

Department of Horticulture

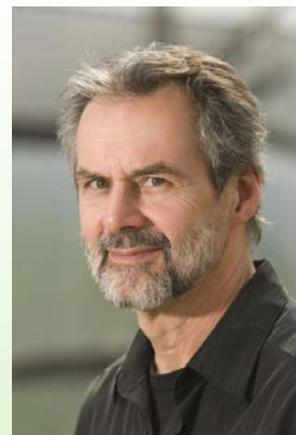
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Richard Veilleux, Interim Department Head

August 2014

Greetings from the interim Horticulture Department Head, Richard Veilleux. Our campus, including the Hort Gardens, is looking lush after a cool summer with plenty of rain. As the 2014 summer season comes to an end and fall semester begins, we welcome ten new undergraduate majors along with 72 returning students in Horticulture, as well as a bumper crop of 12 new graduate students to join the 23 who are continuing. In addition we welcome our new Assistant Professor of Translational Plant Genomics and Bioinformatics, **Aureliano Bombarely**, to the Blacksburg campus (see details below) and **Ramon Arancibia**, Assistant Professor of Horticultural Crop Production at the Painter AREC on the Eastern Shore (more to follow next month). Some curriculum developments that reflect the changing scope of Horticulture, and our ongoing effort to remain relevant to today's horticulture students, will be implemented over the coming academic year. This semester, **Mark Williams** will teach a special study course entitled *A Microbial World: Project-Based Science and Your Mobile-Device Microscope*. **Alex Hessler** will teach *Sustainable Agriculture Internship* as a special study where students will participate in all aspects of running a diversified vegetable farm, including planting, cultivation, irrigation, pest management, season extension, and harvest. In addition, **Megan O'Rourke** completed the first *Food Systems Field Course* in August during which she traveled with six students around Virginia to talk with farmers and learn about sustainability in Virginia's food production systems, and she will be teaching *Ecological Agriculture* this fall. Enrolled students will study ecological principles in the context of managed ecosystems, civic agriculture, and food systems. With these new and continuing developments, we intend to provide our scholars with a successful, enriching, academic environment that will help prepare them for their future careers.



New Grad Students (listed with degree sought and advisors):

Yirou Luo – MS – Eric Beers/Amy Brunner

Rachel Mack – MS – Alex Niemiera/Jim Owen

Garland Mason – MS – Susan Clark

Leslie Peck – MS – Holly Scoggins

Richard Rodrigues – PhD – Mark Williams

James Russell (Russ) Moss – MS – Tony Wolf

Jessica Schultz – PhD – Susan Clark/Megan O'Rourke

Celia Silverstein – PhD – Megan O'Rourke

Cody Kiefer – PhD – Greg Peck

Rachel Seman-Varner – PhD – Susan Clark/Megan O'Rourke

Elizabeth (Liza) Dobson – MS – Susan Clark/Megan O'Rourke

Rafael Saldana – PhD – Mark Williams

Auré Bombarely joins Horticulture

Dr. Aureliano Bombarely has arrived in the Horticulture Department on the Blacksburg campus to assume a new faculty position in translational plant genomics. Auré uses genomic approaches to study evolution and plant domestication, especially for horticulture crops. He completed his doctoral studies at the University of Málaga (Spain) working on transcriptomic analysis of strawberry fruit ripening. Encouraged by the expansion of bioinformatic research in the plant sciences, he moved to the Boyce Thompson Institute (Ithaca, NY) as a postdoctoral researcher for the Solanaceae Genomics Network database laboratory headed by Prof. Lukas A. Mueller. While there, he was involved in database development and genome assemblies, specifically the transcriptomic analysis of allotetraploid *Nicotiana tabacum*. This work in plant genome evolution led to a second postdoc with a leading expert in plant polyploidy, Prof. Jeffrey Doyle, in the Plant Biology Department at Cornell (Ithaca, NY). The main focus of this research was systematic analysis of perennials in the *Glycine* polyploid complex using Next Generation Sequencing technologies, such as RNASeq and Genotyping-By-Sequencing. During this period he also worked as a bioinformatician for Prof. Kerry Shaw in the Department of Neurobiology and Behavior at Cornell.



Aureliano Bombarely

Auré is currently involved in several plant genome sequencing projects including *Nicotiana benthamiana*, *Petunia* and gloxinia (*Sinningia speciosa*). The drafts of these genomes will lead to the development of new tools to facilitate breeding these crops while elucidating genomic modifications that accompany plant domestication. We are excited to have Auré in this new position in the Department of Horticulture, not only as a complement to two other new positions (in *Plant Pathology, Physiology and Weed Science* and *Crop and Soil Environmental Sciences*) as part of a cluster hire in plant genomics, but also to interact with students and faculty within our department who want to use genomic and bioinformatic approaches to address their own scientific questions. Auré's warm personality and accessibility will help to convey these complex topics to the horticultural community through new course offerings and outreach.

Horticulture Summer Interns

MAOP interns

The Minority Academic Opportunities Program (MAOP) sponsored three interns in the Department of Horticulture this summer. Bishal Paudel, a rising junior majoring in biology at VT, worked with Ph.D. candidate Parker Laimbeer and technician Kendall Upham on the potato genomics project in the Veilleux lab. Solmaz Eskandari Nezhad and Michael Sibilo, both majoring in Biotechnology at Northern Virginia Community College, interned in Mark Williams' lab focused on rhizosphere biology. Solmaz worked with Ph.D. candidate Richard Rodriguez to identify the cultivable nitrogen fixing bacteria in the rhizosphere of switchgrass varieties. Michael worked with Ph.D. candidate Rosana Pineda using real time PCR to analyze soil fungal and bacterial communities during ecosystem development. The interns presented their research at a symposium held on July 31 on campus. Bishal summarized his experience with: "Overall, I had a great time working with you and all the people in your lab. Thank you for this opportunity. "



MAOP interns conducting field work in a strawberry field

Hampton Roads AREC Intern

Mikel Conway interned for Jayesh Samtani this past summer. She summarized her experience with: "It has been a great experience learning about strawberry and blackberry production along with combating the ever present pests associated with small fruits. It was a great summer working with the intern team."



Hampton Roads AREC Intern, Mikel Conway

State Master Gardener Intern

Madeleine Gordon, a senior majoring in Communications, spent this summer interning with the State Master Gardener's Office. Her primary responsibility was editing for the quarterly newsletter, In Season. You can find her summer edition here:

<http://www.hort.vt.edu/mastergardener/newsletter/Summer2014.pdf>. Along with her various newsletter activities, Madeleine also assisted with the 27th Annual Master Gardener College in June which drew more than 250 Master Gardeners and 40 speakers from around the state. Throughout the summer, she also helped to field requests about the program, provide certificates, and assist with the volunteer recognition awards, Milestones. The Master Gardener Office truly enjoyed having Madeleine in the program this summer, and she plans to continue into the Fall and Spring.



State Master Gardener Intern, Madeleine Gordon

Hahn Horticulture Garden Interns

Each summer, the Hahn Horticulture Garden hosts two undergraduate interns: the M. Evans Gardner Memorial Internship, endowed in 1990, and the Mike and Susie Hildebrand Landscape Internship, established in 2011. Interns acquire hands-on garden construction and maintenance experience as well as exposure to activities and responsibilities specific to public horticulture – tours, educational programming, working with volunteers, special events, and more. Alexandra Cantwell of Virginia Beach, spring 2014 graduate in Landscape Contracting, held the M. Evans Gardner Internship. Nolan Hudson of South Boston, rising Senior in Environmental Horticulture, held the Mike and Susie Hildebrand Landscape Internship. We are also grateful to our 2013 intern, Izak Khani, who continued to assist in the garden throughout the school year and for the summer. A call for 2015 internship applications will go out to horticulture students in December.



Hahn Horticulture Garden interns for 2014 – Nolan Hudson (left) and Alex Cantwell

Fralin Fellow Examines Health Impacts of Community Supported Agriculture

Working with Megan O'Rourke, Hayley Billingsley of Monterey, Virginia, a senior majoring in Human Nutrition, Foods, and Exercise in the College of Agriculture and Life Sciences, spent her summer investigating health impacts of community supported agriculture as part of the Fralin Life Science Institute Summer Undergraduate Research Fellowship program (SURF). Her work was featured in VT News

(<http://www.vtnews.vt.edu/articles/2014/07/072114-fralin-surflocalagriculture.html>).



Hayley Billingsley (far right) interviewing CSA participants, photo courtesy of VT News

Mark Williams travels to Mongolia

Mark Williams, our rhizosphere biologist, travelled to Inner Mongolia as part of a collaboration with Dr. Qibing Wang to study how native grasses, crop plants and their associated root-zone microbial communities alter carbon cycling and soil organic matter stability. China, Mongolia and surrounding regions have one of the largest expanses of grassland biome in the world. Many ornamental flowers including asters originate from this region.



Dr. Wang and Dr. Williams in Mongolia

Lisa Lipsey visits Longwood

During a recent trip visiting public gardens around Philadelphia, Lisa Lipsey met up with two of our Horticulture students, James Rockwell and Annie Saunders, both summer interns at Longwood Gardens. After a brief reunion with Brian Trader, a Ph.D. graduate of VT Horticulture and currently Coordinator of Domestic and International Studies & Interim-Director at Longwood, James and Annie provided a personal tour of their work areas. James worked in the Production Greenhouses, facilitating the beautiful seasonal displays throughout Longwood. Annie worked outside in the specialty gardens, learning maintenance practices, garden design and honing her people skills. She was selected as one of the few summer interns to be entrusted with shears in the Topiary Garden.



Lisa (front right) with James (back left), Annie (to the right of James) and Brian (far right)

Dining Services Farm Update

Summer crops are being harvested and fall crops are newly planted at the Dining Services Farm at Kentland Farm. More than 1,600 pounds of watermelon from the farm were served at the annual Hokie-Hye picnic. The high tunnel at the Urban Horticulture Center is yielding roughly 300 pounds of tomatoes and 50 pounds of cucumbers per week. Beginning this fall, 13 undergraduate students from across CALS will have the opportunity to learn the theory and practice of organic vegetable production at the Dining Services Farm and UHC through their participation in the field-based course HORT 4984: *Sustainable Agriculture Internship*. Faculty from Horticulture and Dining Services recently highlighted this novel collaboration in their presentations at the Sustainable Agriculture Education Association Conference in Raleigh, North Carolina.



Tomatoes ripening in the high tunnel

VNLA Annual Field Day

The Department of Horticulture hosted the Virginia Nursery and Landscape Association's (VNLA) annual field day event on August 14. VNLA attendees toured The Hahn Horticulture Garden, laboratories in Latham Hall, the Urban Horticulture Center, and Kentland farm. Alex Hessler, Horticulture Department Instructor, led most of the tours. Other events included a panel discussion on the future of horticulture led by horticulture faculty, native plant talks by Holly Scoggins and Alex Niemiera, and a keynote presentation by entomologist Doug Tallamy who discussed the biodiversity associated with native plants. The day was capped off by a very entertaining presentation



Bingyu Xiao presenting his research to VNLA visitors in Latham Hall

entitled "Typhoons and Iguana Stew - The Glamorous Life of a Plant Explorer" by Mark Weathington, a VT horticulture graduate and currently Assistant Director and Curator of Collections at the J.C. Raulston Arboretum at North Carolina State University. The VNLA Field Day was primarily orchestrated by Jeff Miller, VNLA Executive Director, and Sonya Westervelt, VNLA Vice President, both VT horticulture graduates.

Horticulture Workshop at the 2014 Virginia Association of Agriculture Educators Conference

Horticulture faculty Joyce Latimer, Alex Niemiera, Holly Scoggins and Dave Close conducted a one-day workshop for middle school and high school agriculture teachers at their annual conference on July 17. This year's conference was held in Lynchburg. The horticulture workshop began with a guided tour of Lynchburg Grows (<http://lynchburggrows.org/>) led by Kevin Camm, the ANR/4-H Extension agent in the Lynchburg office. About thirty Brookville High School teachers participated in any of three sessions taught by Alex (Woody Native Species and Gardening Trends), Holly (Hot Plants and Other Tips for Plant Sale Success), or Joyce (Greenhouse Maintenance and Troubleshooting). A similar in-service training is expected in Blacksburg in 2015.

Open House at the Alson H. Smith, Jr. AREC

The Alson H. Smith, Jr. AREC hosted a public open house on August 16. Over 75 members of the community visited the lab to learn about projects led by Tony Wolf, Greg Peck, and other AREC faculty. Drs. Jody Jellison and Bobby Grisso attended the event on behalf of CALS. The AREC was recently featured in this Northern Virginia Daily story:

<http://www.nvdaily.com/news/2014/08/research-extension-center-aids-state-farmers.php>.



Horticulture doctoral students, Cody Kiefer and Ashley Thompson discuss the research projects they conduct in Dr. Peck's program

Greg Peck Awarded a Grant to Redevelop the Hard Cider Industry

Greg Peck and a team of colleagues from Virginia Tech, Washington State University, Michigan State University, and the University of Vermont have been awarded a USDA-SCRI (Specialty Crops) planning grant titled: *CIDER: Creating InterDisciplinary Extension and Research Programs to Redevelop the North American Hard Cider Industry*. Their goal is to develop research and outreach programs on the complete supply chain for hard cider, including apple cultivar and orchard site assessment, orchard management (integrated pest management, labor saving mechanical pruning and harvesting technologies), apple processing/fermentation for hard cider, and market/economic assessments of the hard cider industry. Greg is the project director for this effort. His team will use the planning grant to develop and submit a multi-institutional grant to the SCRI program next year.

Barbara Leshyn is a Certified Floral Designer

Barbara Leshyn has been recognized by the American Institute of Floral Designers (AIFD) as a recipient of its Certified Floral Designer (CFD) designation. Barbara was granted this honor after completing the Professional Floral Design Evaluation (PFDE) prior to AIFD's National Symposium "Transition Transformation" in Chicago last July. CFD recognition is granted after an applicant has demonstrated proficiency in the concepts of design through evaluation by an international panel of design experts. As a Certified Floral Designer in AIFD Barbara can become an AIFD member which will qualify her to start a student chapter. Students in AIFD have the opportunity to continue their floral design education and receive educational scholarships.

Pris Sears at Art Pannonia!

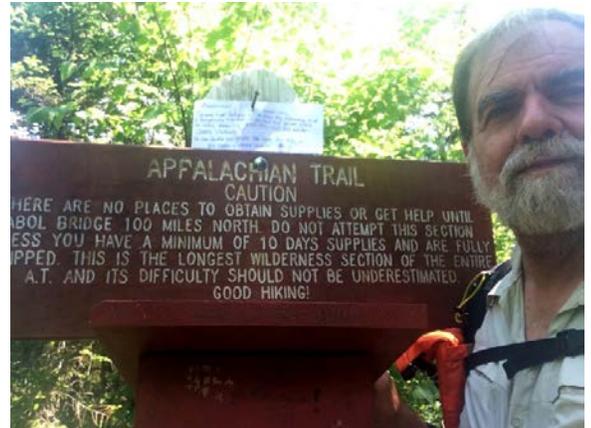
Pris Sears, Horticulture's IT specialist as well as part-time graduate student, has metal and other multi-media art on display at the Art Pannonia gallery in Blacksburg from August 1 to September 21. The gallery is at 114 North Main Street and is open weekdays from 11 AM - 7 PM and Sat. & Sun. 11 - 5 PM. See www.artpannonia.org for more information.



Metal artwork titled Tarantella 21

Update from the AT

I thought some of you might be wondering how our Department Head is doing on his quest to hike the entire Appalachian Trail this past summer and fall and so am submitting this brief report. He started on June 24th in Maine at Mount Katahdin. New England has been a tough hike, very rocky, very rainy, and slow going. Dr. Harris' dog, Rocket, joined him in Rangeley, Maine, and now the two of them are nearing Vermont. They have gone about 440 miles so far. He's made new friends on the trail, and was joined by some old friends as well for the hike up Mount Washington. The scenery is fantastic. He's had one twisted ankle, some blistered feet, and a starting-to-leak rain jacket—but is otherwise holding up well and has become very fond of powdered peanut butter! He sends his best to everyone in Horticulture. —Susan Day



Roger starting his journey on the Appalachian Trail

Publications

- TC Miller, JB Samtani, SA Fennimore. 2014. Mixing steam with soil increases heating rate compared to steam applied to still soil. *Crop Protection* 64, 47-50
- Chen, Y., S.D. Day, A.F. Wick, and K.J. McGuire. 2014. Influence of urban land development and subsequent soil rehabilitation on soil aggregates, carbon, and hydraulic conductivity. *Science of the Total Environment*, 494-495: 329-336
- Lu, N., B. Zhao, A. Pereira, V. Shulaev, and R.E. Veilleux. 2014. Strategies for transposon tagging in plants using gametophyte specific promoters. *Plant Cell Tissue and Organ Culture*: (on-line first)