DEPARTMENT OF HORTICULTURE

2018 Alumni Newsletter

IOWA STATE UNIVERSITY

Greetings Alumni and Friends of the ISU Department of Horticulture

It's hard to believe another year has come and gone, but the calendar doesn't lie and 2018 is already fading from memory. To be sure, 2019 will be filled with many expected and unexpected changes, but perhaps the most noteworthy event will be the arrival of the new Dean of ISU's College of Agriculture and Life Sciences, Dr. Dan Robison. He comes to us from the University of West Virginia where he served as Dean of the College of Agriculture, Natural Resources, and Design. It's always a little unsettling when new leaders arrive. After all, we had grown very fond of Dr. Wendy Wintersteen and her leadership in CALS, and she knew us and appreciated horticulture. So, what about the new guy? Well, with a B.S. in forestry, M.S. in silviculture, and Ph.D. in entomology I think it is safe to say he knows something about plants, their management, and a lot about the good and bad that insects bring to the table. In other words, I think Dr. Robison speaks our language.

But it is incumbent upon all of us to make Dr. Robison feel welcome and to help him understand Iowa horticulture. And towards that end, I began to think of things I'd like Dan to know about the best Department of Horticulture in the country. What? I'm not just blowing smoke here folks…I'd stack our program up against any other horticulture program out there. So Dan, if you're listening, here's what you need to know about us:

- Our faculty and staff are simply outstanding. And we're getting younger and better. Not that there's anything wrong with old dudes like me and Nick Christians, but the future of this department (and that includes the wildly popular "new" Global Resource Systems major) is tied to our youth movement. Our foundation is solid and getting stronger as we add teammates like our newest hire Dr. Grant Thompson. A "blue chipper" indeed!
- Our facilities are modern, up-to-date, and help us deliver a relevant education to our students. Greenhouses, growth chambers, and recently renovated lab and classroom spaces make us the envy of the college.
- Our students (and they're a diverse bunch) make us very proud. To be sure, there's a few that try our patience, but when you consider all that is asked of them (student clubs, academic competitions, civic engagement, studies, and for many, work), they do a wonderful job representing their families, themselves, and us!

Okay, that was easy, and the list could go on and on. But to be fair, and in the spirit of complete disclosure, there are a few things Dan should know about us that aren't as flattering. Deep breath….here goes:

- Well, if you frequent Horticulture Hall late at night, you just might stumble upon a wayward cockroach or two. By the way, when they die why do they flip over on their backs? Perhaps a question for Dr. Robison…the entomologist, eh?
- Then, last summer there was a rather memorable invasion of ants. They streamed in through the south entrance, making a beeline straight to the student reading room. Hey, you go where the food is, right? Note to self…never look under that couch again!
- Mice? No mice here…ahem!

Bottom line, I've got the best job in the country and each and every day I am proud to represent this department, past, present, and future. And you are part of our legacy. So, keep up the great work out there, stay in touch, and have a great 2019!

Jeff Iles, *Professor and Chair*
Department of Horticulture

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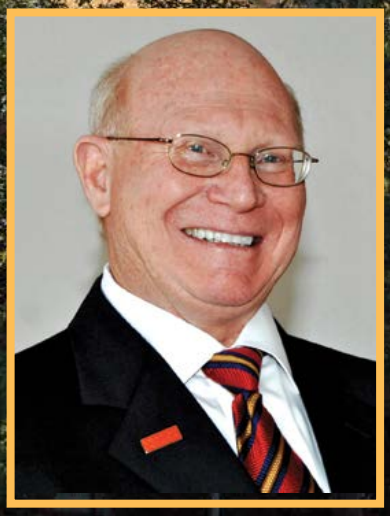
A Message from
Interim Endowed Dean Joe Colletti



It's been an honor and a privilege to serve as the Interim Endowed Dean of the College of Agriculture and Life Sciences since November 2017.

I will continue to serve into the spring semester of 2019 until I officially turn the reins over to Daniel Robison, our new Endowed Dean. I will be returning to my role as Senior Associate Dean once Dean Robison joins us.

Dean Robison comes to us from his position as dean of West Virginia University's Davis College of Agriculture, Natural Resources and Design. I was recently browsing West Virginia's website and noted a banner-headline story on a horticulture student whose passion was growing giant pumpkins — some over 1,400 pounds.

I know when Endowed Dean Robison arrives, he'll discover passionate students like that in horticulture and in every major as he begins to learn about every corner of our world-class college. It may not be giant pumpkins, but the passions will be broad and deep.

Our students want to make a difference in many ways: growing nutritious food, reducing hunger and malnutrition, improving the environment and our urban and rural landscapes — even making sure the Super Bowl turf is the best-tended, most manicured it can possibly be!

Part of the itinerary for each finalist in the endowed dean search was a driving tour of Ames-area research and teaching farms. The Horticulture Research Station, of course, was a must-stop. The site makes an indelible impression; I know that Dr. Robison was very impressed. It probably generated more questions and interest than any other stop.

As alumni and friends of the Department of Horticulture, I hope you will extend a message of welcome to Endowed Dean Robison, and let him know your connections to this great university and your hopes and dreams for how we deliver on our programs in the future.

Thank you for all you do to support our horticultural team of faculty and staff and our always-impressive students!

Joe Colletti, Interim Endowed Dean
College of Agriculture and Life Sciences

Horticulture Faculty

Rajeev Arora, Professor
rarora@iastate.edu
Crop physiology – study of plant response to low temperature stress

Nick E. Christians, University Professor
nchris@iastate.edu
Reducing maintenance costs and energy consumption in the turfgrass industry; alternative pest management strategies for turfgrasses

Barb Clawson, Program Coordinator, Senior Lecturer
bclawson@iastate.edu

Diana Cochran, Assistant Professor
dianac@iastate.edu
Extension specialist for fruit production

Christopher Currey, Assistant Professor
ccurrey@iastate.edu
Greenhouse and controlled-environment production of ornamental and food crops

Kathleen Delate, Professor
kdelate@iastate.edu
Sustainable/organic horticultural and agronomic crop production and marketing

Kevin Duerfeldt, Lecturer, Global Resource Systems
kduerf@iastate.edu

Shui-zhang Fei, Professor
sfei@iastate.edu
Turfgrass breeding, genetics, and biotechnology

Mark Gleason, Professor, Plant Pathology
mgleason@iastate.edu
Research, extension, and teaching on sustainable disease management of fruit (apple, strawberry), vegetable (muskmelon), and ornamental (hosta) crops; plus turfgrass and shade trees

David J. Hannapel, Professor
djh@iastate.edu
Molecular biology of growth and development; characterization of potato tuber proteins involved in the process of tuberization; regulation of potato gene expression by hormones and environmental factors

Cynthia Haynes, Associate Professor
chaynes@iastate.edu
Consumer horticulture; human issues in Horticulture; youth and undergraduate education

Jeffery K. Iles, Professor and Department Chair
iles@iastate.edu
Landscape plant establishment and maintenance; landscape plant selection

Dorothy Masinde, Senior Lecturer, Global Resource Systems
masinde@iastate.edu

Bethzayda Matos, Lecturer, Global Resource Systems
masinde@iastate.edu

David D. Minner, Professor
dminner@iastate.edu
EARTH – Education and Resiliency Through Horticulture

Ajay Nair, Associate Professor
nairajay@iastate.edu
Extension specialist for vegetable production

Gail R. Nonnecke, University Professor, Morrill Professor
nonnecke@iastate.edu
Horticulture: Management and physiology of small fruit crops; Global Resource Systems: Interdisciplinary major in the College of Agriculture and Life Sciences, Global Technical, cultural, leadership, and integration competencies

Lisa Orgler, Senior Lecturer
lorgler@iastate.edu

Aaron Steil, Lecturer
ajsteil@iastate.edu

Catherine Swoboda, Lecturer, Global Resource Systems
cswoboda@iastate.edu

Grant Thompson, Assistant Professor
glt@iastate.edu
Sustainable landscape management; landscape design; plant establishment and maintenance; and green infrastructure

Adam Thoms, Assistant Professor
athoms@iastate.edu
Effective and economical strategies for commercial turfgrass management; investigating performance of turfgrass subjected to various management techniques, putting greens, athletic fields and safety turfgrass adaptation in Iowa

Mark Widrlechner, Affiliate Associate Professor
isumw@iastate.edu
Plant Introduction Station Agronomy/Horticulture. Germplasm conservation, evaluation of landscape plants

Emily Zimmerman, Lecturer, Global Resource Systems
emilyz@iastate.edu

Associate Dean David Acker Honored for **Mpirigiti Rural Training Center**

At the annual spring banquet on April 22, 2018, students and faculty honored Dr. David Acker, Associate Dean in the College of Agriculture and Life Sciences, for his leadership in the building of the Mpirigiti Training Center in Kamuli, Uganda. Dr. Acker was a key member of a team that created the Center for Sustainable Rural Livelihoods, Iowa State University-Uganda Program and Uganda Service-Learning, School Garden Program. As the programs have grown and engaged more members of the Kamuli community, the need for staff offices, demonstration plots and student housing increased. Dr. Acker committed hours of his professional and personal time to facilitating the completion of this center that will fundamentally transform the programs in Kamuli.

Over 230 Iowa State (Ames, Iowa) and Makerere University (Kampala Uganda) undergraduate students have participated in the Uganda Service Learning Program and with the new center, the numbers of students who can participate will continue to grow. Honoring Dr. Acker at the banquet was a small token of appreciation for a thankfulness students cannot truly express in words. Students presented a video, a student-created watercolor painting of the Mpirigiti tree, and a basket of thank-you notes to Dr. Acker.

President Wendy Wintersteen and David Acker at the dedication of the Mpirigiti Rural Training Center in Uganda.

Awards and Recognitions 2018

Dr. Chris Currey received the 2018 ISU Award for Early Achievement in Teaching.

Congratulations to **Dr. Kathleen Delate** for 20 years of service to Extension and Outreach. Dr. John Lawrence presented Dr. Delate with her certificate at the 2018 Extension Annual Conference.

Dr. John Lawrence presented 20 years certificate to Dr. Kathleen Delate.

Dr. Shuizhang Fei was recently named recipient of the AgOnline Teacher of the Year 2018 Award for his course Crop Genetics: Agronomy / Horticulture 506 for the Plant Breeding Master's program. Dr. Fei is one of two outstanding faculty who received the award this year. This award is student nominated along with results of their CALS course evaluations. The criteria include evidence of commitment to online education, outstanding teaching and mentoring of students, innovative course or design and delivery, and overall contributions to online teaching. This award is given during National Distance Learning week. Dr. Fei received high marks from his students as they rated his experience as an instructor and their experience within his course. Students would highly recommend this instructor and course to their friends. In summary, Dr. Fei is making a difference in the course he teaches. His dedication, work ethic, and expertise combine to help his department, Plant Breeding Master's Program, and college deliver an innovative, quality course that serves students at a distance.

Gaylan Scofield, director of the Brenton Center presented the AgOnline Teacher of the Year Award to Dr. Shuizhang Fei.

Kristine Lang won first place award at the 2018 Graduate Program in Sustainable Agriculture (GPSA) Research Symposium held April 18, 2018.

Iowa State University Hort ALUM Among Top 2018 Honorees in US Gardening

Kelly D. Norris of Des Moines, Iowa, received the American Horticultural Society's newest award, the Emerging Horticultural Professional Award. He joins 11 other distinguished national award recipients for 2018, all of whom represent the best in American gardening and Horticulture. Kelly began his horticultural career at age 15, when he talked his parents into purchasing a nursery, Rainbow Iris Farm, which he still runs. He subsequently earned a master's degree in horticulture and is currently the director of horticulture and education at the Greater Des Moines Botanical Garden. He has authored two garden books, and is a regular contributor to several gardening publications.

Horticulture Staff

GREENHOUSE MANAGER
Peter Lawlor

HORTICULTURE RESEARCH STATION STAFF
Nick Howell, Superintendent
Chad Arnold
Jeff Braland
Brandon Carpenter
Lynn Schroeder
Ben Pease

EXTENSION AND OUTREACH STAFF
Susan DeBlieck
Richard Jauron

GLOBAL RESOURCE SYSTEMS STAFF
Maggie Sprecher
Jennifer Lillo

OFFICE STAFF
Kim Gaul, Administrative Specialist
Colleen Johnson, Office Support Staff
Deb Cochran, Office Support Staff
Savannah Hartman, Hourly Student

IT STAFF
Dianne Brotherson

BUILDING STAFF
Kevin Tye, Custodian

AREA STAFF
Joe Hannan, Field Specialist, Adel, Iowa
Myron Rees, Superintendent, Muscatine Island Field Station, Fruitland, Iowa
Patrick O'Malley, Field Specialist, Iowa City, Iowa
Mike White, Viticulture Field Specialist, Indianola, Iowa

PROGRAM COORDINATOR
Robert Turnbull

NEW Horticulture Faculty

Grant Thompson earned bachelor's degrees in horticulture and landscape architecture in 2007 from Iowa State University. After graduating, Grant worked as an associate and project landscape architect at Genus Landscape Architects in Des Moines, earning his professional license in 2011. Grant was involved with many sustainable design and ecologically sensitive projects including restoration efforts at Big Lake Park in Council Bluffs, LEED projects at the University of Iowa, and a vision and comprehensive plan for the Loess Hills Alliance in western Iowa. While at Genus, Grant was on interdisciplinary project teams that were recognized with design, planning, and communications awards from the Iowa Chapter and Central States Conference of the American Society of Landscape Architects and the Iowa Chapter of the American Planning Association.

His passion for integrating sustainability science, design, and landscape horticulture led him to pursue graduate school at Cornell University, where he earned a master's degree in 2014 and a doctorate in 2018, both in horticulture. During his master's research, Grant explored the role of biodiversity and ecosystem function in urban grasslands. He expanded this work during his doctoral research to include the implications of land-use legacy on soil microbiomes and biogeochemistry of urban grasslands within the National Science Foundation's Baltimore Ecosystem Study, Long-Term Ecological Research Project. Grant was a teaching assistant for courses in restoration ecology, horticulture, education, ethnobotany, and garden design and has received top awards for his teaching and mentoring contributions at Cornell University. He is excited for the opportunity to teach and mentor undergraduates and graduate students interested in horticulture and sustainable landscape management.

NEW Global Resource Systems Staff

Hello! My name is Jennifer Lillo and I am the new Program Assistant for Global Resource Systems and a program leader for the EARTH Program. I will be involved in the service learning programs in the U.S. Virgin Islands and Uganda, while providing on-campus support to the GRS major. Originally from Nebraska, I moved to Ames for school and decided to stay! I graduated from Iowa State University in 2015 with a B.S. in Global Resource Systems and Environmental Studies, completing two international internships in New Zealand and France during my studies at ISU.

After graduation, I spent 2.5 years working with the NSF Engineering Research Center for Biorenewable Chemicals (CBiRC) and the Institute for Transportation (InTrans) in Iowa State's College of Engineering. There, I managed a variety of workshops for K-12 students and teachers interested in science and engineering fields. I supported recruitment, communication, program delivery, and post-award administrative efforts for these STEM programs. Now, I am excited to continue my adventure at Iowa State and for my renewed involvement in Global Resource Systems!

IT Happenings in Horticulture

by DIANNE BROTHERSON, Horticulture IT Support

File Storage in the Cloud

Iowa State has implemented CyBox, which is the university's implementation of Box.com cloud storage. CyBox is an ideal solution for general, day-to-day documents and easily allows sharing those files both inside and outside of Iowa State. This makes collaboration among vendors, academic partners and others much easier. All faculty, staff, and students have an unlimited quota of cloud-based file storage at no charge. A huge advantage for students is the opportunity to maintain their CyBox account after graduation allowing them to continue accessing files that they created as a student at ISU. Chris Currey, Assistant Professor in Horticulture, loves the convenience of accessing files on campus, in class, at home and via his smart phone and heavily utilizes the features of cloud-storage.

New Look for Horticulture Classrooms

Horticulture classrooms 160 and 57 have been transformed from dingy, dark archaic classrooms into bright and inviting teaching spaces with increased space utilization for the Horticulture classes. Barb Clawson, Program Coordinator/Academic Advisor, remarks, "I teach Hort 110 for transfer students in Hort 160. I love the new remodel! There is a teaching station that is wonderful to use and the lab tables and chairs are comfortable to work at while sitting or standing. The colors in the room and lighting are much improved." Cynthia Haynes, Associate Professor in Horticulture says, "I have been using Room 57 for the semester, and I believe it is a much better teaching space. The updates to the classroom have made it brighter and more inviting to students. Re-orienting the space and changing the layout has also improved how the space functions as a lab/classroom. Finally, the addition of the touch-screen technology to the classroom has helped me better deliver information and engage my students.

Classroom 57 remodel.

Classroom 160 remodel.

Okta

Iowa State is continually working to protect the campus community against security breaches and cyber threats and that is why it implemented Okta campus-wide on March 1, 2018. Okta is a cloud-based service that helps organizations manage their employee and student's passwords by providing a "single sign-on" experience. All faculty, staff, and students now see the Okta login page when signing into ISU web-based applications such as CyMail, CyBox, Office 365, Canvas and other applications. It is now easier to log into various ISU web-based applications because Okta reduces the number of times an individual needs to enter their ISU Net-ID and password. Additionally, once multifactor authentication (MFA) is activated, an individual's information and the university information is better protected by requiring an ISU Net-ID, password, and self-selected multifactor authenticator to log in and access that data. Currently, MFA is not required but will be in early 2019 for faculty and staff and for students at the start of 2019 Fall semester.

Horticultural Challenges in Washington DC

by Richard Jauron, Extension Program Specialist

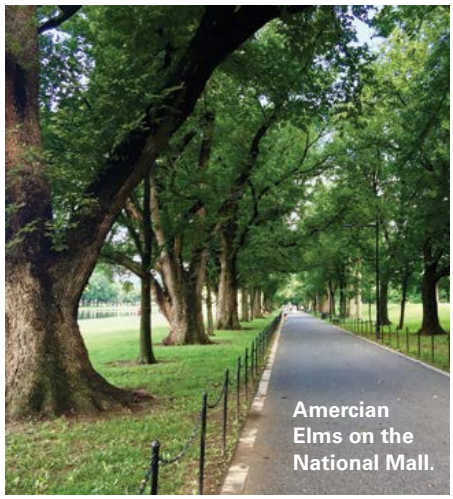
This past summer I had the opportunity to attend the 2018 American Society for Horticultural Science National Conference in Washington D.C. One of the highlights of the conference was the Ornamental and Turf Management Tour of the National Mall, Capitol Grounds, and Smithsonian Gardens.

The National Mall, the Smithsonian Gardens, and Capitol Grounds are visited by millions of people each year. They also host numerous special events through the year. The challenge for the National Park Service, Smithsonian Gardens, and Capitol Grounds gardeners is to provide attractive gardens and landscapes for their visitors while limiting their impact on the plants.

The National Mall in front of the U.S. Capitol.

"America's Front Lawn" (the 18 acres of turf on the National Mall from the United States Capitol to the Washington Monument) was recently reconstructed at a cost of $40 million. The turf-type tall-fescue lawn is protected from foot traffic during major events (such as presidential inaugurations, July 4th celebrations, and large demonstrations) by covering the grass with hundreds of interlocking panels. The translucent panels allow light, water, and air to past through them, but prevent the crowns of the turfgrass plants from being crushed.

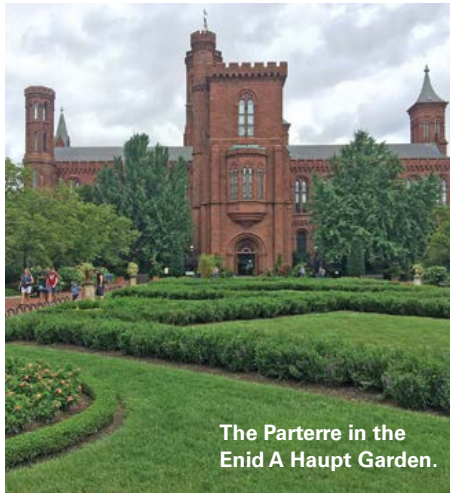
In addition to turf, horticulturists care for approximately 600 elm trees that line the National Mall from the U.S. Capitol to the Washington Monument. One major threat to the trees is Dutch elm disease (DED). Trees are regularly scouted for symptoms of Dutch elm disease. When the presence of Dutch elm disease is confirmed, infected trees are promptly removed. Removed trees are replaced with DED resistant cultivars or hybrid elms such as 'Accolade.' High value trees are injected with a fungicide every three years. An even larger threat to the elm trees is soil compaction. During major events, trees are boxed off to keep crowds away and prevent additional compaction. Air spades (which remove compacted soil around trees without damaging their roots; the empty spaces are then filled with compost and uncompacted soil) are used to alleviate soil compaction.



Amercian Elms on the National Mall.

Like the turf and trees on the National Mall, the management of the Smithsonian Gardens (which are located around the mall museums) is also very challenging . The mission of the gardens is to enrich the Smithsonian experience through exceptional horticultural displays. Among the gardens managed by the Smithsonian Gardens staff are a pollinator garden, urban bird habitat garden, rose garden, and victory (vegetable) garden.

The Enid A Haupt Garden (another one of the Smithsonian Gardens) is located south of the Smithsonian Castle. It is a actually a rooftop garden as it sits atop the National Museum of African Art, the S. Dillon Ripley Center, and the Arthur M. Sackler Gallery. The 4.2 acre garden is comprised of The Parterre, the Moongate Garden, and Fountain Garden. The small amount of soil on the site (the deepest areas contain only 6 feet of soil) limits the use of heavy equipment. Irrigation is strictly monitored to lessen the chances of water damage to the museums and galleries beneath.



The Parterre in the Enid A Haupt Garden.

The museums, monuments, and historical places on the National Mall and around the U.S. Capitol in Washington D.C. are great attractions. For horticulturists, the turf, trees, and gardens are just as impressive (especially when you consider the management practices needed to maintain them).

Horticulture Resource and Career Center: **2018 Update**

by BARB CLAWSON, Program Coordinator

Greetings Fellow Horticulturists and Friends:

The The 2018 year brought 139 undergraduate majors and double majors to the Department of Horticulture. Fall 2018 brings 14 freshmen and 13 transfer students to our building. The Learning Community is in place for the new students to visit horticulture places of interest on field trips. The Learning Community also provides peer mentors to organize social activities and assist with tutoring/mentoring, and organizes activities that will help the students quickly acclimate to Iowa State University's environment. Project Glean, a service learning project, where the Hort and Food Science and Human Nutrition Learning Communities pick, process, and package apples from the Horticulture Research Station and donate to food pantries and charities in the Ames area. The group picked approximately 4,000 pounds of apples. The Agriculture and Life Sciences Agriculture Career Day is a major event on Iowa State's Campus each October. The night before, the Department of Horticulture holds a Horticulture Career Night in the Garden Room of Reiman Gardens. This year it exploded with 39 companies attending. Horticulture students were able to visit with these companies about full-time positions and internships and enjoy dinner to further visit with the professionals attending.

The Department of Horticulture has a strong study abroad program, including an exchange with the University of Costa Rica (UCR) that started in March, 1999. In odd-numbered years ISU students visit Costa Rica to study the production and processing of tropical crops such as bananas, pineapple, coffee, mangoes, sugar cane, papayas, melons, rice, and palm oil. In even-numbered years the Costa Ricans come to Iowa and see a variety of our crops and products, including corn, soybeans, vegetables, fruits, grapes, wine and sports turf. This summer 13 UCR students and 2 professors visited Iowa's agricultural and horticultural enterprises and some tourist destinations from July 16 to 23. Dr. Erin Hodgson, Dr. Mark Gleason, Dr. Donald Lewis and I worked up a whirlwind 12 day tour of most parts of Iowa. The itinerary captures what the students saw in Iowa.

July 17

The group began with a tour of Reiman Gardens with our own alumnus Aaron Steil as the tour guide. Donald Lewis introduced the group to Iowa products and measurements we use in the agriculture industry in Iowa. Lee Burras took the group on a walking tour of campus focusing on the soils and rich history our campus has to offer. The day ended with tours of Jack Trice Stadium and the Cyclone Sports Complex lead by Turfgrass Science majors Marcus O'Brien and Kyla Crooks. UCR students enjoyed some soccer on the ISU Soccer field as well as a picnic that included the departments of Entomology, Plant Pathology and Microbiology, and Horticulture.

Aaron Steil explaining the many features at Reiman Gardens.

Marcus O'Brien showing off the Cyclone Sports Complex.

July 18

The students boarded the vans for Elma, Iowa to visit the Cedar Valley Produce Auction and an Amish vegetable and fruit grower. After lunch they made their way to Decorah and a tour of the Luther College prairie from Dr. Kirk Larsen. The group checked into Baker Village dorm at Luther College for the night.

Produce at the Amish Produce Auction in Elma, Iowa.

Dr. Kirk Larsen talking about the Luther College prairie.

July 19

After a hearty breakfast at the Luther College Cafeteria, the group toured Effigy Mounds National Monument in Harpers Ferry, ate lunch in McGregor and on the way home visited Carmen Black at Sundog Farm and Local Harvest CSA near Solon, Iowa.

UCR group at Effigy Mounds National Monument in Harpers Ferry, Iowa

July 20

A tour at the ISU Field Extension Education Laboratory (FEEL) near Boone included lectures and demonstrations by Warren Pierson, FEEL Farm Manager (introduction and overview), Dr. Bob Hartzler (weed science), Dr. Alison Robertson (corn and soybean plant diseases), Nic Boersma (miscanthus bio-fuel production), Amber Anderson (soil science – the Costa Ricans so admired our Iowa soil profile that they had to be drug from the soil pit!), and Christopher Murphy (use of drones in agriculture production). A group shot from the drone was awesome for the UCR students to see. Lunch and a tour of the Monsanto Learning Center near Huxley was next on the agenda for the day. Michael White and Chris Hudnell greeted the group at Snus Hill Winery for a tour and evening of fellowship and music. Donald Lewis closed the evening with a walking tour of the High Trestle Bridge in Madrid.

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A drone shot of the UCR group at the ISU Field Extension Education Laboratory (FEEL).

Mike White discusses the vineyard at Snus Hill Winery.

Mark and Winnie Gleason provide a wonderful brunch.

The Des Moines Farmers Market had many of the same fruits and vegetables that the UCR students can get at home.

Hort farm high tunnel and farm tour caught their eye.

July 21

The UCR students got a taste of the Des Moines Farmers market, followed by a tour of Principal Park (Iowa Cubs baseball diamond) with Chris Schlosser, Director of Grounds, Iowa Cubs. Lunch and shopping occupied the afternoon at Jordan Creek Mall in West Des Moines. The group had a picnic lunch on the Mezzanine at Principal Park, followed by an Iowa Cubs vs. New Orleans baseball game.

July 22

A wonderful brunch was prepared by Mark and Winnie Gleason at their home in Ames. Maurcio Serrano-Porras, alumnus of UCR, and ISU Graduate Assistant-Research in Plant Pathology and Microbiology, provided music during the brunch. Mark set up a croquet game in the back yard, and taught the group a new game. A tour of the Horticulture Research Station featuring high tunnels, hops production and meso-tunnels was given by Dr. Ajay Nair and Hayley Nelson. Dr. Adam Thoms provided an explanation about golf in the U.S. and a tour of Veenker Golf course. He turned the group lose with a bucket of balls and golf clubs on the driving range. Most students had not played golf. It was fun to see them learn a new sport.

July 23

Greg and Polly Rinehart welcomed the students to Rinehart's Family Farm north of Boone where they have been raising fruits and vegetables for sale since 1990. The Rineharts sell on-farm and at Farmer's Markets around central Iowa. Greg put the Costa Rican students to work!

Picking sweet corn at the Rinehart Family Farm.

Jerald Deal talking about Deal's orchard.

UCR students experiencing the large farm equipment on the Westrum farm.

A tour of the tomato vines at Graddy's.

They harvested the day's sweet corn after touring the other crops. The next stop was at the Kevin and Marilyn Westrum farm. Marilyn prepared a lunch of pork burgers, homemade zucchini cake and sweet corn sponsored by the Iowa Farm Bureau. The UCR group found their way west of Ames to my farm for dinner. My kids had their Boone County Fair Jersey heifer and ewe lambs haltered up to let the UCR students lead around some animals. The kittens and puppy were also a hit with the group.

July 24

Deal's Orchard tour and lunch was given by Department of Horticulture alumnus Jerald Deal in Jefferson. The group toured the apple orchard, hard cider production and agritourism. The next stop was Graddy's Tomatoes (hydroponics) in Carroll. Graddy's was started in 1999 and have vine-ripened tomatoes, fresh salsa and basil. They also now grow lettuce and make fresh pesto. Bauer Built MFG. in Paton is the home of one of the largest corn and soybean planters made for John Deere Company. They make a variety of other agricultural and heavy industrial equipment.

July 25

A wonderful tour of the Berry Patch in Nevada was given by Dean Henry. Dean and Judy Henry established the Berry Patch Farm in the early 1970's. They grow strawberries, raspberries, vegetables, apples, blueberries and more. Judy served sweetcorn and her special homemade blueberry muffins for lunch. The group received a tour from Don Van Houweling, owner/CEO of Van Wall Equipment in Perry. The students got to ride in the large John Deere tractors. A highlight was purchasing John Deere hats, shirts and memorabilia to take back to Costa Rica. The day ended with a very informative tour

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Picking blueberries at the Berry Patch was a highlight of the trip.

Andy Suby explaining the concepts behind the BioCentury farm.

of the ISU Dairy Science Farm and ISU Compost facility located at the Dairy Science Farm site. The students took in the home town feel of Hickory Park restaurant and enjoyed some Ames barbeque.

July 26

Nicole Jonas met the students at Red Granite Farm. The Jonas' grow fruits and vegetables as well as run a small garden center of perennials and shrubs. El Azteca was the lunch choice, and then headed to Ag Leader for a tour of the no steer technology, on-the-go yield monitor, and other precision agriculture tools that improve decision making, efficiency and solve agronomic challenges around the world. The day ended with a tour of the BioCentury Research Farm directed by Andy Suby. Donald and Dorothy Lewis hosted a wonderful farewell dinner at Inis Grove Park in Ames.

Nicole Jonas, owner Red Granite Farm, speaking to the students about her greenhouses and fruit and vegetable production.

July 27

Students had the opportunity to walk around campus, meet with professors about furthering their education and getting ready to depart for Costa Rica.

All in all, the weather was perfect, the food was amazing, the tours were exceptional and the conversation between UCR and Iowa State University staff and students was priceless. A huge thank you to professors Amy Wang and Monica Blanco for organizing the group of UCR students to visit Iowa State University. Also, a grand thank you to the Department of Horticulture, Plant Pathology and Entomology for sponsoring many of the events while the students were here. The Iowa State University group will visit the University of Costa Rica on March 13-23, 2019.

The ISU and UCR group at Inis Grove Park for the farewell dinner.

Graduate Student Horticulture Society

Front Row L to R: Chris Imler, Alex Litvin
Second Row L to R: Anna Talcott, Moriah Bilenky
Back Row L to R: Allen Chen, Ben Pease, Jean Yost, Ashly Senske, Marcus Jansen, Austin Gimondo, Thanh Nguyen

By Allen Chen and Ben Pease, GSHS Co-Presidents

The Graduate Student Horticulture Society (GSHS) has had a productive 2018!

Thanks to Laura Irish, our 2018 plant sale coordinator, and many of our GSHS member volunteers, we drew in a record number of sales this spring at the Plant Sale Extravaganza. The sale is hosted annually by Reiman Gardens, and numerous departments and organizations provide locals with high quality plants for their gardens and landscapes. GSHS members propagated and sold several varieties of tomatoes, peppers, brassicas, and herbs to round out yet another successful season.

This fall, GSHS welcomed eight new graduate students into the horticulture program with barbecues, tailgates, and trivia nights. Many new faces were elected into officer positions at the beginning of the school year, and we are excited to see what new ideas are brought to the table!

GSHS has also been volunteering at Food at First, a local community garden that provides fresh produce for the Food at First meal and pantry programs. So far, we have helped by mulching the garden exterior, installing low tunnels to extend the growing season, harvesting vegetables and herbs, as well as planting garlic for the winter. Additional outreach and extension efforts have included co-teaching several classes to Master Gardeners, including botany, plant pathology, and composting.

2018 Executive Team:

Co-presidents: Allen Chen and Ben Pease
Treasurer: Zach Hudson
Historian: Jean Yost
Social Chairs: Austin Gimondo and Thanh Nguyen
Plant Sale Chairs: Chris Imler and Ashly Senske
Philanthropy Chair: Anna Talcott

Advisor: Dr. Diana Cochran

Graduate Degrees and Students

GRADUATE DEGREES

HORTICULTURE SPRING 2018

Laura Irish (MS)
Mwape Mwanakatwe (MS)

CURRENT GRADUATE STUDENTS

Moriah Bilenky (MS)
Allen Chen (PhD)
Tim Dalsgaard (MS)
Austin Gimondo (MS)
Zachary Hudson (PhD)
Kristine Lang (PhD)
Alex Litvin (PhD)
Yang Liu (PhD)
Ryan May (MS)
Isaac Mertz (PhD)
Kyungwon Min (PhD)
Ben Pease (PhD)
Anna Talcott (PhD)
Libby Trecker (MS)
Sharon Tusiime (PhD)

Graduate Student **FOCUS**

Chris Imler

Hometown: Inarajan, Guam

Advisor: Dr. Christopher Currey

Degree Sought: Masters of Science

Major: Horticulture

Current Research: Temperature differential management effects on herbs

Career Goals: Controlled environment agriculture technology development and food security extension

Hobbies: Strength training, gardening, and reading fantasy fiction novels (R.A. Salvatore)

Marcus Jansen

Hometown: Quincy, Illinois

Advisor: Dr. Diana Cochran

Degree Sought: Masters of Science

Major: Horticulture

Current Research: Profitability of high tunnel peach production

Career Goals: Education and extension in Horticulture

Hobbies: Boating and water sports, golfing, singing, and gardening

Thanh Nguyen

Hometown: Ho Chi Minh, Vietnam

Advisor: Dr. Kathleen Delate

Degree Sought: Masters of Science

Major: Horticulture

Current Research: Community farms and gardens. Estimate the impacts of community farms/gardens on Iowa's neighborhoods, especially the immigrant and limited income citizens. Study will clarify whether farms/gardens are serving the needs of identified clientele, as well as identify the bottlenecks to more organic production. Outcomes can help ensure food security and point out ways to assist organizations that are working to help underprivileged communities and encourage in more organic practices.

Career Goals: Build an NGO working on urban gardening or sustainable farming education in South East Asia that could help disadvantaged communities on food security and income stability. Pursue a Ph.D. program.

Hobbies: Hiking, biking, cooking, eating, drinking tea in the garden, crocheting, watching movies, and spending time with family

Graduate Student **FOCUS**

AJ Lindsey

Hometown: Mankato, Minnesota

Advisor: Dr. Adam Thoms

Degree Sought: Ph.D.

Major: Horticulture

Current Research: Evaluating turfgrass fertility practices and products for lawns and golf courses

Career Goals: Academia

Hobbies: Sports, spending time with family and friends, traveling, and working out

Ashly Senske

Hometown: DeWitt, Iowa

Advisor: Dr. Diana Cochran

Degree Sought: Masters of Science

Major: Horticulture

Current Research: Optimization of hop production for the state of Iowa. Specifically, how various rates and types of nitrogen fertilizer affect plant growth and yield

Career Goals: A career of growing things while simultaneously reducing the environmental impact of agriculture

Hobbies: Eating, reading, trying new things, exploring, and family time

Jean Yost

Hometown: Atlanta, Georgia

Advisor: Dr. Christopher Currey

Degree Sought: Masters of Science

Major: Horticulture

Current Research: Hydroponic speciality green production

Career Goals: Greenhouse consulting and growing

Hobbies: Cooking, hiking, paddling, gardening, and reading

GREENHOUSE Update 2018

by PETE LAWLOR, Greenhouse Manager

Nursery courtyard before completion and after a 5-inch rain.

Nursery courtyard after completion showing LEDs in the greenhouse.

Organic green pepper research, heirloom tomato grafting, wavelength specific LED lights for basil in space, turf root studies, our nursery area refinement and two classroom laboratory upgrades are a sampling of happenings here in the controlled environment realm of our Horticulture department this past season. The upgrades include complete demolition of two, 1980's labs and replaced with sleek 21st century, LED lit, and large touch screen blackboards and of course WIFI. Vegetable production, floral design and hydroponics classes have again been very popular with students. Horticulture undergrads also gained much experience growing 500 poinsettia and in the spring, 100 mixed-plant hanging baskets. Graduate students grew at least 500 large tomato plants of a dozen carefully selected varieties for the multi-club cooperative sales efforts held at Reiman gardens each Mother's Day. That is what is happening here!

If you find yourself in Ames, stop by for a tour of the interesting particulars at the Department's 21st century greenhouses. It would be my pleasure!

Greenhouse organic green pepper fertilizer testing.


Grape fungicide research in action.

Turf root morphology sand tube research.

ISU Horticulture Research Station 2018

NICK HOWELL, Superintendent

Iowa Public Radio's Charity Nebbe interviewing Dr. Ajay Nair at the IPR Horticulture Day Field day.

The ISU Horticulture Research Station had another successful season. Coordinated by ISU Research and Demonstration Farms of the College of Agriculture and Life Sciences, the station continues to improve its teaching, research, and extension functions.

STAFF

Chad Arnold, ag specialist, formerly from Agronomy, was hired June 1. Chad will be an ag specialist with an emphasis on machinery, facilities, and the shop.

STUDENTS

The Horticulture Station is an important part of the horticulture student's academic experience at Iowa State. This season three students completed internships at the station. Truman Brady, senior in Agronomy/Horticulture, completed the student food production internship. The internship was January through November. The student runs a food production enterprise from the beginning to the end of the season. This includes choosing and growing crops and marketing them on the station's FoodLocals website. Truman grew a diverse variety of vegetables including several tomato and pepper varieties, kale, eggplant, okra, kohlrabi, cabbage, carrots, and several other vegetable crops. The second intern, Michaela Jenkins, senior in English, grew a green bell pepper crop contracted by Campus Dinning Services. This field was a half-acre in size and yielded 9,000 lbs. of peppers. Michaela had the opportunity to learn how to grow a vegetable crop on a large scale. Eric Hall-Floden, sophomore in horticulture also completed an internship. Eric learned about high tunnel production of colored peppers and cucumbers.

Moriah Bilenky, station graduate assistant, continued her research project in 2018. Working with Dr. Ajay Nair, she is looking at vegetable production techniques using chickens as an added value product. Farm graduate student, Jean Yost, from Atlanta, Georgia, is the latest to join the farm assistantship program. Her assistantship started fall 2018 and she will be working with Dr. Chris Curry on hydroponic vegetable production research.

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Moriah Bilenky with chickens at the farm.

A field day at the Horticulture Research Station earlier this year drew many visitors.

Planting cantaloupe.

Harvesting Brussels sprouts.

There are many additional students who contribute to the station's activities and they all did an exceptional job. The Horticulture Station staff is proud of them and their accomplishments. We hope they have continued success in their college and professional careers.

RESEARCH

The Horticulture Station's main function continues to be research. With more than 75 projects and 20 faculty members involved, the range of projects is quite diverse. Apples, grapes, hops, tomatoes, peppers, squash, and melons were grown for research. Ornamental crops, such as turfgrass, shade trees, flowering crabapples, also were used for research purposes. In addition to the horticultural crops, projects using corn and soybeans were conducted. Projects involving bees and tree swallows added more research diversity.

One significant PhD level project under Dr. Ajay Nair was completed in 2018. A colored pepper production project in high tunnels was finished. This project looked at the effect of three levels of shade on colored peppers. Also, Dr. Nair's high tunnel tomato grafting project to control soil-borne diseases was completed. Dr. Nair began a new project in 2018 looking at fertility rates in sweet potato production. Dr. Diana Cochran's hops research continued in 2018. Her research looks at water and fertilizer requirements for hop production. In addition, her work on a hop cultivar selection trial continued. Dr. Adam Thoms' turfgrass research focused on products and practices for athletic field safety.

A view of the prairie at the farm.


Farm pond.

LANDSCAPE AND INFRASTRUCTURE

In 2018, the new prairie was spectacular and demonstrated a new level of maturity. Seeded in the fall of 2015, 10 acres of prairie was added below the dam of Horticulture Lake. This area containing a remnant oak/hickory savanna with the 14th largest Burr oak in Iowa was cleared of non-native and invasive woody plants in 2010. In 2015, the herbaceous vegetation was killed and then seeded with a diverse prairie seed mix. In its 3rd season, the prairie forbs formed waves of color across the 10-acre site and the plant species showed evidence of segregating themselves to the areas in the prairie they are best suited for survival. The prairie project is a part of the national Monarch Butterfly habitat improvement project and was funded by the Iowa Monarch Conservation Consortium. It will not only benefit the Monarch Butterfly but also provide the many other benefits of diverse prairie.

Several infrastructure improvements were completed in 2018. The shop's original roof was removed, the ceiling was reinsulated, and a new roof was installed. The pump station was insulated so the irrigation system can be run later in the season better serving research. A new electrical service was installed in the high tunnel field. This upgrade will make the power supply more reliable and will allow for the addition of new tunnels in the future. The largest infrastructure project in 2018 was the renovation of the Aquatic Research Facility. These six ponds built in 2005 were originally constructed to do fish production research projects. They were mothballed when funding ended in 2013. When attempting to bring the ponds back into use in 2016, they leaked making them unusable. To remedy the situation, 90 tons of bentonite was applied and incorporated into the six pond basins and they were refilled with water. With the ponds now repaired, research will focus on natural aquatic ecosystems.

INDUSTRY AND THE PUBLIC

The research station hosted five field days for people interested in vegetable and fruit production, hops, turfgrass, cover crops, general home gardening, and bees and pollinators in 2018. The most notable field day however, this past season was the Iowa Public Radio's Horticulture Day at the Horticulture Station. This included tours of the farm, apple sorter demonstrations, kid's games, and a farmer's market. A special program lead by radio personality Charity Nebbe provided the audience the opportunity to ask our horticulture experts horticulture related questions. Despite rain and cool temperatures, 200 people attended.

In addition to the field days, the farm hosted 19 tours and 5 other events and meetings for the public. More than 1,200 people visited the station in 2018.

With the student activities, extensive research projects, farm improvements, industry and public functions, the Horticulture Research Station was extremely busy. The station continues to improve and expand its operations with the goal of moving it to the next level of research and teaching capabilities. It is hoped that it will continue to be vital to students, faculty, and staff in the College of Agriculture and Life Sciences and Iowa State University.

2018 ISU Fruit and Vegetable Field Day

Discussing hop research and production.

The 2018 Fruit and Vegetable Field Day attracted close to 135 people and was well received. The event served as a great platform for grower questions, discussions, and networking opportunities. There were many research projects that were highlighted in addition to equipment demonstrations. Thanks to Nick Howell and his crew at the Hort Station, farm systems staff, undergraduate and graduate students, Tim Dalsgaard (our grill master), and all others who supported the field day.

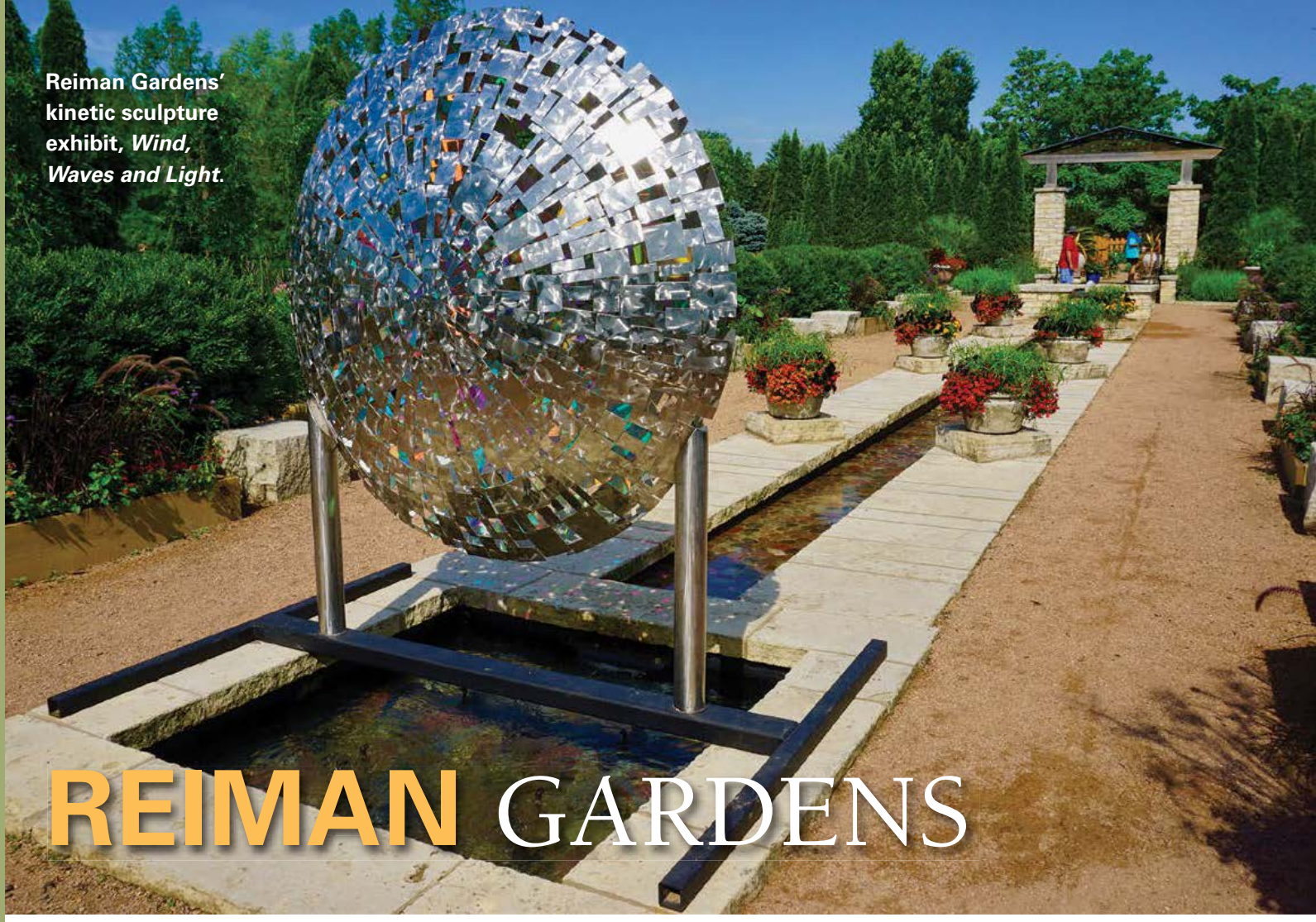
Growing vegetables in high tunnel system.

TURF Field Day 2018

Dr. Adam Thoms discusses turfgrass weeds.

What a great day for the Iowa State University Turfgrass Field Day. Close to 200 participants made their way to the ISU Horticulture Research Station to learn about turfgrass management from one of the best "turf teams" in the country. And can you believe this was Dr. Christians' 40th field day? Quite the run Nick. Congratulations! Just 38 more to go, Dr. Thoms.

Dr. Nick Christians marks his 40th field day at Iowa State.



Reiman Gardens' kinetic sculpture exhibit, *Wind, Waves and Light*.

REIMAN GARDENS

by **MARIA TEPLY**

In In 2018 Reiman Gardens celebrated the theme of Movement which featured Wind, Waves, and Light as its annual exhibit. These 13 large, endlessly fascinating moving sculptures had to be seen, up close and in person, to be believed. Made of stainless steel, they reflect the light and landscape and continually change. Wind speed and direction, shades of light, time of day, precipitation, and seasonal color made the sculptures a little different every hour of every day. With Movement as the focus, the Hughes Conservatory featured these garden displays: Orchids in the Air, Zen Gardening, and Fall Floral Frenzy. And outdoors Movement was on display in the Children's Garden focusing on plants that move, in the Campanile Garden with pollinator plants, and the Home Production Garden featured edible root crops.

There were many updates and upgrades outside that happened this year. We had a generous memorial gift left to us by member DeeAnn Drew with plans to expand and improve our current Shade Garden. The Gardens also decided to improve the walkways in the south half of the Gardens by using a porous pave installation in the Town and Country Garden. It was completed and is holding up well. The raised beds of the Jones Rose Garden were rebuilt. 20 years of wear and tear was replaced in a week, and the beds are now ready for another 20 years of rose gardening. None of this would be possible without the help from a group of AmeriCorps NCCC students and our volunteers.

Reiman Gardens also continues progress on two new garden spaces that are part of our 20-year master site plan. The Gardens is progressing with our new garden project, Sycamore Falls, on the south end of the Gardens. Last fall, we completed the land shaping. In April, we started construction. This gorgeous project will feature several waterfalls cascading over native limestone walls, flanked by sculptural terraces with generous swaths of colorful ornamental plants, and ending in a large reflecting pool. The plan incorporates seven iconic sycamores that have been on the property for

Orchids in the Air display in Reiman Gardens' Hughes Conservatory.

about 80 years. The second garden still under construction is the Water-wise Hillside Garden which commemorates a gift of money given by the Class of 1955. The design presented in the new Master Plan focused on a terraced, winding path created by limestone walls, featuring cascading plants and a grand staircase. Because Reiman Gardens has a strong sustainability initiative, we changed the focus to a water-wise, low-impact garden style that has been used very successfully in Germany for 15-20 years. This method is so new to the United States it appears in only a very few locations, which fits our desire to be leaders.

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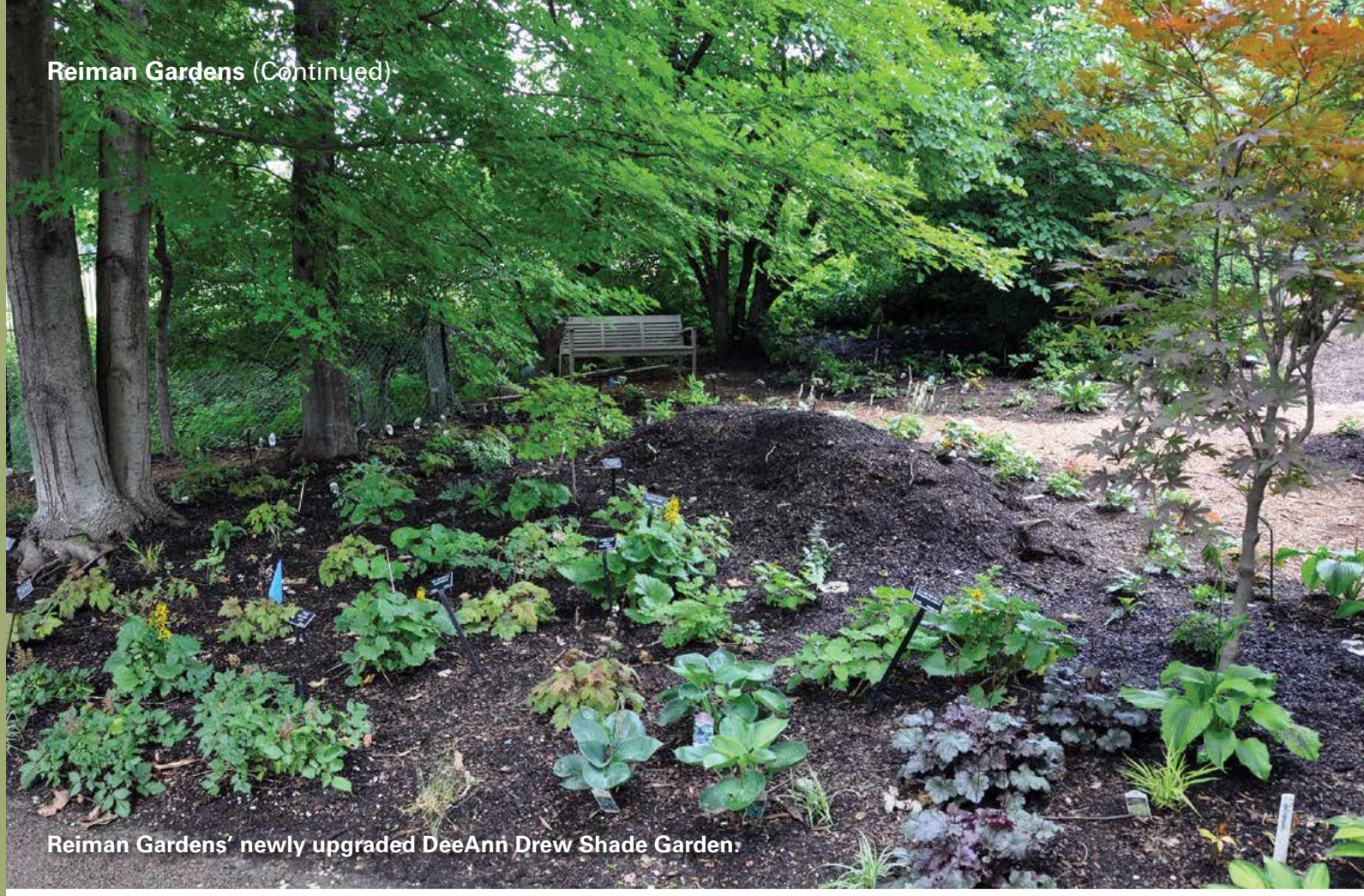
Reiman Gardens' new Hillside Water-wise Garden.

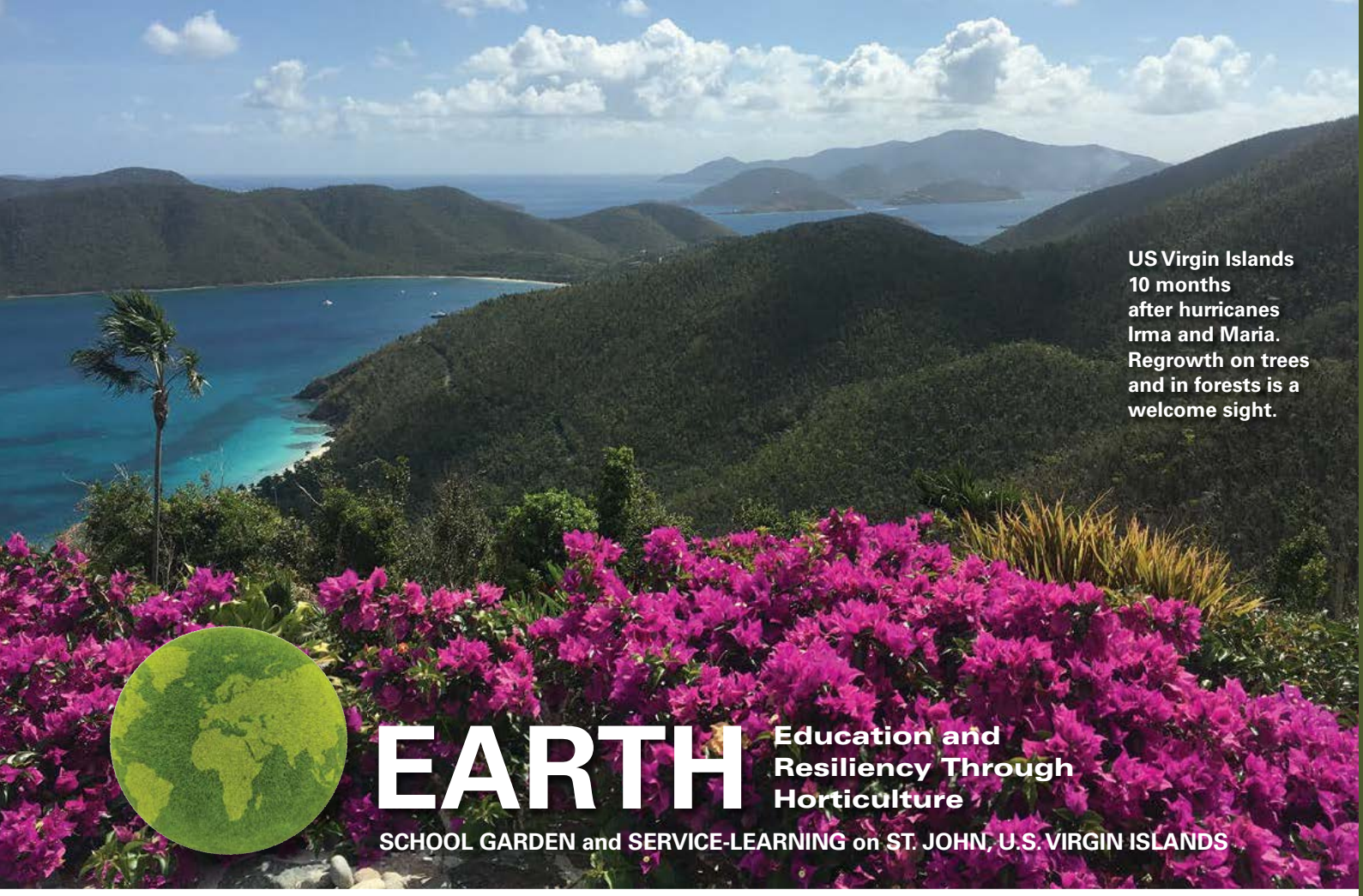


Reiman Gardens' newly upgraded DeeAnn Drew Shade Garden.

In 2018 Reiman Gardens was excited to introduce two new insects that will be on permanent display at the Gardens. Starting in March, two species of walking sticks were added to the center emergence case in the lobby area. Featured are the New Guinea Walking Stick (*Eurycantha calcarata*), which is about four inches long and very bulky looking, and the Jungle Nymph (*Heteropteryx dilatata*). Female Jungle Nymphs will be recognizable by their bright green color and can grow up to five inches in length while the males are smaller and brown colored. This particular species is special in that they can live up to two years.

Reiman Gardens would like to thank all of our members, visitors, volunteers, and stakeholders for their support in 2018.

Fall Frenzy display in the Reiman Gardens' Hughes Conservatory.



US Virgin Islands 10 months after hurricanes Irma and Maria. Regrowth on trees and in forests is a welcome sight.

EARTH

Education and Resiliency Through Horticulture

SCHOOL GARDEN and SERVICE-LEARNING on ST. JOHN, U.S. VIRGIN ISLANDS

by GAIL NONNECKE, DAVID MINNER and JENNIFER LILLO

INTRODUCTION

Iowa State students travel to the U.S. Virgin Islands and the Island of St. John for their summer, spring, or fall semester to participate in the EARTH Program. While on St. John, students live in, work with, and provide service for the local communities. Students who are involved with service learning assist in community engagement projects that benefit both the local area as well as the student's own knowledge. These service learners are actively involved during their time on the island, contributing to gardens to grow local fruits and vegetables sustainably, serving those in need, participating in environmental initiatives, and providing learning opportunities for school children.

HURRICANE UPDATE

This past academic year, the EARTH Program hosted eight service learners who were actively involved in horticulture, agriculture, food, environmental, youth, senior, and service projects in the greater community. The academic year was very different because of hurricane damage in September, 2017. Hurricanes Irma and Maria, both with category 5 hurricane strength, hit the U.S. Virgin Islands (USVI) causing significant damage to the EARTH gardens, local communities, and island ecosystems.

EARTH Program interns were just about to travel to the islands, when the hurricanes destroyed much of the infrastructure. In September and October of 2017, the students remained in Ames, working and learning in local central Iowa projects in activities similar to the EARTH Program. They arrived on St. John in early November, just two months after the major hurricanes. Much of their time was devoted to recovery efforts including clean-up and salvaging materials. The program was able to host four summer 2018 interns, who continued to rebuild the EARTH Program gardens and contribute to the communities of St. John.

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EARTH Blog: http://isuearth.wordpress.com/

School garden before hurricane.

School garden after hurricane.

Clearing debris in EARTH Program gardens.

EARTH PROGRAM PROJECTS AND ACTIVITIES

Rebuilding the EARTH Program
Students in the fall and summer semesters cleared and helped to rebuild the EARTH Program office and gardens at Gifft Hill School and the ISU dormitory property. All gardens were flattened and the office severely damaged and needed to be rebuilt. Students also contributed to feeding the hungry and assisting those in the community in need.

EARTH Composting Program
The EARTH composting program initially was suspended following the hurricanes since the local resort hotels had no vegetable scraps. The resort food services used to provide the "green" components of the compost. Composting resumed in April 2018 when three local restaurants were able to supply vegetable scraps. The EARTH Program also collects grass clippings from a resort's grounds department and combines them with wood chips from the debris-to-mulch program in the USVI to create finished compost for the EARTH gardens.

Vermicomposting
Vermicomposting occurs with worms actively decomposing organic materials in constructed boxes containing organic materials and worms. As the worms digest the organic materials, "castings" are created and a fertile soil amendment is created that helps to improve both the fertility and structure of the garden soil amendment.

Feeding the Hungry through Local Food Kitchen
Since September 2016 ISU EARTH Service Learners have worked at least one day a week in the Our Lady of Mt. Carmel food kitchen to help

Vermicomposting.

support the underserved with food and clothing. It continued this year with an increase in number of days. Fresh produce from the EARTH Gardens is used in the meals that students help prepare and serve. After the 2017 hurricanes, the soup kitchen has been operating daily and sometimes meals were served in the park gazebo due to the increased demand. ISU EARTH interns helped out in the kitchen 3-4 days a week, cutting vegetables, assembling salads, baking desserts, serving meals, and cleaning the kitchen after a meal. The EARTH Program donated fresh vegetables to provide nutritious food and promote farm-to-table practices in the community. The kitchen collected food scraps which were used for composting in the EARTH gardens.

Creating compost for EARTH Program gardens.

Senior Center Projects

Prior to the hurricanes, the ISU EARTH Program provided vegetables to assist in the feeding of seniors at the senior center kitchen in the basement of the Episcopal church at the St. Ursula Senior Center on St. John. The Senior Center was severely damaged by the hurricanes but finally reopened in January 2018. Vegetables were provided each Wednesday from January through June 2018. When summer interns arrived in May, an increased activity schedule was finalized between ISU interns and senior citizens. Summer 2018 EARTH interns designed and built a caged, 4-by 8-foot, table garden, with materials scavenged from repurposed hurricane litter.

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Serving soup in the community after the hurricanes.

Constructing a table garden.

Completed table garden for senior center.

This table-top garden will give senior citizens an opportunity to maintain a vegetable garden with reduced physical strain and stress. The seniors have the chance to implement fresh produce into their daily meals. In May and June, ISU EARTH interns led activities and interacted with seniors three days a week by assisting in the making of recycled crafts, leading exercise classes, sharing stories, attending field trips, and distributing vegetable bundles for seniors to take home for increased nutrition.

Rotating garden hose.

Irrigation

Rainfall is the primary source of a water supply in the Virgin Islands. Due to infrequency of rain events, it is necessary to design efficient irrigation systems that are economical and safe to operate. The project involved students designing a 12-foot rotating garden hose so that the garden can be watered by one person. A working apparatus was created from repurposed materials, and by working with a local welder to convey the concept, digging a four-cubic foot hole, mixing cement, cutting and splicing repurposed hose, and constructing the apparatus. The watering system will reduce the damage inflicted by walking in between plots to reach plants, allowing plants to grow better and potentially lead to better yields.

Clean up and landscaping of the Elaine I. Sprauve Public Library "reading area". The library is listed on the National Register of Historic Places.

Library Landscaping Project

The ISU EARTH Program, in partnership with the Head Librarian at the Elaine L. Sprauve Public Library, landscaped a section of the library grounds to provide seating in a shaded and mulched area where young children can attend reading classes in an aesthetic outdoor environment.

Field Trip to St. Croix Agriculture Fair

The ISU EARTH Program sponsored a trip to the St. Croix Agriculture Fair, May 26-28, 2018. The team included Gifft Hill School students and a teacher and EARTH Program students. All traveled to St. Croix and stayed at Ridge to Reef Organic Farm. During their time at the ag fair, the team learned about tropical agriculture and also toured various entities that contributed to their improved understanding of US Virgin Islands' agriculture, tropical plants and ecosystems, and culture. They also had a chance to see an old Baobob tree (*Adansonia digitata* L.), which arrived in the Caribbean region from Africa.

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Baobob tree on St. Croix. Baobob trees were brought to the U.S. Virgin Islands from South Africa.

Gardens after hurricane destruction.

Gardens after reconstruction.

Earth program students learn about Virgin Island culture from local residents.

Lillian Nabwiire visiting community meal program.

ISU GRADUATE STUDENT

Lillian Nabwiire, who served as an EARTH Program intern in Fall 2016, enrolled in the graduate college at Iowa State University in Fall 2017 in an MS degree program with majors in Food Science and Horticulture. She is completing her graduate research in the USVI. Lillian's research project is to partner with local USVI food handlers, governmental and public health groups, and the University of the Virgin Islands to conduct a food safety needs assessment and develop culturally appropriate food safety educational programming to support the food handling industry in the USVI. The aim of the Food Safety Team of Iowa State University is to assist the USVI with ensuring all food handlers (i.e. farmers, restaurants, roadside food vendors, and other food service establishments) are equipped with food safety education to reduce the chances of food-related illness. Lillian also served as a "residential advisor" to the EARTH Program students living at the EARTH Program dormitory.

Study Abroad: Exploring Peru through Natural Resources and Local Communities

by Emily Zimmerman

Marissa Till, Emmaline Putnam, and Jace Hadish, hiking on the Inca Trail.

Group photo after hiking into Winayhuayna, which is an important archaeological site and temple designated for offerings to the sacred mountain spirits of the area.

Emily Zimmerman, lecturer in Global Resource Systems, and Dr. Dick Shultz, university professor in Natural Resource Ecology and Management, led a 16-day, study abroad program to Peru for students in the College of Agriculture and Life Sciences. Thirteen students learned about and experienced the rich natural resources and culture of Peru. Peru has several unique ecosystems, including highland grasslands, the Andes Mountains, cloud forests, and the Amazon rainforest. These Peruvian ecosystems boast some of the highest botanical and avian biodiversity in the world. Culturally, Peru is home to the famous 15th century Incan citadel, Machu Picchu, which is recognized as a UNESCO World Heritage site, and is well-known for its indigenous Andean cultures. On this trip, students participated in the Inca Trail Hike to Machu Pichhu, volunteered and lived with a local community in the cloud forests of the Andes Mountains, and adventured into the Amazon rainforest.

The program was held from May 6-22, 2018. After arriving in Cusco, Peru, the famous once-capital of the Incan Empire, students spent the first afternoon acclimatizing to the high-elevation city (11, 152 feet!). Students explored the Plaza de Armas, which has stood the test of time: the Incas constructed the foundation of the plaza, and the Spanish added stone architecture and cathedrals immediately following their conquest. In the evening, students traveled to Ollantaytambo, located in the Sacred Valley of the Incas, in preparation for the start of the four-day, three-night Inca Trail Hike.

The Inca Trail Hike stretches 27 miles, winding through river valleys and mountain ranges. Portions of the trail correspond to the original Inca Trail system, which stretched over 18,500 miles across the Incan Empire through present day Colombia, Ecuador, Peru, Bolivia, Chile, and Argentina. The first day, students hiked approximately 7.5 miles and gained approximately 1,000 feet in elevation. Guides shared information about two ruins: Patallacta and Willkarakay. These ruins served important administrative, economic, military, and religious functions during the Incan Empire and remain today. In addition, as we hiked through the lush river valley of Wayllabamba. We observed handmade, stone agricultural terraces – a bit different than the agricultural terraces of central Iowa!

The second and third days of the Inca Trail Hike were gorgeous and challenging. Our group hiked over 16 miles, at times reaching elevations of nearly 14,000 feet. Both days required early wake-ups. At 5 a.m, our students crawled out of their tents into the chilly, thin air, sleepily ate breakfast, and donned their packs. On the second day, we reached the mountain pass of Wamihuanusca (Dead Woman's Pass), which is the highest point of the trek. We enjoyed beautiful panoramic views of the valleys below as we caught our breath. On the third day, we explored the archeological sites of Runkurakay and Sayacmarca, which were resting places for Incan travelers and strategic military outposts, respectively. In the evening, we camped near Winayhuayna, which is an important archaeological site and temple designated for offerings to the sacred mountain spirits of the area, as well as a large terraced area for agriculture.

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Some of the study abroad group at the Plaza de Armas, central Cusco.

The final day of the Inca Trail Hike was the day we'd been waiting for: Machu Picchu! We rose at 3 a.m. to reach the Sun Gate at sunrise. On rare clear mornings, it is possible to see the citadel of Machu Picchu and the sunrise over the Andes Mountains. While the morning was foggy (reflective of the increased humidity as we descended into the cloud forest), the Sun Gate was still beautiful and we enjoyed a snack. We continued to descend toward Machu Picchu, eventually arriving around 10 a.m.

What a sweet reward for our efforts on the trail! We enjoyed a two-hour tour of Machu Picchu, and learned about the various structures and livelihoods of the Incas. Machu Picchu is arguably the most famous icon of the Incan civilization, and was likely built in the 15th century as an estate for the Inca Emperor Pachacuti. The citadel was abandoned at the time of the Spanish conquest, and was largely unknown to the outside world until 1911. In 1981, Machu Picchu was declared a Peruvian Historic Sanctuary, and in 1983 it was declared a UNESCO World Heritage Site. Nearly 1.5 million tourists visit the historical site annually.

We traveled to a rural community in central Peru to work with our partners at Illampu. Illampu is a nonprofit organization that advocates for bio-diversity conservation within the rainforest and Andes Mountains of Viracochasi, Peru. Illampu provides support to the local community by helping build an ethical economy based on educational ecotourism and sustainable agriculture. In Viracochasi, we stayed on a local farm, and shared meals, conversation, and laughter with local community members. During our stay in the community, we participated in several community-organized activities, including: native tree seedling collection and propagation in a nursery; reforestation with native tree seedlings; coffee planting, harvesting, drying, roasting, and grinding; cocoa roasting, grinding, and pressing; banana and pineapple harvesting; and animal husbandry. Students prepared traditional meals alongside community members, and learned about different cultures, world views, and agricultural systems.

We next traveled to Manu National Park is a 3.7 million acre national park, located in southern Peru. The park is uniquely situated at the meeting point of the tropical Andes and the Amazon basin, and is marked by the Madre de Dios River. Manu National Park is immensely diverse, and its diversity is of global importance; between 2,000-5,000 plant species and over 1,000 species of vertebrates call the park home. There are more than 200 species of mammals and more than 800 species of birds. The National Park remains predominately roadless, so we accessed our rustic lodge via a 3.5 hour boat-ride up the Madre de Dios River. During our time in the Amazon rainforest, we were able to view many unique animals, including poison dart frogs, caiman, capybara, giant river otters, capuchin monkeys, howler monkeys, and woolly monkeys. We also saw several species of birds including, the hoatzin, quetzal, and the famed, Peruvian Cock-of-the-Rock. We saw many species of spiders and insects on our guided-night hikes!

We returned to Cusco to enjoy a day of sight-seeing and exploring prior to departing for the United States. We returned to Des Moines tired, but having learned about and experienced the rich natural resources, history, and culture of Peru.

Emmaline Putnam harvests coffee on a rural farm in Viracochasi, Peru.

Jennifer Sigmon grinds coffee grown and harvested on the farm to be shared at breakfast.

Service-learning group at the equator.


CALS Service Learners with Nakanyoni primary school teachers, donating notebooks and pens for Ugandan pupils at Nakanyoni Primary School.

Spring Break Service Learning in Uganda

by Kevin Duerfeldt

Eleven College of Agriculture and Life Sciences students had the opportunity to participate in the NREM-Globe 496A Service Learning travel course to Uganda over spring break 2018. Catherine Swoboda, Global Resource Systems and Dr. Dick Schultz, Forestry, co-instructed this course.

Prior to departing for Uganda, the students met weekly for an intensive preparation seminar during which they studied and familiarized themselves with the history, geography, culture, society, natural resources, agricultural systems, and development status of Uganda. This learning prepared the students for in-country service-learning activities with the Iowa State University Uganda Program (ISU-UP), a non-governmental organization working with the people and communities of the resource-poor Kamuli District.

Upon arriving to Uganda, the 11 service learners traveled to Queen Elizabeth National Park for two full days of learning about the native, wild fauna and flora of Uganda. The guided tours of Queen Elizabeth included sightings and observations of elephant, hippopotamus, native bird, crocodile, leopard and lions among other wildlife, as well as tropical plant species. From Queen Elizabeth, the group traversed Uganda by van to reach Kamuli and got right to work with service-learning projects supporting the work of ISU-UP.

The first day in Kamuli was particularly special as it marked the community opening of the Mpirigiti Rural Training Center – ISU-UPs educational and training center for farmers, teachers, community leaders and students. The service learners helped with preparations for this ceremony, at which community groups and visitors were welcomed to the training center's grounds for tours and interaction with ISU-UP staff.

Following the excitement of the center's opening, the service learners spent their time in the community immersed in service-learning activities. Service learners visited two different primary schools – Nakanyoni and Namasagali Primary – where they worked with Ugandan pupils to plant pumpkins, citrus, sweet potatoes and create sack gardens.

While at Nakanyoni and Namasagali primary schools, the service learners distributed pens and notebooks they had generously donated to all of the pupils at both schools. These materials, much-needed by the Ugandan pupils, served as an important support and point of encouragement from the ISU service learners for each Ugandan student to continue their education and put forth their best effort in school.

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Planting citrus trees at Mpirigiti Rural Training Center.


Creating sack gardens with ISU-UP staff.


Setting out sweet potato vines with Ugandan pupils.


Planting pumpkins at Nakanyoni Primary School.


Finishing the piggery in Kamuli.

Uganda (continued)

Beyond the service-learning activities at the schools and school gardens, the service learners spent a day with a Kamuli farmer and her family to construct a piggery for the farmer's swine. The service learners visited an ISU-UP Nutrition Education Center (NEC) as well as the farm of a female youth in an ISU-UP agricultural club. In both visits, the service learners worked with the NEC clients and female youth to plant fields of grain amaranth, a nutritious grain.

After five full days of service-learning activities in Kamuli, the service learners made a final contribution to the Mpirigiti Rural Training Center by spending an afternoon planting citrus trees on the grounds of the new center. The whirlwind week of learning and service in Uganda was capped off with a visit to the Source of the Nile in Jinja, Uganda, before boarding the plane for the long flight (over 20 hours) back to Iowa.


Service learners at the Mpirigiti Rural Training Center..

GRS student, Abigail Vonhandorf at the source of the Nile River, Junja, Uganda.

Overall, this spring break travel course was an important and valuable opportunity for CALS students to learn from and offer their service to the life-changing, agricultural development work of ISU-UP in the Kamuli District of Uganda. Through the service-learning activities, the CALS students were able to understand how their majors contribute to agricultural development in a global setting, while offering their service to the people of Kamuli.

Global Food and Agriculture: Brazil

by Catherine Swoboda

In May 2018, 13 first- and second-year Global Resource Systems students examined agricultural, food and natural resource systems in Brazil through the travel course Global Food and Agriculture: Brazil. This intensive course was comprised of a pre-departure class, in-country travel and learning, and a post-travel reflection course. Kevin Duerfeldt and Catherine Swoboda co-taught all courses.

In Brazil, the group began their understanding of Brazil's resource systems with two days of learning in the global megacity of São Paulo. Students visited the historic center of São Paulo and the point where the city was founded, from where colonization and European expansion emanated into the regions which constitute present-day Brazil. Students discussed the pre-Colombian population and ecosystem makeup of South America and how colonization ushered in an era which transformed the natural resource and agricultural systems of the region and learned about the history, economic and political climate of the country. While in São Paulo, the group met with the leadership of the Federation of Agriculture and Livestock of São Paulo State and visited Cargill's São Paulo headquarters, where they learned about global food and agricultural trade markets. Following this in-depth examination of Brazil's agriculture, livestock and agribusiness industries, the group visited the Biological Institute of Brazil, an applied research center that works to prevent zoonoses and foodborne animal pathogens, developing biological controls in coffee, sugarcane and other crops.

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Students harvesting coffee.


Arriving in São Paulo.

Learning of biological control research for sugarcane (Londrina).


Harvesting cassava.


Enjoying lunch at a farm in the Atlantic Rainforest.

Brazil (continued)

After two days in the big city, the group traveled to Campinas to the University of São Paulo, Luiz de Quieroz College of Agriculture where they spent a full day with a forestry research lab focused on conservation and reforestation in the Amazon. From Campinas, the group traveled to Curitiba, a city regarded globally as a paragon of sustainability. Starting off in Curitiba, the group traveled through the Atlantic Rainforest to reach the Port of Paranaguá, the largest bulk port in Latin America and one of the world's most important sea trade centers. An exclusive tour through the port itself offered an up-close look at Brazil's massive grain exports to world markets as well as fertilizer and vehicle imports from Europe and Asia. Time at the Port was followed by on-farm visits with an agricultural extension service to a cassava and banana farm in the Atlantic Rainforest biome.

The group departed Curitiba to travel to Ponta Grossa where they visited a Cargill facility which crushes soybeans and has an animal nutrition wing. The group was welcomed by Cargill with an informative presentation about the plant's operations and an extensive facility and operations tour led by Cargill employees. Following this, the group traveled to an experiment station with the Institute for Agronomy, IAPAR, to learn about environmental and production research being conducted for farmers in Brazil.

From Ponta Grossa, the group headed north to Londrina, stopping at the Guartela Canyon along the way. Guartela Canyon is the largest canyon in Brazil, nearly 1,500 feet deep and 20 miles long. The group was led on a hike of the canyon by a Brazilian expert in the flora, fauna and area history.

Upon arriving in Londrina for a three-day visit, the group visited the university Philadelphia Institute Londrina (UNIFIL). This provided for stimulating interaction and exchanges with students, professors and researchers, examining issues related to agronomy, sugar cane production, wildlife management and ecology, biological control, and animal science. Day two in Londrina was spent at a coffee farm where the group was involved in the production and harvesting of coffee, including taste-testing the coffee produced on the farm itself. With Brazil being the largest supplier of coffee worldwide, supplying a third of coffee beans globally, this farm visit was a tremendous learning opportunity. Day three of the group's time in Londrina was spent at EMBRAPA, the Brazilian Agricultural Research Corporation, where research is focused on developing technologies to improve all aspects of agriculture and livestock. The EMBRAPA center in Londrina is focused on soybean research and development.

From Londrina, the group traveled to Santa Teresa Oeste where they visited an IAPAR center conducting research on the environment, specifically soil resources, and agroecology. That afternoon, the group visited a family-owned dairy farm.

The final three days of the group's learning in Brazil were spent at Iguazu Falls, one of the largest waterfalls in the world. Iguazu Falls is comprised of approximately 275 waterfalls, spanning an area of 2.7 kilometers, and

Iguazu Falls.

two countries: Brazil and Argentina. While at Igauzu Falls, the group took guided hikes through the national park, learning about the natural ecosystems, native fauna and flora. The group also spent a day at Itaipu Dam, once the largest hydroelectric dam in the world. Located at the border of Brazil and Paraguay, the dam provides electricity to both countries and was a fantastic opportunity to examine and understand energy issues in the region.

Following the in-country travel course in summer, the students met weekly for a post-travel reflection course in fall, in which they developed scientific posters examining a resource issue they learned about in Brazil. The travel course to Brazil was a tremendous learning and professional opportunity for the students as they were immersed in the food, agriculture, and natural resource systems of Brazil – a country which offers unparalleled and important insight for an examination of agricultural production, markets, sustainable development and natural resource management issues. Throughout this course, students were considering and discussing how the history, economy and political climate of the country and region shape and impact the resource systems issues examined.

Hiking in Guartela Canyon.

GRS students with the head vet at a family-owned dairy farm.

Hort Club students at the Local Foods Festival.

ISU Horticulture Club 2018 Update

by Sarah Steffen

Another year has flown by for the students involved with Horticulture Club on campus. Members participate in biweekly meetings, and we are proud to say that we draw students from a diverse range of majors. We participated in staple activities and sales of horticulture club, as well as adding a few new opportunities for students. We have continued to build upon the foundation of past years and are prominent members of many activities on campus as well as intercollegiately.

Throughout the year, students have the opportunity to gain hands-on experience in greenhouses, the sales process, and design through the many club sales. Poinsettia sale once again was a huge success. Students, faculty, staff, and community members look forward to purchasing the beautiful plants grown by students around the holidays. This is by far the biggest revenue generator for the club, helping to send students to competitions and on trips at little or no cost to them. Flower bouquets on Valentine's day continue to be a wonderful way for students to gain design experience, as well as the Spring Sale of hanging baskets around Mother's Day. The succulents grown and sold by the club at the Cyclone Market during the Spring game are a hot commodity and sell out almost instantly. The Local Foods Festival held this past September saw students selling cider from Deal's Orchard, out of Jefferson, Iowa, and apples from the Horticulture Research Farm. Members were able to chat with students about the importance of buying local foods and how they can be affordable, even on a college budget.

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Homecoming festivities and displays.

Students planting bulbs at Reiman Gardens.

Horticulture Club (continued)

Students also have many philanthropic opportunities. Once again, President Wintersteen, then Dean of CALS, bought the club's donated yard clean up at the United Way fundraiser in the fall of 2017. A group of 15 students worked on a fall clean-up for her. During CALS week, students prepared bacon wrapped jalapeno poppers for the Bacon Expo where the proceeds go to an Ames area support program chosen by CALS council.

During the end of April 2017, six students competed at the North American Teachers and Colleges of Agriculture (NACTA) in Norfolk, Nebraska. The team took first place in the four-year division and held top honors in each of the categories. Spring break saw students form Horticulture, Landscape, and Turf Club join forces to compete at the National Collegiate Landscape Competition (NCLC) in Graham, North Carolina. Students had the opportunity to compete in several competitions, with many top ten finishes. Twelve students competed at the Mid-American Collegiate Horticulture Society (MACHS) conference hosted at Fort Collins, Colorado, by Colorado State University in September 2018. The team took second over all and had students ranking in the top of each exam area. These competitions and conferences create opportunities for students to network with industry professionals through tours, seminars, and career fairs.

Popular club socials, like barbeques, bowling, pumpkin painting, ugly Christmas sweater contests, and many other activities help to grow the club's connection. Our float made a great showing in this year's homecoming parade in October. We are excited to have started off this academic year so strongly, and cannot wait to see what this year has in store for the club.

Club members having a fun time bowling.

Wishing you all the best and as always, go Cyclones!

HORTICULTURE CLUB

Horticulture Club MACHS Trip

Colorado State University Trial Gardens.

The Horticulture Club traveled to Fort Collins, Colorado in October to participate in the 2018 MACHS (Mid-America Collegiate Horticultural Society) annual competition. MACHS is a society created to promote an awareness of the profession of Horticulture, to create a medium of communication for Horticultural students, and to exchange club and professional ideas. Along with the annual meeting, the clubs compete in four divisions: Plant Judging, Plant Identification of Woody specimens, Plant Identification of Herbaceous specimens and a general knowledge exam. ISU had a strong finish and extra congratulations to the following students:

Group participated in the Colorado State University Trial Gardens.

Justin Wigdahl (second place overall), Grant Hughes (first place in herb ID), and Emily Meader (second place in judging) received awards for various categories.

The tour for the Welby Gardens Wholesale Center.

The group placed second in the team award.

Having fun during competition.

TURF Club Review for 2018

by MARCUS O'BRIEN, Turf Club President

The 2017-2018 academic year was one for the books for the ISU Turf Club. This year the turf club had a few extra fundraising projects to help raise funding for the various turf conferences. It started in the summer, when a few of the members laid sod at Reiman Gardens. In addition, the turf club sold a John Deere Gator to the ISU Research Farm's as a fundraiser. A big thank you to Van Wall Golf and Turf for the gracious donation of the Gator. Once classes were back in session, the club did some additional work at Reiman Gardens that included hydro-seeding, and the normal fertilization. A few weeks later the Turf Club had a yard cleanup day for Dean Acker.

For the 50th Anniversary of the Horticulture Research Station the turf club volunteered to mow the farm leading up to the event, and park cars during the event. There was a great turnout, and the club was happy to be part on the celebration. Next came homecoming, where the turf club, horticulture club, and landscape club built a homecoming float that was voted the best in show for the homecoming parade.

January starts the conference season for the turf club. Mid-January, the club took four teams to the National Sports Turf Managers Association Conference in Fort Worth, Texas. The first team brought home the first-place trophy for the student challenge. Iowa State has done well in the student challenge in years past, but has never won this contest. A couple weeks later, many members of the turf club attended the Iowa Turfgrass Institute's Annual Conference in Altoona, Iowa. There the members attended many learning sessions, many receiving scholarships from the ITI, Iowa Golf Course Superintendent's Association, and the Iowa Sports Turf Managers Association. In February, four ISU Turf Club teams participated in the Turf Bowl at the Golf Course Superintendent's Association of America's Meetings in San Antonio, Texas. The top ISU Turf Club finishing team was fifth place. We are excited about continuing to represent Iowa State University in these competitions, and to continue to strive for excellence.

This April, many members helped set-up and then played in the Derrek Harmon Memorial Golf Outing. It was a great turn out, despite the rainy morning. The golf outing is a great way for current turf students to network with ISU alumni, and it also provides scholarship opportunities for turf students. The final event that the club partook in, was the spring Reiman Gardens application. The Turf Club fertilized and applied a pre-emergence herbicide to the grass areas of Reiman Gardens. Many of our members were able to attend and help out.

Overall, the 2017-2018 year was a great year for the Iowa State University Turf Club. The club made some great achievements, and was able to take 19 different students to the national turfgrass meetings. We are looking forward to another great year for the Iowa State University Turf Club.

NACTA 2018

NACTA team members from left to right: Jenna Rasmusson, Emily Stoffel, Lori Croghan, Ellen Sattler, Grant Hughes, Annie Butler, Sarah Steffen, and Dr. Diana Cochran.

This year the annual NACTA competition was hosted by Northeastern Community College in Norfolk, Nebraska. Iowa State, as always, took many teams to the competition, one of which was the Horticulture team. Every year the horticulture department takes two teams to the competition, an official team and an unofficial team. The official team is made up of 4 people whose scores will contribute to the overall team score. And the unofficial team is made up of people who plan to compete next year on the official team. This year's official team members were Annie Butler, Emily Stoffel, Grant Hughes, and Sarah Steffen. The unofficial team included Ellen Sattler, Lori Croghan, and Jenna Rasmusson, an agronomy student who wanted to give the horticulture competition a try. These students were coached and supported by Dr. Diana Cochran. The horticulture contest has 3 portions, the general knowledge exam, problem solving, and identification.

The 2018 NACTA competition proved to be a successful year for Iowa State. The University as a whole won sweepstakes in the four year division. (ISU won the most contests within the competition). The Iowa State Horticulture team took 1st in the four year division for the Horticulture contest with the top two individuals, Grant Hughes and Emily Stoffel. In the identification portion, Iowa State took 1st with Grant Hughes earning first place, Ellen Sattler placing second, and Emily Stoffel placing third in the individual placement. For the general knowledge portion, Iowa State again took first place with Grant Hughes earning first place, and Annie Butler taking second place individuals. In the problem solving portion, Iowa State took second place with Annie Butler placing third.

We enjoyed both doing well in the competition as well as the team comrade during our study sessions and travels. The Horticulture team was honored to respresent Iowa State University in the 2018 NACTA competition.

Grant Hughes in landscape installation competition.

Iowa State Team Participates in **National Collegiate Landscape Competition**

Iowa State University horticulture students attended the National Collegiate Landscape Competition (NCLC) at Alamance Community College in North Carolina March 14-17, 2018. Participants in the three-day event demonstrated their skills in 30 real-world competitive events and networked with some of the top industry companies as well as dozens of the biggest industry manufacturers and suppliers. The team from Iowa State was among the more than 700 top landscape and horticulture students from two- and four-year colleges across the country.

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Landscape Competition (continued)

Justin Wigdahl and Cooper Christensen in the wood construction competition.

Justin Wigdahl received first place nationally in Annual and Perennial ID. Bree Van Meeteren received second place nationally in Exterior Landscape Design.

Bree Van Meeteren in the exterior landscape design competition.

Matt Collingbourne in the hardscape installation competition.

Grant Hughes checking out a plant in the annual and perennial identification.

Sketching an elevation drawing at the spring student design sessions.

Landscape Club 2018

by Justin Wigdahl

Landscape Club is having another exciting year in the Department of Horticulture. One of the most exciting things is we've grown enough to meet separately from Horticulture Club. Beginning this semester, we meet once a month. Our first meeting served as an introduction to the club and future activities. We also received an introduction from the Department's newest faculty member and club advisor, Grant Thompson. On October 3, we toured a Country Landscape designer's personal garden to hear about the design process from start to finish and dealing with how a landscape evolves over time.

Last spring, we got hands-on experience with evolving landscapes as we completed spring clean-ups to raise money for NCLC. Homeowners around Ames contacted us to request raking, weeding, and trimming services to prepare their gardens for the growing season. With gorgeous fall colors around the corner, we'll be working outside again as we complete fall clean-ups this semester.

We created a new fundraiser this past spring called Student Design Sessions. Our advisor, Lisa Orgler, mentioned at a meeting that she often gets calls from homeowners seeking design advice. She thought that local homeowners and students would both benefit from participating in some sort of landscape consulting meeting; thus Landscape Club's Student Design Sessions were born. In this fundraiser, local homeowners schedule a 30- or 60-minute time slot to meet with a group of 2-4 students to receive landscape design advice and plant recommendations. They are required to send in a photo of their yard so that students can draw an elevation sketch of what their landscape could look like. The event was held at Country Landscapes last spring in March and we met with over 20 clients. In lieu of last semester's success, we will be holding a 2nd Student Design Sessions event this fall on October 20 at Horticulture Hall.

As an encore to the Student Design Sessions last semester, the Siouxland Garden Expo invited us to hold a Student Design Sessions booth during the expo in Sioux City, Iowa. Four students drove up to provide advice and sketches to over 10 northern homeowners in only 3 hours.

These events not only provide a way for club members to enhance their landscaping and design skills, but also to raise money for the club's trip to the National Collegiate Landscape Competition (NCLC). This year, NCLC was held at Alamance Community College in Graham, North Carolina over our spring break (March 11 -17). Landscape Club had a team of 15 students fly down to compete in 17 different events including irrigation troubleshooting, plant problem diagnosis, interior design, construction cost estimating, woody plant identification, and more. Of the 15 students who participated, only one was an NCLC veteran so it was a new and exciting experience for most of us. Our team

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Landscape Club (continued)

Landscape Club's NCLC team: 15 students and 2 advisors.

was one of over 60 schools that attended from around the country (and even Canada!) and after the competition we ranked 36th overall. We had 2 students place in the top 3 of their events and many placed in the top 20. During the competition, there was a career fair that brought over 100 landscape and horticulture companies to the campus for internship and job recruiting. After the competition, we visited the North Carolina State University Arboretum, the Sarah P. Duke Gardens and the JC Raulston Arboretum where we enjoyed an early spring with redbuds, magnolias, and tulips in full bloom before flying back to Ames.

NCLC 2019 will be held at Colorado State University in Fort Collins. We will begin preparing and training for the big spring break trip later this semester. With many students planning to return to NCLC next year, we will build on what we learned this year to do even better in 2019.

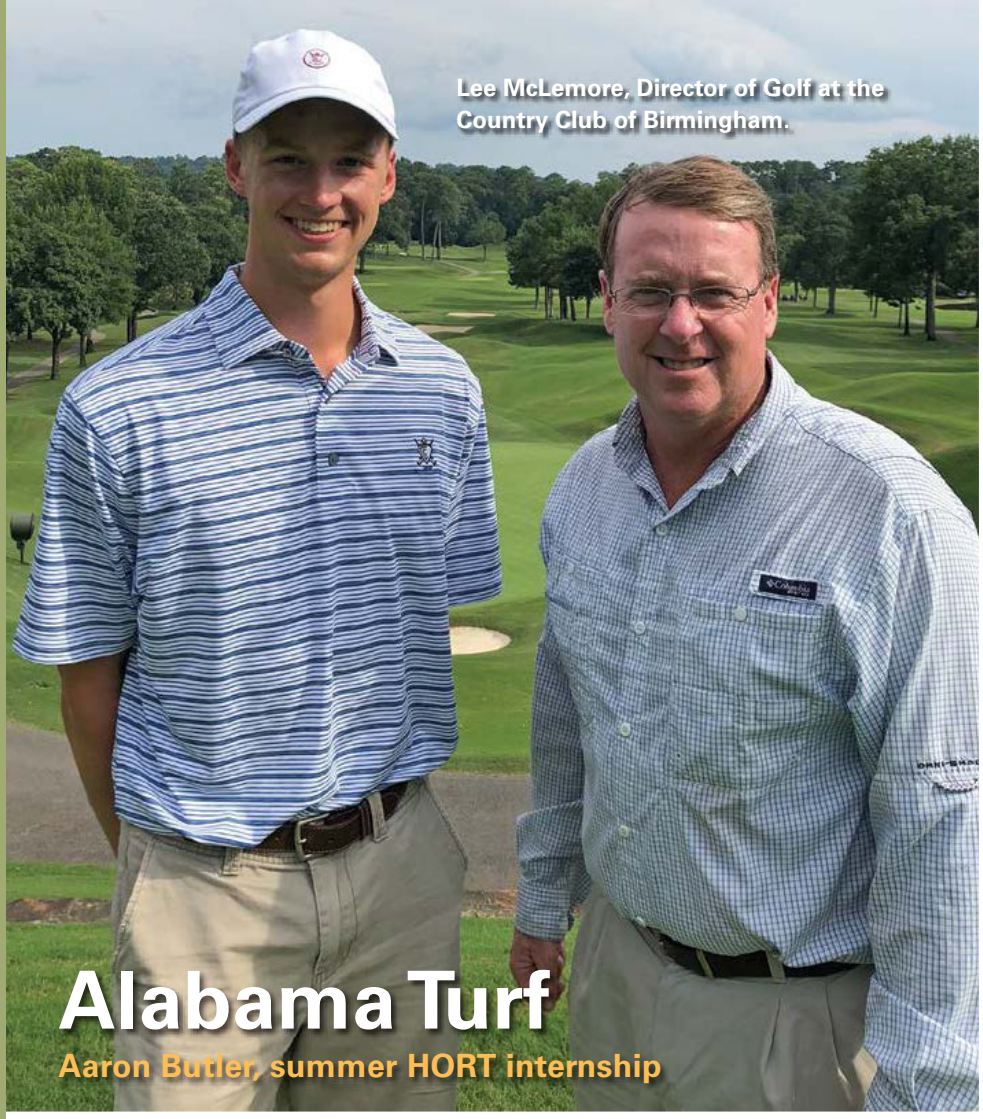
We are excited to continue exploring how we can help students enhance their landscaping and design abilities for the rest of 2018 and beyond. Thank you for your interest and support!

Working hard at a chilly spring clean-up.

2018 HORT Student Banquet

Graduating seniors: Matt Collingbourne, Breanna VanMederen, Marcus Jansen, Katrina Vanringelestein, and Josh Hammond.

Hort Club President, Sarah Steffen.



Lee McLemore, Director of Golf at the Country Club of Birmingham.

Alabama Turf

Aaron Butler, summer HORT internship

My name is Aaron Butler, and I'm completing my senior year of my Turfgrass Management major at Iowa State. This summer, I interned at the Country Club of Birmingham in the great state of Alabama. Since this was my last internship opportunity before graduating and I've only had experience working on courses above the transition zone, I wanted to experience managing bermuda along with bentgrass greens in the south- which was not an easy task.

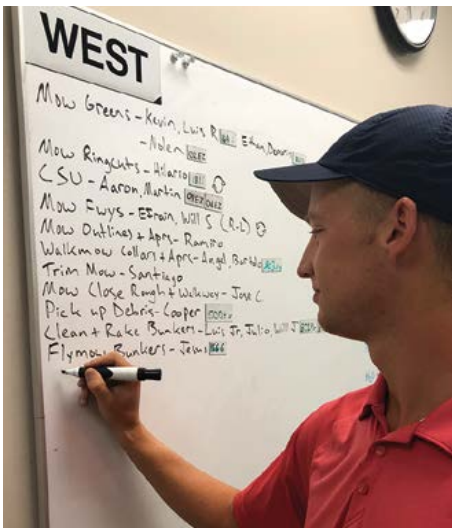
The Country Club of Birmingham has two 18 hole golf courses, both of which are world class. Founded in 1898, just outside of downtown Birmingham, this course has a rich history of ameteur championships, most recently the 2016 USGA Men's State Team, along with a very thankful group of members for the highly conditioned course.

Here I learned from one of the best in the business, Lee McLemore, CGCS. Every week I spray hawked greens. Before mixing products into the tank, I felt like I was back in Horticulture Hall learning from one of my teachers, but specifically learning why each product was being used. Lee is one of the smartest superintendents I've ever met, and is very open to teaching everything he knows. Lee taught me why each product, whether it be fungicide, fertilizer, or wetting agent, was being applied, along with the science behind it.

A classic example was the combination of spraying Signature™ Stressguard® and Daconil Action™. There is a lot of research showing the synergistic properties these two fungicides have when mixed together. Acquiring this knowledge has taught me the importance of following turfgrass research, along with the importance of always learning how to improve the turfgrass health and looks on the golf courses in the future. All of this was inspired by my mentor this summer.

Another great part of working in the Birmingham area was getting to volunteer at two different professional golf events: the Regions Tradition, and the U.S. Women's Open at Shoal Creek. This was a great networking opportunity for me to meet other local superintendents and others in the turf industry. Seeing the hard work, and all the people who have a part in these events was an awesome experience.

Along with everything learned, I also had a lot of management experience throughout the summer. By the end, my Assistant Superintendents let me make the daily morning schedule and assign tasks to the crew. Being my last internship, I will soon be looking for an assistant job at a golf course. Getting to assign jobs, and having a manager role during this internship gave me more assurance this is what I want to do following graduation. I can't thank all of my supervisors at the Country Club of Birmingham enough, and for all the southern hospitality along the way.



Volunteering at the U.S. Women's Open at Shoal Creek.

Volunteering at the Regions Tradition.

Aside from The Country Club of Birmingham, I had the opportunity to travel with two USGA agronomists as part of the Green Section Course Consulting Service Internship. During the first week of August I traveled to Columbus, Ohio where I met Zach Nicoludis and John Daniels, Central region agronomists. During this week I toured golf courses ranging from Scioto Country Club (host site of the 2016 U.S. Senior Open), and a low budget course struggling to keep up with the property's needs. It was a great experience getting to learn first hand what the Course Consulting Service has to offer to any golf course needing extra advice from a USGA agronomist. Not only this, but getting the time to get to know Zach and John while also learning everything they knew about being successful in the golf course industry. I couldn't thank the USGA Green Section enough for giving this opportunity to college turf students.

Swedish Hill Winery

ANNIE BUTLER, summer HORT internship

This summer I began a six month internship with Swedish Hill Winery in Romulus, New York. Romulus is located in the heart of the Finger Lakes Region. The Finger Lakes has established itself as a distinguished wine region in the last 30 years.

Swedish Hill has been producing wine since 1986. They were pioneers and one of the first wineries in the Finger Lakes. Since the start of wineries in New York, the wine industry in the Finger Lakes has boomed. Swedish Hill now produces 60,000 cases of wine annually and has opened two other wineries, Penguin Bay and Goose Watch. In 2017, Derek Wilber, the head winemaker, and Zach Pegram, assistant winemaker, were honored with the Andre Tchelistcheff Winemakers of the Year award at the 2017 San Francisco International Wine Competition. It has been great experience to work beside such gifted winemakers.

I started my internship on May 20th For the first three months, I have been working out in the field. I assisted in managing 86 acres of grapes. My knowledge of cold climate cultivars was warmly welcomed and as a result I worked with the young cold hardy vines Initially, I had a hard time wrapping my head around the size of Swedish Hills vineyards. But by the end of the summer I had been through just about every row. This summer I was able to see the advantages of mechanization in the vineyard. However, the idea that each vine is unique was reinforced.

This summer I was given a block of Pinot Noir grapes as my project. This block became known as “Annie’s Acre”. Because of a hard frost over the previous winter, this block had experienced significant dieback. As a result it could not be pruned like everything else. I found it very rewarding to prune and train this block. I am very thankful for all of the new experiences I had out in the vineyard. I am looking forward to add this knowledge to aid my career aspirations.

In the middle of August, I moved into the winery. I primarily work in the lab, on the bottling line, and in the wine cellar. This new experience has been particularly enlightening. I came into this internship with a fair amount of viticulture knowledge, but with pretty limited enology experience. Being in the lab brought me back to the days of organic chemistry.

Applying calcined clay to the infield skin.

Iowa Cubs Groundskeeper

THOMAS GOULD, summer HORT internship

When I began my work at Principal Park in Des Moines, home of the Iowa Cubs, I didn't know what to expect from the work, all I knew was that the standards for the field were high and that the Iowa Cubs have one of the best fields in minor league baseball. One of the biggest things that I was surprised by was how much dirt work there was to do in preparation for games, keeping the skin watered and moist was something that I learned was imperative. One of my main

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Principal Park in Des Moines, Iowa.

Home for the Iowa Cubs.

THOMAS GOULD (continued)

responsibilities was making repairs to home plate, which was a fantastic experience. I quickly learned that there are a lot of variables when making repairs, so learning what to do to create a solid playing surface was important. I had the great opportunity to mow, mowing a quality pattern was very satisfying and quickly became one of my favorite tasks. I also did a lot of aerating the field, which I realized the value of relieving compaction and keeping turf healthy. When it comes to the grass it was on a strict program of spraying and granular applications to keep the grass healthy and to keep the disease away. I was always amazed with the amount of labor associated with working on two acres of grass, it was a regular occurrence to work 75 hours a week when the team was in town. Although the hours were long, I found the work not only satisfying, but fun.

HORT internship

Part of the living wall installed in downtown Milwaukee. The wall featured split leaf philodendrons, neon pothos, and Algerian ivy.

Milwaukee Interiors

EMILY STOFFEL, summer HORT internship

Over the summer, I was able to intern at Interiorscapes by The Plant Market located in Milwaukee, Wisconsin. Interior landscaping is a sort of niche within the horticulture community that has been growing throughout recent years as companies recognize the importance of greenery in the office space. However, most companies don't have the internal resources to properly care for and maintain plants at a corporate level of quality. That's where we come in. Interiorscapes handles everything plants including initial plant and container choices, installation, and routine maintenance.

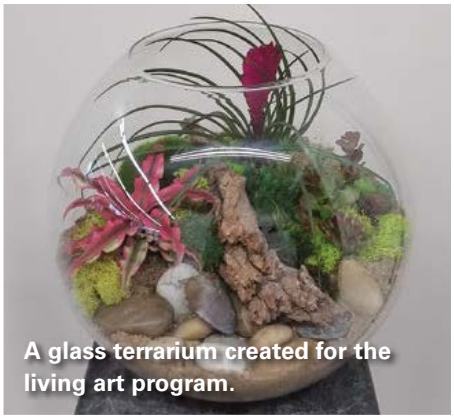
Interiorscapes has been in business since 1975 and currently services over 600 location throughout Wisconsin. These accounts range anywhere from hospitals to malls and large atriums to office plants. The company also has a living art program which is replaced monthly. This is offered as an alternative to cut flower arrangements which can be expensive. Since these containers incorporate colorful live plants they last much longer than a cut arrangement.

So what did I do all summer? A lot! I was able to be involved in just about every aspect of the company. At least one day a week, I helped out in the shop – a unique old building in downtown Wauwatosa. The shop was the homebase of operations and was filled to the brim with plants that were going out to accounts. I would water and groom the plants that were there as well as prep plants (clean and put Spanish moss on the base of the plant) that were being installed. This was the best way to learn the names of plants and what kind of conditions they liked (i.e. if they liked a lot of water, if they preferred direct or indirect light).

I also worked with many of the technicians who service accounts on a bi-weekly basis. We would go from account to account and water, clean, scout for pests, trim, and groom. It was great experience working in the field and interacting with clients. Watering plants correctly can be really tricky especially when you see them once every two weeks. It takes a practiced hand and I'm glad I got to learn from some of the best!

When living art programs were going out, I got to help create the containers…and it's a lot harder than it looks! A lot of trial and error goes into pairing just the right plants together and then getting them all to stay put. But I learned so much about arrangements and the design aspects that go into a single art piece. It was one of my favorite things to do!

And of course there were the out-of-the-ordinary tasks as well. Trees get dirty and when you have 30 ft tall indoor ficus trees, cleaning them can be adventurous. Luckily we had tall ladders, a pressure washer, and lots of tarps. We also installed a living wall that needed over 150 plants! Moss and succulent walls are gaining popularity as low maintenance décor and I got to help piece some together (also one of my favorite projects). And that's not even everything! This summer was packed with hands-on-learning new experiences. It was a gratifying feeling to be able to apply the skills and ideas I learned in school. I'm very grateful I was able to work with such talented individuals at a truly unique company!



A glass terrarium created for the living art program.

Moss and succulent wall.

Designing a hosta glade for Bachman's CEO, Susie Bachman West.

Bachman's Landscapes

JUSTIN WIGDAHL, summer HORT internship

My name is Justin Wigdahl and I'm a junior in the landscape design option of horticulture at ISU. I'm from Ames, Iowa and I've loved growing up in central Iowa. ISU's Department of Horticulture has opened so many doors for me to internships and industry experiences. After my freshman year, my dreams came true as I spent summer 2017 at Walt Disney World in Florida as a Horticulture Professional Intern. This summer I had the privilege of working at Bachman's in the Twin Cities as a Landscape and Garden Services Intern.

Bachman's is a large horticultural business that has been providing high quality products and services to the Twin Cities for over 135 years. I worked in their Landscape and Garden Services Department, but they also have a floral division, a wholesale annual, perennial, and tree farm, and multiple garden center locations across the Twin Cities. I quickly learned if you're looking for high quality designs, plants, or garden and landscaping materials in the Twin Cities, then you come to Bachman's. It was an honor to work for a company that has such a long history of high quality standards and it helped shape the way I approach clients and designs.

My role as a Landscape and Garden Services Intern was to learn from and assist my mentor as she approached maternity leave in midsummer so that I could take over some of her work after the baby came. My mentor, Ashley Hansen, was a salesperson for garden services. Her hobby, ultramarathons, provides a good context for her incredible work ethic. She was always on the go with new client leads, client meetings, creating and sending quotes, designing seasonal installs, communicating with clients and crews, and more–all while pregnant. I was impressed that she could handle all of these responsibilities and still treat each client personally. That was an important thing I learned from her: even though you may have many clients, each client wants to feel like they are your only client.

Before she left on maternity leave, I followed her to client meetings to learn how she interacted with clients. She taught me how to create quotes for client jobs and how to coordinate things when clients decided to go with us. I also got lots of experience driving around the Twin Cities to fix issues that came up, such as installing a few extra annuals to fill in gaps, switching out different colored hibiscus to match the color palette, etc. Summer annual installs happened in late May through early April, so I got to work with the crews installing annuals into some incredible planters in downtown Minneapolis and suburban lake houses.

Once Ashley had her baby, I became some of her clients' main contact, which means that I received some upset customers. It was great learning how I should react to customers facing difficulties and how I could improve. I also started getting new leads to contact and meet with, which means that I began quoting jobs on my own (with the advice and support of Brad Weber, another garden services salesperson). All the new work was exciting! It forced me to become more organized with my schedule in order to keep track of everything. I was given a lot of independence to get projects completed which was different from most other jobs I'd had. This independence, along with having my own cubicle, gave me a feeling of what a "real" job is like.

Communicating with the crews was another large task. Garden services has 4 crews with lots of talent. Relaying information between clients and the crew became a major part of my job. Later in the summer, I was in charge of garden maintenance checks. I visited homes that we serviced regularly to make sure we weren't missing anything important and to check in with clients about any concerns or additional needs they might have. All the information and photos I gathered had to be passed on to the crews. Between sticky notes, emails, and phone calls, I learned many channels of communication.

I had the opportunity to complete two designs over the summer. The first was a planting design for a couple in Edina who were piloting their first episode of HGTV's Stay or Sell. They had a very clean modern aesthetic and loved grasses. The second was a planting design for Bachman's CEO, Susie Bachman West. Our landscape crews just finished the new landscape work at her home. All that was left was a hosta glade. I specified the placement of different hosta sizes and colors to create the desired patchwork effect.

Completed the install on the rooftop garden at WCCO in Downtown Minneapolis.

My mentor, Ashley Hansen, and I checking out some vine and moss balls.

The Twin Cities offered much to do outside of work including the Como Park's Conservatory.

Additionally, I helped design and quote a few different seasonal annual container designs including one for the upscale Edina mall, Galleria.

Spending a summer in the Twin Cities was a valuable experience. I learned so much about how a large landscaping business works and how to manage an office job relating to customer service and sales. I'm excited to use the skills I brought back from up north in school and future jobs. Though, that's not the only thing I brought back. A handful of hardy Minnesota plants made their way back down with me to our balmy Iowa weather too. Thanks to Bachman's for providing me with so many fantastic experiences this summer!

Sierra in Shanghai, China.

E-commerce with Cargill Animal Protein China

SIERRA BECKER, Global Resource Systems and Animal Science

This summer, I spent nine weeks in Shanghai, China completing my GRS international internship with Cargill - a global agricultural leader in nourishing the world.

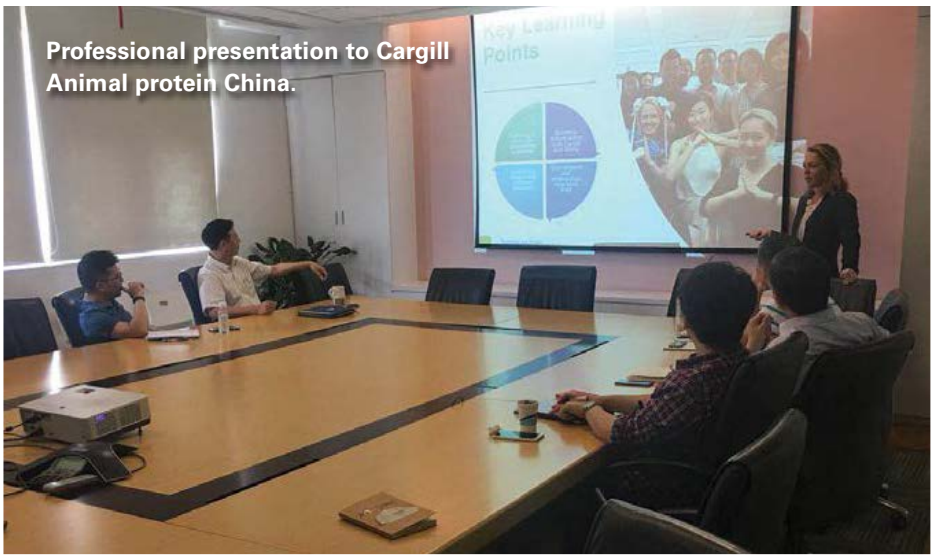
I worked in Cargill's Animal Protein China (CAPC) focused on new product development and e-commerce. My official project was to facilitate pork product selection in hopes to diversify Cargill's protein portfolio in China. I did this by choosing five specific pork products to potentially be launched on the market after performing an economic analysis, consumer research, and taste preference data. I also supported CAPC retail entry into major e-commerce websites including Jing Dong, T Mall, and Yiguo Fresh. These two components of my internship provided a bigger picture of China's livestock industry and e-commerce. This experience taught me to be adaptable by allowing me to work in a business unit which was unfamiliar to me.

My internship was a perfect combination of my technical area and major; Animal Science and Global Resource Systems. Working with Cargill Animal Protein China allowed me opportunities to see the poultry supply chain from egg hatching to taste testing and everything in between. This experience was eye-opening and informative, especially since I have had the opportunity to work with poultry, an animal-sourced protein I'm unfamiliar with.

In addition to gaining technical knowledge from my internship, I learned more about myself. I received a deeper understanding for how the working world works and saw incredible aspects of Chinese culture. One of my favorite parts of the internship was getting to know the people with whom I worked. Each coworker had a unique story on how they arrived to where they are now. They taught me the importance of being a 'life-long learner' and gave me the opportunity to work with a diverse team to gain different perspectives on issues and ideas within the company. My coworkers took me under their wing and I realized the importance and value of personal connections within the workplace. I even had the chance to meet some of my coworkers' families which was a truly enriching experience.

Working with a global company to implement sustainable and more efficient techniques to raise animal protein sources has influenced my future career endeavors. This internship taught me how to live and work in another country using the knowledge I attained from the classroom and past experiences. It pushed me both personally and professionally, making a lasting impact on my future!

GRS internship



Professional presentation to Cargill Animal protein China.

Anne assisting in research.

Genetics Research and Crop Science in Urgaway

ANNE DINGES, Global Resource Systems and Agronomy

Throughout my years at Iowa State University and with Global Resource Systems, I have gained many skills by learning in different environments. I've worked at a non-governmental organization (NGO), on-campus as a GRS peer mentor, at a private company doing sales and research, and for local government using aerial imagery software. For my Global Resource Systems international internship, I wanted to complete my circle of experiences by working in scientific research. I traveled to Montevideo, Uruguay, to assist in research at Universidad de la Republica, the largest university in the country.

Through my project at Universidad de la Republica, I looked into the genetics of a wild relative of the cultivated potato. My daily tasks were to perform PCR and gel electrophoresis to determine the transferability of molecular markers. With my lab colleagues, I traveled to the countryside to collect specimens of various species in the wild. I grew potatoes from seed and isolated the DNA to then test markers on those groups. This research has important implications for potato production all over the world as genetic diversity is important to increase pest and disease resistance and environmental adaptability. By introducing traits from Solanum chacoense into Solanum tuberosum, these goals could be achieved. Hopefully, there will never be an Irish Potato Famine again because of genetics work like this being done.

Our lab focused on genetics of multiple species outside of the potato so we had weekly update meetings from each lab group through which I learned about forages, olives, and corn. Learning technical skills in the lab was incredibly interesting. I also loved getting to know the culture through the people I met in Uruguay. My supervisors were helpful and thoughtful and my labmates were so inviting. Everyone took the time to show me new food, like the thin, breaded steak called milanesa, all the tourist spots, like the La Rambla, a fourteen-mile walking path along Rio de la Plata, and sea lions near the ocean. One of my favorite parts of Uruguayan culture was drinking the traditional mate. This highly caffeinated tea is consumed in a communal manner from a hollowed gourd and metal straw, passed around a group of friends.

Professionally and academically, this experience enhanced my Global Resource Systems and Agronomy degrees through my newfound knowledge of genetic applications in crop science and a new perspective of the world. I'm so thankful for this opportunity and look forward to presenting my research at the American Society of Agronomy meeting.

Cross-cultural learning and connections with labmates.

GRS internship

Natasha meeting with village leaders in rural India.

Rural Development in India

NATASHA HILL, Global Resource Systems

My international internship with the SM Sehgal Foundation in New Delhi, India over this past summer was the most notable and lifechanging job opportunity I have had. The Sehgal Foundation is a non-governmental organization (NGO) that works to strengthen rural communities in three key areas: good rural governance, water management, and agricultural development. I chose this internship because I felt the Sehgal Foundation had a very holistic development agenda that targeted multiple facets of life in rural India. This internship also gave me the opportunity to conduct my own independent research, which I have never done previously. I wanted the opportunity to gain experience in research for graduate school, and also research a topic which genuinely interested me and aligned with my studies in Global Resource Systems – Sustainability and Leadership.

During the two months I spent with the Sehgal Foundation I worked in good rural governance, where I helped to conduct research on the leadership capabilities of rural village leaders and the impact of leadership on village development. I completed a literature summary, assisted with sixteen interviews with rural leaders, and a research paper articulating my findings and recommendations to the foundation. I was able to provide a meaningful look into how leadership functions at the village level and give suggestions to Sehgal Foundation on how to continue to strengthen leadership among the villages in which they work.

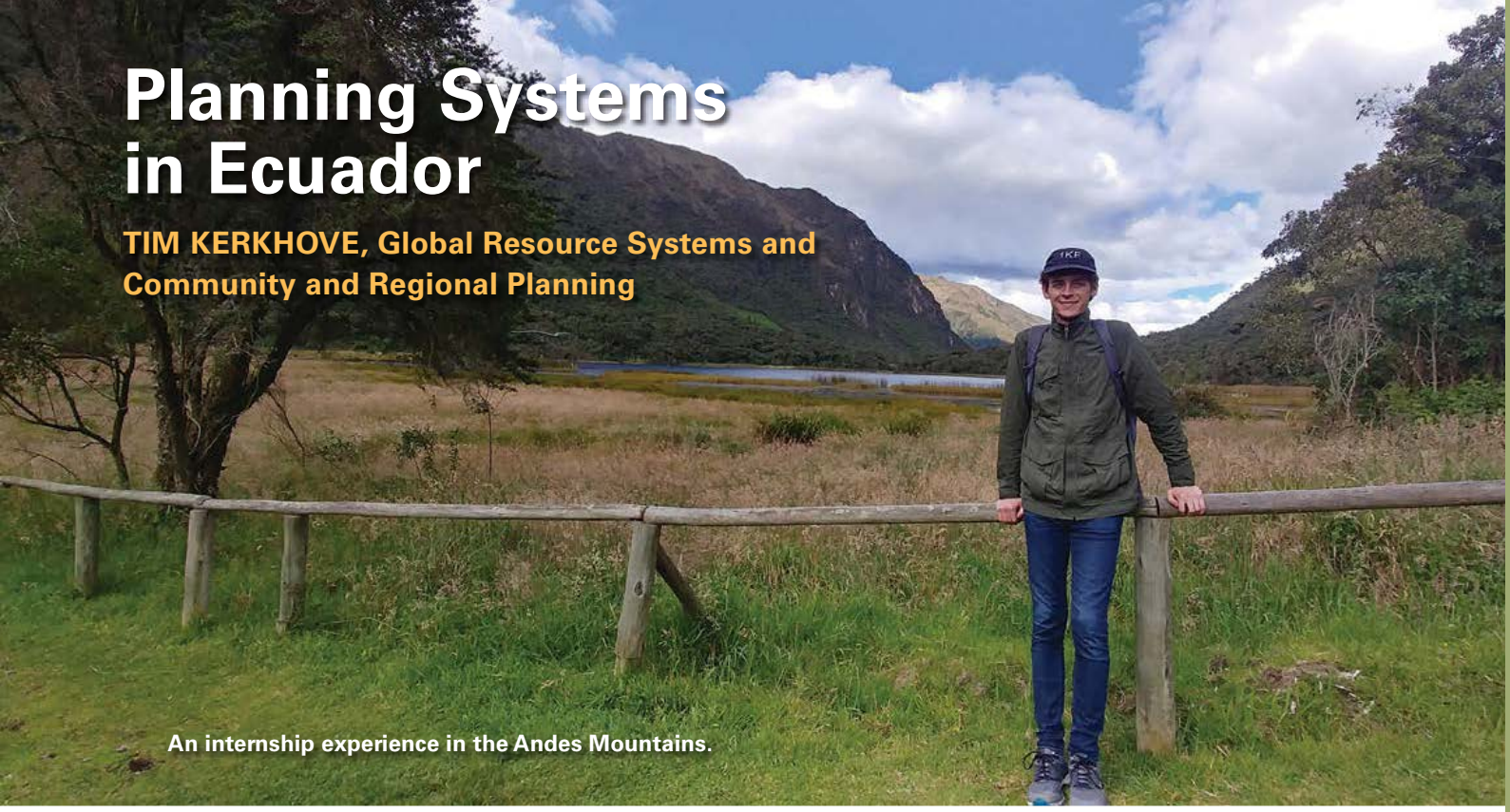
My favorite part of my internship was meeting the village leaders, specifically the women leaders. It was so inspiring to listen to women who face extreme forms of discrimination overcome these social barriers in the name of community development. Many of the women were unafraid of the ramifications they faced from being active in their communities and continued to break social norms with a vision of a better life for themselves and their communities. I met incredibly strong women, from whom I've learned so much.

While living in a different country for two months was challenging in some ways, I came to understand and appreciate unique world views that have forever changed the way I view development, development work, and my place in it all. I hope to use everything I have learned from this internship, and future experiences abroad, toward a career and work where I can create meaningful, sustainable social change in our world.

Learning about rural development with SM Sehgal Foundation.

Planning Systems in Ecuador

TIM KERKHOVE, Global Resource Systems and Community and Regional Planning



An internship experience in the Andes Mountains.

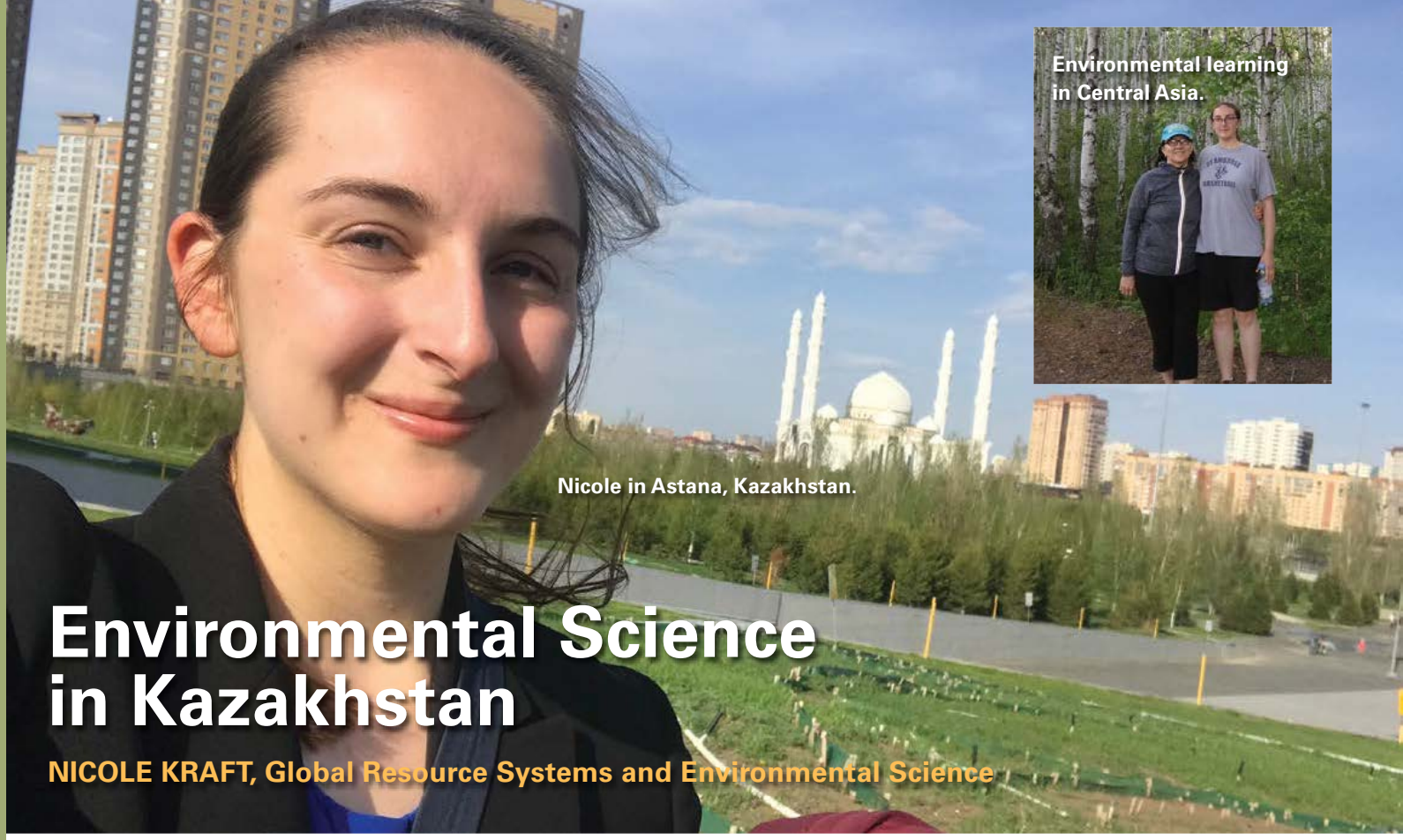
In the summer of 2018, I completed my Globe internship with the Municipal Control of the City of Cuenca, Ecuador. The Municipal Control is primarily responsible for reviewing construction plans and regulating construction projects to ensure they have proper permits and follow city code. Over the course of six weeks I had the opportunity to work in multiple offices in the department.

While in different offices, I reviewed construction plans and identified potential code infractions; I also helped with the process of marking the line between the public right of way and private property in communities outside Cuenca. I had the chance to work in the office responsible for fielding complaints and inspecting sites with potential code violations or that lacked permits; and I was in the office responsible for providing permits to street vendors and inspecting existing vendors to ensure their paperwork is up to date.

I decided to conduct my internship in Cuenca for academic and professional reasons. First, I have studied Spanish for many years. After studying for a semester in Spain, I wanted to reach full fluency through my internship. Ecuador, being a Spanish-speaking country, would be an ideal location for this. Second, I hoped to complete my internship working in a local government office as I hope to work in local government as a city planner after graduation. I sought out an experience in a foreign local government to learn a different system and integrate what I learned into my future work in the United States. It is difficult to find an internship in a local government if you are not from that country, but through the GRS program's connections in Cuenca it was possible.

This internship had a definite impact on me. Professionally, I exercised my willingness to adapt and take on unfamiliar challenges. If I can learn a planning system in another country in a language that is not my native tongue, adapting to a system in any planning department in the United States will not be as difficult. In addition to becoming fully fluent in Spanish, I have acquired a new technical vocabulary unique to my field that I previously lacked. This vocabulary has already helped me connect with Spanish-speaking renters in Ames as I work with tenant rights in my community. Personally, my experience in Cuenca was wonderful in large part due to the amazing people I met. My host mother was generous and supportive, my coworkers were invested in my learning, and the friends I met taught me a great deal about their culture and lives. The friends I made were my favorite part of my time in Ecuador, and I hope to return again.

Working with the linea de Fabrica in Cuenca, Ecuador.



Environmental learning in Central Asia.

Nicole in Astana, Kazakhstan.

Environmental Science in Kazakhstan

NICOLE KRAFT, Global Resource Systems and Environmental Science

As a student majoring in Global Resource Systems and Environmental Science, with a minor in Russian Studies and a focus area on Central Asia, the opportunity to conduct an internship in Kazakhstan was an incredible one. It was an amazing opportunity to learn about the natural resources and environment of Central Asia, and also an opportunity in which I could use and improve my Russian language abilities.

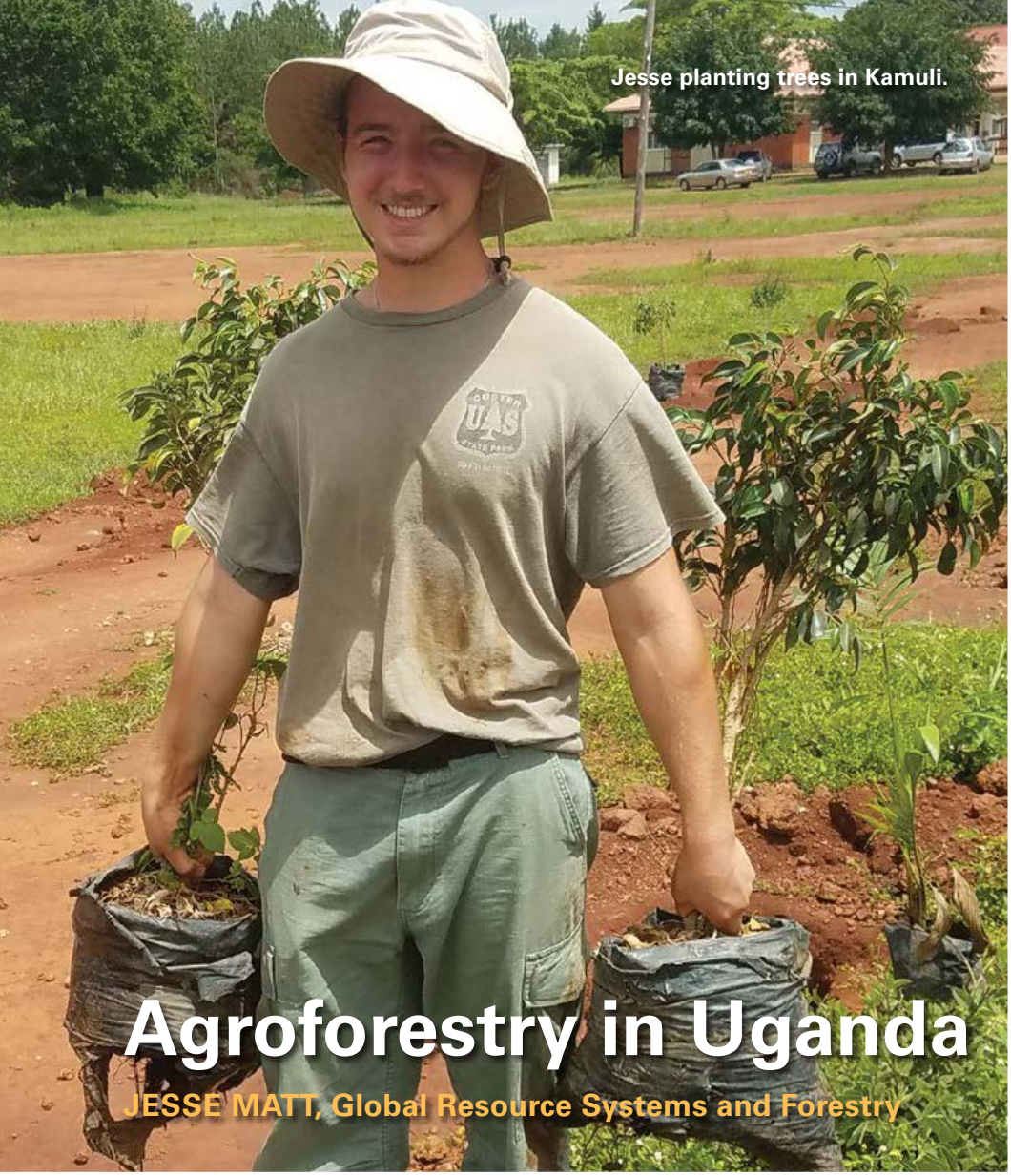
For my internship in Kazakhstan, I created and carried out several different research projects, while being hosted by L. N. Gumilyov Eurasian National University Hydrology Department. In Kazakhstan, my host helped connect me to resources and opportunities. This experience was a challenge and opportunity to grow professionally as I spent most of my time operating independently, learning how to manage my time and progress.

My main project was an examination of how city parks in Kazakhstan's capital, Astana, represent cultural values through observations of community interaction, and surveys of landscape design, layout, and vegetation. My other major project, was to compare the difference between environmentally focused educational trips and student interactions with learning between Kazakh and United States students, with a secondary objective to learn about the regions in which the students were learning.

My favorite part of my time in Kazakhstan was getting to meet new people, and being able to travel to different regions where I learned about the environment, natural resource systems, issues, human and environmental interaction and agricultural systems. I learned something new from everyone I met from all different social spheres and places. Whether it was learning about the students and what their goals are, to lunch with office mates, talking with tourists, or finding a favorite café to get coffee and speaking with the owners and workers, every person was important and had a story to tell and helped shape the dynamics of the Kazakh culture.

Having such a broad base of tasks, opportunities and freedoms, I had to learn to be flexible in order to get the best results out of each opportunity and task. I learned how to set my own structure, organization, and self-standards while gaining practical field experience. I worked with professors and students while accomplishing my own individual research goals. Having worked in a diverse environment has shown me that I want to continue my education after obtaining my bachelor's degree. This experience reinforced my career goals, which is to work in Central Asia and help develop the agricultural sector. Specifically, my interest lies in helping manage nutrient flow in the region, and in developing local markets to stabilize the area to stresses including environmental, political, and socio-economic factors faced by the people who live in the region.

Undergraduate Research Internship



Jesse planting trees in Kamuli.

Agroforestry in Uganda

JESSE MATT, Global Resource Systems and Forestry

The Iowa State University Uganda Program (ISU-UP) has a bright (and green) legacy bringing students, agriculture, and service learning together in the Kamuli district of Uganda. While at ISU, I have had the privilege to work in Uganda on two separate occasions. As a double major in Forestry and Global Resource Systems, learning in Uganda allowed me to put my education to use in the real world.

My first taste of agroforestry came as a service learner in the summer of 2017, establishing a fruit orchard in the school gardens and teaching agriculture at a primary school. When I had the opportunity to return to Uganda as an agroforestry intern during the spring semester of 2018, I knew it was my chance to continue helping a corner of the world I fell in love with, and build the foundation for something far greater than a mere career. Agroforestry is a broad discipline that shelters people, livestock, agriculture, and forestry under its wings. My work in Kamuli was diverse and focused in several different agroforestry and development efforts.

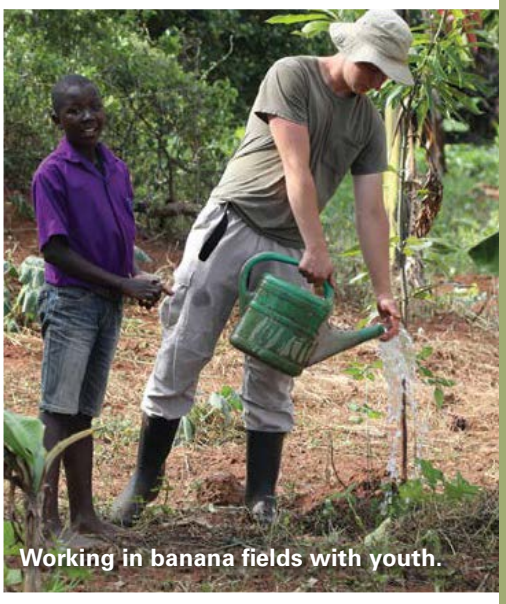
A large portion of my time in Uganda was spent conducting independent analysis. With support and guidance from the ISU-UP staff, a partner and I set out to discover the scope of forest resources available in the Kamuli district and how the local population uses them. This involved surveying nurseries, studying native and exotic species, touring farms, and visiting small lumber industries. Our research was facilitated by a job-shadow with the District Forestry Officer, who provided knowledge and mentorship.

I had the opportunity to work with local agroforestry systems by developing a demonstration woodlot at the new Mpirigiti Rural Training Center. It was wonderful to have the opportunity to take the agroforestry systems we envisioned and create them in a place that brings the community together for the purpose of education and restoration.

Two other major projects I worked on in the Kamuli district involved selecting and planting trees to benefit the training center's livestock pen and coordinating with the local government in installing "green byways" along the major roads of Kamuli town. This was part of a nationwide effort to beautify towns and provide resources for communities to share and manage.

Throughout my internship, I learned about so much more than trees. Gender inequality, poverty, and lack of education are all enormous barriers to healthy forest management and community development. I learned that development has many dimensions and that if a problem cannot be solved holistically and sustainably, it will never truly be solved.

I am very proud to have been a part of ISU-UPs work. Over one thousand trees were planted in the Kamuli township during my semester-long internship. I am honored to have been a small part of such an ambitious project. A little piece of my heart still lies within every tree I planted in Uganda.



Working in banana fields with youth.

Undergraduate Degrees

FALL 2017

Global Resource Systems

Karyl Clarete
Winnipeg, MB Canada

Katherine Lyn Cummings
Cedar Rapids, Iowa

Ella Jean Gehrke
Clive, Iowa

David Michael Tepper Hickok
Ames, Iowa

Allison Kay Jaeger*
Lisbon, Iowa

Rylee Michelle McDermott*†
Colesburg, Iowa

Ezequiel Rene Ramirez
Marshalltown, Iowa

McKenzie M Theisen
Le Mars, Iowa

Colin Steele Weaver
Boone, Iowa

Horticulture

Maria Louise Fox
Newton, Iowa

Michael Lee Gray
Waterloo, Iowa

Ethan Edison Kain
Prairie City, Iowa

Amanda Marie Petersen
Manning, Iowa

Paige Lynne Peterson
New Douglas, Illinois

Hunter James Rogness
Council Bluffs, Iowa

Ruidong Wang
Guangzhou, China

SPRING 2018

Global Resource Systems

Sydney Elenor Beaurivage**†
Coralville, Iowa

Kerri Lee Ann Carleton*
Elkhorn, Nebraska

Caleb Hansen Floss***
West Des Moines, Iowa

Megan Jean Frisvold
Eagen, Minnesota

Kara Marie Gardiner
Minneapolis, Minnesota

Erica Lauren Henderson***
Omaha, Nebraska

Catherine Elizabeth Leafstedt**
West Des Moines, Iowa

Paige Aleesha Myers**†
Boone, Iowa

Dakota Thomas Olson
Keswick, Iowa

Amelia Marie Rinker
West Des Moines, Iowa

Hannah Kathleen Schlueter
Issaquah, Washington

Charlsea Soderstrom
Story City, Iowa

Emily M. L. Southard**
Des Moines, Iowa

Rachel Michele Sporer
Runnells, Iowa

Lauren Julianne Suhi**†
Batavia, Illinois

Marissa Mary Till**
Maquoketa, Iowa

Simrita Varma
Johnston, Iowa

Adam C. Willman**†
Marshalltown, Iowa

Alexandria Jeanne Wilson
Howell, New Jersey

Mei Ling Wong
Hong Kong, China

Horticulture

Victoria Denise Buldhaupt
Eagle Grove, Iowa

Matthew Richard Collingbourne*
Genoa, Illinois

Garrett Lee Goodwin
State Center, Iowa

Alex John Harter
Pella, Iowa

Elena Joy Ingram
Ames, Iowa

Marcus David Jansen**
Quincy, Illinois

Rebecca Suzanne Johnson
Earlham, Iowa

Brooke Marie Jerie
Rockford, Illinois

Sarah M. Kurtz
Waverly, Iowa

Jessica Jane Mason
Traer, Iowa

Patrick Nolan Mendoza***
Santa Ana, California

Sinan Nisanci
Istanbul, Turkey

Mitchell Richard Null
O'Fallon, Missouri

Whitney Amelai Pokorny
Clutier, Iowa

Caleb Jeffery Schmidt
Lisbon, Iowa

Rachel Michele Sporer
Runnells, Iowa

Rachel M. Tan
Mason City, Iowa

Benjamin Ross Tow
Des Moines, Iowa

Sarahi Trejo
Des Moines, Iowa

Breanna Lynn Van Meeteren
Glenwood, Iowa

Katrina R. VanRingelestein*
Fremont, Iowa

Christopher M. Wermuth
Grapevine, Texas

Jacob Micael Wilde
Eagle Grove, Iowa

James D. Williams
Urbandale, Iowa

SUMMER 2018

Global Resource Systems

Amanda C. De Carvalho
Bayamon, Pureto Rico

Jenna Elizabeth Sandquist
Osceola, Iowa

Horticulture

Zora M. Fisher
Charles City, Iowa

Jacob Robert Lehmkuhl
Clinton, Iowa

* **Cum Laude**
** **Magna Cum Laude**
*** **Summa Cum Laude**
† **Honors Program**

Horticulture and Global Resource Systems **Scholarships**

Sterling Ainsworth

Sterling Ainsworth
(in memory of Ray Schulenberg)

Mary E. Amos

Jerry Benning

Boone Garden Club

Newell W. and Dorothy E.
Boughton Scholarship

Mildred D. Bradbury

Cargill-Global Resource Systems

Bob Clark Memorial

Robert M. Clark Memorial

Lumir and Sara Dostal

Erwin Memorial

Federated Garden Club

Charles Hall

Todd and Lori Hall Global Resource
Systems Scholarship

Department of Horticulture
Graduate Student Scholarship

Global Resource Systems
General Scholarships

Rick Hall Memorial Scholarship

Derek Harmon

Horticulture Club

William Hughes

Isabelle M. Isley

Kemper A. Kirkpatrick

Kolschowsky Global Scholarship

Elmer Lundberg

Naomi Maahs

Manatt Global Scholarship

Nau Memorial

Brad and Dawn Peterson

Pickett-Volz-Nichols

Edward R. Robinson

J. Frank Schmidt

Arvil and Elva Stark

Family of Ernie Streicher

Hattie Meyer Traviss

West Pottawattamie

Ralph Williams

C.E. Watts

Zimmerman Memorial

Alumni Spotlight

Evan Alderman

- **Program Chair and Instructor, Horticulture and Turfgrass Management Program, Southeast Community College, Beatrice, Nebraska**
- **Degree in Horticulture, May 2014**
- **Originally from Waterloo, Iowa**

Major job responsibilities: Being both a program chair and instructor I have a wide variety responsibilities. For my program chair role, I am responsible for class scheduling, catalog and curriculum development, recruiting potential students, and managing the day-to-day requirements of the program (i.e. making sure a student's graduation requirements are met). As an instructor, I am responsible for teaching, the development, implementation, and evaluation of new classes, managing the day-to-day production and operations on their two-hole golf course and greenhouses, and lastly advising and mentoring students.

What I like about this position: What I like the most about my job is the opportunity to engage with the students whether that be through teaching or advising. Each day, I have the opportunity to share my passion and education for Horticulture and Turfgrass Management; similarly to my professors during my time at Iowa State. Being able to advise and mentor diverse groups of students who will be the next generation in our professional industry is truly rewarding. The students drive me to not only keep challenging them, but also to challenge myself to continue to grow professionally.

Advice for current students: My experience in the post-secondary education system wasn't always easy, and I didn't take the most direct route. It took a long time for me to find myself and figure out what my passions in life are. I owe that to my experiences at Iowa University. I think the one piece of advice I would give students is to take full advantage of any opportunities given to you while at school, and if you're not given any – go out and find them. Success isn't always a one-way street, but it's the journey you take and the experiences you have that make you the best version of you. Loyal, Forever, True.

Erin Bohlin

- **Degree in Horticulture, emphasis in Landscape Design, May 2015**
- **Originally from Dubuque, Iowa**

Major job responsibilities: I take the concepts and hand-drawings from the Las and other Designer and plug everything into AutoCAD/LandFX to create official drawings, ranging from Conceptual to Preliminary and frequently Construction Drawings. I also work on construction details themselves. With my background in design and increasingly thorough focus on plant material (always learning!), slowly being pushed to do planting design as my experience grows. I dabble with Photoshop to create image boards and to render perspectives and elevations for their clients for a multitude of purposes varying from persuasion to marketing material. Cost estimates, but those aren't as much fun.

What I like about this position: I get to see and work on all aspects of what goes into planning and designing a range of environments, from homes to planned communities to hotels/resorts to community parks. I'm often in touch with planning departments of city and county governments, vendors of all sorts of products, engineers and architects so I get to see a little bit of a lot of different worlds. But my favorite is seeing our hard work installed, come to life, and grow.

Advice for current students: Ask lots of questions – the right questions are as impressive as knowing the correct answers. Don't be afraid to interview with what seems a little out of your league – I thought working for this Landscape Architecture firm was too high on the ladder given my limited experience and degree but here I am!

Dana Diers

- **Grower at Johnson's Nursery, Inc., Menomonee Falls, Wisconsin**
- **Degree in Agronomy and Horticulture, May 2015**
- **Originally from Fairfield, Iowa**

Major job responsibilities: Winter Greenhouse Tomato Production and Propagation Technician. During the in-season, my responsibilities are Container Tree Production Lead and Field Production, Plant Maintenance and Fertility/Cover Crop Planning.

What I like about this position: The variety – I am able to be involved in some way with every aspect of nursery production and I continue to learn new things every day. I like to help make sound decisions in order to bring high quality plants to the end user. Of course there is nothing better than working outside with PLANTS.

Advice for current students: Learn to always have an appreciation for plants, nature and the world around you. The ability to grow comes from diverse experiences, meeting new people, and challenging yourself through it all. Immerse yourself in everything you can even if it scares you. Join clubs, compete in the competitions, and always give your best effort! Your potential is what you make of it. When you believe in yourself good things will come.

Amanda Groleau

- **Assistant Manager and Landscape Designer, Earl May**
- **Degree in Horticulture: Fruit and Vegetable production and Management, May 2016**
- **Originally from Westgate, Iowa**

Major job responsibilities: When the manager is off, I run the store in his absence, and that includes opening and closing the store. With the landscape part of the job, I design landscapes and install them with a crew. If a customer has a question about plants, I help answer their questions regarding diseases, pests, and any special care that plant might need.

What I like about this position: My favorite thing about this job is who I work with, because it is a small location and everyone feels like family. I also really enjoy helping customers figure out plant problems. It is rewarding when the customer comes back and tells you that the plant is doing great.

Advice for current students: There are so many paths you can take with a horticulture degree, so do not be afraid to step out of your comfort zone or experiences, because you may surprise yourself and really enjoy an opportunity.

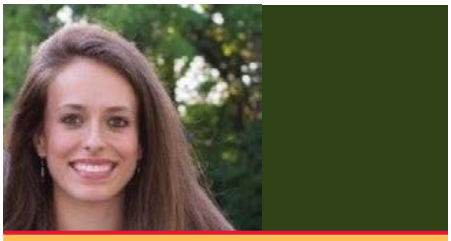
Chris Hickman

- **Degree in Horticulture, May 2006**
- **Originally from Larchwood, Iowa**

Major job responsibilities: Initially I was responsible for overseeing the construction and grow-in phases of the 18-hole golf course. I am now responsible for everything associated with the maintenance of the golf course and resort grounds. This includes 200 acres of manicured turf and just over an acre of landscape beds.

What I like about this position: I enjoy the fact that no two days are alike in the business. Everyday I are challenged in a new way, and it is up to my team to figure out a way to be successful. At the end of the day, hard work is easily recognizable.

Advice for current students: Be careful when selecting internships. The biggest names don't always guarantee a valuable experience. Make sure that you are going somewhere that will benefit your future. When you get there, ask all the questions you can think of.



Brianna Vest Keninger

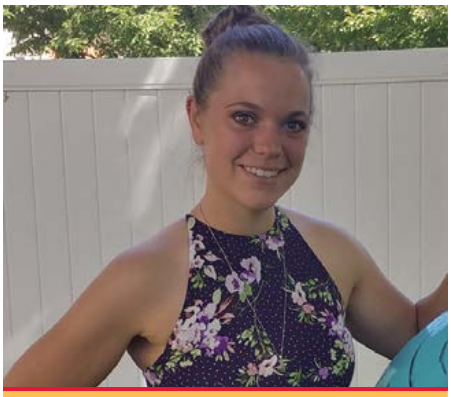
- **Production Manager, Otto's Oasis, Charles City, Iowa**
- **Degree in Greenhouse production and Management/Ornamental Production, May 2016**
- **Originally from Newton, Iowa**

Major job responsibilities: Growing the main spring crop, as well as the winter poinsettia crop. I help with buying, merchandising and pricing of items (hard good and live goods) that come into the store which includes attending buyer shows and putting together purchase orders for the spring/winter crops. I take care of nursery stock and do occasional landscape maintenance and install at businesses. I also help manage the Mason City location. I provide customer service, floral design and take care of social media and occasional website maintenance.

What I like about this position: It always keeps me on my feet – the days go too fast, spring, and fall are gone before I know it and winter is too long. There is something new everyday to learn. I get to meet a lot of great people and make new contacts all the time. Picking out plants for the spring season is the best of all! The greenhouse industry is my passion; there are so many aspects to the industry – it's not just growing plants. Overall, the best thing about my job is working for a small family business. The freedom of wanting to learn new things is unlimited.

(continued)

Advice for current students: Internships have helped me so much with the job I have now. If it weren't for internships I'm not sure where I would be at this point in life. Do as many internships as you can! Most of all, hard work DOES pay off. Patience is key and you will be rewarded.



Heather Lappe

- **Wright Outdoor Solutions**
- **Degree in Horticulture, December 2016**
- **Originally from Marion, Iowa**

Major job responsibilities: Working as a design associate. My responsibilities include measuring sites, putting together basemaps and designs, shadowing designers, working with crews, and any other learning opportunities that arise.

What I like about this position: I love that in my position I spend my time doing so many different things. Some days I spend my entire day outside jumping from site to site. Other days I work directly with the designers on staff learning. Some days I spend with crews doing installs.

Advice for current students: If there is a class that sounds interesting take it! You never know when the additional knowledge will come in handy.

Josh Lenz

- **Assistant Turf Manager, Arizona State Sun Devil Athletics**
- **Master's Degree in Horticulture, May 2016; Bachelor's Degree in Horticulture emphasis in Turfgrass Management**
- **Originally from Gilbert, Iowa**

Major job responsibilities: Coordinating and assisting in the maintenance of about 20 acres of athletic fields at Arizona State University.

What I like about this position: What I love MOST about my job is the combination of being outdoors and surrounding myself in sports. I love that I get to be outside almost every day and I love the atmosphere of college athletics. The collegiate level provides so much variety and it makes every day unique and provides so many different challenges.

Advice for current students: Have a great support system and surround yourself with people you enjoy. When days get long and hard, it's so much easier when those you love understand and those you work with still make the job fun.

Christina Riessen

- **Perennial Production Person, Bachman's**
- **Degree in Horticulture and Agriculture and Life Sciences Education, December 2014**
- **Originally from Schleswig, Iowa**

Major job responsibilities: Assisting the perennial production manager in overseeing a crew to ship, plant and maintain container perennials. When the department is at a low point, I help with greenhouse, container shrubs and trees, and other aspects of production.

What I like about this position: I love continually learning the best tactics to produce quality plants efficiently alongside driven, upbeat colleagues. My teaching skills come in handy while training crew members how to do our next project, which is a personal pleasure. Another perk is that I get to learn other languages (mostly Spanish) while on the job because most of my coworkers speak limited English. It's especially intriguing when we share about our cultures-language, holidays, family events, food, slang and much more.

Advice for current students: Spend time getting work experience before you try to climb the managerial ladder too quickly. Your education can be a valuable investment to give you background knowledge of how's and why's (like the importance of knowing which buds to prune in order to properly shape maples), but you will be all the wiser to learn from the people who excel in the tedious grunt work in the fields due to their depth of knowledge from years of hands-on experience. Plus, they'll have more respect for you if you spend time doing the work alongside them before you jump in to manage them. Then you will be more aware of what things create positive and negative work environments, so you can mold a destination workplace.

How can you start getting work experience? Do various internships instead of simply a summer job. Join Horticulture Club or other student organizations to obtain practice working with others. Attend conferences, competitions, and continuing education events (e.g., Shade Tree Short Course, conveniently on Iowa State's campus) to give you invaluable connections, and potentially future coworkers and friends.

Michael Seibert

- **Country Landscapes, Inc. (Clear Lake)**
- **Degree in Horticulture, emphasis in Landscape Design and Build with minor in Agronomy**

Major job responsibilities: Assistant Crew Foreman, Nursery Operations, Horticulturist, Foundation Plantings Designer.

What I like about this position: I love seeing designs fold out to become really awesome builds. Our crew focuses on lakeside projects in Clear Lake most of the time, which requires us to use our barge. I never thought that I would be a part of a landscape company that could haul several tons of materials and equipment (including excavators, skid loaders, etc.) across a lake. After long days of building, I come home to do design work on the side and use what I have learned on the job site and incorporate those skills into my designs. Country Landscapes supplied me the table, pencils, markers, etc. knowing that I would be perfecting my design skills to use for the company in upcoming projects.

Advice for current students: Always look for that job that will make you happy and treats you right and never be afraid to possibly start something of your own!

Adam Thoms

- **Assistant Professor, Iowa State University**
- **Degree in Horticulture with turfgrass option, May 2006**
- **Originally from Waverly, Iowa**

Major job responsibilities: I teach Sports Turf Management and Irrigation classes, conduct turfgrass research, and serve as the Turfgrass Extension Specialist.

What I like about this position: I really enjoy interacting with the turfgrass professionals and solving problems they are having. It is so much fun to get to see how everyone manages their turfgrass, and the pride they take in their jobs.

Advice for current students: Don't be afraid to get involved and try the opportunities that are offered to you while at Iowa State University. You have so many opportunities from amazing internships, to competitions, to study abroad events that can lead to a potential connection for the future.

Anna Underhill

- **Graduate Research Assistant, Department of Horticultural Science, University of Minnesota**
- **Degree in Horticulture and Agronomy, May 2016**
- **Originally from Eagan, Minnesota**

Major job responsibilities: Collecting and analyzing data relating to cold-hardy wine grape breeding efforts; specifically, working on high-throughput phenotyping methods for cluster compactness and the genetic basis of phenology in our populations. During planting in the spring, pollination in the summer and harvest in the fall, I help out at their research vineyard and winery. I also work in the greenhouses doing things like tissue collection and plant propagation. Additionally, I occasionally spend time in the lab extracting DNA from leaves for genotyping. When I am in the office, I spend most of my time working in programs like R and MATLAB to perform data and image analysis.

What I like about this position: First, my favorite part: I get to work with grapes! I love that I get to be very independent – whether it's spending the day reading articles, sifting through data I've collected, or transplanting vines for a new study, I have the freedom to get things done without a rigid schedule. I also enjoy the mix of work that I get to do; some of my more interesting tasks include taste-testing grapes in the field, helping teach our viticulture and wine class, and hosting judges from around the country at the International Cold Climate Wine Competition. Being at a university is great since there's always new things going on all around you, and I like being able to hear about them all at our weekly seminars.

Advice for current students: For students interested in research, I'd tell them to get involved now. Research experience in undergrad, however small, stands out to future graduate school advisers and employers. Take advantage of opportunities you have on campus. If you're interested in something someone does, ask them about it! Don't be too worried about knowing exactly what you're going to do after graduation (I still don't). Horticulture is a diverse field. It seems like everyone I know has worked in a variety of different plants and industries – it's never too late to change.

A National Park's High Dessert Orchard Struggle

By John A. Bray (TheHoe.org)

Orchards at Capitol Reef National Park in Utah brush up against raw geology. Photo Credit: Olivia Bray.

Amanda Snodgrass is going to miss the fruit trees. "It's like I had 2,000 children and I don't have them anymore," she said.

Until two weeks ago, it was her job to keep the trees on a good path amid the sunlight and shadows of their red cliff enclosure. She was the horticulturist of the historic orchards in Capitol Reef National Park in Utah, where fruit trees have been grown for nearly 150 years.

Some of the original trees remain in Fruita, as the orchard community is called. But keeping up the 80 acres of orchards, where tourists and local residents throng to pick a cornucopia of fruit, takes a strong and sensitive hand on the harsh terrain.

"It's difficult to have proper watering regimes, difficult to replace trees," said Snodgrass. "Soil conditions need to be addressed."

Trained in sustainable agriculture at Iowa State University, Snodgrass came to the Park in 2012 as an intern, took a position as orchard manager and then became horticulturist. She worked on rejuvenating the orchards, while preserving historic conditions and practices.

In the high desert, water is precious and becoming more so. The mountain snowpack has thinned; rain has dwindled; it's gotten a little warmer, Snodgrass said.

Irrigation, which draws on the Fremont River, is tightly regulated by state and local authorities. Five valves at the Park flow water into a gravity-powered system of ditches and bouts, and then into tightly spaced, shallow furrows that traverse the orchards.

Using a network of gates, water gets rotated around the orchards. Individual trees may only be irrigated once a month. Some roots, at least those of mature trees, can reach groundwater 6 to 8 feet below the surface.

"We have a meter that is checked every day that reads our flow rates. Everyone downstream still has to receive a portion of their water," she said. "Each year, the water

allotments get cut more and more, earlier and earlier in the season."

KEEPING PARK ORCHARD PRESERVES

Planted by Mormon pioneers and under National Park Service control since 1971, the Capitol Reef orchards are among the largest historic fruit tree collections in the National Park Service. But scores of NPS sites include orchards. Upkeep varies, according to Jim Roche, acting chief of resource management and science at Capitol Reef, where a successor horticulturist is being sought. For example, at Yosemite, a previous posting for Roche, the orchards are merely protected, not actively managed. "It's a wildlife issue. They draw in the bears," Roche said. "We organize to pick the apples very quickly, mainly to reduce human-bear interaction."

At bearless Capitol Reef, tree holdings, inventoried by a Northern Arizona University team, have fluctuated. The tree array includes apple, cherry, peach, quince, walnut, pecan and almond.

"Some of the original Golden Delicious were my absolute favorites. It was only certain trees," Snodgrass said. "When initially planted, there was still some genetic variability, even in a single variety." Oddballs exist, too. "The Winter Banana is fun because it actually tastes a little bit like bananas, but it doesn't have a great texture."

Genetic testing indicates that three varieties of original trees do not exist anywhere else in the world. At times, more modern varieties have been planted, but the emphasis has been on preservation.

The historic figure of about 2,800 trees rose to a peak of about 3,200 under Park management, but the count has fallen to about 2,400 now, with pressure from disease and old age. And soil replant disease, a common complex of various ground organisms that undermine tree health, doesn't help. Mature trees are better positioned to resist because they have grown in tandem with the damaging soil bacteria and nematodes. New plantings are more vulnerable.

"Typically, in a production orchard, in between plantings, you have to sterilize the soil because the disease pressure is too high," Snodgrass said. "That's for intensive commercial production."

Commercial operations, which Snodgrass described as a "whole different ballgame," don't fit with demands for preserving historic methods and conditions in the Park. Still, much can be done to blend past and present practices. "Creativity is the key," Snodgrass said.

To combat codling moth, an apple menace around the world, tree trunks were wrapped with corrugated cardboard bands, grooves against the bark, to entice descending larvae looking for comfortable places to overwinter. The plan was to trap the bugs and remove them with the cardboard. Holes started appearing in the bands.

"Woodpeckers decided it was a lunch buffet," said Snodgrass, whose studies included integrated pest management. "It was a labor-intensive practice, but we didn't have to destroy anything. The local birds took care of it."

"Honestly, a lot of those trees are very tough," she said, noting they also must grow in ground short on main nutrients, such as nitrogen. "I would call it a wild system to a certain degree."

Meanwhile, most of the produce gets picked by Fruitaphiles among the roughly 1.4 million people per year who now visit the Park, with lines forming at times, especially for peaches, according to Snodgrass. She is now a botanist at Klamath National Forest, located in northern California and southern Oregon.

"I worry about them," Snodgrass said of her former charges. "But I know they'll be OK."

Weighing in my harvest in mid-August of Ginger Gold apples at $1 per pound at the gate of an orchard at Capitol Reef National Park.Photo Credit: John A. Bray.

Dedication of the new Mpirigiti Rural Training Center.

Creating a School Garden: Service Learning in Uganda 2018

by GAIL NONNECKE, DOROTHY MASINDE, KEVIN DUERFELDT, and HANNAH DARR

INTRODUCTION

The Uganda service learning programs took major leaps forward in 2018. The new Mpirigiti Rural Training Center was opened to the Kamuli District community in March and dedicated on July 11. The new center will help Iowa State's Center for Sustainable Rural Livelihoods expand food and agricultural programs that serve local families. It also will provide more service-learning opportunities for ISU and African students.

The Mpirigiti Rural Training Center provides accommodations for up to 48 students and 13 faculty, research and demonstration facilities, office space for Iowa State University – Uganda Program (ISU-UP) staff, and common spaces for learning and recreation. Due to the new facilities and increased capacity the first semester-long program was offered Spring 2018, and the number of summer service learners was increased to 14. The continued growth of this program would not be possible without support of many generous benefactors. We continue to be very grateful for those who have supported the student service learning, school garden program and for the students' valuable work, positive attitudes, passion to help others, and willingness to learn while serving.

The Creating A School Garden: Service Learning in Uganda had another cohort of excellent students from Iowa State University (ISU) and Makerere University (MAK) participating in 2018. Thanks to donor support the number of ISU students increased from 13 to 14. They were joined by 12 MAK service learners, six additional MAK service learners from previous years who returned to Kamuli as student leaders, and four Global Resource Systems (GRS) interns completing their global internship with the ISU-Uganda Program (ISU-UP) in Kamuli. Together they assisted teachers in four primary schools and one junior-senior high school, and completed ten bi-national team projects to benefit the schools.

ISU and MAK students teaching in bi-national teams.

TEACHING

ISU and MAK students taught 5th and 6th grade pupils at four primary schools in bi-national teams. University students assisted teaching integrated science classes, which included subjects of agriculture, and health – nutrition and sanitation and mathematics classes. Specific agriculture topics covered included units on root crops, managing pest and diseases, soil fertility and erosion, and keeping farm animals. Topics are from the Ugandan national curriculum for primary schools and are included in the secondary school entrance exams.

Students used song and dance, handmade posters, and demonstrations in school gardens as just a few of the strategies used to create an interactive and engaging learning environment for pupils. Students worked with primary school teachers to learn culturally appropriate teaching techniques and exchange classroom activities from the U.S. with Ugandan teachers. While in classrooms and the gardens, ISU and MAK students served as role models and inspired primary school children to continue their education and view agriculture as a positive livelihood and profession.

SCHOOL GARDENS AND NUTRITION

School gardens provide fruit and vegetable produce, eggs, and income to support school feeding (lunch) programs. They also create learning opportunities for pupils and university students, acting as outdoor learning laboratories and providing hands-on experiences. High-value crops such as grain and leafy amaranth, orange-flesh sweet potatoes, tomatoes, collards, eggplants, peppers, onions, and soybeans are grown and either added to the school lunch program or sold to purchase the lunch's ingredients.

Previously, schools served a light maize porridge which contained only about 50 kilocalories per serving, and only to some pupils on certain days of the week. The school lunch programs have moved from porridge to 'nyoyo', a mixture resembling a stew of corn, common beans, vegetables, iodized salt, and vegetable oil. 'Nyoyo' provides over 800 Kcals per serving and more vitamins and minerals than maize porridge alone. Once per week at two schools, eggs from the poultry project at each school were included in the 'nyoyo' stew. Currently, 'nyoyo' is served five days a week to every child at Namasagali Primary School, and school feeding programs are growing at the other four schools to

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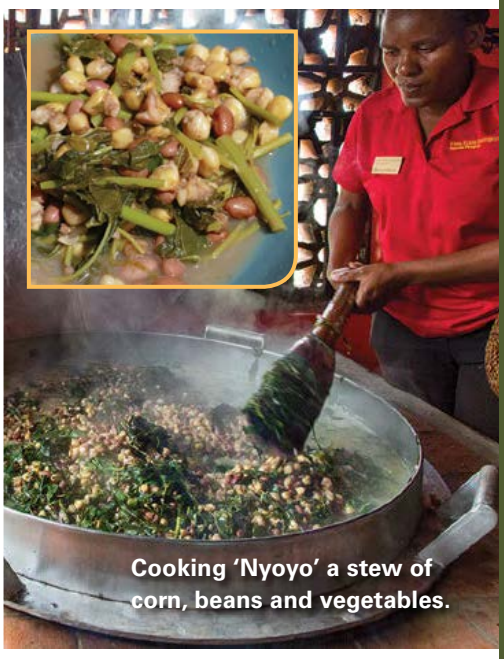

Cooking 'Nyoyo' a stew of corn, beans and vegetables.

Student with banana tree.

add additional weekdays. The school lunch programs improve children's attendance and pupils' ability to focus in the classroom, directly impacting children's education.

ISU and MAK students tended gardens across four primary schools, which are approximately 7.5 acres in area. Vegetable crops include collard greens, onions, eggplants, leafy amaranths, tomatoes, and sweet potatoes. Fruit crops grown in school gardens include bananas, papayas, oranges, avocadoes, and mangoes.

Checking cover crops.

Pupils and university students learned about sustainable production practices in a tropical climate, including using nitrogen-fixing cover crops as a rotation crop. As they constructed nursery beds and sweet potato mounds, cleared plots, and harvested grain and leafy amaranths, ISU students were surprised about the amount of work required to produce a crop – especially without access to the same garden equipment we have in Iowa and the U.S. Pupils worked in the primary school gardens with ISU and MAK students in their free time, and the university students made many new young friends.

BI-NATIONAL TEAM PROJECTS

Teams of ISU and MAK students developed and implemented projects in agroforestry; beekeeping; soil improvement and irrigation; post-harvest; school feeding, health, and sanitation; and poultry. These projects assist ISU-UP programs at primary schools by developing and maintaining infrastructure and programs to benefit the schools and pupils in Kamuli.

The agroforestry team constructed live fences made of barbed wire fences planted with *Euphorbia* sp. to protect garden produce from roaming livestock and/or residents encroaching on school property. The agroforestry team also pruned woodlots providing the primary schools with firewood for cooking the schools' lunch meals.

The beekeeping team expanded the bee forage garden surrounding the apiary by planting blooming pollinator plants in the apiary that will provide nectar for the bees. A major effort to separate the beehives from each other resulted in new hives inhabited by new bee colonies. They also worked with the Namasagali College Entrepreneurship Club, at the junior-senior high school club, to maintain the top bar and local bee hives, checking them for honey.

At Namasagali and Nakanyonyi Primary Schools the health, sanitation, and school feeding team painted murals on pit latrines and revitalized the health and sanitation teams to improve tip-tap hand washing station maintenance. They


Planting seeds.

created an incentive program for pupils to fill hand washing stations with water and made pupils excited about washing their hands. They also constructed dish racks to dry dishes after the school lunch and key hole gardens to increase vegetable production near the kitchens and serve as a demonstration area.

Post-harvest losses can account for 20-40% of grains lost in Uganda, and an even higher loss of fresh fruits and vegetables. The post-harvest handling team cleaned and sorted grain at the primary schools, moved the grain storage rooms at Namasagali Primary School to inside the kitchen to help manage grain and reduce post-harvest loss. The post-harvest handling team also experimented with methods for drying leafy vegetables to increase shelf life for use in the 'nyoyo' at a later date.

The poultry team expanded and repaired poultry runs at Namasagali and Nakanyonyi Primary Schools. They prepared the poultry houses for a new batch of chicks and made sure the the new chicks upon arrival were vaccinated by the ISU-UP veterinarian. Eggs from the chickens are incorporated into the school lunch program for animal-source protein. A new program allows pupils in the poultry club to receive ducks for their personal production and ISU and MAK students visited poultry club members homes to see their new ducks and offer encouragement.

The soil improvement, irrigation, and school gardens team refurbished compost pits at Namasagali, Naluwoli, and Nakanyonyi Primary Schools and created signage to sensitize pupils on how to use compost pits. They also cleaned irrigation cisterns to increase water storage capacity and improve water quality for irrigation of the garden plots.

FARM VISITS

Students worked with small landholder farmers to assist with harvesting and processing crops and observed what it is like to be a small-scale famer in the Kamuli District. Farm visits have become an integral part of the service learning activities where students visit, work, and learn from farmers while sharing new innovations and technologies they have learned at their respective universities. This summer students cleaned and processed ground nuts (peanuts), made silage, planted bananas, threshed beans (dry common beans), planted tomatoes that were intercropped in maize, and visited two nutrition education centers.

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Pig eating lunch.

Miller Hall is the new student residence.

TRAINING CENTER

The Mpirigiti Rural Training Center was officially opened on March during a ceremony with the Kamuli community, including the King of Busoga, William Kadhumbula Gabula Nadiope IV. An estimated 500 people attended to learn about programs and resources offered by ISU-UP. The Mpirigiti Rural Training Center is on 13+ acres near the edge of Kamuli Town. The facilities were constructed with the latest in environmentally sustainable design practices, including use of local materials, passive ventilation, solar panels, rainwater harvesting, and constructed wetlands for waste-water treatment. The facilities provide housing for up to 48 students and 13 faculty/guests, housing and office space for ISU-UP staff, a dining facility for 65 people, a library and lounge with books and computers as educational resources, research and demonstration gardens and a gazebo for field trainings, livestock demonstration paddocks, an outdoor training pavilion, and a grain lab. There are recreational facilities included a soccer field, basketball court, and netball (volleyball) court. The center invites the community into the center and helps them to see it as a community resource. Students participating in service learning programs also have the opportunity to play sports with local children and young adults and feel like they are part of the community. Soccer is a popular sport on the soccer field; a basketball court and volleyball field also are being constructed. The completion of The Mpirigiti Rural Training Center has allowed major program growth with the inclusion of the Semester Along the Nile immersion study abroad program and increase in service learning students. It also represents a minimum of a 99-year commitment of ISU-UP to work in the Kamuli District, based on the land rental.

The Mpirigiti Rural Training Center was dedicated on Wednesday July 11th, 2018 during a ceremony with student service learners, ISU and MAK faculty and staff, ISU-UP staff, and guests of honor as CSRL donors, President Wendy Wintersteen, and Robert Waggoner. The program included remarks from students, ISU-UP staff, donors, faculty, and President Wintersteen on the past 14 years of work and progress and the achievement of opening the Mpirigiti Rural Training Center. Students remarked on the significance of being able to live as a bi-national team of ISU and MAK students all together in one location for the first time since the program expanded to include more students. Traditionally many MAK students lived in field houses near the schools instead of at the former Kamuli compound where ISU students and some MAK students lived. Items for a time capsule were collected,

to be opened in 2050 on the 32nd anniversary of the dedication. The evening concluded with a reception to celebrate all of the progress ISU-UP has accomplished and the beginning of a new chapter for continuation of the programs.

INTERNSHIPS

Four GRS interns completed internships with ISU-UP in 2018. ISU–UP is a registered nongovernmental organization of Iowa State University.

Hannah Baysinger, Megan Kemp, and Amanda De Carvalho worked with ISU-UP staff in the field to learn about small land-holder agriculture, and agriculture extension in developing countries. Hannah Baysinger studied how farmers access water and the types of water sources used for agriculture along the Nile River. Megan Kemp worked with Moureen Mbeiza to look at how mothers graduating from the ISU-UP Nutrition Education Centers adopt innovations to improve agriculture production of nutrient dense crops and farmer livelihoods. Amanda de Carvalho worked with Martin Lukwata to review record keeping and programs for youth in agricultural entrepreneurship. Natalie Keller completed a global internship working with Uganda Women's Network on gender issues in the Kamuli district.

Students enjoying a game of soccer.

SEMESTER ALONG THE NILE

The completion of the Mpirigiti Rural Training Center and the growth of ISU-UP has allowed for a new, semester-long service learning program to be established. Students travel to Kamuli for the entire Fall or Spring semester and work with ISU-UP staff and local experts on an internship or independent project in their technical area while completing service learning activities

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Planting a Mpirigiti tree.

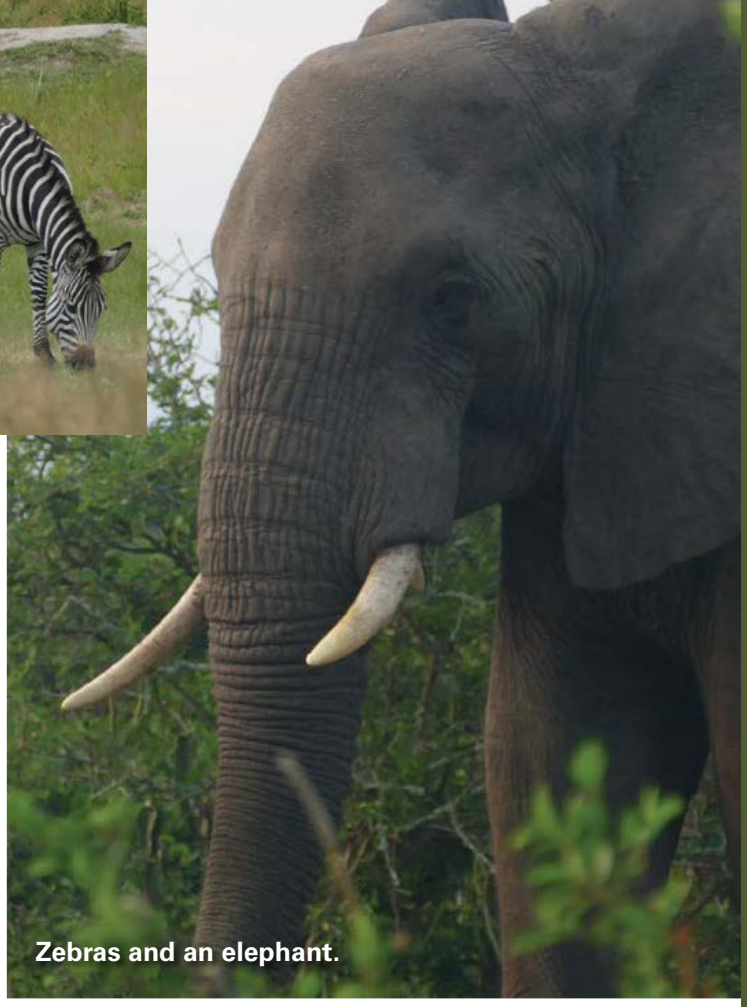
Students teaching in bi-national teams.

and university courses. They also have classes from local experts to learn Lusoga, the local tribal language, and drumming. Seven ISU students participated in the spring semester, and five ISU students are currently in Kamuli for fall semester.

SUMMARY

Creating a School Garden: Service Learning in Uganda has developed into a world-class, transformational learning experience and development program thanks

Basket weaving.



Zebras and an elephant.

to the continued efforts of many students, faculty, and staff from ISU, MAK, and ISU-UP. Although we continue to reflect on this year's program and all that the students have accomplished, we enthusiastically look forward to next years' service-learning program. The move to the new training facility has given us the opportunity to increase the number of ISU and MAK students, create new programs to benefit Kamuli and ISU and MAK students participating in this transformational learning. We are looking forward to see what new opportunities and experiences the growth of ISU-UP and service learning will bring in the future.

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Students eating a stew of corn, beans and vegetables.

Group posing by a nearby lake.

Students at the marker for the equator.

Celebrating 40 Years

by Susan DeBlieck

We turned 40! The Iowa Master Gardener program was created in 1979 in Bettendorf to equip volunteers to answer garden-related questions. Since that time, over 14,000 people have participated in the Master Gardener training. The training equips participants to grow in knowledge about gardening best practices. Afterwards, Master Gardeners volunteer in their community on projects from school gardens to plant sales.

The Master Gardener training has continually adapted technology to offer the training at the local level. Live lectures were broadcast to Iowa State University Extension and Outreach county offices via satellite television, and later the internet. Sensing that people's attention spans were hard to hold for the three hour evening presentations, Laura Klavitter, Hort 2011, piloted offering a flipped classroom in 2016 in Dubuque.

In 2017, the flipped classroom was offered at six locations. Participants watched lecture videos at home, which freed up class time for hands-on activities and tours of orchards, arboreta, and prairies. When surveyed, participants were very satisfied with the training model. One participant said, "I liked the time to interact with other students and learn about the community".

"The flipped classroom structure has benefitted the learning of our Master Gardener trainees by engaging them in learning by doing." Said Ray Kruse, ISU Extension and Outreach Dubuque County, Hort 2015, "The class structure encourages the trainees to work with one another, learn from each other, and see firsthand how to garden. This ultimately creates a fun and positive learning environment that encourages the trainees to continue with the program after the training has finished."

In 2018, 10 locations offered the Master Gardener training as a flipped classroom. Participants got to tour community gardens in Spirit Lake, Nahant Marsh in Davenport, and Jack Trice Stadium in Ames. "The legwork for staff is putting together a puzzle of great places to visit to share research about growing trees, vegetables, and flowers." John Krzton-Presson, ISU Extension and Outreach Jasper County, Hort 2017, "We show learners volunteer project sites to create connections."

The Iowa Master Gardener program is working to empower volunteers with gardening knowledge through a new hands-on approach. We hope to attract more trainees who are working and have young children, and train a new group of volunteers equipped to support their communities.

LETTERS from ALUMNI

Scott Dalen

Greetings fellow alumni. It made me smile to find the annual letter from Professor Iles in the mailbox today, and as I hadn't written an entry for a few years I thought an update was in order. Much has changed since I walked out of Hort Hall back in 2001, though some things do stay the same as well. Over Memorial Weekend, I actually had the opportunity to swing through campus with my family and I showed them my old stomping grounds. I was pleasantly surprised to find that my old dorm room in Helser does still exist (I thought it had been demolished in the Friley remodel a few years back). To catch up with big happenings in my world, I recently celebrated the 5-year anniversary of my Ordination as a Lutheran pastor which goes hand in hand with 5 years serving a church in southwest Iowa, near to the border with Omaha, NE. While the day to day grind of ministry often seems to be the same, I did have a highlight of traveling with my wife to visit the Holy Land, mainly centering around Jerusalem, this past spring. A lifelong notch on the bucket list checked off. I hope all is well for everyone, and know that I'm attempting to carry on the Cyclone legacy in a few more years when my now 14-year-old son starts thinking college in another year or two.

Scott Dalen
Class of 2001

Genna Tesdall

Thank you for the Department request for information about the alumni. I'd like to provide some updates on my career and life!

Genna Tesdall (Global Resource Systems, '15) will graduate this year from Penn State University with a Master's of Science in Plant Pathology and International Agriculture and Development. Her thesis focuses on the ecology of the fungus Fusarium oxyporum, which causes disease in over 100 crops, including banana.

In the next year, she will be a Fulbright Fellow at the Humboldt University of Berlin. She will move to Berlin in September with her spouse Michael Tesdall (formerly Hess). They send greetings to their colleagues from GRS and from the International Association of Agriculture and Related Sciences Students (IAAS).

Thank you!
Genna Tesdall
MS student, Plant Pathology and International Agriculture and Development
The Pennsylvania State University

Debbie Miran

Since my graduation in 1976, I have spent over 30 years in the human and veterinary pharmaceutical industry as a QC chemist, a formulation scientist and most significantly in senior management of drug regulatory affairs with 3 large companies. After a hiatus, due to a serious health condition, I began studying the potential therapeutic benefits of medical cannabis which took me to seminars, master classes, and conferences all over the world. As a 25 year Maryland resident, I was eager to develop our program and as a consequence, Maryland became the 24th state. I was very fortunate to be appointed as a commissioner to the newly created cannabis commission and spent 3 years developing regulations, guidances, and launching a program. Now, I continue to lecture about the science and pharmacology of medical cannabis and consult to both the private industry as well as other state and international medical cannabis programs.

Debbie Miran
Class of 1976

Anna Underhill

Dr. Iles,

I'm currently a graduate student at the University of Minnesota, where I'm working on my M.S. in Applied Plant Sciences. I'm lucky enough to work in the Grape Breeding & Enology program, which means tasting wines and spending days in the vineyard are part of my job description (along with genetic analysis and phenotyping techniques, which is the much larger part of that description). Upon my graduation this coming May, I hope to stay in the grape and wine industry in a research or otherwise viticulturally-related role.

My big milestone for the year was marrying my favourite Kiwi, Tim Snedden, whom I met while spending a semester abroad in New Zealand. Though navigating the U.S. immigration system continues to be daunting, we're overjoyed to finally be spending our days in the same country after 3 years apart. If we're ever looking to relocate, I hear his home nation produces a few horticultural crops ($7 billion worth, in fact!).

Best,
Anna
Class of 2016

Mike Gooder

Dear Fellow Alumnus,

Hard to believe just a brief 38 years ago, I received my diploma from ISU, married Rachel Reicher (Hort '79) on June 20, and on June 28 took over a mom and pop greenhouse in my hometown of Cresco. To say the least, it has been truly an adventure. Many highlights, plenty of challenges, and in the end, great satisfaction of accomplishment in our lifework of creating Plantpeddler.

Today, Plantpeddler has balanced wholesale and young plant divisions, along with local full service retail floral. The young plant division is the national leader in vegetatively propagated Begonias, roots over 10 million liners of major annual crops a year, and serves growers in all 50 states and all Canadian provinces. We are partners with all major global breeders and import from over 20 countries annually. The wholesale division serves middle and traditional markets in seven states providing premium annual products in a range of forms in all major seasonal market windows. We are considered leaders in greenhouse innovation and quality products.

Probably the greatest satisfaction comes in building the business with my wife, and more recently with our son John (Hort '14), along with a fantastic team of very dedicated individuals (including several ISU grads, and always looking for more). I was honored within our industry last year with the National Horticulture Leadership Award. During this journey, we have been featured in many trade magazines. We also are very active with ISU Hort, and especially enjoy working with Dr. Chris Currey.

Most recently, on July 12, our daughter Abby (Ag Bus '12) with husband Dan Inglis (Ag Studies '12) had our first grandchild, Wyatt Michael. This fall, son John will marry Molly Reicks on September 29, further expanding our family. Can't wait to have grandchildren attending ISU, hopefully in Horticulture.

In 2002, we purchased the family farm located just south of Cresco. Since then, we have planted over 20,000 trees, restored prairie, planted bee pollinator plots and constructed two wildlife ponds creating an oasis for people, plants and wildlife.

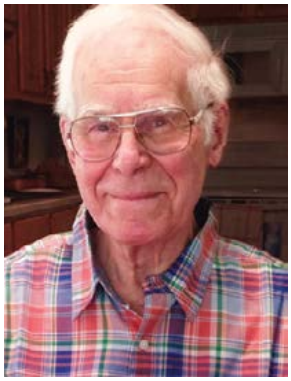
(continued)

I am totally thankful for being a Cyclone alumni. Please feel free to contact me at any time: **mikeg@plantpeddler.com** or (800) 827-1654.

Sincerely,
Mike Gooder
Class of 1980

Bruce A. Kirkpatrick

(Sent from daughter Amy Kirkpatrick)



Bruce A. Kirkpatrick passed away on April 16, 2018, at the age of 90. Bruce majored in horticulture and graduated from Iowa State University. He discovered while still in college that he liked journalism and after college worked at Miller Publishing on milling and agriculture publications. In time, he became the publisher of the Northfield News in Northfield, Minnesota. Bruce had a life-long love of horticulture and after retiring Bruce and his wife Bernie settled in Crosby, Minnesota to enjoy life on Rabbit Lake. Survived by his wife of 57 years, Bernie; daughter, Amy; son, Kemper; and granddaughter, Emily.

Terry King

Hello Fellow Hort Alumni!

This will be the first time I have addressed the Alumni Newsletter so it will be a short bio of my life. I came to Iowa State in the fall of 1963 after two years of Junior College at Clarinda Community College (now Iowa Western Community College) with a view to orchard management. I attended off and on for two years, depending on how long my money held out! Finally, I went in the Navy in June of 1966 as a meteorologist for the next six years. I was stationed in London, England for three years where my wife came over and we were married in 1970 and our first son born there in 1971. I got out of the Navy in July of 1972, started back at Iowa State that fall but didn't stay long – felt out of place because of my age! We moved back to our home town, where I worked in a photo off-set printing plant and part-time at a local greenhouse. After the owner passed away, I took over the greenhouse, a small vegetable/bedding plant operation, and ran it for the next six years, in the meantime also writing a weekly gardening column for the local newspaper, and also managing the local youth center. In the fall of 1980 I returned to Iowa State, finishing my B.S. in horticulture in the spring of '81. I applied for several positions in Extension work but a freeze had been put on hiring so that came to nothing! I was mowing my lawn in town one morning when the mailman (who also happened to be the Postmaster) came by and said that they were short-handed right now, and did I want a job? Of course I said yes, even if it was part-time! So, I spent the next sixteen years as a clerk/carrier; and then Postmaster in a small nearby town for 11 years before retiring in 2008. In the meantime, we had moved to 10 acres near town. We planted about 100 apple trees with a view towards a retirement project but that didn't work out due to health issues. We still garden some though not on the scale we first did. And I write a monthly gardening column for a Senior Citizen Newsletter put out by a local extension service. I had a kidney transplant in 2013 which has given me an extra five years so far – we live from day to day and thank the good Lord for each one.

Terry King
Class of 1981

Robert F. Kazimour, Dr. Kim Kazimour, Ph.D.

This is an article from my daughter, Dr. Kim Kazimour. She and a partner have established the most unique project to train people with disabilities in the field of horticulture and create options for them to be gainfully employed. It shows both of our daughters have been well-trained early in life to remain in the horticultural field.

It's so interesting how seeds planted long ago, sprout! Growing up, I spent many happy hours working and playing at my grandpartents' farm, Kazinour Farm and Orchard, in Cedar Rapids, Iowa. I learned much and developed a real love of growing things. While attending Iowa State, I enjoyed taking some horticulture courses and was even a horticulture major for a period of time! Eventually, I earned a PhD. in psychology, but always kept my love of plants. Every place I ever lived and every office in which I worked housed many!

And now, many years and miles down the road in Gainsville, Florida, I have been able to combine horticulture and psycology in the development of a local project called GROW HUB (Growing Real Opportunites to Work- Harvesting Urban Business) Together with a devoted group of volunteers, we have opened a plant nursery that provides job training and employment for adults with disabilites of vaious types. It has quickly grown from an idea into a business garnering support from many corners of the community and integrating the services of a variety of agencies to provide paid internships for many of our employees.

Most recently we have invited a local beekeeper to transfer his hives to our property and are working with the Institite of Food and Agricultrual Sciecnes at the University of Florida to reestablish a large blueberry patch previously producing on the property. We even have several heritage apple trees that, with some attention, may become productive again… shades of the Kazimour orchard!

The many aspects of growing plants creates a place for everyone to GROW HUB. For some, working with us will be a long-term job opportunity while others will learn skills so as to become employed with other businesses in the community. For everyone, these are friendships forged through the wonder of growing things and pride in work well done. It has truly been the closing of a circle, for me, to watch the power of horticulture enriching the lives of so many!

Kim Kazimour, Ph.D. ISU '77, '79, '84
Hello to all of my classmates.
Robert F. Kazimour
Class of 1957

Lisa (Mayer) Flaucher

Since the newsletter, my husband and I celebrated our 35th wedding anniversary by taking a cruise to the inside passage of Alaska. We stopped in Juneau, Skagway, Tracy Frods Arm, and Victoria, British Columbia. We saw two glaciers (before they melt away). It was our honeymoon 35 years late. Alaska was the only thing on my husband's bucket list. I, however, have many, many more destinations on my list. Next destination on my list is Hawaii for our 60th birthdays. Germany is also top of the list. I often take day trips with the 50+ club at the Olathe Community Center.

Both of my children have moved out of the house and are empoyed. My son, Nick, 29 is a pic nurse at Children's Mercy. My daughter, Natalie, 25, works in the ICU at Providence Hospital.

I have been with Johnson County for 27 years as a child support enforcement paralegal. Our (ex) governor privatized half of the child support cases and really made our jobs more of a challenge. We went from a staff of 40 to 12.

My husband suffered an injury at work and was off work for 2 ½ months and had to hire an attorney to begin receiving workers' copensation. Unfortunetly, his pension plan at work is slowing going broke; now he has seven more years before he can retire at 65/ (His pension plan will be broke in 2025.) He has been at YRC (Yellow Roadway Corporation) for 35 years.

Lisa (Mayer) Flaucher
Class of 1983

Nancy Allen

Dear CoHorts:

I feel fortunate to have worked for a farmer-owned cooperative for 36 years, retiring in 2014. GROWMARK is a farmer-owned cooperative which wholesales agricultural supplies and services to FS retail outlets. It is one of the largest Agriculture-based companies operating in the US and Canada.

I realized in May that it had been 40 years since I graduated from ISU. Wow. At the time I was a student, ISU operated under quarters rather than semesters. Actually, 3 quarters and two summer sessions per year. I loved this system, because I was able to take a wide range of classes outside my major. I even picked up a second major, Botany, and completed both within four years, 1974-1978. And speaking of CoHorts, when I was a freshman, the department assigned an upper-classman to help me get involved in the activities and stay on track. I hope the "CoHort" is an on-going program.

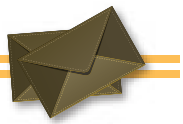
Back then, I struggled through the myriad of chemistry, genetics, laboratory, and statistics courses. And, people would say, "You'll never need this in the real world." That was far from the truth, as it turned out. My work duties included genetic testing of hybrid corn, managing a seed lab and feed lab; and later selling plant nutrients. Thinking about it now, these classes are very much still pertinent today. I have always been so grateful that I had

(continued)

the experience of an ISU Horticulture education, and I fly the Iowa State University flag (literally) with pride.

Today, my husband, Dave, and I enjoy the beautiful vistas from our home on Lake of the Ozarks in Missouri. I still grow my own veggies, but now in containers. On a daily basis, I miss that rich, deep Iowa soil.

Sincerely,
Nancy Rutherford Allen
Class of 1978



Philip Balderston

Seldom do I write for the Newsletter and rarely do I recognize the names of you who do write. A few years ago I wrote of a unique Horticulture Show in the late '50s when the department was smaller and times were more modest. Now, I'm recalling an experience a few years earlier. In his Pomology class, "Prof" Nichols felt it important to demonstrate packing apples in a wooden barrel for railroad shipment. At the time, we students dismissed the instruction as interesting, but irrelevant. Now, I see it as one of many mileposts.

I'm sharing this incident as a life-lesson in change… exponential change. As good as was my instruction at Iowa State, I was not prepared for the rate of change. After military discharge, I remained in California to work with Mexican contract crews in the ledgendary Salinas produce fields. Spanish 101 was not enough, and I resolved to become more fluent. Never did I expect, even after a couple years in Mexico, that my Spanish would be utilitarian in the North American Midwest.

Now, more than 50 years living and working in Ohio, we have seen the expansive glasshouse industry disappear and reemerge as extensive tunnel production. Lake County, once the epicenter of fruit ad nursery production, is now mostly urban. Many of us Horticulture graduates have had multiple careers. Even my given name, Claire, which served me while at Iowa State, has long-since changed its gender identity and "Phil" has become operative. Certainly, none of us have packed an apple barrel.

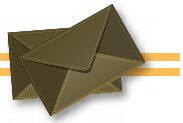
So, the "take-away" of this story is the recognition that we must expect and prepare for change. Life is the story of change.

Claire Philip Balderston
Class of 1960

Gary Garles

I started a small maintenance company in Des Moines in 1967. In 1969 I was present when Bob Lenc Landscaping was formed as a company. I worked there until 1985, then ran my own company for 22 years. That business was in Fairfield, IA and called The Landscaper. In early 2008 I went back to Lenc, and worked as the Senior Designer there until it closed May 18. I have the dubious distinction of being the only person there for the beginning and the end. I have revived The Landscaper business, and I am working independently as a landscape designer and consultant. I recently attended the 50th Anniversary celebration for the American Hosta Society in Philadelphia, PA. Part of my current business is growing Hosta for resale. Cheers to all of you in the business.

Gary Garles
Horticulture 1978



Jerry Benning

Greetings from Berlin, Germany!

It seems impossible to me that 2019 marks my 45th year in Germany. Guess I don't have to tell any of you how time flies by and seems to go quicker every day! Seems like "The class of '74" is positively ancient history!

I retired in 2015. While it lasted, it was nice to work mostly in the family's main residence in Berlin and sometimes in the their "get-away" estates in Mallorca, Spain or the Hamptons, Long Island. But all good things come to an end, and I decided to take early retirement for no particular urgent reason except that "I ain't getting any younger!" Since then, I have kept up my main hobby of travelling. I head to Palestine every spring for a few weeks to visit my Palestinian friend, Samer. I sometimes co-ordinate the visit with the four-day 'Sounds in the Old City' music festival, which is absolutely enchanting with musicians scattered around Jerusalem's Old City lanes in the evenings. Or I go for Easter, which is a challenge because of the hordes of visitors, especially for the Orthodox Easter. Or I try to miss that altogether. A few years back, Samer was in Iowa with me and we spent a day at ISU. He was very impressed with the campus and said he would love to study in such a beautiful setting!

Most autumns I manage to set my sights a little further afield, such as in 2017 when I headed down to South Africa for the third time, flying via Qatar and had a day in Doha, a very impressive city. The astonishing Museum of Islamic Art is home to a wonderful collection of Islamic art from many lands. Need anything be said about Cape Town, one of the most beautiful spots in the world??

I went once again to India in Feb 2017 for a month and by the time you read this will probably have gone there again, as well as to the Far East in Autumn 2018 to re-visit Hong Kong, Singapore, Bangkok, and Malaysia and maybe Myanmar to see all of the changes since I was last in that neck of the woods some two decades ago. Have to go back to "Down Under" again, also an incredible continent. Closer to home, I get to Prague and Budapest every few years.

Berlin is THE place to be based for travel to European destinations these days, being a major hub of low-cost air carriers. I can be in every capital city in three hours or so. And the rest of the world is available with just a transfer at a major airport in Europe, Istanbul, or one of the Arabian Gulf hubs.

I couldn't be happier living in Europe and really can't imagine being based anywhere else. And I will probably stick around in Berlin, as it seems most everyone and their dog wants to come here to live after having experienced the city. So, it would be the height of folly to leave, even if places like Cape Town beckon...

Take care and take time to enjoy life. Maybe our paths will cross someday...

Jerry Benning
Class of 1974

Linda (Klocke) Naeve

I always enjoy reading the ISU Department of Horticulture Alumni Newsletter and learning about all of the great accomplishments of ISU horticulture faculty, staff, and students. I also like to hear what fellow Horticulture alumni are doing around the state, country and world. It makes me proud to be connected with all of you. The years have gone by quickly since I first stepped foot on the beautiful Iowa State campus in 1974. I started working at ISU in 1977 and recently retired after two great careers spanning 36 years. Iowa State University Extension and Outreach offered me many rewarding opportunities and challenges and allowed me to work with outstanding colleagues.

During my early career as an Extension specialist in the Horticulture Department, I coordinated the Iowa Master Gardener program and watched it grow from a 2-county pilot project to a statewide program. I also had the opportunity to be a part of the planning committee and early years of Reiman Gardens. After 20 years, I retired from ISU for the first time to develop 4-H school gardening curriculum and write for Better Homes and Gardens Television and HGTV. Five years later, I returned to ISU and spent a few years at Reiman Gardens and in the Extension Pest Management and the Environment program. For the past 9 years until I retired, I was a horticulture specialist in the Extension Value Added Agriculture program. During that time, I worked on the Extension Food Safety team and coordinated the state Sustainable Agriculture Research and Education (SARE) program.

After my husband, Randy, "retired", we operated a small vegetable farm (Nature Road Farm) for 8 years. Our farm supplied a 100-member CSA and some wholesale markets. Every year we hired ISU student interns, hoping to "sprout" their interest in commercial vegetable production.

In retirement, we are planning more trips to visit our three daughters and their families (4 grandchildren) in Las Vegas, Boston, and St. Louis. I am looking forward to more time to garden, bike, golf, travel, volunteer, and enjoy the next chapter in my life.

Paul Norman

Again, thanks to all who put in so much hard work on this newsletter! Always enjoy seeing what's happening in the department and with students.

I am now the proud father of an Iowa State freshman! Hate to admit, but it was a bit of a step back in time to walk campus again. I did, however, still recognize quite a few of the same trees on campus from Dr. Kelly's plant materials class. Shouldn't have been surprised by how much things can change in thirty-something years. A few new buildings and a few of those old trees not there anymore, but still the same great place. I look forward to getting back more often. Thanks again.

Sincerely,
Paul Norman

(continued)

Lew Klinge

Hey Everyone…

I've had a very busy year of travel… in addition to a couple trips to Iowa to visit my family (Mom at 93, sister in Forest City, and brother in Panora), I've done a couple international trips… both very memorable. In March, I joined a very small group in South Africa to begin a 2.5-week trip in the Cape Town area and then headed up through Zimbabwe to Victoria Falls. Along the way we were at the southern tip of Africa, did a shark cage dive, visited wine camps and eventually several "game drives". We saw it all. Definitely a bucket-list item. While in Cape town we spent a day at the Kirstenbosch Botanical Gardens. As many of you may recall, South Africa suffered a severe drought and it really showed at the Gardens. In all fairness, it was also the end of the Fall season, so the Gardens weren't as impressive as they generally are. Nevertheless, I enjoyed it very much and I learned how much of the Latin names I've forgotten. (Dr. Bauske would be very disappointed.)

I made a second, major trip this year… in April, I met a group at a chateau in the Loire Valley for a week to help a good friend celebrate his 50th birthday. The chateau is HUGE, of course, and was started in the 12th century and added to over the centuries. It survived recent times because a landscape architect, who had US and French citizenship bought it (probably for very little) after WWI when the old system in Europe broke down. He raised his family (10 children) there and constructed beautiful gardens complete with topiary and many water features. It's now a family business which serves as a venue for reunions, symposia, weddings, etc. It's called Chateau du Pin. Anyway… fabulous summer.

I'm in touch regularly with Art Little and since he lives in the Chicago area, it's convenient over-night stop when I drive to NE Iowa. My health is holding and I had my 70th birthday in September. Life's good!

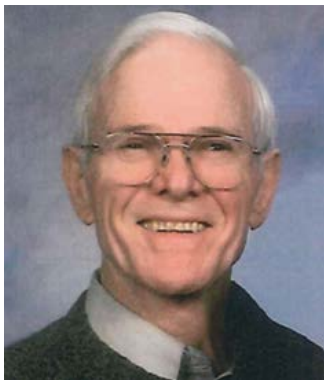
Lew Klinge

KEEP IN TOUCH

Department of Horticulture

www.hort.iastate.edu

In Memoriam



Murray Wayne Hefley was born on his family's ranch near Lake Creek, Texas on October 28, 1939, to Lon and Rubye Gobel Hefley. He passed from this life on May 8, 2018, at Israel Family Hospice House in Ames, Iowa.

Wayne grew up on the ranch and graduated from high school at Commerce, Texas. He received his Bachelor's degree from Texas Tech University and spent several years in South Korea, where he worked with Korean farmers, teaching them to use modern equipment. He received both his Master's and Doctorate degrees in horticulture at the University of Maryland. For 20 years he served as a professor at Iowa State University in the Department of Horticulture. He especially enjoyed interacting with his students and advisees, and was coordinator for the Horticulture Club, forming life-long friendships.

In 2006, he was united in marriage to Linda Johnson at Bethesda Lutheran Church in Ames.

Wayne and Linda continued making their home in Ames. They are members of Lutheran Church of Hope.

Wayne was preceded in death by his parents and two brothers, Riley and Blake. He is survived by his wife, Linda; one son, Robert Wilke; three daughters, Laura (Cory) Hammitt, Melinda(Michael) Leon, and Allison (fiance, Jose Rodriguez); grandson, Finn Hammitt and stepgrandson, Van Leon; his brother, Lynn (Nancy) Hefley; mother-in-law, Beulah johnson; brother-in-law, Alan (Roberta) Johnson; and several nieces and nephews.

Gordon Dwight Rolph, 82 of Kelley, Iowa passed away June 30th, 2018 at the Israel Hospice House in Ames.

Gordon was born in Little Sioux, Iowa to Earl and Irene (Wallis) Rolph. He graduated from Onawa High School. In 1955, he was the state High and Low Hurdle Champion. After high school he was drafted into the Army where he was in the Honor Guard Company in Fort Meyer, VA. He served on the Colonial Color Guard; walked the Tomb of the Unknown Soldier; guarded the Arlington Cemetery and served at the White House during the Eisenhower/Nixon term. In 1960, he married Charlotte Rose Ammerman, who passed away in 1972. They were blessed with three children; Karen Louise (Kevin) Abate, Susan (Kevin) Jacobson, and Daniel Wallis (Cindy) Rolph. He graduated from Iowa State University and then proceeded to work in the ISU Horticulture department for 35 years in the Soil Lab. In 1994, he married Bonnie Muehlenthaler Rolph. Gordon served on the Gilbert Fire Department for 45 years. He worked his way up to Fire Chief. After retirement in 2001, Gordon enjoyed working in his vegetable and flower gardens, spending time with family, studying genealogy, hunting, fishing, and taking pictures.

Those left to cherish Gordon's memory are his wife Bonnie, children Karen (Kevin) Abate, Susan Marie (Kevin) Jacobson, Daniel Wallis (Cindy) Rolph, his step-children Keith (Celeste) Muehlenthaler, Terri (Brian) Holmes, Sandra (Dave) Vagts, Kathy (Randy) Witt, his grandchildren Joshua Abate, Sarah (Dan) Bade, Danielle (Jimmy) Butz, Christina (Kyle Case) Abate, Katheryn Abate, Stephanie (James) Chance, Chelsie Jacobson, Tiffany Jacobson, Brian (Mindy) Rolph, Kevin Rolph, Daniel Lee (Kiele) Rolph, his sisters Kathryn Oaks, Lois Miller, Lorna McNeill, Colleen (Mike) Vaughn, his brother Wallis (Lorna) Rolph, his sister-in-law Marsha Rolph, his 11 step grandchildren, his 10 great-grandchildren, his 2 step great-grandchildren, and many nieces and nephews.

He is preceded in death by his parents, his first wife and mother of his children Charlotte, his sister Alvena Phillips,his brother Norman Rolph, his brother-in-laws Paul Phillips, Jack Miller, Mel Oaks, his nephew Greg Phillips and Greg's wife Cheryl Phillips.

Local Foods Festival at ISU

The Department of Horticulture was prominent at the 4th Annual Local Foods Festival, held on central campus, on September 19, 2018. Over 2,000 students and ISU/community members tasted local foods from some of the 30 vendors, including the ISU Horticulture Club, the Horticulture Farm, and the Organic Ag Program. Horticulture students also participated in the Good Earth Student Farm booth. Festival-goers learned about organic and horticultural practices while sampling apples from the Hort Farm and taking organic squash and peppers from the Delate lab home to eat. ISU Daily article: http://www.iowastatedaily.com/news/local-food-festival-encourages-healthy-eating-sustainability/article_efb85240-bc4b-11e8-b643-1b21b270a9b3.html

Fulbright Scholar Learns about Iowa's Community Farmers

Theo (Thanh) Nguyen is a new graduate student from Vietnam, working on his M.S. in Horticulture. Theo originally applied for his Fulbright scholarship two years in advance of arriving for Fall semester 2018 at Iowa State. For his thesis, Theo is examining the impact of community gardens/farms on Iowa's immigrant communities. Farmers he has connected with have emigrated to Iowa from Somalia, Burundi, Sudan, Laos, Cambodia and Nepal, often escaping political turmoil in their home country. In addition to working with community farmers, Theo is learning organic agriculture practices in the Organic Ag Lab, with Kathleen Delate as his Major Advisor. His goal is to return to Vietnam and continue the work he started there with an educational NGO, promoting organic horticulture.

2018 Shade Tree Short Course

The 62nd Annual Iowa State University Shade Tree Short Course and Iowa Nursery & Landscape Association Conference and Trade Show was held February 20-22, 2018 at Iowa State University.

The theme was "The Race Isn't Won Yet...Passing the Baton to the Next Generation." Attendees were welcomed by Donald Lewis, Iowa State University.

The opening session was "Generational Differences at Work" by Steve Benzschawel, Generational Consulting, LLC,. "You Can't Take the Country Out of the Tree" was given by John Ball, professor of Forestry from South Dakota State University. Closing session was "Communicating, Connecting, and Engaging People with Urban Forestry" presented by Paul Ries, president of the International Society of Aboriculture.

Other sessions included:

- "Community Tree Diversity: Looking Beyond EAB"
- "Making Landscapes Work for Wildlife"
- "Trees as Witnesses"

IOWA STATE UNIVERSITY
FOUNDATION

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GIFT/PLEDGE FORM

Name:_____

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OUTRIGHT CONTRIBUTION

❑ Check enclosed (*payable to ISU Foundation*)

❑ Charge this gift to my/our credit card (**signature required*)

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Card number _____ Exp. date _____

Signature _____ Date _____

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❑ I/We wish to pledge a total gift of $_____ in equal installments of $_____

beginning (month/year) _____.

❑ I/We intend to make payments ❑ monthly ❑ quarterly ❑ semi-annually ❑ annually for _____ years.

(*Please specify your pledge for a period of three years or less. Signature required below.*)

GIFT DESIGNATION

❑ Horticulture Department Fund (0131712)

❑ Horticulture Graduate Scholarship Fund (2703558)

❑ Horticulture Undergraduate Scholarship Fund (0144941)

❑ Other: _____

❑ This gift should also be credited to my spouse/partner.

Spouse/partner name: _____

You may also make your gift online at www.foundation.iastate.edu/horticulture
Return this form to: Iowa State University Foundation • PO Box 868 • Ames, IA 50010-0868

For more information about our status as a non-profit 501(c)(3), visit **www.foundation.iastate.edu/disclosure**

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IOWA STATE UNIVERSITY

Department of Horticulture
106 Horticulture Hall
Ames, Iowa 50011-1100

Greetings Alumni