

RosBREED

Combining Disease Resistance with Horticultural Quality
in New Rosaceous Cultivars



V9.1 OCT 2018

Communicating Science

Kathleen Rhoades, Extension Team Member, Michigan State University

In This Issue

[Click image title to go to story](#)

This summer I had the opportunity to attend two science communication workshops, both featuring multi-day “bootcamp” formats: Speaking Science workshop for plant breeders, hosted by the Cornell Alliance for Science in Ithaca, NY, and ComSciCon Michigan, hosted by the University of Michigan in Ann Arbor. While I have substantial experience in science communication, I learned a whole lot in these intensive sessions about how to improve my science communication skills and would like to share some of my takeaways.

Both workshops emphasized a fundamental for any communication: know your audience and tailor your message accordingly. If you are visiting your state or national legislator’s office to talk about research funding, do your homework. Know what committees and subcommittees they serve on, know what legislation may be coming up for debate that’s relevant to your cause, and have examples of the specific ways your research will benefit the legislator’s constituents. Prepare accordingly every time you talk with a new audience in a new context. If you are talking to growers, you won’t be using the same messaging you were using with the legislator, and if you’re talking to a school group you won’t be using the same messaging you were using with legislators or growers.

Distilling a message and figuring out your communication goal can be difficult. One of the most useful exercises I learned at ComSciCon is called “half-life your message.” Say you’re preparing an extension talk about your research. With no preparation, talk to someone about your research and why it’s important for 60 seconds. Then repeat what you want to say, but this time give yourself 30 seconds. Then repeat yourself again but within 15 seconds. Maybe even take it a step further and talk about it for five seconds. As you deliver your message in smaller and smaller amounts of time, you should be able to whittle it down to the essential point you’re trying to get across. When you hit the 15-second exercise, your brain is forced to discard extraneous information and you will get your point across in one or two sentences. Building on that foundation, you can develop and deliver a message far more effectively.

With any audience, especially journalists, you need to have your message prepared ahead of time. At Speaking Science, we utilized the message triangle (Fig. 2), which I learned is a common strategy in communication. First, decide what point you are trying to get across in one sentence. From there, break your message down into three parts: The challenge, the solution, and the call to action. What is the specific challenge that your message relates to? What is your solution to this challenge? And what are you calling on the audience to do to support your solution? For each “point” of the triangle you should have up to three concrete examples clearly illustrating your communication point. You may not get to all three examples in an interview with a journalist, but that is not an issue. In fact, most people cannot remember more than three points and you might even distract from your overall messaging. The comedy rule of threes exists for a reason!



Fig. 1. Kathleen Rhoades, MSU PhD student.



(continued next page)

(continued from previous page)

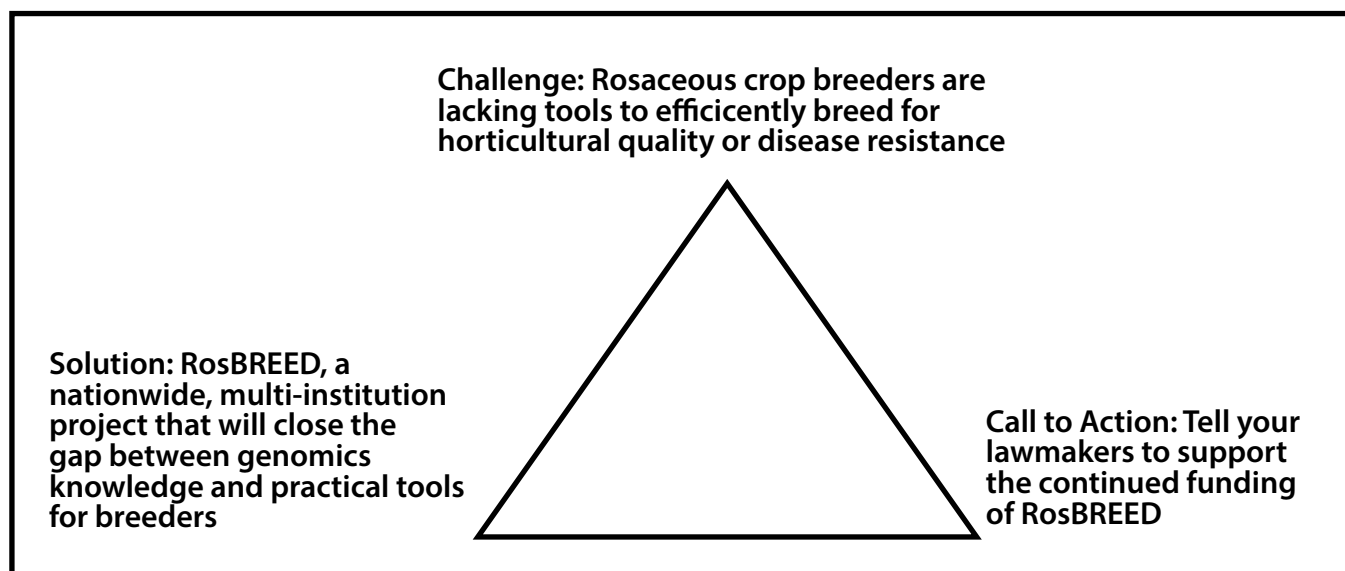


Fig. 2. The message triangle for communicating key points to your target audience.

At the Speaking Science workshop, we participated in several activities with the Cornell College of Agriculture and Life Sciences' communications staff, many of them former journalists happy to put us through challenging mock interviews and give us guidelines on how to stay on topic when dealing with off-topic questions. They also highlighted the important role an organization's communications office can play. Good research is good PR for the organization, whether a college, university, the USDA Agricultural Research Service, or a commodity commission. People who work in a communications office are always looking for interesting or newsworthy research to publicize. They have the option to communicate research news on "owned" media, like an in house newsletter or magazine, and they also maintain relationships with unaffiliated professional journalists who may be interested in writing about your research. If you aren't sure if what you're working on is newsworthy, talk to your communications office. They won't know about your research unless you tell them about it, and they can help you prepare for interviews you may be asked to do.

Finally, a note that ComSciCon emphasized for those of us just starting out in science communication: Be authentic to yourself. If you hate the way you're doing science communication, your audience will be able to tell, and you won't be communicating effectively. The keynote speaker for ComSciCon was Dr. Raychelle Burks, Professor of chemistry at St. Edward's University in Austin, TX, who works in various areas of science communication, including a regular column in Chemistry World about forensic chemistry and true crime. In her presentation she stressed the importance of choosing a media type and area of science communication that you actually enjoy. If you enjoy writing from the comfort of your own desk, write for university or local media outlets, or the RosBREED newsletter. If you prefer talking to people in person, look for opportunities to speak to the public, policymakers, or growers about research. In the age of the internet there is no one "right" way to communicate science, so find your niche and embrace it.

I appreciated the fantastic opportunity to participate in these workshops and urge my colleagues in RosBREED and beyond to do the same and improve your science communication skills.

Where Are the RosBREEDlings Now?

Natalia Salinas, University of Florida



Fig. 3. Natalia Salinas.

(continued next page)

(continued from previous page)

Where are you now and what are you doing?

Currently, I'm a third-year PhD candidate in the strawberry breeding program at the University of Florida, Gulf Coast Research and Education Center (GCREC) in Wimauma, Florida. I'm advised by Dr. Vance Whitaker (strawberry breeder). Drs. Seonghee Lee (strawberry molecular genetics and genomics), Natalia Peres (plant pathologist), Samuel Hutton (tomato breeder) and Patricio Munoz (blueberry breeder) are serving on my committee.

My project focuses on discovering and characterizing genetic loci for resistance to Anthracnose fruit rot and crown rot in strawberry caused by the fungus *Colletotrichum acutatum*.

How were you involved with RosBREED and did it prepare you for your current position?

I'm originally from Quito, Ecuador where I obtained a Bachelor of Science degree in Engineering and Biotechnology from ESPE University. In 2012, I obtained a Fulbright Scholarship to pursue a Master of Science degree in Horticulture with emphasis in Plant Breeding and Genetics at Oregon State University. In August 2015, I defended my thesis: "Validation of molecular markers associated with quantitative trait loci for perpetual flowering and soluble solids content in strawberry." My advisers, Drs. Chad Finn



Fig. 4. Natalia manually pollinating strawberry flowers. Photo credit: Natalia Salinas.

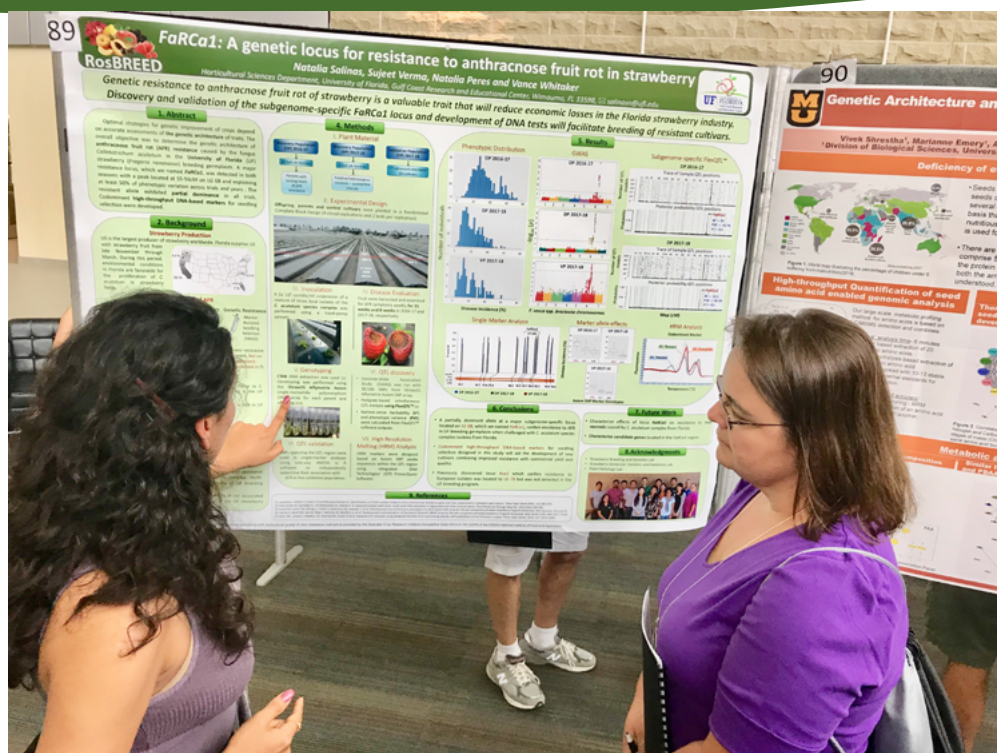


Fig. 5. Natalia explains her current research during the 2018 NAPB meeting Guelph, Ontario, Canada.

and Nahla Bassil, members of RosBREED, encouraged me to do high quality research, interact with other students and publish my work. Also, I appreciate all the meetings, conferences and seminars that I was able to participate in with RosBREED support. The combination of all these experiences allowed me to improve important technical and social skills to become a better scientist, writer, presenter and professional, which helps me to be successful in my PhD program and career.

What was your most memorable experience with RosBREED?

At the annual RosBREED meetings in Michigan, I was able to interact with Rosaceae breeders, statisticians, software developers and students. The networking skills I acquired during this time have been crucial in my PhD program.

Any advice for RosBREED's current participants?

Work hard and network hard.

It's not just about what you've done, or what you know. It's also about who you know and how you can collaborate with people in research projects – so make sure you interact with as many people as possible in conferences and seminars.

Jewels in the Genome

Sweet Cherry Firmness

Amy Iezzoni, Project Director, Michigan State University

It is absolutely clear that consumers prefer firm, sweet cherry fruit (Yue et al. 2017), and it is also true that the vast majority of sweet cherry fruit must be shipped long distances to reach the marketplace. Therefore, developing cultivars that maintain desirable levels of firmness throughout the supply chain is a top priority for sweet cherry breeders.

Our modern sweet cherry scion cultivars are derived from wild ancestors, collectively referred to as mazzard types, which have unacceptably soft fruit. Centuries of selection have resulted in the identification of firm-fruited cultivars such as 'Bing' in the U.S. and 'Ambrunes' in Spain. A genetic study led by the RosBREED team at Michigan State University and collaborators at INRA, France, identified a locus named *qP-FF4.1* located on sweet cherry chromosome 4 (Cai et al. submitted). The "soft fruit" alleles for *qP-FF4.1* contributed by

(continued next page)

(continued from previous page)

mazzard sources were dominant over the “firm fruit” alleles present in landrace and bred cultivars. This poses a classic challenge to cherry breeders, because mazzard types exhibit considerable genetic variation for important traits like disease resistance. For example, among the accessions in the USDA-ARS National Clonal Repository, Davis, CA, Mildew-Immune Mazzards are excellent sources of powdery mildew genetic resistance (www.rosbreed.org/breeding/jewels/cherry-powderymildew). However, they are also homozygous for “soft fruit” alleles at *qP-FF4.1*.

A DNA test for routine screening of alleles at *qP-FF4.1* is being developed for use in sweet cherry breeding. As *qP-FF4.1* is at or close to the previously described locus influencing fruit maturity timing (www.rosbreed.org/breeding/jewels/cherry-maturity-date) (Sandefur 2016), initial experiments will involve testing whether the DNA test for maturity time also discriminates among the “soft” and “firm” *qP-FF4.1* alleles. In the meantime, high-resolution SNP array information is able to determine the fruit firmness and maturity timing alleles of any gene-scanned individual. Therefore, because knowledge of this genetic region will lead to the more effective breeding of sweet cherry cultivars for fruit firmness, it is featured as one of the RosBREED “Jewels in the Genome”.

References

- Yue C., S. Zhao, K. Gallardo, V. McCracken, J. Luby, J. McFerson. 2017. U.S. growers’ willingness to pay for improvements in rosaceous fruit traits. *Agric. Res. Econ. Rev.* 46:103-122.
- Cai L., Quero-García J, T. Barreneche, E. Dirlwanger, C. Saski, A. Iezzoni. A fruit firmness QTL identified on linkage group 4 in sweet cherry (*Prunus avium* L.) is associated with domesticated and bred germplasm (submitted).
- Sandefur, P. 2016. Enhancing efficiency in tree-fruit breeding by developing trait-predictive DNA tests. PhD Thesis. Pullman: Wash. State Univ.

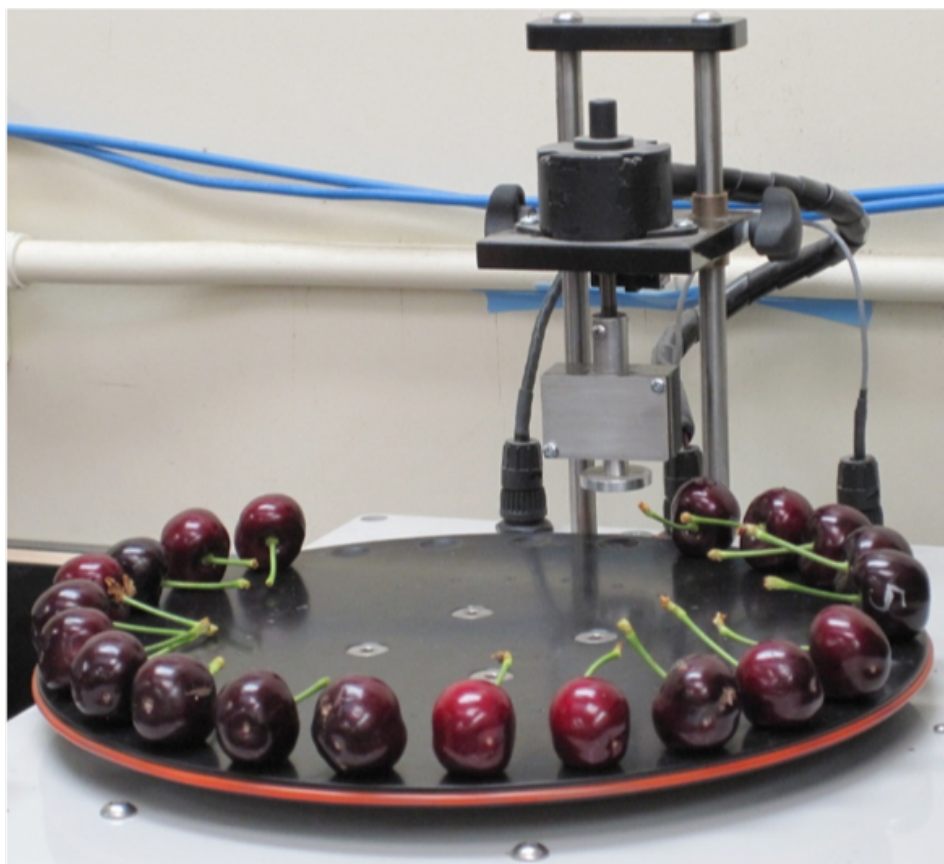


Fig. 6. FirmTech instrument measuring firmness and size of cherry fruit.

Community Events

RosBREED Advisory Panel Meeting

10 Jan 2019
San Diego CA

RosBREED International Partners Meeting

11 Jan 2019
San Diego CA

RosBREED Participant Workshops

25-26 Mar 2019
East Lansing MI

RosBREED Participant Project Meeting

27-28 Mar 2019
East Lansing MI

ASHS Annual Conference

22-25 Jul 2019
Las Vegas NV

10th International Rosaceae Genomics Conference

2020
Barcelona, Spain



Fig. 7



Fig. 8

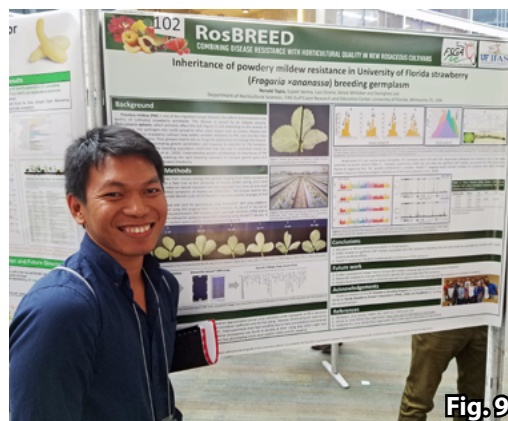


Fig. 9

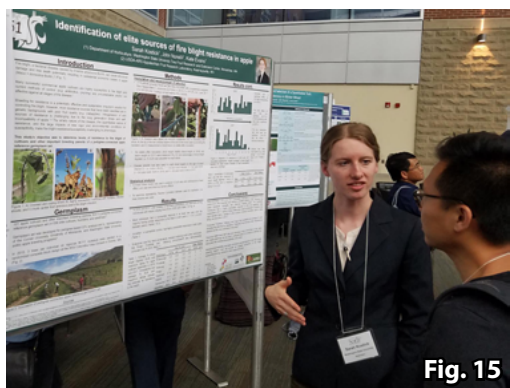


Fig. 15

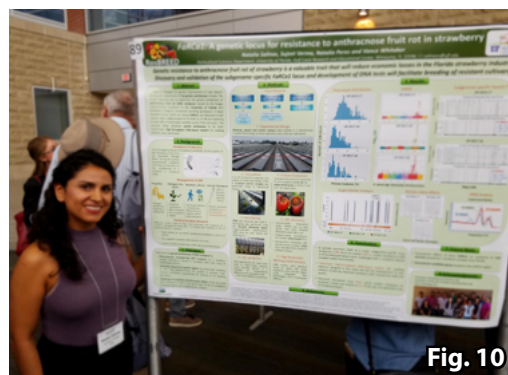


Fig. 10

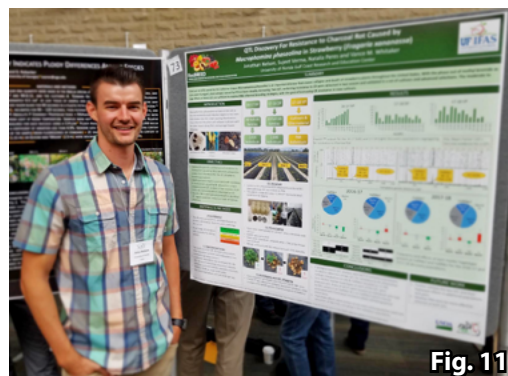


Fig. 11



Fig. 14

RB @ NAPB

RosBREED participants represented at the National Association of Plant Breeders meeting 7-10 Aug at the Univ. of Guelph, Guelph, Ontario, Canada. Natalia Salinas was honored with third place overall in the student poster competition. Susan Brown updated attendees on Marker-Assisted Breeding in apple, and John Clark got the crowd clapping with a live a capella version of his classic composition: "Transgressive Segregant Blues."

Figures going clockwise:

Fig. 7. Rosaceae grad students Natalia, Sarah, Ronald, and Josh; Fig. 8. The Guelph Gryphon; Fig. 9. Ronald Tapia, UF PhD student; Fig. 10. Natalia Salinas, UF PhD student; Fig. 11. Jonathan Nelson, UF PhD student; Fig. 12. Susan Brown, RosBREED Co-PI, Cornell Univ., Geneva; Fig. 13. John Clark, AP member and U Ark, 2017 Plant Breeding Impact Award; Fig. 14. Josh Anderson, UMinn MS student; ; Fig. 25. Sarah Kostick, WSU PhD student.

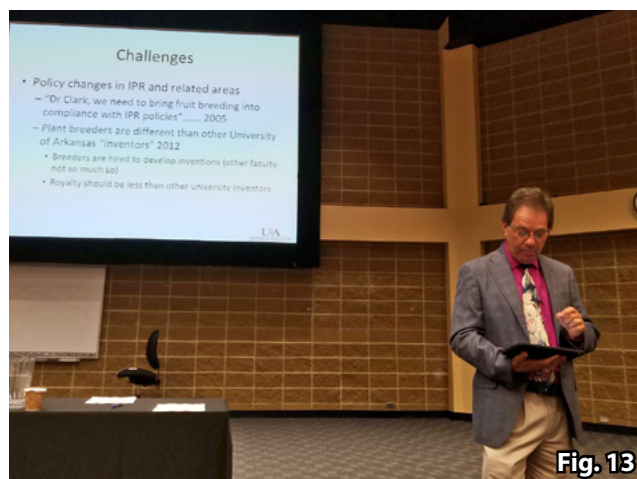


Fig. 13



Fig. 12

In the next issue

- **Featured: Disease phenotyping**
- **Cultivar Corner**
- **Rosaceae Nemesis & Solution: Root knot nematode**
- **Featured RosBREED Community Members**

Funding for RosBREED: Combining disease resistance with horticultural quality in new rosaceous cultivars is provided by the Specialty Crop Research Initiative Competitive Grant 2014-51181-22378 of the USDA National Institute of Food and Agriculture.



RosBREED newsletter staff

Editor: Jim McFerson, RosBREED Extension Team Leader

Design: Wendy Jones

Contributing editors: David Karp, David Eddy, Cameron Peace, Kathleen Rhoades

Images provided by: Jim McFerson, Amy Iezzoni, or Audrey Sebolt unless otherwise credited

WE ARE ON SOCIAL MEDIA!



Check us out on Facebook @rosbreed2



and Twitter @rosBREED

Find us on the web at www.rosbreed.org