to those that have only eaten grocery store grapes. One might say it is more of an "outdoor" or "front porch" texture – a lot of spitting and chewing involved.

The Arkansas goal was to improve textures, enhance seedlessness, develop thin skins but still maintain fruit-cracking resistance, and provide flavors from neutral to fruity. A major restriction, however, was that the more the "improved" texture was attained, the more problems there were with poor winter hardiness, disease susceptibility and fruit cracking in summer rains. Progress was made, albeit slow and frustrating. Great texture and thin skins could be attained, but then later

the plant with these traits would be killed to the ground or have other winter injury manifestations, have fruit cracking and often disease susceptibility.

In 2001, David Cain came to see me in Arkansas. He had begun a new table grape breeding effort, International Fruit Genetics (IFG) based in Bakersfield/Delano, California, and had been involved in table grape breeding for many years. He had visited Arkansas several times, and knew its breeding program had substantial genetic diversity, particularly in cracking resistance, berry shapes, improved textures and range of flavors. These trait combinations had never been combined in quite this degree. He wanted to use this material in his new program. After many months of discussion and deliberation, an agreement was signed between IFG and the University of Arkansas to allow the Arkansas breeding selections to be used in his hybridizations with pure *V. vinifera* parents.

Cotton Candy is one result of this cooperation. Some may remember its appearance on "Good Morning America" in August 2013, one of the few times (or maybe the onlytime) that a fruit breeding story was featured on this show. It combines crisp texture with thin skins, large fruit size, seedlessness, and a flavor unlike anything most humans have ever experienced. Cain and I were very impressed with this selection soon after it was found, but wondered if it had too much flavor compared to the neutral-flavored grapes most Americans were accustomed to.

Time will tell, but it appears that grape consumers around the world are finding this flavor to be very attractive. It is truly a breakthrough in flavor in a table grape. And there are more varieties coming that combine an entirely new set of flavors.

The Arkansas effort of about 35 years to develop Cotton Candy's mother, plus about 15 more years of breeding and development in California to get the variety into the marketplace, totals about 50 years. This is a long time to develop a product. It took the inspiration of several people, a lot of focus and work, cooperation in a manner not common (public and private interaction) and a production and marketing plan to get the fruit to consumers.

A lot went into this! But this variety, plus other developments coming in table grapes, will put a smile on consumers' faces, provide a healthy product and make it all worth it. **FCN**

Fifty years of grape breeding leads to Cotton Candy



Cooperation between David Cain, left, and John Clark led to the development of the Cotton Candy grape. Photo: University of Arkansas

