RosBREED

Combining Disease Resistance with Horticultural Quality in New Rosaceous Cultivars

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In This Issue

A Stormy Start to Great Engagement

Mercy Olmstead, Extension Team Leader

The RosBREED team puts high value on regular, face-to-face communication with its U.S. stakeholders and international research collaborators. Although technology is making it easier and easier to communicate via email or web-based conferencing, nothing can replace the value of having a group together for formal and those all-important informal conversations. Although the weather was stormy, the sun came out just in time for our annual picture!

On January 7 and 8 RosBREED hosted its Advisory Panel (AP) and International Partner meetings, respectively, in San Diego. We were pleased once again to have a wonderful turnout – 27 AP members! Working with the RosBREED Executive Committee our extension, scientific, and industry panelists spent a productive session reviewing project strategy and accomplishments.

Similarly, our International Partners, 36 scientists from 9 countries, shared updates on their latest research results and spent an entire day working with RosBREED scientists to ensure we are efficiently leveraging the best possible genomic and genetic data to inform rosaceous crop breeding programs.

Such genuine engagement with our stakeholders and our scientific collaborators is both inspiring and challenging. As we have done previously, the RosBREED team will adjust project activities based on this latest feedback and constructive criticism.

In addition to this customary activity, we welcomed the participation of several USDA personnel, including Dr. Parag Chitnis, Deputy Director of the NIFA Institute of Food Production and Sustainability, Dr. Ed Kaleikau, National Program Leader for plant genomics, genetics and breeding, and Dr. Ann Marie Thro, who provides leadership to focus and coordinate federally funded activities in plant breeding and is the senior advisor for plant health, production, and products. The RosBREED team appreciated the positive comments Dr. Chitnis shared at the end of our AP meeting. It was especially gratifying that our USDA-NIFA colleagues were able to see RosBREED in action, working together across crops, disciplines, institutional affiliations and locations.

Another special treat at this annual meeting was the opportunity to sample fruits of 'Sweet Sensation' strawberry, freshly delivered by Dr. Luis Osorio, representing Dr. Vance Whitaker and the University of Florida strawberry breeding program. Nothing beats face-to-face engagement with stakeholders, and delicious rosaceous fruit makes it all that more enjoyable! Let's hope at our next meeting Vance (or other RosBREED scientists) will provide additional validation that our project's breeding programs will be delivering products with such superior quality.

This year, project staff and AP members met in crop group breakout sessions - pome fruit, stone fruit, and rose and berries – to consider new and emerging issues, how RosBREED is doing, and how it may help to address these issues in the future. We also inquired as to the effectiveness of RosBREED communication – both to AP members, our stakeholders, and the larger scientific community.

(Cont. on Page 2)

Advisory Panel members and RosBREED project members braving the wind for a group photo. Photo: M. Olmstead

A new project communication tool – RosBRIEFs - was presented in packets to AP members to summarize our success stories. AP members were excited about these short summaries of the existing state of knowledge, RosBREED methods, and what success we have had, all of which are easy to distill to social media posts.

The AP members in general felt that the RosBREED project is on track, and are impressed with the progress towards determining sources of disease resistance and developing DNA-tests for marker-assisted selection. They concluded that the RosBREED project is on track towards understanding the sources of disease resistance and developing DNA tests to facilitate DNA-informed breeding. They also cautioned the project group to not neglect the importance of host-pathogen interactions, and provided some interesting insight.

Twitter can't describe how good @rosbreed variety Sweet Sensation tastes #NIFAimpacts #RosMtg16

Featured Team: DNA-Informed Breeding Team

Cameron Peace, DIB Team Leader and Julia Piaskowski, DIB Team Member

We're here to help you access DNA information for breeding! RosBREED's dedication to bridging the chasm between genomics research and routine breeding is a transdisciplinary effort involving all Teams, but it falls to the DNA-Informed Breeding Team to ensure all struts and cables in that bridge are connected from one end to the other so that ideas, data, tools, information, germplasm, and experts are crossing the bridge in both directions. If we do our job right, valuable genomics discoveries are routinely translated into tools and knowledge that powerfully benefits U.S. Rosaceae breeding now and long into the future. In short, we fill the gaps.

Team's Roles

The Team has three major roles (Figure 1; photos below). First, we provide DNA-based assays that effectively reveal genetic potential to breeders. New DNA tests are developed from RosBREED's discoveries of large-effect genomic regions influencing traits of socioeconomic value. Because these discoveries are made with the U.S. "Crop Reference Sets" as well as "Breeding Pedigree Sets" from demonstration breeding programs, each genomic region is also evaluated for its breeding utility: estimation of effects of allelic combinations in various genetic backgrounds and allele frequencies, distributions in breeding parents, and original sources. New DNA tests are also developed from such discoveries made by the Rosaceae genomics researchers around the world that are reported in the literature or shared through our collaborative network. In addition, as collaborators report or share new DNA tests, the DNA-informed breeding team evaluates predictiveness in U.S. breeding germplasm and for specific breeding programs. Finally, current DNA tests are constantly refined to cover new alleles, incorporate multiple genomic regions, and convert to various marker platforms. Outputs of this work are provided in the form of "DNA test cards" – as

DIB Team Members

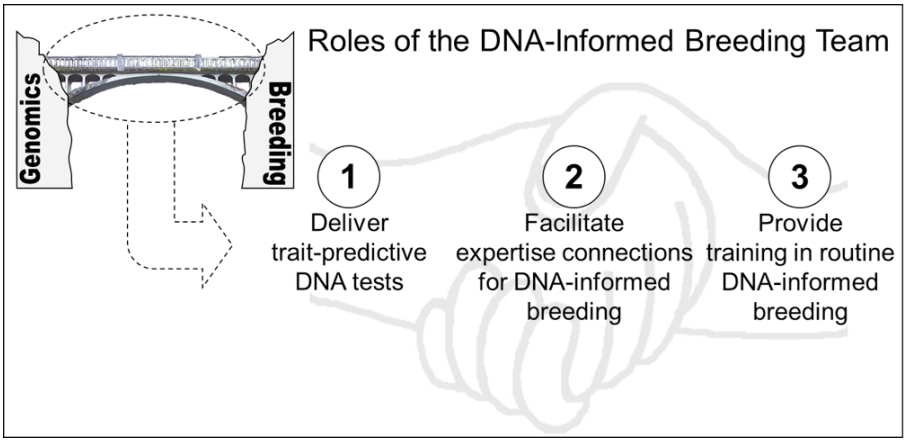


Figure 1: RosBREED's DNA-Informed Breeding Team – filling the gaps in bridging the chasm.

described in this month's Community Breeders' Page article.

The Team's second role involves ensuring breeders are connected to expertise and services required for obtaining and using DNA information in their programs, as well as ensuring that allied scientists are aware of and focused on breeder needs. The former includes facilitating access to molecular geneticists with expertise in the relevant crop, germplasm, and traits, access to decision-support software, and access to reliable, affordable services in DNA-based diagnostics. The latter includes publicizing priorities of valuable traits to genetically unravel (so that not just the easy traits are studied), familiarizing commercial service providers with the particular needs of U.S. Rosaceae crop breeders, identifying software needs for complicated information management, providing examples of breeder-friendly DNA information, and highlighting case studies in successful navigation of the translational pipeline. Open communication benefits from a common language, so the "Terminology Police" arm of the Team helps participants avoid jargon, acronyms, ambiguous terms, and misconceptions. This work mostly happens behind the scenes, although each DNA-informed breeding success, article, scientific paper, and delivered tool strengthens the bridge. Those interested in forging or strengthening the genomics-breeding continuum for their crop improvement or research should contact their Crop Postdoc (see below) or the Team Leader (cpeace@wsu.edu).

Technical training, the Team's third major role, aims to support breeders transitioning from traditional to DNA-informed breeding. Drawing on outputs from the first two roles, help is provided to the community of U.S. Rosaceae breeders via on-site visits, workshops, online information pages, online learning modules, webinars, videos, and print material. The "For Breeders" section of the project website (www.rosbreed.org/breeding), previously known as the Community Breeders' (web) Page, houses training resources. The most recent addition is a Quick Start Guide to help breeders jump right in. Visit For Breeders regularly for more useful advances in training resources.

Team Members

The DNA-Informed Breeding Team is led by RosBREED Project Co-Director, Cameron Peace, Washington State Univ. (WSU). In his downtime, Cameron eats fruit and lots of it, thankful for breeders' past efforts and the fruit industry's current work in providing such a wide range of delicacies at retail. He can also be found tending most Rosaceae crops (and other fruit) in his backyard or tracking down neighborhood, feral, and wild plants throughout the fruiting season. He's therefore constantly inspired to help breeders develop exciting new cultivars.

Other core members of the Team also creatively translate genomics into impact. The Crop Postdocs include Dr. Stijn Vanderzande (cherry and apple), Dr. Laima Antanaviciute (peach and other non-cherry Prunus), and Dr. Jason Zurn (berries, rose, and pear), who are the frontline liaisons between breeders in those particular crop groups and the tools, knowledge, and expertise connections that RosBREED can provide. The team consists of Belgian Stijn, supervised by Dr. Peace at WSU, Lithuanian Laima, supervised by Dr. Ksenija Gasic (Stone Fruit Breeding Team Leader) at Clemson Univ., and American Jason, the most recent addition, hailing from North Dakota. Jason works under the direct supervision of Dr. Nahla Bassil (DNA Testing Team Leader) at USDA-ARS Corvallis. Lichun Cai is not assigned to any particular crop but provides much-needed data analytics support for all crops, supervised by Dr. Amy Iezzoni (Project Director). RosBREED's web training resources specialist, Dr. Julia Piaskowski, with a strong background in quantitative genetics and annual crop breeding, curates the For Breeders webpage (https://www.rosbreed.org/breeding), preparing much of the material and helping connect breeders with Statistical Genetics Team outputs, rounding out the DIB Team.

Additional team members include Daniel Edge-Garza (cost-efficiency and logistics of marker-assisted seedling selection), graduate students such as Paul Sandefur – DNA test development, Feixiong Luo – apple disease resistance DNA tests, and Ashley Powell – apple acidity genetics, and leaders of the crop breeding teams.

Featured Team Member: *Lisa DeVetter*

Audrey Sebolt, Project Assistant

Washington State is the largest producer of processed red raspberries in the United States and also produces a significant amount of blueberries and strawberries, as well as black raspberries. Lisa's extension program currently focuses on strawberries, blueberries and red raspberries, each with different needs and challenges. To reach all of these industries, Lisa has established a website in which growers can access critical resources, from site preparation and establishment to cultivar selection (http://

Lisa DeVetter, Washington State University Photo: WSU

smallfruits.wsu.edu/). Lisa engages the Pacific Northwest small fruit industry and growers to learn about their research needs and their recommendations for educational tools.

In addition to her extension role, Lisa conducts research on several emerging issues. Blueberry production is a rapidly growing industry with increasing acreage in both the western and eastern areas of the state. The challenge for growers, and for Lisa's research, is that the two regions have vastly different climates. While western Washington has a mild maritime climate, eastern Washington is a cool desert, with warm days and cold nights and very low humidity. During the winter, temperatures can dip below critical bud temperatures, damaging the current season's crop. Thus, cold hardiness of blueberry buds/flowers is a critical issue for the eastern Washington industry; little is known about which cultivars are best suited for eastern Washington and at which temperatures buds/flowers are most susceptible to freeze damage.

Lisa also conducts research on alternative management practices for soilborne diseases of raspberry. The soil fumigants that growers can use are only minimally effective and have regulatory barriers which complicate their usage. Alternatives that Lisa is researching include the use of cover crops as pre-plant traps for parasitic nematodes, and using different species of alleyway cover crops to enhance soil health and suppress soilborne diseases. She is also working to pinpoint the best management practices for raspberries, to address labor shortage issues by investigating different pruning systems and trellises.

Lisa's contributions to RosBREED include writing and editing quarterly newsletter articles. At winter small fruit grower meetings, Lisa informs Pacific Northwest berry growers of RosBREED's progress and success stories. She is also assisting the Socio-Economics Team with the development of a strawberry survey, which will assess cultivar adoption. The case study will involve surveying growers to determine their cultivar preferences. Currently, Lisa and the Socioeconomics Team, with the aid of the Extension Team's leader Mercy Olmstead, are developing questions for the survey. Lisa will assist with administering the survey and disseminating the results and conclusions via outreach summaries to the strawberry grower community.

RosBREED is excited to have Lisa on our Team bringing new energy and enthusiasm to RosBREED's efforts. She is committed to helping the team achieve success and facilitate the development of improved cultivars for growers. Below are her thoughts regarding RosBREED.

Why did you choose to be involved with RosBREED?

I was invited to participate in RosBREED within the first few months of my career as an assistant professor in small fruit horticulture at Washington State University. RosBREED has such a positive legacy and I was extremely flattered to receive an invitation to participate. The overall scope and mission of RosBREED brings immense value to producers and the horticultural industry. The opportunity to contribute to that mission was very appealing and I saw a role for myself to contribute as a small fruit specialist in the Pacific Northwest. Moreover, the entire RosBREED team is made of esteemed scientists. It was and still is a very exciting opportunity to interact and learn from this tremendous group of people.

What successes do you hope to see from RosBREED?

Genetic resistance to diseases plaguing production and postharvest storage is a tremendous tool for producers and we certainly need more. Moreover, we need resistance to key diseases of Rosaceous crops combined with horticultural quality so producers have a marketable product that keeps them profitable. We also need breeding tools to accelerate cultivar development with these important traits. These are all goals that I hope RosBREED is successful in addressing.

How have you already benefited from RosBREED?

As a horticulturist specializing in production horticulture and physiology of berry crops, I've certainly gained a lot of knowledge about plant breeding and the new tools being used in this endeavor. Perhaps most important, I've come to meet a great group of colleagues that comprise RosBREED. It is also rewarding to know what new cultivars are being developed and will hopefully soon be available to the Rosaceous crop industry.

What is one thing (or a few) your colleagues don't know about you?

I love science. Growing up, I could not decide what to be and I remember at the age of eight I was considering a career in plant genetics, astronomy, or marine biology (emphasizing coral reef ecology). One horticulture class as a sophomore in college made me find my calling in horticulture.

I have a serious side, but I do love to laugh; my all-time favorite movie is Monty Python and the Holy Grail.

Rosaceae Nemesis:
Armillaria Root Rot

Drew Wilson and Mercy Olmstead, Extension Team, Guido Schnabel, Pathology Team Member

Armillaria root rot wreaks havoc on rootstocks, killing young and old peach and cherry trees before spreading to neighboring trees. In the southeastern U.S., Armillaria root rot, caused by the fungus *Armillaria tabescens*, infects roots and destroys the lower trunk of the tree, turning wood material into a brown, pulpy mess interspersed with white fungal masses and causing tree death as the infection spreads and the wood loses structural integrity. Armillaria root rot caused more than $1.5 million in damage to the Georgia peach industry between 2000 and 2002, and between 1987 and 1992 the disease caused an estimated $3.86 million in annual damages in South Carolina (Schnabel, 2015).

This devastating disease can be caused by other Armillaria species as well. *A. mellea* is the primary pathogen in northern states, causing premature peach tree decline, with the potential for significant annual losses. In Michigan, the predominant fungus is *A. ostoyoe*, found in tart cherry orchards. Unfortunately, there is no "silver bullet" solution to protect trees, and Armillaria infections have taken many prime orchard sites out of production.

The first symptoms of an Armillaria infection are chlorotic leaves, stunted growth, and sudden collapse of shoots. A tell-tale sign of Armillaria infection is the presence of clusters of mushrooms around the base of an infected plant. Mushrooms sprouting from an *A. mellea* infection are honey-colored to dark brown and have a domed cap. Depending on species, the mushrooms may or may not have an annulus around the stalk or caps that are more disc-shaped.

Figure 2. Armillaria-resistant P. maackii *is mainly an ornamental plant due to its distinctive bronze-colored bark. Photo: A. Sebolt*

Infected plants can also be identified by cord-like structures called rhizomorphs (Figure 1) that grow on roots beneath the surface and between the wood and bark above ground. Some species produce rhizomorphs that can grow for many yards in the soil in search of prey: others only produce rhizomorphs initially to bridge the gap between a colonized dead root and a healthy root. Once trees are infected, they must be removed; however, the fungus can survive on roots left behind in the soil for many years to infect new trees after replanting. Unfortunately, the most effective way to combat Armillaria rot is to avoid planting on land where the fungus has been found, particularly if there were oak trees (*Quercus* sp. or *Lithocarpus* sp. syn *Notholithocarpus* sp.) present. If trees have been infected, the entire root system of diseased individuals would have to be removed from an orchard to reduce further spread of the fungus.

Figure 1. White mycelial fans exposed in structural roots in Armillaria infected peach trees (left) and rhizomorphs in peach root systems. Photo: M. Olmstead (L), G. Schnabel (R)

Solutions on the horizon? For peach trees, at least one rootstock, 'MP-29,' is reported to have good Armillaria resistance (Beckman et al., 2012). For cherry trees, *Prunus maackii*, commonly known as Manchurian cherry, has also exhibited resistance to Armillaria (Figure 2). The peach breeding and cherry breeding programs at Clemson University and Michigan State University, respectively, are pursuing leads to develop Armillaria-resistant rootstocks (Figure 3). Obtaining DNA information to increase the efficiency of the development of these resistant rootstocks is a key objective of RosBREED.

Figure 3. 'Balaton' x P. maackii *cross, MSU 2014. Photo: A. Iezzoni*

References

Beckman, T.G., J.X. Chaparro, and W.B. Sherman. 2012. 'MP-29', a clonal interspecific hybrid rootstock for peach. HortScience 47:128-131.

Cox, K.D., H. Scherm, and T.G. Beckman. 2004. Armillaria root and crown rot. Southeastern Peach Growers Handbook. http://www.ent.uga.edu/peach/peachhbk/fungal/armillariacr.pdf

G. Schnabel, 2015. Armillaria root rot. http://www.clemson.edu/extension/horticulture/fruit_vegetable/peach/diseases/arr.html

Jewels in the Genome

Amy Iezzoni, Project Director, Michigan State University

Aroma is a complex trait that contributes to the quality of rosaceous fruit and floral products. Its perception by humans is largely determined by the relative abundance of a combination of volatile ester compounds that increase during the ripening process. Apple cultivars like 'Royal Gala' are characterized by a "fruity" aroma compared to cultivars like 'Granny Smith'. In progeny from a cross between these two cultivars, a cluster of large-effect loci for 31 ester compounds was identified at the top of apple linkage group (chromosome) 2 (Souleyre et al., 2014). For one of these 31 compounds, the effect of the "fruity" allele for this complex locus increased the ester production as much as 53-fold. The gene underlying the variation at this locus was determined to encode for alcohol acyl transferase 1 (AAT1), an enzyme that catalyzes the synthesis of a broad range of esters found in 'Royal Gala' fruit that contribute to its "ripe apple" aroma. Two functional variants of *AAT1* were identified. The variant from 'Royal Gala' was associated with a significant qualitative and quantitative contrast in ester profile and production compared to 'Granny Smith'.

Apple breeders already have access to DNA tests to select for other key components of apple fruit quality, including apple texture (*Md-ACS1* = Jewel 1); crispness, juiciness, acidity (Ma locus = Jewel 6); firmness (*Md-PG1* = Jewel 9); and fructose concentration (*LG1Fru*). With genetic knowledge of which apple seedlings will most likely have desirable ester content and profile (along with the other components of apple fruit quality), breeders can plan crosses to maximize the probability of obtaining selections with excellent fruit quality. Therefore, because knowledge of this genetic region will lead to more efficient breeding of apple cultivars, it is chosen as one of RosBREED's "Jewels in the Genome."

Reference

Souleyre E.J., D. Chagné, X. Chen, S. Tomes, R.M. Turner, M.Y. Wang, R. Maddumage, M.B. Hunt, R.A. Winz, C. Wiedow, C. Hamiaux, S.E. Gardiner, D.D. Rowan and R.G. Atkinson. 2014. The AAT1 locus is critical for the biosynthesis of esters contributing to 'ripe apple' flavor in 'Royal Gala' and 'Granny Smith' apples. Plant J. 78: 903-915.

Photo: Fotolia

*Ph*inally *D*one!

Terrence Frett showcasing new and potential grape cultivars at Sun World

Congratulations to Dr. Terrence Frett, who successfully defended his Ph.D. dissertation at the University of Arkansas. Dr. John Clark was his major advisor.

Terrence's dissertation title is Genetic Determinism of *Xanthomonas arboricola* pv. *pruni* (Xap) Resistance, Fruit Quality, and Phenological Traits in Peach and Incorporation of Marker-Assisted Selection (MAS) in the University of Arkansas Peach and Nectarine Breeding Program. Terrence said it was "a feeling of relief and joy" to successfully defend his dissertation, especially considering the amount of work he covered in his research.

He also said that one of the most difficult challenges was to explain his research and such topics as SNP haplotyping to scientists not familiar with molecular biology. "I will continue to work on explaining tough concepts in simple ways for all to understand. At Sun World, I will be talking with multiple investors on why they should be investing their money into these new technologies and how it will help separate them from all competitors who are not using these techniques."

Currently Dr. Frett is a stone fruit and grape breeder with SunWorld. Sun World packs, markets and has a renowned stone fruit and grape breeding program based in Bakersfield, California.

Community Events

8th International Rosaceae Genomics Conference

Angers Convention Bureau, Angers, France
June 21-24, 2016
For more information: www.rgc8angers2016.com

American Society for Horticultural Science (ASHS) Annual Conference

Sheraton Atlanta Hotel, Atlanta, GA
August 8 – 11, 2016
For more information: www.ashs.org/?page=GeneralConference

International Strawberry Symposium

Quebec City Convention Centre, Quebec City, Quebec, Canada
August 13-16, 2016
For more information: www.iss2016-quebec.org/en

National Association of Plant Breeders (NAPB) Annual Meeting

Hosted by Cotton Incorporated and North Carolina State University, Raleigh, NC
August 15-18, 2016
For more information: www.plantbreeding.org/annual-meeting-2016

Cultivar Corner

'WHITE ZEST ONE'

INVENTOR: David Byrne, Stone Fruit Breeder, Texas A&M Univ., College Station, TX

COLLABORATOR: Natalie Anderson, Research Associate, Texas A&M University, College Station, TX

Photo: D. Byrne, TAMU

What makes 'White Zest One' special?

'White Zest One' is a medium chill (500-550 chill units) peach, with striking white flesh that bleeds slightly from the deep blush on the skin. It has traditional acid balance (sweet-tart), and is a melting flesh peach with a semi-freestone pit. Full bloom occurs 4-5 days before 'June Gold' and about two weeks before 'Scarlet Pearl'. 'White Zest One' bloom also occurs with or slightly before 'White Delight One' and 'White Delight Two'.

When was the cross made?

The cross was made in 2003 and planted into the high density nursery in 2004. It was selected in 2006 for further evaluation. A typical timeframe from cross to cultivar release is 12-18 years!

What is the pedigree of 'White Zest One'?

'White Zest One' is one of a number of seedlings from a cross between TX3D45W, a white-fleshed seedling, and 'TropicPrince' that was planted in 2004. In 2006, it was selected for further evaluation and designated as TX3C331W. Interestingly, TX3D45W, one of the parents of 'White Zest One' has a complex background with 'O'Henry' (yellow-flesh), 'Giant Babcock' (white-flesh), 'Redwing' (white-flesh), and 'Red Delight' (nectarine, yellow-flesh) present in its heritage.

Are there other siblings from this cross that have commercial potential?

Nothing that will be released.

Will this cultivar be used in RosBREED and how?

This cultivar is in the mix of parents in the families being used in the postharvest work. It has good postharvest life and has been crossed with a couple selections that have excellent postharvest life. The relative postharvest durability of these will be characterized this year.

Any other interesting notes about 'White Zest One'?

This peach was evaluated in three different sites that were medium to medium-high chill; however, in lower chill conditions, it developed a slight suture bulge and tip (slightly misshapen).

Why should growers want to grow 'White Zest One'?

In the 1990s, the Prunus Breeding and Genetics Program at TAMU began to develop a series of early to mid-season ripening peach and nectarine cultivars adapted to the low-medium chill zone (300-600 CU) for the southern U.S. The objective was to improve on the current cultivars and expand on the types of stone fruit products available. Over the last several years, the TAMU program has released the 'Royal Zest' peach series (yellow-fleshed, traditional acid flavor), the 'White Delight' peach series (white-fleshed, low acid sweet flavor), the 'Flat Delight' peaches (low acid donut peaches), the 'Golden Zest' peach (yellow peach, non-melting flesh), and the 'White Zest One' peach (white-flesh, sweet acid flavor). This gives the growers in the medium chill zone improved cultivars (better color, shape, firmness) as well as more types of products (white-fleshed, low-acid flavor, donut shape) to offer their clientele.

Photo: D. Byrne, TAMU

Meet Our Advisory Panel Members

Fred Bliss
Scientific Advisory Panel

What is your job description? How do you help the Rosaceae community?

I am a Professor Emeritus in the Department of Plant Sciences, Univ. of California-Davis (UC Davis), Davis, CA. I continue to do consulting to various groups about plant breeding, especially fruit breeding. My other primary activity is exploring approaches to plant breeder education and training.

I co-teach a course titled "Program Management for Plant Breeders" through the Seed Biotechnology Center at UC Davis, Sept. 2016

Why are you interested in RosBREED?

RosBREED and RoBREED2 are providing cutting edge knowledge and technology for fruit breeders. The projects are facilitating development of new fruit cultivars that contribute to sustainable fruit production and healthful new products for consumers.

In addition to the research and technology, participants are training new breeders and scientists to fulfill societal needs in the U.S.

How do you feel that you can contribute to RosBREED?

I have plant breeding, genetics and genomics experience in public universities (Univ. of Wisconsin-Madison and UC Davis) and the private sector (Seminis and Monsanto) as a breeder and manager.

I have experience developing and deploying molecular breeding tools and knowhow in vegetable and fruit breeding. I can provide guidance for plant breeding students, and education and training for management of breeding programs.

Brad Rickard
Scientific Advisory Panel

What is your job description? How do you help the Rosaceae community?

I am an associate professor in the School of Applied Economics and Management at Cornell University where I teach, conduct research, and have an extension program. My work focuses on the economic impacts of policies, innovation, and marketing arrangements for food and agricultural products.

Much of my work studies real-world marketing and policy issues facing horticultural producers in the United States, and my research has helped to identify fruit traits that are important to consumers and the value of new cultivars to producers.

Why are you interested in RosBREED?

I have been keenly following the work of Karina Gallardo, Chengyan Yue, Vicki McCracken, Jim Luby and Jim McFerson (RosBREED's Socioeconomics Team) over the past few years that examines consumer response to traits and other attributes in some of the major fruit crops produced in the United States.

With my recent interest in producer adoption of cultivar innovations in the apple market, I am particularly interested in the new work that the socioeconomic team within RosBREED is doing to evaluate producer response to new cultivars.

How do you feel that you can contribute to RosBREED?

As a member of the RosBREED Scientific Advisory Panel, I hope to share ideas with the members of the Socio-Economics Team as they develop surveys and other tools to elicit information about cultivar adoption from growers. In addition, I expect that serving in this capacity will allow me to learn a great deal more about fruit and rose breeding, and that this will enable me to develop new research ideas concerning the economic tradeoffs associated with innovations in disease resistance and fruit quality.

Phil Korson,
Stakeholder Advisory Panel

What is your job description? How do you help the Rosaceae community?

I am President and CEO of the Cherry Marketing Institute, a National Research and Promotion Program representing US Cherry Growers. I have deep roots in cherry research and have spent the last 35 years working closely with researchers to address key problems in the field.

Why are you interested in RosBREED?

RosBREED 1 focused on fruit quality. RosBREED 2 is focused on cherry leaf spot and Armillaria resistance. These are two high priority research areas for the cherry industry. We believed this project is key to the future of our industry. We are very enthusiastic about this project and really like the collaborative nature of the project. It is one of the best project panels that I work with.

How do you feel that you can contribute to RosBREED?

By involving grower input in the process we build a better research program that ultimately is more useful to the industry. I always feel welcome and our input is always well received.

Community Breeders Page

DNA Test Cards – a Technology Interfacing article

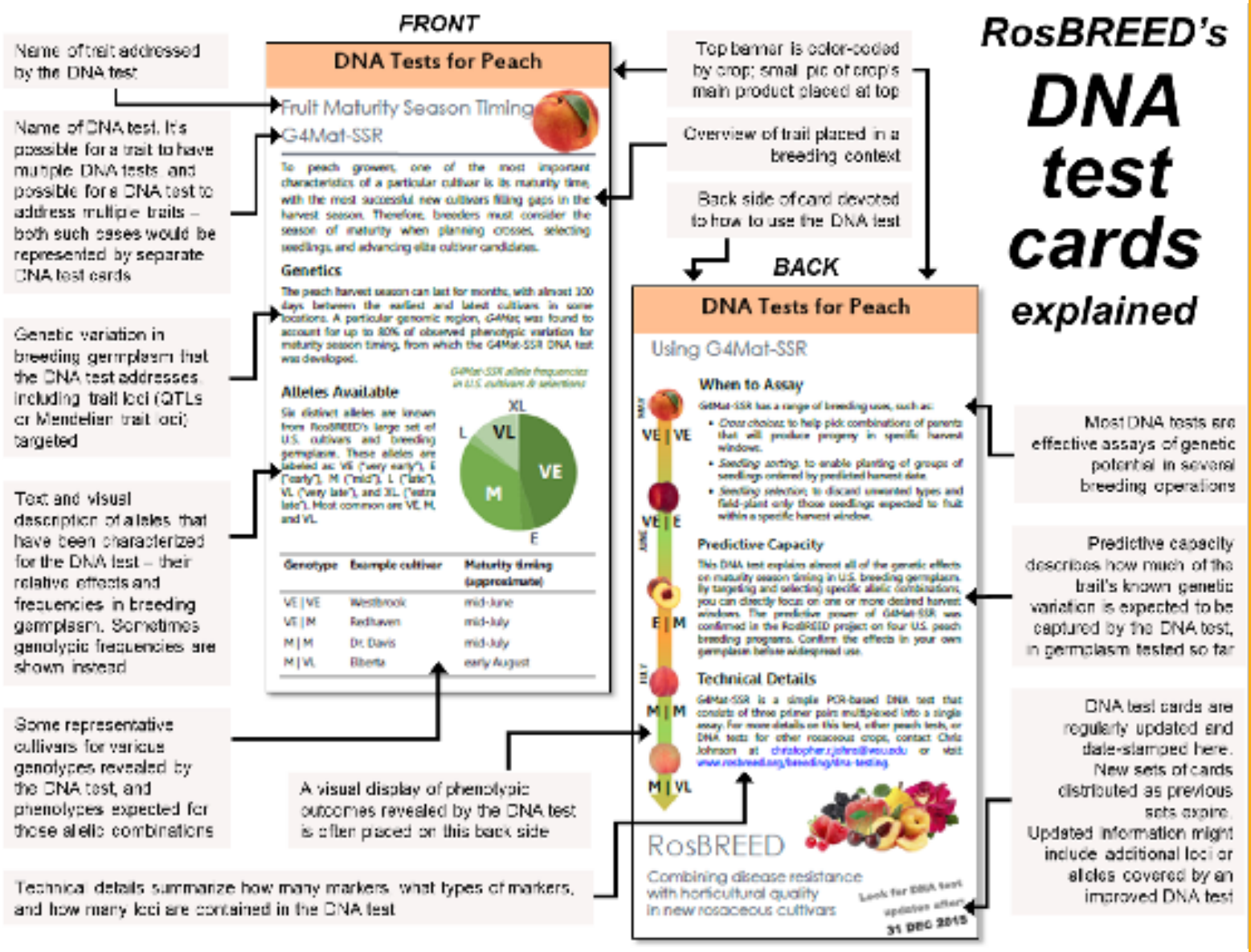
Cameron Peace, DNA-Informed Breeding Team Leader

The things you need to know at your fingertips, for available trait-predictive DNA tests. That's the concept of DNA test cards, a series of "hold-in-your-hands" informational resources that RosBREED is now providing for each crop.

By standardizing the information associated with each available DNA test, allied scientists developing these tools are better directed in their experiments and calculations, ensuring that you have access to the information you need. A plethora of peach (and nectarine) DNA test cards were provided to Californian stone fruit breeders and associated professionals during RosBREED's on-site visits in summer 2015. Regular updates of DNA test cards, provided in batches, ensure that you are up to date as more information is gathered, current DNA tests are improved, and new DNA tests are developed. DNA test cards are also available in their online format at: https://www.rosbreed.org/breeding/dna-tests.

The DNA test cards are not quite stand-alone – they come wrapped in a brochure targeted to each crop. These brochures include additional information to bring DNA tests into operation for your program, such as how to order your leaf sample collection kits, sample prices, a list of available DNA tests, and what you can expect when your results arrive.

If you would like a set of DNA test cards for your crop, or have any comments, please send me a message (cpeace@wsu.edu). We hope the DNA tests reveal lots of jewels in your breeding germplasm!



Coming up in the next issue:

- **Meet more members of our advisory panel**
- **Our "Featured Team Member" will be a familiar face!**
- **Our next "Jewel in the Genome" focuses on disease resistance**
- **What will be the next Rosaceae Nemesis? It might be one important for your Rosaceae crop!**

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RosBREED newsletter staff:

Editor-in-chief: Mercy Olmstead, RosBREED Extension Team Leader

Design: University of Florida-IFAS, Gainesville, FL

Contributing editors: David Karp, David Eddy, and Cameron Peace

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