

Looking Ahead

| Matthew Chappell

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In the wacky world of ornamental plant breeding lives a community of people who are in it for the long haul. You can think of them as the engineers of ornamental horticulture, who appreciate spending a decade (or in some cases decades) creating the trees and shrubs that serve as the foundation of our landscapes. They craft the plants and brands, like Encore Azaleas and Endless Summer Hydrangeas, that take generations (of plants) to bring to market and even longer to refine.

They resurrect forgotten and/or maligned ornamental species and invigorate them with new ornamental characteristics, improved environmental tolerances or sterility to minimize environmental risk. If I had to peg them with an overall stereotype, it would be ornamental soothsayers, who sometimes read palms on the side for extra cash.

I recently sat down with six woody ornamental plant breeders from across the nation who, as fellow breeders, I look to for innovative ideas and plants. Each is unique in their background and approach, and yet some interesting trends surfaced that are worth discussing. But first, who are these people?

- Dr. Michele Scheiber is Director of Breeding for Star Roses & Plants.
- Dr. Michael Arnold is a Professor of Landscape Horticulture at Texas A&M University.
- Dr. Ryan Contreras is an Associate Professor of Ornamental Plant Breeding in the Oregon State University Department of Horticulture.
- Robert "Buddy" Lee is Director of Plant Innovations for Plant Development Services, Inc. and evaluation director for the Southern Living Plants Collection.
- David Roberts is General Manager and Breeder for Plant Introductions, Inc. (PII) based in Georgia, which is a subsidiary of Bailey Nurseries.
- Dr. Todd West is a Professor of Woody Plant Improvement in the Plant Sciences Department at North Dakota State University.

Trends in nursery plants

When you have a conversation with an industry member, it's hard not to focus on the topic of trends—after all, that drives what many of us do in the green industry. Sometimes the trends are regional and sometimes national, yet in plant breeding the goals of a program rarely line up perfectly with what's going on right now in the industry. That's to be expected, as trends come and go in one- to three-year waves, whereas woody ornamental breeding takes much longer.

But I nonetheless asked each of the six breeders what, if any, effect regional or national trends have on their breeding program. I could have sworn that the breeders had coordinated their responses. Essentially, trends have little effect on what genera or species are selected to include in a breeding program. A great deal of that is based on gut-instinct and/or specific trait(s) that a breeder identifies that can be improved upon. Much comes down to the plants that a breeder finds to be the love(s) of their life.



Pictured: Abelia Peach Perfection, bred by Michele Scheiber.

For example, when I asked what their favorite plant was, five of six indicated it was a plant that they've worked on. For Buddy, it was azaleas; David proclaimed hydrangeas; Todd pointed to maples; Ryan couldn't make up his mind and went with "anything fragrant" (no surprise since he's working on lilacs, deutzia, mock orange, etc.); Mike was quick to say bald cypress. Michele was the lone holdout, but only because cold hardiness is an issue for her dearest *Michelia figo* in eastern Pennsylvania. Yet I have a feeling she'll find a way to work on *Michelia* spp. in the future.

Ornamental breeders, rather than focusing on trends, typically focus on more regional issues. Todd, for example, summed up the Northern Plains and Canada when he told me, "Trend or not, the biggest issue in Zones 3 to 4 is cold hardiness, and in the plains and upper Midwest is soil pH, because it doesn't matter how pretty a plant is—if it can't tolerate -40F and high soil pH, it won't be

successful here."

As a result, his breeding program focuses on finding alternatives for staple plants like buckeye, red maple, Japanese maple and flowering

magnolia that push into Zone 3 and tolerate soil pH pushing 7.5. Interestingly, he's found that interspecific hybrids are typically more cold hardy, which has resulted in some amazing strides in cold hardiness, including plants like *Magnolia x loebneri* Spring Welcome and *Aesculus x* Prairie Torch (both Zone 3 hardy).

How to top these two? Well, that's easy—Todd and his crew are crossing *Acer pseudosieboldianum* (Korean maple) with *Acer japonicum* (Japanese maple) to push the boundaries of Japanese maples into Zones 3 to 4.

Mike is another breeder that focuses more on regional trends, although Texas is certainly big enough to be the center of attention for any breeding program. Specifically, Mike focuses on plants that are "resource efficient" and "saline (salt) tolerant." Ironically enough, his breeding efforts were borne from necessity, as he noticed that most ornamentals grown in Texas aren't well-adapted to high heat, frequent droughts, low chilling hours and highly alkaline irrigation (if irrigated at all).



Pictured: Lavaburst Buckeye, bred by Dr. Todd West, has bright burgundy leaves in the fall.

He also noticed that there was wide variation in native plant populations when working with his favorite plant, *Taxodium distichum* (bald cypress), as well as many other coastal plain and prairie species. The result, long before the current national craze over "native plants" and "pollinator plants," was to focus on this group. While not technically a woody species, a perfect example of how his work on resource-efficient native species transcends into the currently popular trends of native plants and pollinator plants is *Helenium amarum* Dakota Gold. This fact isn't lost on Mike, who indicated, "My program was shaped as I was walking through prairies with students. I would say, 'That would make a nice ornamental,' and they would respond 'Then why not improve it?' So I did."

Breeding for the masses

Speaking of trends, one of the largest national trends in woody ornamentals over the last 15 years has been the proliferation of reblooming shrubs, and at the center of this are three brands that you'd need to be cryo-preserved not to have heard of: Encore Azaleas, Knock Out Roses and Endless Summer Hydrangeas. Unlike pollinator plants, natives, etc., this is a trend born at the hands of ornamental breeders and not initially driven by consumer demand.

In the case of Encore Azaleas, Buddy was an independent plant breeder at the time he started the process of azalea breeding in the late '70s. As with most independent breeders, Buddy started working on azaleas out of a love for the plant, rather than any specific goal (that would come later). Soon though, he discovered

a plant that rebloomed and the rest is history.

Much like the Encore azalea line, Knock Out Roses took many generations of breeding and evaluation to bring to market, with a breeding history spanning nearly a quarter century. Endless Summer Hydrangea was a bit more serendipitous and was first spotted by Dr. Michael Dirr when visiting Bailey Nurseries and voilà—a brand was born. Now David Roberts leads the team that works on hydrangea breeding for Plant Introductions, Inc. and Bailey Nurseries.

I'd been itching to ask the head breeders from these three brands a pivotal question: Does the industry need another azalea, Knock Out Rose or hydrangea? The answers were both enlightening and similar.

David responded that "Yes, the world does need more hydrangeas, but cultivars must be an improvement—for example, new foliage colors or improved environmental tolerance to winter cold, heat and drought."

I can attest to the latter, as one of the latest Endless Summer releases, Bloomstruck, is a much tougher hydrangea that holds up well to heat with minimal flagging. However, the new foliage color idea is especially intriguing and David Roberts indicated there are some big changes coming to hydrangea foliage.

Michele echoed this philosophy with regard to Knock Out Roses, specifically mentioning that improving cold tolerance is a continual means of expanding market considerably and a priority for any rose breeding program.

Buddy implied a similar theme. He indicated "The world may not need another pink or white reblooming azalea, but people want new cultivars and that drives the market and plant breeding efforts." What's more, "the world really could use a yellow-flowering azalea, and while it may be years away, it will happen one day due to continual, incremental improvements."





Pictured: Encore Autumn Fire Azalea, bred by Buddy Lee.

In the interim, small improvements are being made with regard to disease and insect tolerance, bloom size and numbers, and environmental tolerance. If you look back at hydrangeas, roses or azaleas that were available 25 years ago compared to today, all of those small changes (and a few breakthroughs thrown in) have transformed the market and absolutely driven consumer buying habits.

Speaking of breakthroughs, one breeder working on the edge of sanity and science with little regard to trends is Ryan, whose program is squarely focused on those breakthrough plants capable of changing how (and where) the industry utilizes a species. As a graduate student, Ryan honed his skills in ploidy manipulation (with Dr. John Ruter) to induce sterility into otherwise weedy woody ornamental species by creating triploid cultivars. As a rule, triploids aren't capable of producing viable pollen and/or seed. These plants often have the added benefit of frequently reblooming, as many plants that don't set seed will just keep on trying. Just imagine a sterile Norway maple, cherry laurel, mock orange, flowering currant or althea—all of those are in Ryan's pipeline.

Many of you may not be aware of the vast number of advanced selections or plants that are ready for release and tucked away in field plots awaiting just the right time to be given a silly marketing name and introduced to the marketplace. This is the stage of the ornamental breeding process where regional or national consumer trends can make or break a plant, because to fit in the market, there must be demand.

Demand can, of course, be generated, but it's a risky business for a nursery to market a plant that's outside of the mainstream. Case in point is an outstanding bald cypress cultivar developed by Mike more than a decade ago with great form, salinity tolerance, drought tolerance and extreme cold hardiness for the species. Yet it sits in the field in College Station, Texas, awaiting its big break.

So goes the woody ornamental breeding world, where breeders hedge their bets and hope for the best. **GT**

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