DEPARTMENT OF HORTICULTURE

2017 Alumni Newsletter

IOWA STATE UNIVERSITY

Greetings
Alumni and Friends of the ISU Department of Horticulture

It's Monday after Thanksgiving week, I'm at home reclining on the couch with wife Laura, the fire in our "fake" fireplace is gently rolling, and our recently decorated Christmas tree is adorned with an assortment of ornaments and lights that can only be described as equal parts tacky and whimsical. It is that special time of year to reflect on all that we are thankful for, and for me, my list of blessings is longer than I deserve. I have nothing to complain about and for much to be thankful. And I suspect most of you reading this note feel pretty much the same way. So let me begin my letter this year with humble and heartfelt thanks for staying in touch and remaining a loyal supporter of this department. I like to think of each and every one of you as extended family, and regardless of your graduation date or final GPA, you should know you're always welcome back here on campus.

But what else am I thankful for? Check out this list:

- Former Dean of the College of Agriculture & Life Sciences, Dr. Wendy Wintersteen is now the new President of Iowa State University. Wendy certainly is well acquainted with this department and has always been a strong supporter of Iowa horticulture, and as the old saying goes, it never hurts to have friends in high places.
- I'm also grateful for our new (interim) CALS Dean, Dr. Joe Colletti. Hey, he just might read this, and you know about that old saying.
- I'm grateful for our annual Department of Horticulture chili cook off competition, which this year taught me a valuable lesson in humility. You see, I often win or at least place in the top three, but this year I failed to bring my "A" game and ended up on the outside looking in. Wait until next year?
- 2017 witnessed the passing of three great former horticulture faculty members; Dr. Charles Hall, Dr. Clint Hodges, and Dr. Jim Kelly. Each left their mark on this department and I am grateful that I had the opportunity to work with each of them.
- I remain grateful that our department (housing both Horticulture and Global Resource Systems majors) is the lone tenant in Horticulture Hall. It's like we have our own little fiefdom with this terrific view of central campus.
- Every day when I walk the halls, I am reminded just how fortunate we are to have such an inspiring and hard-working group of undergraduate and graduate students. They compete in academic competitions, represent us at scientific meetings, are fantastic ambassadors in the community, and generally make us look very good whenever and wherever they travel.
- And finally, I am thankful for the privilege of working with the best team of horticulturists to be found anywhere in this country. The ISU Department of Horticulture remains one of the best and strongest academic units of its kind, and just so you know, we aren't planning on slowing down now, or in the future.

So let me finish where I began, by thanking you for your loyalty and support. We never forget our obligation to students past, present, and future, nor our duty to honor and cultivate our horticultural roots, now almost 150 years old.

Best Wishes for a Prosperous 2018!

Jeff Iles, Professor and Chair
Department of Horticulture

Table of Contents

A Message from Former **Dean Wendy Wintersteen**

We are proud to have the Iowa State University Horticulture Research Station as a beautiful, knowledge-centered part of our statewide research farm system.

The Horticulture Research Station truly is a jewel. And the Department of Horticulture did a wonderful job making the farm shine during its 50th anniversary last September.

Students, staff and faculty did a fantastic job welcoming participants, leading the tours and selling produce. I particularly enjoyed visiting with the Kemp family and learning about their experiences on the farm as children of Al Kemp, the first superintendent. It was fun to watch Charity Nebbe of Iowa Public Radio interact with the large and enthusiastic crowd as she conducted a live "Horticulture Friday" program.

In short, it was a great community event to celebrate the work of our faculty, staff and students.

The Horticulture Research Station's 50th anniversary publication was very well done, with Jeff Iles' article reminding readers of how the core Iowa State missions of teaching, research and extension and outreach have been met for half a century and will continue to be met for the next 50 years.

The College of Agriculture and Life Sciences has been blessed that the Horticulture Station has been such a special place for half a century. It is a special place where new knowledge is generated, and where science is practiced. It's a place where learners—students, faculty, extension clients, the public—and nature come together, and experience science literally growing and producing.

I congratulate and thank the Department of Horticulture and all the faculty, staff and students connected to the Horticulture Research Station.

Wendy Wintersteen, Dean
College of Agriculture and Life Sciences

Horticulture Faculty

Rajeev Arora, Professor
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Crop physiology – study of plant response to low temperature stress

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

Barb Clawson, Program Coordinator, Senior Lecturer
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Diana Cochran, Assistant Professor
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Extension specialist for fruit production

Christopher Currey, Assistant Professor
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Greenhouse and controlled-environment production of ornamental and food crops

Kathleen Delate, Professor
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Sustainable/organic horticultural and agronomic crop production and marketing

Kevin Duerfeldt, Lecturer, Global Resource Systems
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Shui-zhang Fei, Associate Professor
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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
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Consumer horticulture; human issues in Horticulture; youth and undergraduate education

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

Dorothy Masinde, Senior Lecturer, Global Resource Systems
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Bethzayda Matos, Lecturer, Global Resource Systems
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David D. Minner, Professor
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EARTH – Education and Resiliency Through Horticulture

Ajay Nair, Associate Professor
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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
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Denny Schrock, Lecturer, Coordinator, Master Gardener Program
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Aaron Steil, Lecturer
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Catherine Swoboda, Lecturer, Global Resource Systems
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Adam Thoms, Assistant Professor
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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
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Plant Introduction Station Agronomy/Horticulture. Germplasm conservation, evaluation of landscape plants

Emily Zimmerman, Lecturer, Global Resource Systems
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Awards and Recognitions

Bioplastics for the Green Industry Team members: Darren Jarboe, David Grewell, James Schrader, Christopher Currey, William Graves, and Kurt Rosentrater

Dr. Kathleen Delate receiving the Rodale Institute 2017 Organic Pioneer Award on September 9, 2017.

Bioplastics for the Green Industry Team received the 2017 College of Agriculture and Life Sciences Team Award.

Dr. Nick Christians was the 2017 recipient of the Colonel John Morley Distinguished Service Award.

Dr. Chris Currey was named the 2017 recipient of the College of Agriculture and Life Sciences ISU Award for Early Achievement in Teaching Award.

Dr. Chris Currey was selected to join *Greenhouse Product News* magazine's Class of 2017 "40 Under 40 Program." Forty individuals were recognized for setting the pace of the future of the horticulture industry.

Dr. Michael Dosmann (M.S., 1998) was named Keeper of the Living Collections of the Arnold Arboretum. He is only the second "Keeper" in the 145-year history of the Arnold Arboretum.

Dr. Kevin Duerfeldt received the North American Colleges and Teachers of Agriculture Teaching Award of Merit certificate on July 2017 at Purdue University.

Dr. Kathleen Delate was honored with the Rodale Institute 2017 Organic Pioneer Award.

Dr. William Graves was the recipient of 2017 American Society for Horticultural Science Outstanding Graduate Educator. The award was presented September 2017 in Hawaii.

Dr. Cindy Haynes received the 2017 American Society for Horticultural Science Outstanding undergraduate Educator Award, September 2017 in Hawaii.

Dr. Ajay Nair was promoted to Associate Professor.

Dr. Gail Nonnecke received the 2017 Faculty/Staff Inspiration Award from the ISU Alumni Association. She was recognized and honored on May 19, 2017 at the ISU Alumni Center.

Dr. Dorothy Masinde was named the 2017 recipient of the ISU Award for Early Achievement in Teaching Award.

Dr. Dorothy Masinde received the 2017 College of Agriculture and Life Sciences Lecturer and Adjunct Faculty Teaching Award.

Lisa Orgler was promoted to Senior Lecturer.

Lisa Orgler was named the 2017 recipient of the North American Colleges and Teachers of Agriculture Teaching Award of Merit Certificate. It was presented July 2017 at Purdue University.

Dr. Ann Marie VandDerZanden was a national winner of the United States Department of Agriculture Food and Agriculture Sciences Excellence in Teaching Award for 2017. A plaque was presented in Washington, DC.

Horticulture Staff

TECHNICAL STAFF
James Schrader, Research Scientist with Dr. Graves
Mark Rippke, Ag Specialist with Dr. Cochran

GREENHOUSE MANAGER
Peter Lawlor

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

EXTENSION AND OUTREACH STAFF
Susan DeBlieck
Richard Jauron

GLOBAL RESOURCE SYSTEMS STAFF
Maggie Sprecher
Hannah Darr

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
Josh Cunningham, 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

NEW Horticulture Faculty and Staff

My name is Mark Rippke and I have been hired as an Agricultural Specialist in Horticulture working with research in fruit production. Current projects I will be working on include cold hardy grapes, hop production and apple rootstock trials. I graduated from Iowa State University in 2016 with a B.S. in Horticulture, emphasis in fruit and vegetable production, and spent the past year volunteering in Ghana through AgriCorps, an NGO focused on agricultural education.

I grew up on a small corn and soybean farm outside of Moville, Iowa, and during my time as an undergraduate, I worked at the Horticulture Research Station and for Dr. Diana Cochran as a research assistant. I was also involved with FarmHouse Fraternity and Dance Marathon as a student. I look forward to growing as a horticulturist and sharing research findings with Iowa's growers through this position.

Global Resource Systems Welcomes **New Lecturers**

Catherine Swoboda and Emily Zimmerman will continue their adventure at Iowa State University on Jan. 1, 2017 as new lecturers in Global Resource Systems (GRS) – a college-wide major in the College of Agriculture and Life Sciences.

Catherine Swoboda earned a bachelor's degree in agronomy in 2008 and a master's degree in crop production and physiology in 2010 from Iowa State University. Catherine views agriculture as a powerful means to serve others and has dedicated her professional career to international food security issues. After graduation, she completed a yearlong internship in the Agronomy, Crop and Soil Science Societies of America's Science Policy Office in Washington, D.C. She returned to Iowa to work as the Director of Iowa Education Programs at the World Food Prize Foundation and established the Iowa Youth Institute, a model educational program which promotes Science, Technology, Engineering, Mathematics (STEM) and global awareness among high school students and teachers. In 2014, Catherine was named Director of Planning at the World Food Prize, in which she was responsible for planning and implementing the Borlaug Dialogue International Symposium. Catherine was appointed to the Iowa Governor's STEM Advisory Council in 2011, was recognized with Iowa State University's "Outstanding Young Alumna" award in 2013, and was a recipient of the Business Record's "Forty Under 40" recognition in 2016. Catherine is also an active volunteer with the refugee community in Des Moines. Her experiences and interests align with the goals of the Global Resource Systems program to prepare students to solve problems with strong technical and cross-cultural skills, and she is excited to join GRS and work with the next generation of leaders in agriculture.

Emily Zimmerman obtained a bachelor's degree in biology and global resource systems from Iowa State University in 2011. She attended the University of Michigan, Ann Arbor and received her master's degree in natural resources and environment with a concentration in conservation ecology. During her graduate program, Emily worked with a team of faculty and graduate students to design and implement a Science, Technology, Engineering, Mathematics (STEM) curriculum for USAID educational programs in Liberia, West Africa. She also accumulated a variety of teaching assistant roles in the fields of biology, ecology, and sustainable agriculture. Emily returned to Iowa State to obtain her doctorate degree in sustainable agriculture and environmental science. Her dissertation topic is identifying ecological and economic opportunities for the co-production of supporting, provisioning, regulating, and cultural ecosystem services in Big Creek Watershed, Iowa. She possesses a strong background in environmental resources and its interdisciplinary connections. Emily received top awards for her teaching contributions at both University of Michigan and Iowa State University. She looks forward to the opportunity to teach and mentor undergraduate students in interdisciplinary fields of study.

Global Resource Systems warmly welcomes these two accomplished professionals to our team. We are excited about the experience and passion they will bring to the major and our students.

IT Happenings in Horticulture!

by DIANNE BROTHERSON, Horticulture IT Support

New Horticulture Lab Computers Installed during the Summer

The Horticulture computer lab got a new look this summer when twenty new Dell computers were installed. The computers have two monitors and general software as well as landscape-design specific software to give the Horticulture design students and all Horticulture students the best possible tools for their classes. The computers were purchased using Computation Advisory committee (CAC) funds, which are funds from computer fees assessed on all students and then given to departments in proportion to their student enrollment. This program has allowed Iowa State University and the Department of Horticulture to keep computers, printers, and other technology needs current and relevant for our students.

New Look for the Horticulture Halls

Over the winter break, the Horticulture halls got a new look with digital wall images created by PUSH Branding and Design. These colorful wall images show students and faculty working on horticulture projects on campus and in local and international locations. The result is a pictorial storyboard of the department and branding that is consistent with the Iowa State message of "Choose Your Adventure". An added feature are two wall-mounted kiosks that have touch screens for finding Horticulture faculty, staff and graduate student directory information as well as information about the careers of recent Horticulture graduates.

Good-bye Blackboard, Hello Canvas

On January 5, 2018, Iowa State University (ISU) will be turning off all access to Blackboard; the ISU centrally supported Learning Management System (LMS) that was used for many years on campus. An LMS is an online platform that is used by faculty and students for teaching and learning. Starting in spring of 2018 all centrally supported LMS courses will be taught in Canvas. This change occurred because the license for Blackboard was due to expire at the end of 2017 and a decision was needed to determine if the license should be renewed with Blackboard or if a switch should be made to another LMS application. After much input and review, the decision was made to switch to Canvas. In the broadest terms Canvas is designed to deliver a simple, transparent, and consistent online learning experience for students. As one student commented, "The entire site has a cleaner look than Blackboard and that alone makes it easier to find classes, assignments, and grades. Its sleek design is modern and uncluttered, creating a more user-friendly platform". Horticulture Faculty member, Cynthia Haynes, was an early adopter of Canvas and migrated several courses to Canvas before Fall semester. Cynthia is delighted with how easy Canvas was to use and the breadth of tools available that allow for flexibility in setting up classes. She feels it was a good decision to make the switch and a positive change for the students.

Striking digital images grace Horticulture Hall.

Hortline Updates

by Richard Jauron, Extension Program Specialist

Hortline was established in 1983 to assist home gardeners and extension staff with horticulture related questions. Since its inception, 215,000 individuals have received assistance via the telephone and 20,000 by e-mail. In 2016, extension staff responded to 2,700 phone calls and 1,850 e-mails

A significant number of calls and e-mails deal with the identification of plants and plant problems. The following are four examples of insect/pest related questions answered by horticulture staff in 2017.

Magnolia scale

Magnolia scale is the largest scale insect in Iowa. Sap feeding by the insects causes stress to heavily infested plants and can result in stunted growth, yellowish foliage, branch dieback, or death of the tree. Magnolia scales produce large quantities of honeydew (sugary excretion) that accumulate on the tree's leaves and branches and other objects (perennials, patio furniture, etc.) beneath the infested tree. Sooty mold, a black fungus that grows on honeydew, turns the honeydew-covered leaves, branches, and other objects black.

To control magnolia scale, remove and destroy heavily-infested branches. Treat trees with a contact insecticide (horticultural oil, insecticidal soap, or a synthetic insecticide) in August and September to kill newly-emerged nymphs called "crawlers." Apply a dormant spray of horticultural oil in late March or early April (just before bud break) to suffocate overwintering nymphs. In late spring, apply a systemic insecticide, such as imidacloprid, as a drench around the root zone of the infested tree.

Magnolia scale is difficult to control. It may take 2 to 4 years to completely control magnolia scale.

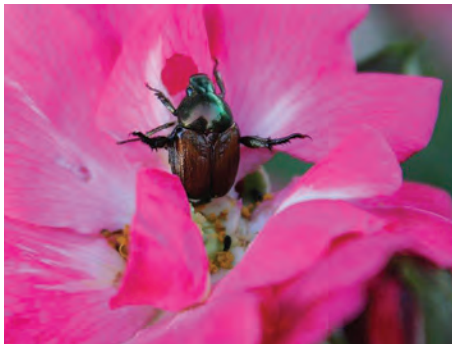
Cigarette paper webworm

The cigarette paper webworm is a burrowing type webworm. The caterpillar lives in a 2-inch-long vertical burrow in the soil and the burrow is lined with a paper-like, white sac that looks like an empty cigarette paper. The larvae living within these sacs feed on blades of grass at night.

Birds, such as robins and starlings, pull out the burrow lining, eat the webworm and leave the paper-like sac lying on the grass. The accumulation of the sacs on the surface can be rather disconcerting, but their presence indicates the birds have taken care of the problem.

Praying mantid egg sacs

Praying mantids mate and lay eggs in stiff foamy egg sacs in late summer/early fall. If they survive the winter, the eggs hatch in spring (around mid-May). Praying mantids feed on both harmful and beneficial insects. Their impact in the garden is likely negligible. Adults die of old age or cold temperatures in fall. There is one generation per year. In Iowa, praying mantids are most often found in the southern two-thirds of the state.



Japanese beetles

This summer was one of the worst years in recent memory for Japanese beetles in Iowa. Japanese beetles feed on the foliage, flowers, and fruit of more than 300 different plants. Some of their favorite plants include lindens, birches, grapes, roses, raspberries, and stone fruits. By early July, defoliated linden and birch trees were turning brown due to heavy beetle feeding and hot, dry weather. Fortunately, defoliation of well-established, healthy trees is not fatal. Defoliation is most harmful to recently planted trees (those planted in the last two or three years). One-third of the telephone calls fielded from late June to mid-August dealt with Japanese beetles.

Horticulture Resource and Career Center: **2017 Update and Costa Rica**

by BARB CLAWSON, Program Coordinator

Greetings Fellow Horticulturists and Friends:

The 2017 year was green and growing in the Department of Horticulture. Spring 2017 brought 139 Horticulture majors and 14 double majors. I'm happy to report 21 freshmen and 15 transfer students. Our learning community continues to visit horticulture companies in the area to show students the breadth of our horticulture industry. The Hort Learning Community still participates in Project Glean, a service learning project where the Hort Learning Community students picked apples with the Food Science and Human Nutrition Learning Community. This year they picked about 900 lbs of apple at the Horticulture Research Station and distributed them to food pantries in the Boone and Ames area. The students sorted, graded and bagged the apples for the project. The Hort Career Night held the night before the College of Agriculture and Life Sciences Ag Career Day, drew 39 horticulture companies for the students to speak with about jobs and internships. Our department's study abroad opportunities are very strong, and once again, a group traveled to Costa Rica on our Study Abroad Exchange with the University of Costa Rica. I would like to highlight that trip. A manuscript "Assessing a Reciprocal International Student Travel Exchange: The Iowa State University/University of Costa Rica Intercambio" was accepted in September, 2017 for publication by HortTechnology in a future publication.

On March 8, 2017, 17 students and 4 faculty members from Iowa State University set out to study tropical crops on a Spring Break Study Abroad trip to Costa Rica. The trip is part of an exchange between the University of Costa Rica (UCR) and ISU that started in March, 1999. ISU students travel to Costa Rica in March in odd-numbered years to study the production and processing of tropical crops such as bananas, pineapple, coffee and mangoes. Students from UCR travel to Iowa in July of the alternate years and tour a variety of our crops and products, including corn, soybeans, vegetables, fruits, grapes, wine and sports turf. Attending an Iowa Cubs baseball game and hitting golf balls at the driving range are two highlights of their time in Iowa!

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Students and faculty from Iowa State University going to Costa Rica during spring break 2017.

The itinerary reviewed below emphasizes the variety of tours and activities our students enjoyed. Our agenda is arranged by UCR professor Dr. Amy Wang, one of the founders of the Study Abroad exchange. We stay at Hotel Ave del Paraiso next to the UCR campus in San Jose. From this "base camp" we travel daily to the various sites. Dr. Wang's students accompanied the group each day to assist with logistics and translation as Cyclones studied tropical agriculture in Costa Rica.

March 9, 2017

The day began with a walking tour of the UCR campus. Dr. Felipi Arauz, Minister of Agriculture and Livestock gave a lecture on the agriculture economy of Costa Rica. Dr. Arauz was a professor at UCR with Dr. Wang when this partnership began. After learning about the crops and agriculture products of Costa Rica, the group toured the Organic Farm of UCR student Jonathan Castro and his family. The farm supplies a variety of produce to local farmers markets and families in the Cartago area. Bryan

Students enjoy a walking tour of the University of Costa Rica.

Dr. Felipi Arauz, Minister of Agriculture and Livestock being introduced by Dr. Mark Gleason.

Viques, UCR student explained potato seed production in La Pastora. The evening closed with a welcome reception at the home of Patricia Oreamuno. A delicious traditional Costa Rican meal was prepared by the students of UCR.

March 10, 2017

The Poás Volcano in Central Costa Rica, was the first stop of the morning. It has erupted 39 times since 1828. The center is 1,050 feet deep, with 1 mile across the crater, and is the largest active crater in the world. Fortunately, the clouds lifted while we were there for spectacular views of the crater. Students experienced firsthand the dripping humidity, epiphytes, mosses and plant diversity of a cloud forest while walking to the crater. Lecheria El Corso, near Alawela, Costa Rica is a top rated Agro-tourism business. The farm makes mouth-watering cheese, grows hydroponic and high tunnel strawberries, and welcomes its visitors to milk one of four Jersey cows (the most calm and patient, we might add, of their

Nicole Bowden amazed with the beauty of the Poás Volcano.

Costa Rican Farmers Market stop.

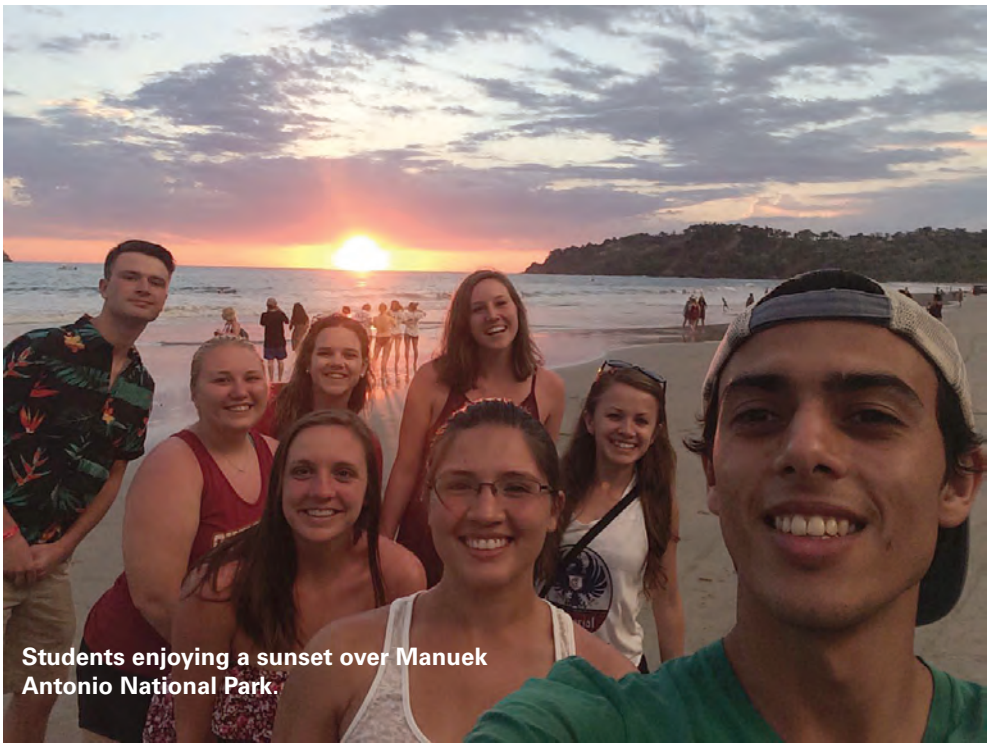
Keely Bradley enjoying a fresh mango on Francisco's plantation.

700-cow herd! A wonderful lunch that included milk in every dish was served to the group in their dining facility. UCR student, Minor Solano explained his research on Peruvian ground cherry (*Physalis peruviana*) at a University farm The students had a taste of the ground cherry fruits at the site and learned that UCR students most develop and run an alternative crop enterprise in order to graduate!

Grant Hughes milking a cow by hand at Lecheria El Corso.

March 11, 2017

Nicole Bowden, Junior in Hort and GRS, commented, "Being able to see a Costa Rican farmers market gave me the chance to experience what a typical Costa Rica diet looks like. It opened my eyes to a whole new world of fruits and vegetables". Her favorite fruit was the star apple (*Chrysophyllum cainita*). Sabino, a melon farmer near Orotina, gave us a tour of his Golden Honeydew melon farm. He sells his produce to the Dulce Costa Rican Melon Company. He has grown melons for over 20 years on over 200 acres. He gets seeds from the Netherlands and direct seeds into raised beds covered with black plastic mulch. He grows some seedlings and checks the germination and replants with seedlings where seeds in the field didn't germinate. Melons hand-picked on the farm are washed, sorted, graded and packed in boxes at the farm before being loaded into shipping containers for transport to Europe. Our third stop of the day required hand picking and eating mangos from the tree on Francisco's mango plantation. Fresh mangoes were a highlight for many students. Francisco has raised Mangos for over 30 years and sells for the local market only and for his family. He does not export any of his mangos. While in the mango field, the students had the opportunity to see a pair of Macaws flying over the plantation. They are an endangered species, but research is being done to bring them back into the area.


Students enjoying a sunset over Manuek Antonio National Park.

March 12, 2017

By Saturday night we had relocated to a resort hotel near Quepos, near the Manuel Antonio National Park on Costa Rica's central Pacific coast. The National Park encompasses a rainforest, white-sand beaches, and coral reefs. The students saw white-faced Capuchin monkeys, three-toed sloths, and hundreds of bird species. The park is about 680 hectares (1680 acres). The students enjoyed fresh fruit on the beach and a relaxing day with the UCR students.

March 13, 2017

Goodbye beach and back to work! Palma Tica is a palm oil company actively involved in cultivation, processing and production of oil palm products. They have 4500 hectares (11,120 acres) of palm oil production in the Central Pacific Region in Quepos. The trees are in blocks of 1-6 years, 6-18 years, and 18-40 years. They stop production on trees over 40 years old due to the fact that no equipment is tall enough to reach the palm fruit bunch to harvest. There are four main stages to harvest palm oil fruits. The palm fruit bunch is cut using a sharp sickle attached to a pole the reaches up to 51 feet high. Bunches are dropped to the ground and loaded in wagons pulled among the trees by water buffalo (necessary when heavy rainfall makes machinery impractical!). Collected fruits are transferred to large containers and transported to the processing plant. We had the opportunity to roam through the palm plantation with an agronomist and watch the entire process. We watched a presentation of the oil extraction process at the plant office.

March 14, 2017

Dole Pineapple was another favorite stop for the group. The plantation harvests two crops each year, with the second being the ratoon crop. Dole has 4500 hectares (11,120 acres) of pineapple production in Costa Rica.

After two harvests the fields are tilled and beds are reformed in preparation for planting. Selected slips or suckers are planted by hand. One worker can plant about two acres of pineapples per day or about 4500 slips or suckers. The workers brought us fresh pineapple from the field and we enjoyed a picnic lunch in


Pineapple plantation.

Anne Dinges eating fresh pineapple in the field.

Chester giving a tour of Dura Flor S.A. bromeliad greenhouse.

the pineapple field. Dole also has a large banana plantation in Costa Rica. We started in the banana processing facility. Banana bunches come from the plantation into the processing area on a mono-rail system. A "train" of banana bunches is pulled by mules or workers. In the plant, bunches are cut into hands that run through a disinfecting solution, before being trimmed, graded and boxed for loading into shipping containers and eventually ending up on our table. The plant can process between 2000-2500 bunches per day. We crossed the road to walk into the banana plantation to view the various stages of growth. This plantation was planted in 2014 and they try to harvest 5 generations. They plant 1500 plants per hectare.

March 15, 2017

Dura Flor S.A. in Alajuela, Costa Rica was a treat for all to see. Chester, son of the owner, has bred bromeliads since he was a young boy at the family's bromeliad farm and greenhouse. He explained the techniques of hybridizing the bromeliads in the greenhouse. Guzmania is the most popular bromeliad he grows. It takes at least 12 years to get a new hybrid to market. Eighteen employees make up his workforce. One of the unique plants we saw there was the pink pineapple. He's hoping in the next 8-10 years to make a hybrid selection. He also is working on an ornamental pineapple for the landscape industry. Werner Salazar, a graduate of UCR, invited us to his Dracaena farm to look at foliage plant production. He has one hectare of dracaena production under shade cloth. Werner is taking down ½ of the shade cloth houses and building three greenhouses to produce hydroponic cucumbers. He has a contract with Walmart to sell his produce. He will have 2500 square meters of greenhouse space to set up the hydroponic cucumber production. Werner's family ordered pizza from a local pizza restaurant where you order pizza by the meter. It was an enjoyable evening relaxing on the Salazar's patio, enjoying the warm Costa Rica evening.

March 16, 2017

The last day in Costa Rica was spent at Coope Tarrazu. The coffee cooperative was founded in 1960 by 228 small farmers. Today the cooperative has 3091 men and 1738 women that are members. The main objectives of Coope Tarrazu are: to develop a culture of sustainable coffee, offer a high quality coffee to our customers, and to improve the quality of life of people. Tarrazu is one of the premier coffee growing regions of Costa Rica and accounts for nearly 35% of the total coffee production in Costa Rica,. Tarrazu, at altitudes of 1000-1800 m encompasses about 45 surrounding communities, with fifty-six coffee-receiving stations for convenience of their members. The region has about 22,000 hectares (54,340 acres) of coffee production. We viewed a presentation on coffee processing from picking to bagging and toured the plantation and processing plant, though coffee harvest in the region is completed by March and the plant was not

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in operation. We did see the coffee pulp composting operation and watched the self-propelled compost turner in action. The tour ended with a chance to test coffee quality (a process called "cupping") and the opportunity to purchase the coffee of your choice.

Felix holding a coffee cherry.

Dr. Mark Gleason, Dr. Erin Hodgson, Dr. Donald Lewis and Barb Clawson, hard hatted at Coope Tarrazu.

Dr. Donald Lewis finding shade in the coffee plantation.

A wonderful group of Tico's hosting the ISU crew.

March 17, 2017

It's good to travel but it's also good to go home again. A layover in Phoenix on the trip back Des Moines offered a chance for reflection and sleep (in approximately equal measures!). The goals of a Study Abroad course in tropical agriculture are to see the challenges and innovations in agriculture in another climate and over a range of operational scales, to better understand the global agriculture economy, especially as it relates to export of perishable commodities, increase appreciation for the customs, history, and people of Costa Rica; interact with new friends from another part of the world and reflect on issues of personal identity and interdependence in a global context. At the end of the trip, students were very happy with the overall experience and felt they had benefited substantially. Many are ready to go again!

A huge thanks to Dr. Amy Wang for leading our tour of Costa Rican Agriculture.

Graduate Student Horticulture Society

Our 2016-2017 officer team. Left to right: Nick Flax, Austin Gimondo, Zach Hudson, Alex Litvin, Laura Irish, and Anna Talcott. Not pictured: John Krzton-Presson.

The Graduate Student Horticulture Society (GSHS) has continued its busy schedule this academic year. We focused our efforts on building relationships with our visiting scholars, planning service learning activities and community outreach, and readying for the annual Plant Sale Extravaganza in May.

A large facet of GSHS's purpose is building lasting, professional relationships between graduate students, faculty, and professionals. This year GSHS prioritized networking and cultivating strong bonds with our department's visiting scholars. Through organized events, we have exchanged horticulture knowledge as well as cultural experiences with these scholars.

The Plant Sale Extravaganza is hosted by Reiman Gardens every Mother's Day weekend, and is the main source of funding for our organization throughout the year. The sale is a cooperative effort and provides GSHS an opportunity to interact with Reiman Garden staff, area master gardeners, and other Iowa State University student organizations. Led by Austin and Moriah, our members grew tomatoes, peppers, herbs, and a variety of other vegetables as part of the sale. In addition to funding, the Plant Sale Extravaganza allows us to increase visibility for our organization, our department, and horticulture as a whole while networking within the Ames community.

During the 2016-2017 academic year, our members broadened GSHS's horticulture network by presenting data at conferences in ten states outside of Iowa.

Best wishes from the graduate students of the Department of Horticulture,

Laura Irish and Austin Gimondo,
GSHS Co-Presidents

2016-2017 Executive Team:
Outgoing President: Kristine Lang
Historian: Anna Talcott
Treasurer: Zach Hudson
GPSS Senator: Nick Flax
Social Chairs: Alex Litvin and John Krzton-Presson

Graduate Degrees and Students

GRADUATE DEGREES

HORTICULTURE SUMMER 2016
Joshua Earl Lenz (MS)

AGRICULTURE FALL 2017
Katrina Jayne Knudsen (MS)

HORTICULTURE SPRING 2016
Nicholas Julian Flax (MS)
John H. Krzton-Presson (MS)
Colton Riley Metzger (MS)
Brandon Michael Miller (MS)

CURRENT GRADUATE STUDENTS

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

Graduate Student **FOCUS**

Allen Chen

Hometown: West Lafayette, Indiana

Advisors: Dr. Shuizhang Fei and Dr. Andrew Lenssen

Degree Sought: Ph.D.

Major: Horticulture

Current Research: I am evaluating several species of perennial grasses as a cover crop for maize systems. A successful and compatible grass species can help increase the sustainable amount of maize biomass harvested and provide several ecological services without a reduction in maize yield.

Career Goals: After completion of my studies, I'd like to pursue a career as a researcher for the agriculture industry.

Hobbies: Rock climbing, working out, hiking, music, and watching movies.

Tim Dalsgaard

Hometown: Springfield, Minnesota

Advisor: Adam Thoms

Degree Sought: Masters of Science

Major: Genetics

Current Research: I am currently researching the effects of the Imants Shockwave aerifier and comparing it to more traditional aerification methods on sports turf. These treatments are being trafficked multiple times a week to simulate football games. I am tracking surface hardness, shear vane values, soil moisture, and percent green cover on each treatment.

Career Goals: Head Groundskeeper at some sort of athletic complex.

Hobbies: I enjoy golfing, driving around, hunting, fishing, and spending time with friends and family.

Ryan May

Hometown: Portage, Michigan

Advisor: Adam Thoms

Degree Sought: Masters of Science – Turfgrass Management

Major: Horticulture

Current Research: Shockwave – linear decompaction system analyzing infiltration rates and gmax readings on a number of different soil profiles.

Career Goals: Head Groundskeeper at college or professional level.

Hobbies: I enjoy sports, music, hanging out with friends and spending time with family.

Supplemental overhead HPS lights and in-canopy LEDS are both used for hydroponic production of tomato in a teaching bay.

GREENHOUSE Update 2017

by PETE LAWLOR, Greenhouse Manager

This year the greenhouses and growth chambers are again very busy with teaching and research. In the greenhouses, ongoing research focuses on growth regulators, germination of hickory, biomass genetics, fertilizers (both hydroponic and soluble types), hydroponic production, lighting levels and LEDs. In the growth chambers much progress is being made with spinach and cold hardiness research among other research with germination of hydroponic commodities.

The latest addition to our teaching tools are in-canopy LEDs used in the Hydroponic Food Production course. These lights are becoming more popular in the industry to increase production by enhancing light quantity within the plant canopy. They are energy efficient and since they do not produce an excessive heat load, they can be placed in very close proximity to the plant. Students will learn about the benefits in the production of hydroponic tomatoes.

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Greenhouse Update, 2017 (continued)

In July, the Departments of Agronomy (Aaron Brand, BS Horticulture, 2003) and Horticulture (myself BS Horticulture 1983) hosted nearly 110 greenhouse managers from the USA and Canada. The AERGC, Association of Educational and Research Greenhouse Curators, have an annual meeting each summer to network, learn the latest, tour facilities and generally have a great time. It was a big deal for ISU Hort! We are all part of a vibrant network of managers from academia, research and public conservatories and associated vendor sponsors. We toured local production facilities, the Bio-century Farm, Reiman Gardens, Jack Trice Stadium, our greenhouses, the Herbarium. We also learned about cotton genomics and corn genetic manipulation. Our Master of Ceremonies and the group founder was the Honorable Jim Kramer (BS Horticulture, 1975). He will always be an Iowa Stater and recalled fond memories of Friley Hall, the old greenhouse range and conservatory and Clyde Williams Field. It was our pleasure to host and Honor Jim.

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!

Root system photographic chamber.


Hickory nut research in the Horticulture greenhouses.

The best dressed greenhouse student in North America making the grade in Spring Greenhouse Crop Production class.

Solar powered food dehydrator testing for use in developing countries.

ISU Horticulture Research Station

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

by NICK HOWELL, Superintendent

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

Students

The Horticulture Station is an important part of the horticulture student's academic experience at Iowa State. This season two students completed internships at the station. Eli Samo, sophomore in Horticulture, managed planting, care, and maintenance of the Home Demonstration Garden. The garden, which is part of a larger graduate student project to grow vegetables for local food pantries, also kept Eli busy working with master gardeners. He provided these dedicated volunteers training and assistance in the harvesting and sanitation of the crops grown in the garden. More than 2,400 lbs. of produce were harvested. The second intern Ben Fox, senior in Horticulture, was responsible for the construction of a high tunnel. This tunnel was dismantled and moved to the Horticulture Station from the ISU Armstrong Farm, Lewis, Iowa, and will be used to grow produce for the student production internship.

Moriah Bilenky, station graduate assistant, began her research project in 2017. Working with Dr. Ajay Nair, she is looking at vegetable production techniques using chickens as an added value product. Farm Graduate student, John Critser, Auburn class of 2016 moved here from Alabama in 2016 and began looking at grape production techniques to reduce vigor and increase production. Unfortunately, a life change didn't allow him to continue and he resigned in July of 2017. We are actively recruiting a new master's student to fill John's position and we wish him the very best in all of his future endeavors.

There are many students who work and 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, and flowering crabs, also were

The new prairie as it appeared in 2017. In the background is the big oak. This Bur oak is the 14th largest in the state of Iowa and is estimated at being over 300 years old.

used for research purposes. In addition to the horticultural crops, projects using prairie plants and soybeans were conducted. Projects involving bees, wasps, and tree swallows added more research diversity.

One significant new PHD level project under Dr. Ajay Nair in 2017 included the construction of 3 new small tunnels. As a result of a preliminary study growing colored peppers in high tunnels under different levels of shade, these new 15 ft X 30 ft high tunnel structures were constructed so the study could be properly replicated. Also, in a 36 ft X 90 ft tunnel Dr. Nair examined the effects of tomato grafting to control soil-borne diseases. Dr. Nair's research using cover crops continued. A cereal rye cultivar study and a study growing garlic using cover crops was completed in 2017. Dr. Diana Cochran's hops research continued in 2017 as well. 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.

Landscape and Infrastructure

The prairie, seeded in 2015, continued making major strides in its establishment. Ten acres of prairie was added below the dam of Horticulture Lake. This area with its remnant oak/hickory savanna was cleared of non-native and invasive woody plants in 2010 and in 2015 the herbaceous vegetation was killed and then seeded with a diverse prairie seed mix. In its second season, the prairie forbs took control and was extremely colorful all season long. Also, the ancient Bur oak, the center piece of the prairie got attention in 2017. After sharing photos of the big oak with Mark Rouw, the big tree expert at the Horticulture Department's annual Shade Tree Short Course, measured and documented the size of the tree and found it was the 14th largest Bur oak in the state of Iowa and estimated its age being over 300 years old. The prairie project is a part of the national Monarch Butterfly habitat improvement project and will not only benefit the Monarch Butterfly but also provide the many other benefits of diverse prairie.

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ISU Horticulture Research Station (continued)

After several years of removal of dead and dying landscape trees, replanting began in 2017. Five Heritage oaks and 10 white oaks were planted at the station. In addition, the old lilac hedge along the west edge of the front lawn was removed and a new red twig dogwood hedge was planted in its place.

Four high tunnels were constructed at the station in 2017. One 36 ft X 90 ft and three 15 ft X 30 ft tunnels were added and will be used for both teaching and research. The Horticulture Station now has 11 high tunnels on site. The apple sorter got some long needed improvements. The wooden 1940s era components were replaced with modern equipment. It is now possible for the apples to be sanitized as part of the sorting and sizing process. A new produce washer also was added to our equipment. This machine is capable of washing and sanitizing produce ranging from watermelons to tomatoes and even root crops like carrots and potatoes. With this new equipment the station has seen a significant savings in labor processing the fruit and vegetables for market.

Industry and the Public

The research station hosted five field days for those interested in vegetable and fruit production, hops, turfgrass, cover crops, and general home gardening. The most notable field day this past season was the Horticulture Research Station's 50th anniversary celebration. This special day included tours of the farm, apple sorter demonstrations, kid's games, and a farmer's market. A special presentation by the Dean of the College of Agriculture and Life Sciences, Dr. Wendy Wintersteen, and Horticulture chair, Dr. Jeff Iles, acknowledged the years of important work that has occurred and also recognized all those who work at the farm. In addition, special recognition of the families of the former superintendents was given by Dr. Iles. The program ended with special guest Charity Nebbe, of Iowa Public Radio, interviewing farm researchers about their work and their impressions of the station. It was a very special day with over 300 people in attendance. Preparation for this day was a significant amount of work and the Horticulture Station staff would like to thank all those who helped, especially the Horticulture and Turf Clubs.

In addition to the field days, the farm hosted 19 tours and 8 other events and meetings for the public. More than 1,200 people visited the station in 2017.

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.

In celebration of the Horticulture Research Station, Jack Trice Stadium Field Manager Tim Van Loo sent his student crew out to paint the ISU logo on the front lawn for our visitors to enjoy.

ISU Horticulture Research Station **50th Anniversary**

Jeff Iles and Wendy Wintersteen address the crowd gathered for the 50th anniversary.

On September 16, 2017, the ISU Horticulture Research Station celebrated 50 years of research, teaching, and extension at its current location, seven miles northeast of campus. The station, opened in 1967, is home to a wide variety of projects and activities focused around field-scale horticultural research, teaching, and extension programs. The celebration was marked by a public field day, tours of the station, a market of station produce and a program. The program was hosted by Charity Nebbe, Iowa Public Radio personality and Jeff Iles, chair of the Department of Horticulture, with remarks by CALS Dean Wendy Wintersteen. More than 300 people attended the event.

The 230-acre station features a 12-acre lake (used for irrigation), vineyards, orchards, a hopyard, turfgrass plots, prairie, fields for growing fruit and vegetables, and shade and ornamental trees. During the 50 years following its relocation from campus to the current site, the station has hosted thousands of students, growers, faculty, and staff as they learn, network, and enjoy the park-like setting. Iles referred to the Horticulture Station "as one of the best (horticultural research stations) that I've seen in my travels around the country." He gave much credit to station superintendent Nick Howell, who has led the operation since 2006. Howell is the fifth station superintendent.

The station has 85 projects led by 24 faculty from five ISU departments and hosts 3,000 visitors annually, 11 distinct field days plus numerous ISU classes.

Charity Nebbe conducted interviews during the celebration.

2017 ISU Fruit and Vegetable Field Day

by DR. AJAY NAIR

The Department of Horticulture in partnership with Iowa Fruit and Vegetable Growers Association (IFVGA), Practical Farmers of Iowa (PFI) and the Leopold Center for Sustainable Agriculture organized the 2017 Fruit and Vegetable Field Day at the Horticulture Research Station, Ames IA on 7 August 2017. Drs. Ajay Nair and Diana Cochran in the Department of Horticulture coordinated the event. The field day attracted 175 participants that included growers, extension staff, county horticulturists, undergraduate and graduate students and representatives from Iowa Department of Agriculture and Land Stewardship and USDA NRCS. The field day provided research-based information on a variety of topics including high tunnel pepper production, tomato grafting, peach production, grape cultivar trial, integrated vegetable and poultry production, and insect management in cucurbit crops. In addition, the field day demonstrated the working of equipment including potato digger, between row weed cultivator, and a fruit washing station.

The event started at 2 p.m. with a welcome note from Drs. Nair and Cochran and Mr. Nick Howell (Farm Superintendent). Dr. Angela Shaw from the Department of Food Science and Human Nutrition provided information about the new Food Safety Modernization Act and things that growers need to do be compliant. Mr. Joe Hannan, Horticulture Field Specialist, shared information on proper sampling and testing procedures for water sampling. Darrell Geisler (IFVGA) and Ms. Liz Kolbe (Horticulture Coordinator, PFI) also attended the field day and interacted with growers. The Field day gave growers an opportunity for a real time assessment of new, innovative, and sustainable research initiatives in the area of fruit and vegetable production. The first stop was the demonstration of operation of a produce washer. The unit washes and sanitizes produce and increases efficiency and safety during the postharvest phase. The next stop was the high tunnel pepper production where Dr. Nair and Kristine Neu, PhD student, provided information on appropriate cultivar selection and selection of shading material to maximize yield and quality in high tunnel colored pepper production. At the second-high tunnel experiment participants learned about benefits of grafting in tomato production. Ms. Kristine Neu, spoke about the ongoing grafting root stock experiment and discussed the potential of grafting to provide disease tolerance and enhance crop productivity, in high tunnel crop production. Several aspects such as cost, construction, maintenance, and production methodologies in high tunnel crop production were discussed.

Dr. Diana Cochran highlighted the new and unique peach production system inside high tunnels. This production technology has the potential to mitigate frost damage thereby improving overall tree growth and fruit quality. She also discussed the ongoing hops project that is investigating the effect of irrigation and fertility management in hops production. She also demonstrated the working of hops harvester that efficiently removes hop cones from the vine. Max Murphy, undergraduate student in Dr. Mark Gleason's laboratory, demonstrated the use of a new insect netting called Protek net used to manage cucumber beetle and bacterial wilt in squash and melons. Alex Harter demonstrated the new disease forecasting system to manage fungal diseases in strawberry production. Moriah Bilenky, graduate student in Dr. Nair's laboratory, spoke on developing integrated production systems that could utilize vegetable crops and poultry production. Field Day participants got a glimpse of mobile chicken coops that were set up in the field following the harvest of a spring broccoli crop. Brandon Carpenter demonstrated the working of a potato digger and between row weed cultivator. This provided participants an opportunity to see the equipment in operation. Often such equipment are expensive and growers are hesitant to make a purchase without seeing the equipment in action.

The field day provided graduate students an opportunity to actively participate and engage growers in their research projects. The afternoon session of the field day was followed by supper at the farm. Most vegetables and fruits served during supper were produced at the Horticulture Research Station. After the supper, growers mingled with farm staff, researchers and graduate students and had discussions on needs and challenges for the fruit and vegetable industry in Iowa. Dr. Iles, Chair Department of Horticulture delivered the vote of thanks and gave away door prizes. The field day was recorded by Channel 13 News and later shown on Channel 13 Agribusiness Report.

TURF Field Day

Dr. Nick Christians discusses turfgrass weeds at the 2017 Iowa State Turfgrass Field Day.

Dr. Adam Thoms presents the performance of various turfgrass and fertility treatments to the lawn care professionals in attendance.

by DR. NICK CHRISTIANS

The 2017 Iowa State Turfgrass Field Day in partnership with the Iowa Turfgrass Institute was held on September 12, 2017. This year's field day was moved to September to better display the research results from the traditional July date. Attendance increased greatly with 225 registered attendees, up from around 80 last year. This year's event also included a return of the turfgrass equipment and management demonstrations, with 21 companies taking part in the demonstrations.

The field day started with three hours of education in three separate areas of focus: golf course management, sports turf management, and lawn care. Each area of focus had

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Mr. Ben Pease, Turfgrass Research Associate, discusses sports turf research projects to attendees of the 2017 Field Day.

research projects currently underway at the Horticulture Research Station, some of the trials discussed were: turfgrass variety trials, amino acid effects on creeping bentgrass putting greens, putting green rootzone recycling trials, new products for athletic field paint, fertility and seed blends performance for lawn care professionals, improving drainage on your course or athletic field, and comparing aerification methods for optimizing athletic field safety and performance. The event also had Iowa Pesticide Applicator Training, and a demonstration on how to prevent Emerald Ash Borer infestation.

The last hour of education included a turfgrass pest walk covering everything from turfgrass weeds, diseases and insects. Lunch was from Hickory Park, and demonstrations of equipment were from 1 to 3 pm. Look on the Iowa State Horticulture Homepage and Turfgrass Blog for the date of next year's field day. We hope to see many of you in 2018!

Not all was turfgrass at the recent turfgrass field day; Jay Goughnour measures an ash tree to demonstrate how to prevent EAB infestation.

REIMAN GARDENS

Conservatory display Totally Tubular
The Totally Tubular display in the Conservatory was inspired by our theme of water and also featured one of the Washed Ashore sculptures, the jellyfish.

by MARIA TEPLY

In 2017 Reiman Gardens celebrated water as its theme and the plant, insect and human lives it sustains. The Gardens was alive with colorful displays inspired by all things water-related – from umbrellas and fountains to sea monsters and surfing. Many joined us at Reiman Gardens as we showed the power and beauty of water!

From April 29 through October 31, Reiman Gardens featured 10, larger-than-life sea creature sculptures made from trash collected from beaches to graphically illustrate the issue of the pollution in our oceans and waterways. Clean water is important to all life, and Reiman Gardens was the first public garden to bring you this message of conservation, protection and recycling through these original, inventive and imaginative garbage-to-art sculptures.

Reiman Gardens also continued its annual holiday train, the RG Express, which was built by Applied Imagination, a company whose train displays are made entirely from natural and botanical materials. It featured a replica of Iowa State University's historic Dinkey train, several bridges and scaled recreations of ISU's Morrill Hall, Beardshear Hall, Campanile and the Hub. In 2017 the Gardens unveiled a new structure as part of the train show, the Marston Water Tower.

The Gardens' newly completed 20-year master site plan reworked and reinvented many of the outdoor garden spaces and also included a new visitor center. Reiman Gardens received funding to start construction on two portions of the new master site plan. They are the Water-Wise Hillside Garden (along the west fence) and Sycamore Falls (at the south end). These are set to be completed in the near future.

Reiman Gardens would like to thank all of our members, visitors, volunteers and stakeholders for their support in 2017.

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Reiman Gardens (continued)

Campanile Garden display From the Deep
From the Deep display in the Campanile Garden was inspired by our theme of water and featured sea monster sculptures.

Washed Ashore great white shark sculpture
Greta the great white shark sculpture was a part of the Washed Ashore sculpture exhibit.

2017 Spring Break group.

EARTH

Education and Resiliency Through Horticulture

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

by GAIL NONNECKE, DAVID MINNER and HANNAH DARR

Through the EARTH Program, Iowa State students travel to the U.S. Virgin Islands and the island of St. John for a summer or an entire semester to work, live and help in the community. University students assist with school gardens and help grow local fruits and vegetables sustainably. The "service-learners" also have the chance to help teachers in EARTH, environmental science and culinary arts classes and create learning opportunities for school children. In addition, Earth Program students assist in the St. John and US. Virgin Islands' communities.

Over the past year, the EARTH Program hosted twelve service-learners who were actively involved in youth, horticulture, agriculture and food projects at Gifft Hill School (GHS) on St. John and service projects in the greater community. We are very grateful for everyone who has supported this program for the past 12 years and are excited to see it grow!

2017 Updates

Service-Learning with the EARTH Program is an excellent opportunity for students to complete ISU course credits while off-campus, and learn while serving. The implementation of the new cultural and U.S. diversity in the U.S. Virgin Islands course has demonstrated the EARTH Program's commitment to honoring local culture, which also enriches the ISU students' experiences. We partnered with the St. John Historical society and local U.S. Virgin Islanders to develop course content and continue to refine the course and related projects, which help the local people of St. John tell their story and our students learn about the cultural diversity of these U.S. islands. Some of the course highlights include focused interviews of local U.S. Virgin Islanders that reflect the diversity and history of the island, student reports on previously recorded oral history archives of U.S. Virgin Islanders, and personal reflections from field trips to ruins, estates, and historic settlements of St. John and other islands.

The EARTH Service Learners have been enthusiastic assistants in the "Feed the Hungry" initiative at St.

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

Visiting students at the St. John Gardens.

EARTH (continued)

Celia's church in St. John. Students help with meal preparation, serving, and clean-up once a week to provide a warm meal to some of St. John's most vulnerable community members.

A Farmers Market selling produce from the EARTH gardens is held at GHS once a week. It is staffed by EARTH service-learners and is open to the entire community. Students have worked to develop produce identification and use cards for community members to best utilize the food purchased and limit food waste.

Drs. Julie Blanchong and Richard Schultz and Emily Zimmerman led an Iowa State University spring break, 2017, service-learning trip to St. John.

Sierra Becker and Tessa Anderson gathering the garden harvest.

St. Croix Ag Fair.

Seven ISU students participated in service and educational activities while in the U.S. Virgin Islands. The group helped to clear a 3,600 square foot area, for the agroforestry plantings and the Gifft Hill School Arboretum Grant Project at Gifft Hill School. The group also assisted the National Park in rebuilding trails. The Spring 2017 EARTH Cohort accompanied the group on cultural hikes and hosted a dinner at the EARTH Program Dormitory and Cottage.

New garden additions in 2016 and 2017 have been created to meet the demand for produce for school and community feeding programs. Produce grown in the now 12,160 square feet garden is used in school snack, farmers market, soup kitchen, and a senior center's hunger-fighting initiatives.

Hurricanes Irma and Maria struck St. John in September 2017, devastating the island and delaying the departure of service-learners in the Fall semester. The four students scheduled to serve have been continuing their coursework in Ames and participating in service-learning activities at Food at First, Habitat for Humanity, and Wabi Sabi Farm. In addition, the students have become FEMA certified and enrolled in an emergency preparedness course in preparation to travel to St. John in mid-November and assist in rebuilding St. John and the EARTH Program.

Fall 2016, Spring and Summer 2017 Student Projects

Service-learners of the EARTH program developed and implemented projects at Gifft Hill School and greater St. John community as a component of their ISU Service-Learning Course. Students select projects relevant to their field of study that benefit the U.S.V.I.

Vermicomposting bin.

Vermicomposting

Two ISU EARTH vermiculture compost bins have been constructed and are being used to demonstrate composting of residential kitchen waste. Five additional vermiculture bins were assembled into DIY kits with instructions. Dr. Minner and service-learners presented multiple composting and vermiculture workshops throughout the U.S. Virgin Islands.

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EARTH (continued)

School Snack Program

After assessing the school lunch system of the Virgin Islands, student researchers sought out a lunch program that utilized locally sourced and nutritious food options. In the spring of 2017, students implemented a snack program that operated on produce obtained from the schools' garden. A sun powered dehydrator helped to ensure the preservation of harvested goods.

Irrigation

Rainfall is the primary source of people's water supply in the Virgin Islands. Due to the infrequency of rain events, service learners devised two, ecologically efficient irrigation systems. The systems were designed to be economical, safe to operate, and reproducible for small scale gardeners.

Hydroponics

Service-learners continued to implement and improve upon a hydroponics system at Gifft Hill School. Soils on St. John are shallow and need to be rebuilt, making hydroponics possibly cost-effective alternatives that would address the lack of soil sufficiency and quality.

Vector Education

Vector borne illnesses maintain a prominent existence in the Virgin Islands. A website-based curriculum that synthesized relevant health information and facts for middle school students to evaluate was established and will be used by teachers.

Composting

After assessing the Islands impending landfill closure, service-learners gauged the feasibility of turn-pile composting in partnership with local restaurants. Food waste was collected from local restaurants imitate the feasibility of maintaining a large scale, city based composting facility.

Farmers Market Nutrition Education

A student researcher aimed to make nutrition facts and recipes available for produce native to the Islands. The student researcher catalogued local people's recipes and USDA certified nutrition facts to construct a pamphlet that could be passed out to consumers at the local farmers market.

#PowerUpUSVI

ISU on-campus initiatives to raise funds and support for the USVI have been undertaken by the Horticulture and Global Resource Systems learning communities and EARTH program participants. Baked good sales and a letter writing campaign is underway, with the hopes of raising money to purchase a generator for GHS. If you are interested in supporting these efforts, please contact Dr. Jeff Iles, Chair, Department of Horticulture or Dr. Gail Nonnecke, University Professor, Department of Horticulture and Global Resource Systems.

Adam Davis working with irrigation.

Lia Gomez gathering mangoes.

Building a bottle wall.

EARTH Student Experiences

Working with students at St. Croix Agricultural Fair to harvest and prepare produce for the farmers market.

Adam Davis
Agriculture Education
EARTH Spring 2017

I love that there is always something new and exciting to learn about agriculture, and I enjoy the diversity in content and material. I heard about the EARTH Program through my family, and knew that it was an experience I wanted during my collegiate career. After participating in the World Food Prize as a "Borlaug Scholar", I realized how much I enjoyed learning about agriculture in other parts of the world and things to consider when trying to improve current practices. The EARTH Program seemed like the perfect opportunity for me to apply that knowledge in a new area.

During my service learning internship, I learned about St. John through research, community events, and hikes. Activities like this were so important because they allowed us to learn and appreciate the history of the island while allowing us to meet the people who live on St. John. I soon learned how limited water resources were on the island, and I was able to develop projects related to irrigation of the school gardens. I constructed two different drip irrigation systems that maximized the efficiency of watering in the gardens. One of the systems was constructed using recycled materials, and it is gravity fed. The students were able to help construct and assemble the recycled irrigation system in the container garden.

Over the course of four months on the island, I was able to learn how to work with students, gardening techniques, and about the culture and history of St. John. I grew substantially as an individual due to this service learning internship. I was also able to better my professional skills through communication and working with the students at Gifft Hill School. One of my favorite parts of the service learning internship was our trip to St. Croix for the annual Agricultural Fair. While on St. Croix, we were able to tour the UVI's massive aquaponics system, visit the Agricultural Fair, explore the island from end to end, and even kayak through a bioluminescent bay at night. This experience, along with the rest of my service learning internship, will contribute to memories I will reflect upon often and cherish.

This service learning internship had a large impact on my life. Working with the students and in the gardens at Gifft Hill School was such a unique opportunity for me as a future educator. I have been able to refine my communication skills through my interactions with students and teachers, as well as the other service learners. I look forward to the journey that teaching will take me through. This unique, challenging, and rewarding opportunity provided me with a framework and reflection as I enter into the education field. The EARTH Program will provide returns on investments throughout my career, and my hope is that it will be enrichment in my instruction to many students to come. It was a privilege for me to be allowed to study abroad on the island of St. John, and it will be an experience I remember forever.

Completed vermicomposting bins for implementation.

Amanda de Carvalho
Global Resource Systems and Sustainability
EARTH Spring 2017

I've lived most of my life in Puerto Rico, so the opportunity to apply my coursework in sustainable food systems on an island in the Caribbean was a main attraction of the EARTH Program for me. I was searching for a program that would allow me to work in a new community and students on issues regarding sustainability and I found that on St. John!

I worked on vermicomposting and garden production projects. My goal was to help the garden produce worm

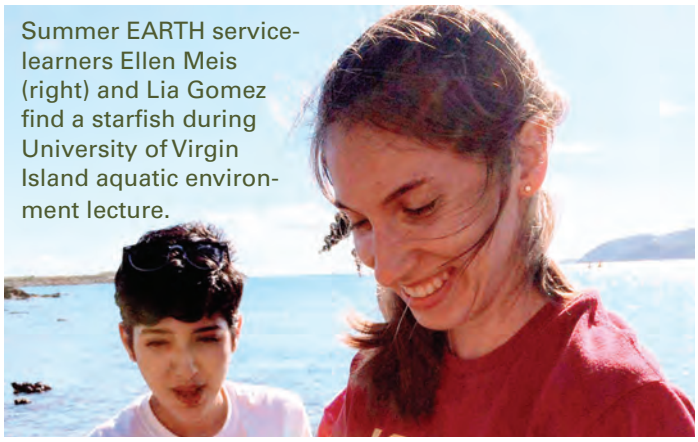
(continued)

EARTH Student Experiences (continued)

casting that could improve soil quality and increase crop yields. In order to do this, I built worm bins and kept a detailed history of all produce grown and harvested at Gifft Hill School. These projects helped me to develop my critical thinking and problem solving skills while working on a diverse team.

There are so many memorable moments of my experience with the EARTH Program. I really enjoyed assisting with events at the school. One of my favorite events was the annual school auction, where students prepared meals, entertainment, and activities for attendees. Many people from the community came out to support student education. I was astounded to see how the guests at the auction valued the education of students whom they may not know!

The most rewarding part of my EARTH Program experience was working with students from Gifft Hill School and Iowa State University. It was wonderful to be involved in a community of people who wanted to learn more about their environment, culture, and the livelihoods of others. I really valued the opportunity to learn and teach others, and serve as a role model to younger students. I hope that my small part in this program has aided at least one student to learn and grow, because undoubtedly the program has allowed me to do so.



Summer EARTH service-learners Ellen Meis (right) and Lia Gomez find a starfish during University of Virgin Island aquatic environment lecture.

Ellen Meis
Biology and Environmental Science
EARTH Summer 2017

I come from a small town in Northwest Iowa, and because of my eagerness to travel, explore, and experience the world, studying abroad was always a major goal for me. This summer I was very fortunate to be selected for the EARTH Program, a six-week service learning study abroad in St. John, U.S. Virgin Islands. I chose EARTH because it offered a flexibility and variety that other programs did not. I was able to tailor my project to my interest in vector-borne disease, as well as serve the community and learn about environmental sustainability.

For my project while on St. John, I decided to create a web site and worksheets on mosquito-borne disease in the islands (Zika, dengue, and chikungunya) to be integrated into the health class at Gifft Hill School next fall. Besides the project, I helped in the school gardens and with the farmer's market and Farm-to-Table class; composted organic waste from some of the restaurants in Cruz Bay; worked in the soup kitchen at the church; assisted in the construction of a bottle wall at the school; and learned about the island's history through cultural hikes.

The service learning component I found really unique and important to the experience – service learning offers so much more community involvement than a typical semester school exchange. I met lots of local people and learned about the community's issues from both experiencing them myself and from people who live with them every single day. I gained a wealth of knowledge on food, water, and waste issues from an island community standpoint, was introduced to the different possibilities of eco-living, realized the tremendous potential of an effective farm-to-table program to create a healthier community, and began to understand the cultural identity of St. John from the Taino people to the Danish sugar plantations to the tourism industry today.

It's truly difficult to choose a favorite part of my experience, but I think if I had to choose it would be all the people I met, including my fellow interns, program directors, and each person on St. John that gave us some of their time, from the Feed the Hungry women at the Catholic church to the women at Fintrac, Inc. and the people in the Island Green Living Association. I loved hearing their individual stories and visions – it was interesting and inspiring. I liked that I felt I was able to contribute to the community and school betterment in some small way by being a part of the program, and I loved being able to explore the island's history, flora, and fauna.

I know there are several parts of this experience that I will carry with me going forward. One simple thing I've noticed is that I think more about my water use and what happens to things that I throw away. I have a desire to learn more about growing my own food, and I feel more confident in my own ability to adapt to and grow in a new setting and culture. This internship also helped me affirm my desire to work in a global capacity and has made me think about what it really takes to make a real positive impact in a community. I am very grateful for the experience and all the ways I was able to grow in the six weeks I had in St. John!

Study Abroad in Germany


Tree planting at Hohenheim University.

The faculty and staff of the Department of Horticulture (Ajay Nair, Gail Nonnecke, and Richard Jauron) led a two-week, study abroad program to Germany for students in the College of Agriculture and Life Sciences. Eight students met international perspective requirements and learned about Germany's fruit and vegetable industry while visiting horticultural regions and enterprises, interacting with faculty and students at German universities and research institutions, and touring historical sites, some of which were over 2,000 years old.

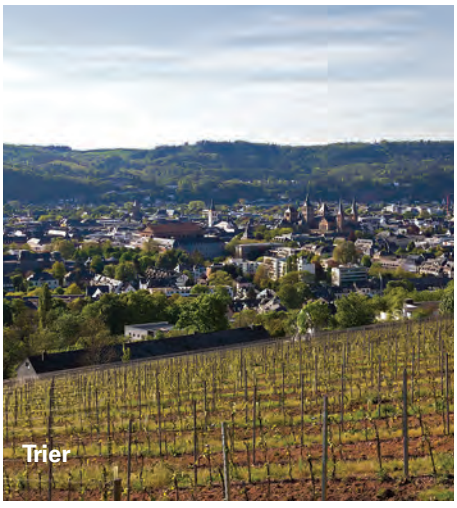
The program was held from May 8 – 20, 2017. After arriving at Frankfurt, the group traveled to the towns and cities of Rudesheim Trier, Heidelberg, Stuttgart, Konstanz, Garmish-Partenkirchen, and Munich and surrounding areas.

While at Rudesheim, the group was hosted by Geishenheim University and viewed specialized climate research facilities, called FACE (Free Carbon Dioxide Enrichment), food crop horticultural research, and winery teaching facilities. There also was a student exchange with Geishenheim University students and visits to the university vineyards of the Rheingau wine-growing region. The visit culminated with a group dinner at Schloss Johannisberg.

In Trier, historic structures from ancient Roman times were some of the featured attractions. Sites included the Porta Nigra (preserved 2nd century CE Roman city gate), the Basilika (throne room for Emperor Constantine - the largest surviving single-room structure from Roman times), and the Trier Cathedral (oldest church in Germany, portions of the structure date to the 4th century CE). Students also traveled in the Trier region and along the Mosel River to learn about grape production systems on the steep slopes and winemaking. They especially enjoyed learning about the propagation and grafting of grapevines.

Next, the group visited the State of Baden-Württemberg's Horticultural School and Research Station near Heidelberg and learned about applied research projects to benefit the horticultural industries. Students explored Heidelberg Castle and while in Heidelberg, they attended a concert of Mendelssohn's music performed by the Heidelberg Philharmonic Orchestra and Bach Choir of Heidelberg.

Replica of Roman wine ship.


Trier

Study Abroad in Germany (continued)

Algebraic equation in flowers on Mainau Island.

During a visit to the University of Hohenheim in Stuttgart, two apple trees were planted to celebrate the partnership and agreement with Iowa State University. Planned tours with university departments, research farms and local vegetable growers showed the importance of vegetable production in the region. Asparagus and strawberries were in season and many farmers' markets and restaurant menus offered "white" or etiolated, field-grown asparagus, which is available only for a limited time.

Additional visits to the Monastery Island of Reichenau (cradle of western culture and the birthplace of modern western horticulture), Mainau Island (the flower island) and its botanical gardens, Lake Constance in Konstanz, and the German Alps at Garmisch-Partenkirchen showcased the natural beauty of the region. Tours of apple orchards and hops plantings demonstrated production systems and applied research projects which aim to increase mechanization and produce high quality crops.

The final tours of the trip included travel through the dairy and cheese region of Allgäu. Bavarian visits included Schloss Neuschwanstein (the inspiration for Sleeping Beauty's Castle at Disneyland) and the BMW Museum in Munich.

On May 20th, the group arrived back in Des Moines, tired but happy from the packed itinerary, and with a better understanding of Germany's fruit and vegetable industries, history, and culture.

Students at Neuschwanstein Castle.

Horticulture Club 2017 Update

by Brooke Jerie

Local foods fest.


NACTA team.

MACHS team.

Homecoming float.

It has been yet another exciting year for the ISU Horticulture Club! As a club open to any and all majors here at Iowa State, we pride ourselves in immersing our members in as many hands on opportunities as possible throughout their time with us. This year was no exception with our various fundraising sales, three different conferences and competitions, and community outreach projects.

Throughout the course of the school year we provide our members' with many different ways to manage, grow and arrange different horticultural crops to sell around campus to other university students and staff. These sales not only bring in money for our various trips and activities, but they give our members' those real life experiences that they can then bring with them to their future careers. Our sales include: a local food fest where we sell apples from the ISU Horticulture research station and local cider, a poinsettia sale where we bring in and grow, over 100 plants of various varieties, a rose sale around Valentine's day for our members who like floral arranging, Cyclone market a campus wide sale where we sell succulent potting's, and our spring sale where we partner with the ISU horticulture graduate students and local Master Gardeners for a large plant sale at Reiman Gardens where we provide hanging basket arrangements.

We pride ourselves in giving our members as many educational opportunities as possible—not only through the experiences they gain during our sales, but also by attending conferences and competitions across the country. Last spring we sent teams to two different competitions: NACTA(North American Colleges and Teachers of Agriculture) and NALP (National Association of Landscape Professionals). We had students place in the top of every event we participated in at both NACTA and NALP, and took first in the four year division at NACTA. This fall we sent a large group of students to MACHS (Mid-America Collegiate Horticultural Society) where our individuals placed in the top of their divisions, and took third team overall. Not only are these events educational, they also provide a chance to network with other students from all different schools and form lifelong memories.

Horticulture Club is also dedicated to our community and education. We donate our time every year to the United Way auction, where we auction club time to provide basic yard maintenance and pruning. We also do various plantings and cleanups across the ISU campus and the city of Ames. Something new to our club this year is our education committee. This committee was formed with the idea of spreading the word on what all the field of horticulture has to offer.

Over the past year, we as a club have had so many amazing opportunities and are eager and excited to see what the next year holds.

Go Cyclones!

Students who came out to spread fertilizer at Reiman Gardens for our first application of the Fall.

TURF Club Update for 2017

The 2017-2018 school year has gotten off to a great start. There are a good number of transfer students and freshmen joining the program. We have also started with our fundraising campaign to fund the students who go down and compete at the Sports Turf Managers Association conference (STMA) and the Golf Course Superintendents Association of America conference (GCSAA). The students who go down represent the program in the STMA Student Challenge and the GCSAA Turf Bowl, which are team based exams that cover all areas of turfgrass management. For the past couple of years the STMA teams have done very well by getting 2nd and the GCSAA teams are looking to get back to first place like many past years. To do this a new class has been made where the students study for these exams and work together to better themselves in all aspects of turfgrass management.

So far this summer and fall we have done multiple different projects at Reiman Gardens to raise funds. This summer sodding was done in a few areas at Reiman where there were sculptures throughout the gardens. To start the fall semester the club put down fertilizer on all the grassy areas of the gardens. Also the club was asked to seed a large part of Reiman Gardens where construction was completed. The club worked with campus services to use a hydro seeder on areas more susceptible to erosion and used push broadcast spreaders to seed the rest of the area. After seeding was completed a few members set up temporary sprinklers in areas where there is no in ground sprinkler head coverage. The 2017-2018 school year is shaping up to be a good one for the Turf Club with a great group of active students along with a new class to better prepare us for the Turf Bowl and Student Challenge.

Professor Adam Thoms using the hydroseeder.

Using the hydroseeder at Reiman Gardens when seeding area that was finished with construction.

2017 HORT Student Banquet

Annie stands next to the commonly used tractor in the vineyard.

Vineyard Experiences

Anne Butler, summer HORT internship

Three Branches Vineyard is located in Arena, Wisconsin. It was founded in 2010 by my aunt and uncle, the owners, Randy and Rosemarie Hartung. The vineyard is currently 9 acres of grapes but by 2020 the total acreage should amount closer to 15 acres. Three Branches grows seven cultivars of grapes, both reds and whites, all of which they sell to local wineries. Because of my connection to the Hartungs, I was offered a summer job as a young 16 year old. What began as a simple job to make some money quickly changed into a passion and my career choice.

My experience and commitment has only grown since that first summer. The summer of 2017 marked the completion of my fifth summer working at Three Branches. This summer was a particularly exciting growing season because I was able to take on much more responsibility than previous summers. The Hartungs are avid travelers. As a result a large portion of the growing season was left to my supervision.

I began my internship on May 8th. The first week of work was primarily made up of office work. I was happy to be included in a financial meeting reviewing the past and looking to the future. This was helpful to be able to see all that goes into setting up a vineyard and looking at the profit it can make. Two large clerical projects that I worked on were a seasonal time log calendar and a pest application database. At the beginning of the season I put together a tentative schedule for the summer based on previous years. This served as a guide to make sure that we stayed on task and were timely in finishing specific tasks. Throughout the season I recorded when and how long each task took. I am currently working on putting this data together so that we can see how much time each task took. In carefully inspecting the data, my hope is that Three Branches will be able to look at where they can save time and labor by implementing various strategies. The pest application database is a big project that I started this summer but is not yet complete. This project consists of developing a series of spreadsheets to more efficiently track and record the use of pesticides, herbicides, insecticides, and fertilizer.

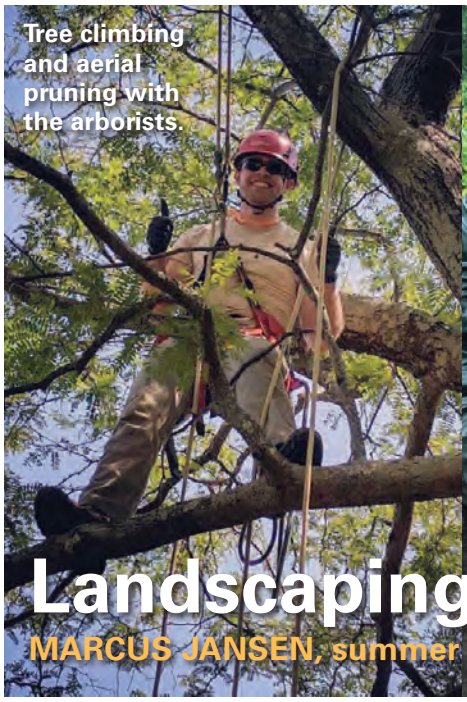
Without a doubt, my favorite part of working in a vineyard is working with the vines themselves. This season I was solely responsible for pluck pruning the vineyard. Pluck pruning is going to each vine to thin the new shoots that are about 6 inches long and removing suckers of the trunk. This is an important step in setting up the future grape bearing branches for the rest of the season. Randy and I made the decision to leave more grape producing shoots this year to push the yields without stressing the plants. When I left the vineyard to come back to school the vines were loaded with grapes and we are anticipating the largest yield in Three Branches history.

Walking through the vineyard with a crew member.

In order to reach the projected 15 acres of vines by 2020, we added another 2 acres this summer. I was able to be hands on with the layout of the field as well as with the planting itself. It was hard work to get up and down over 1,100 times to plant the new vines, but I will also have the future satisfaction of watching them develop into mature heavy producing vines.

One of my favorite moments from this past summer was when I correctly identified a disease in one of the fields. We have a field of Marquette grapes that struggles with frost damage every winter. This spring we had a lot of dieback which seemed uncalled for because of our mild winter. Upon walking through the vines I noticed that the vines that died all had galls on their trunks. Right away I knew that was crown gall. Identifying this disease was helpful at looking into future problems and how they will be prevented.

Overall this was a great summer in which I was able to experience first hand the satisfaction that comes with hard work. There is nothing more satisfying to me then watching a vine progress through the season to end up producing beautiful grapes. I am very thankful for the opportunity and experience that Three Branches has provided me with. In the future I hope to end up taking over the management at Three Branches. But in the meantime I look forward to going out to other vineyards to see their operations.



Tree climbing and aerial pruning with the arborists.

Lacing balled and burlapped trees in the nursery.

Landscaping at Harvard

MARCUS JANSEN, summer HORT internship

If you would have told me a few years ago that I would be living in Boston and working for Harvard University, I would have called you crazy, but now I am pleased to inform you that this is exactly how I spent my summer. From May to August over 14 weeks, I had the pleasure of expanding my knowledge and experiences through the Hunnewell Internship Program at the Arnold Arboretum of Harvard University.

To provide some background on this institution, the Arnold Arboretum was founded in 1872 as a public-private partnership between the City of Boston and Harvard University. Designed by Frederick Law Olmstead and pioneered by Charles Sprague Sargent, this space is a unique blend of a respected research institution and beloved public park in Boston's Emerald Necklace. Occupying 281 acres, the arboretum's living collection of trees, shrubs, and woody vines is recognized as one of the most comprehensive and best documented of its kind in the world with over 15,000 accessioned plants today. Within the Arnold Arboretum framework, I was an intern within the Isabella Welles Hunnewell Internship Program. This program is a paid internship in collections management with concentrations in horticulture maintenance, arboriculture, plant production, and collections curation.

Our class of interns included 10 outstanding young professionals that quickly grew from a group of complete strangers to a close-knit network of colleagues and friends. With schools ranging from King's College London to University of California, Berkeley, our group of interns came from near and far to spend their summer at the Arnold Arboretum. Additionally, we all come from a variety of backgrounds, experiences, and educational degrees with majors including horticulture, forestry, natural resources, biology, hydrology, and landscape architecture. Having this class of interns to work, learn, and grow with certainly made this experience all the more rewarding this summer.

A large portion of the internship program involved work experience, where we as interns worked

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Marcus Jansen (continued)

alongside professional staff in their host departments to develop a comprehensive sense of the arboretum's collection management practices. My concentration was in horticulture maintenance, so many of my days were spent alongside the grounds crew. Throughout the summer we rotated between the different horticulturist's zones and collections doing a variety of work including planting, pruning, mulching, weed management, pest and disease monitoring, root collar excavation, and operating a wide range of maintenance equipment. Additionally, we as horticulture maintenance interns had the opportunity to spend some time with the landscape team covering mowing, irrigation, and hardscapes as well as a stint with the arborist team focusing on tree removal, bucket-truck operation, chainsaw use, and tree climbing. The work experience that I gained this summer not only improved and strengthened some of the expertise that I brought with me, but also left me with a new arsenal of horticulture skills to take with me in the future.

We continued to learn more from the professional staff at the Arnold Arboretum through supplementary classes held weekly throughout the internship program ranging in topic from herbarium organization and beneficial insects to urban ecology and bud grafting. In addition to these classes, we also benefited from weekly field trips, which were easily my favorite aspect of the internship. Not only did we explore the Boston area with tours such as the Hunnewell Estate, Ponkapoag Bog, and the Emerald Necklace Park System, but we also spent weekend trips visiting areas across New England. Early in the summer, we embarked on a plant-collecting trip in the Berkshire Mountains of western Massachusetts where we found and collected four species on the arboretum's wish list. As the summer went on, we also made a visit to the growing Coastal Maine Botanical Gardens in Boothbay, Maine and traveled to 4 gardens on a fun filled weekend in the Philadelphia area include the Morris Arboretum, Chanticleer, Winterthur, and Longwood Gardens.

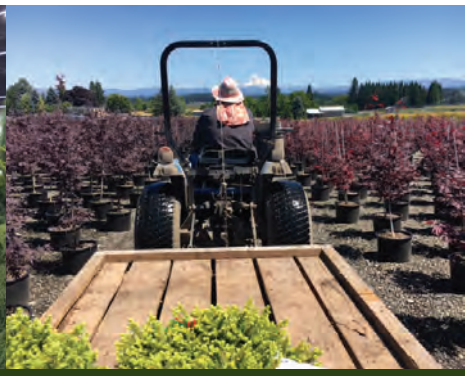
Lastly, we as Hunnewell Interns were challenged with an intern capstone project concerning the herbaceous layer within the Linden (Tilia) and Beech (Fagus) collections at the arboretum. Our work including historical research on the collections and management practices, inventorying the current herbaceous layer of the collections, and developing a management plan for this area. We presented our research and proposal to the staff and administration of the Arnold Arboretum and gave an informational "Tree Mob" session on our project for the public as well. This project served as another avenue for us as interns to create a positive impact on the arboretum into the future.

As I reflect on all of my summer experiences, I must also recognize that none of it would be possible without the support of my host family, the Kantrowitz's. This couple not only welcomed me into their home, but also their family and their lives. I should also acknowledge the support of Iowa State alumnus and current Keeper of Living Collection at the Arnold Arboretum, Dr. Michael Dosmann, for introducing me to the internship program, encouraging me to apply, and continuing to serve as a mentor throughout the summer. The people that I have met and the network that I have gained over these past few months are certainly one of the most valuable pieces that I am taking from this experience. Through this internship program, I stepped outside of my comfort zone by venturing out from the Midwest and exploring life in Boston and the land of greater New England. Interning for the Arnold Arboretum of Harvard University has allowed me to get a taste for public horticulture amongst this primer collection of woody plant material and has definitely paved the way for opportunities in the future!

Marcus Jansen with the main Arnold Arboretum sign.


Identifying plants in the herbaceous layer for the intern capstone project.


2017 Arnold Arboretum Hunnewell Interns at the Hunnewell Estate.



Nursery in Oregon

BROOKE JERIE, summer HORT internship

This summer I had the opportunity to be a returning intern at Iseli Nursery. Iseli is located in Boring, Oregon and specializes in unique dwarf conifers, Japanese maples, and various other deciduous trees and shrubs. They have been providing quality plants and bringing the beauty of nature to the artistry of man for over 40 years.

These past three months were a little different than my previous experience. As the first returning intern to Iseli Nursery, I was given the opportunity to assist them in forming a unique experience that would later be referred to as internship 2.0. In this internship 2.0 I was given the opportunity to go beyond all I had done last summer, and round out my experience and understand of the company.

When coming into the internship program, interns are set in two week rotations throughout the production crews to give them an idea, as well as a first-hand experience, to all it takes to produce quality and unique plant material. Having had this experience under my belt, I got to spend my summer shadowing and learning from Iseli's inventory manager. I spent my days doing a number of different tasks ranging from sitting on the back of the tractor pulling orders, to counting beds of plants days on end.

Not only was I able to expand my duties and knowledge of the nursery, but I was also given the opportunity to attend the annual Cultivate Conference in Columbus, Ohio. While there I attended the first ever Career Up workshop where I got a chance to learn and mingle with some of the industries other young and emerging professionals. The workshop and seminars exposed me to a number of different ideas and practices that I am excited to think more about.

Over the past three months I have not only learned more about Iseli and the nursery industry as a whole, but about myself as well. This summer I have had many unique experiences that pushed me to grow as an emerging professional as well as an individual. After this summer, I can say without a doubt I know horticulture, specifically the nursery industry, is where I belong.

Cyclone Landscaping

NICK PAOLI, summer HORT internship

Almost every day as a child someone asks you "what do you want to be when you grow up?" Well, I finally know what I want to be and I credit that to the internship I have held for almost a year and a half now. The internship I am fortunate to still hold is with the Operations division in the Iowa State Athletic Department. I am responsible for the landscaping beds in and around all of the athletic facilities at Iowa State University. I work alongside the turf crew and work for one of the best in athletic turfgrass management, Tim Van Loo.

During my almost year and a half with this internship, I have had the pleasure of redesigning, installing, and maintaining a whole new landscape at the Cyclone Sports Complex (CSC). I had help designing and installing the new landscape at CSC from two classmates, Kole Witte and Emily Stoffel. Throughout the fall and winter of 2016, Emily Stoffel and I designed and installed some of CSC. Throughout the spring and summer of 2017, Kole Witte and I designed and installed the rest of CSC. Along with the complete renovation of CSC, planting updates were done to the Cross Country track, Jack Trice Stadium, and the grove of trees around Jack Trice. All of the planting updates at all of the athletic facilities included plants that are better suited for the soil conditions present at the various sites.

The planting renovations were accompanied by some difficulties, which I am thankful for because they prepared me for real complications that I will most likely face in my field. Some of the difficulties included horrible soil conditions due to construction, high foot traffic in planting areas, and of course rabbits. Gross. Even though some of these difficulties were quite challenging to deal with, my coworkers and I have been able to establish plants throughout the athletic facilities.

I am very thankful for the opportunity to hold this position at the Iowa State University Athletic Department. I have learned so much about my industry through real world experiences and I feel as though I am very prepared for a "real" job after college. This position has also opened multiple doors for me after college and is a very huge resume builder. I owe my future career to this internship.

HORT internship

Field crew harvesting watermelon in Nebraska.

Produce Supplier

PAIGE PETERSON, summer HORT internship

Hi, I am Paige Peterson, currently a senior at Iowa State University. I am majoring in Horticulture with an emphasis in food crop production, as well as working towards double minoring in agricultural business and entrepreneurship. I originally found Capital City Fruit through the ISU Agricultural Entrepreneurship Initiative Summer Internship Program, where students interested in running a business can work with cutting edge companies and learn more about what it takes to run and manage your own company.

Capital City Fruit is located in Norwalk, Iowa, and has been around for 67 years. It is a family owned company currently under the leadership of Christian Comito, who is the third generation to run the company. Capital City Fruit is a produce supply chain management company that provides quality fruits and vegetables to their customers by shipping and repacking product throughout the Midwest. CCF provides products and services to grocery store chains, wholesale chains, and institutional food service distributors as well as other wholesale produce distributors.

Crates of peppers freshly harvested from a local farm in Minnesota.

This is my second summer here at Capital City Fruit, and I can testify that no summer is the same. I am the locally grown intern, meaning I help out Jon, who is the locally grown representative. As the locally grown intern, I am in constant contact with Capital City Fruit's growers in the neighboring states: Illinois, Wisconsin, Minnesota, Nebraska, and Missouri. Although helping Jon keeps me very busy I am also a part of several developing projects and programs outside of my daily activities.

Throughout the past two summers, I have visited and helped manage relationships of over 15 farms within the Midwest. Jon and I travel to most of our local producing farms in the summer to see how each of our farmers is doing and help make business between us more efficient and stable while providing our end customers the freshest produce available in the market. Along with being in regular contact with our growers, it is also a part of my job to go and inspect all the locally grown produce that goes through our warehouse to ensure produce quality. It is essential to check all the loads of produce that comes through the warehouse because with the outside weather conditions up to Mother Nature the quality of the product can change just as fast as the weather.

Throughout the summers I have also been placed on many projects and programs. I have had the

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HORT. Internship

Paige Peterson (continued)

opportunity to travel to Kansas City to help with a locally grown training we presented to some of our customers, and also visit Wichita, Kansas and Kansas City once more to help represent Capital City Fruit and the locally grown program at a few food shows.

I have been actively helping with pepper roasts we put on for selected Fareway Stores. Capital City Fruit holds a Hatch Pepper roasting event when Hatch Peppers are in season. We get a team together to go out with a roaster and visit selected Fareway Stores to roast Hatch Chile Peppers for customers who purchase them from Fareway. This is a super fun event that allows us to help promote these special peppers to Fareway Customers across the state of Iowa.

Once more program I have assigned to is the Berry Good Strawberries! These are delicious Iowa greenhouse grown strawberries that are chemical pesticide free. We use only natural pesticides like predatory bugs and mites to control pests inside our crops. Helping this program grow from infancy has been so much fun, as well as hard work, but it is all beginning to pay off because it is the strawberry season!

Being a part of the Capital City Fruit family has allowed me to accomplish and experience things I did not even dream about. From helping me grow my resume to gaining real professional workplace experience I have to say Capital City Fruit has shaped me as a young professional to better prepare me for the professional world and I am super thankful to them for allowing me to learn and work alongside such an innovative company.

Happy tomato transplants growing on a Mennonite farm in Missouri.

Field crew out harvesting cucumbers.

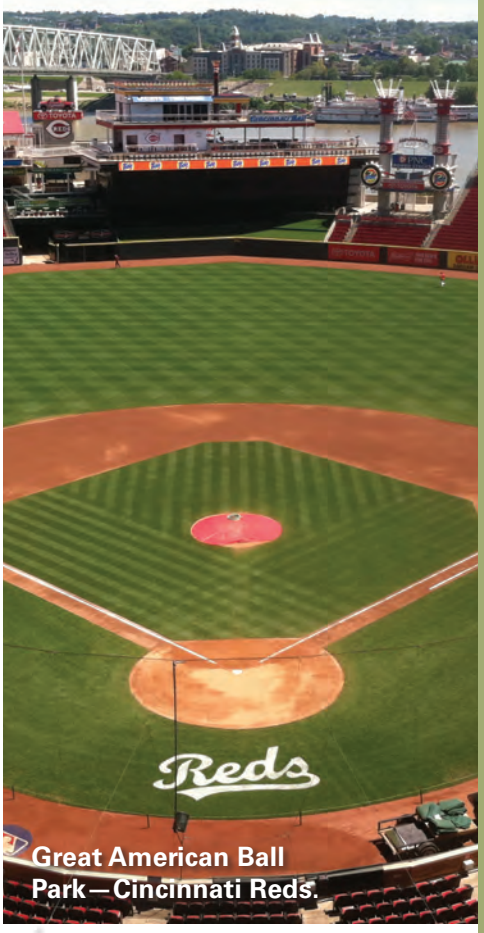
Chalking the batter's box prior to a game in June.

Reds Grounds Crew

ALEX POINOW, summer HORT internship

This summer, I had the opportunity to work back in my home town for the Cincinnati Reds. Over those four months, I was able to experience both off day and game day operations of the grounds crew for a Major League Baseball team. By the end of the internship, I was able to understand the type and amount of work needed to keep the field both healthy and playable at MLB standards.

The majority of work on off days would involve keeping the grass healthy, whether that is spraying, fertilizing, or sodding. On game days, however, the majority of the work shifts to maintaining the infield dirt and the game/bullpen mounds. Learning how to correctly patch mounds and manipulate the infield dirt is what I thought I learned the most during my internship.



Great American Ball Park—Cincinnati Reds.

To go along with maintaining the field, the grounds crew was also responsible for the grounds outside of Great American Ball Park. This includes mowing the terrace outside the front gate and watering/trimming the dozens of flowerboxes and trees surrounding the stadium. This part of the job was also important as I was able to apply some of the practices I learned in my general horticulture classes.

Overall, this internship was a great way to take what I've been learning in the classroom and apply it to the highest level there is: a Major League Baseball field.

HORT internship

Longleaf pines are a prominent part of the farm's history and can be seen throughout the garden.

Estate Gardens

EMILY STOFFEL, summer HORT internship

This summer, I had the opportunity to intern at Moore Farms Botanical Garden located in Lake City, South Carolina. The garden is a private estate owned by Darla Moore and is open to the public for scheduled tours and various events. They have five horticulturists and one grower on staff as well as a full-time crew, maintenance, education, and administrative staff. Over the summer, I spent about two weeks with each horticulturists learning all about their area of the garden.

The garden is only 15 years old, but the original plants brought in were very large making it seem mature beyond it's years. The site was Darla's family farm and was fields of tobacco and cotton. Preserving this rich heritage is very important to the garden and efforts are made to represent that throughout the year whether it be planting various cotton plants in beds or creating a turf pattern to look like a tobacco leaf.

I was given general tasks to do ranging anywhere from weeding to making flower arrangements to finding native plants to cutting down trees. The staff were always more than willing to answer any questions and were great about making my time very educational. If there was anything I really wanted to do or learn, they made every effort to make that happen. It was a great way to gain horticulture experience.

We were given so many opportunities throughout the summer to grow professionally and personally. There was a week long trip to the greater Philadelphia region to tour various gardens and nurseries. Just a few stops included Longwood Garden, Chanticleer, Mt. Cuba, and Morris Arboretum. We met so many great people and learned so much about public gardens and how they are run.

Over the summer, each of the three horticulture interns was given an area of the garden to manage. We were solely in charge of this space, though there was a senior horticulturalist to guide us and answer any questions. We had to set aside time each week to visit the area and troubleshoot problems as well as implement new ideas. I oversaw the intern house landscape and spent my time maintaining as well as installing a small flagstone patio. This project provided invaluable experience in management as well as personal growth.

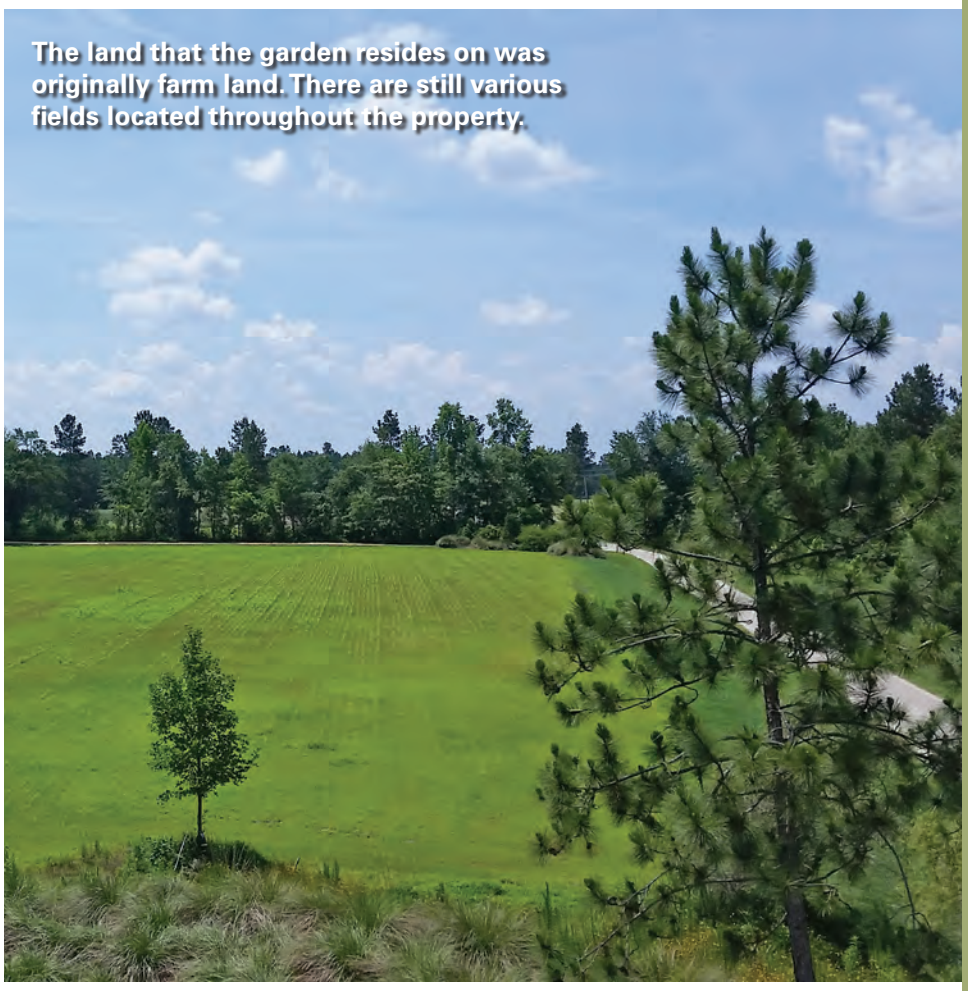
Towards the end of the summer, the interns were able to participate in a professional development day. This was an opportunity for us to sit down with various management staff and discuss our cover letters, resumes, and interviews. We were given feedback on what we did well,

HORT internship

The spring house features an authentic thatched roof and 360-degree revolving doors allowing air flow and creating a perfect resting place.

what we could improve on, and what to expect in future jobs. It was a great way to grow as a professional and see things from an employer's point of view.

Not only was the garden an exceptional place, but South Carolina offered many beautiful beaches, natural areas, and historic towns to make it a fun filled summer. There was delicious food to be had throughout the state as well as ice cold sweet tea at every stop. This internship provided an incredible opportunity to gain experience and learn not just about Horticulture, but about myself and the southern culture as well. The staff were extremely friendly and always willing to go the extra mile. I felt like I belonged and was a valued member of the team almost instantly. It was a great way to spend the summer and I'm so glad I decided to do this internship.



The land that the garden resides on was originally farm land. There are still various fields located throughout the property.

Watering the infield skin to keep good moisture for the coming home stand.

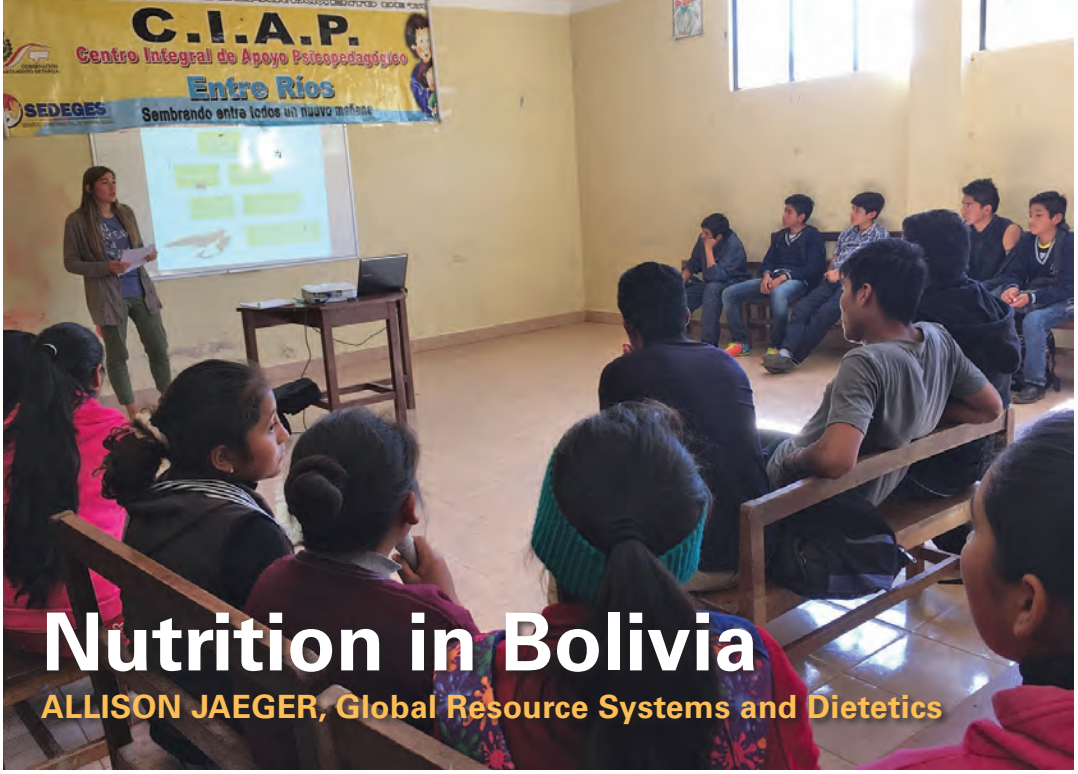
Baltimore Ballpark

ZACH TWILLMAN summer HORT internship

During the summer and fall semester of 2017, I took on the challenge of completing an internship at one of baseball's finest ballparks, Oriole Park at Camden Yards. The experience that I gained while working there will stick with me for the rest of my life. I have had the ability to get hands on with every part of field maintenance from mowing a nice looking pattern into the outfield, learning the ins and outs of moisture management in the infield skin, and even understanding what it takes to run a crew of 30+ people on a busy game day. While working in Baltimore I was part of a crew of 3 full time and 6 seasonal grounds crew members, along with 20+ seasonal tarp crew members that came in on game days. It was extremely important to have constant contact with people to understand what the plan for the day was and when certain things like batting practice or early work for either team may be happening.

With the busy schedule we often worked, sometimes 80+ hours a week when the team is in town, I was given the ability to get my hands dirty and gain experience along with time to ask any questions I may have. Baltimore is in what is called the transition zone for grasses so it makes it difficult with the weather to grow the 100% Kentucky Bluegrass field. One of the big problems we fought against was summer patch taking over in the right conditions and spreading across the field. We also constantly had to check for wilt during hotter days. I have been able to gain experience in one of the hardest places to grow grass and it is continually known as one of the best looking fields. The head groundskeeper, Nicole Sherry, along with assistants Tom Kirsch and Andrew Lawing, have been vital to my learning environment and helping me progress to take the next step in my career and possibly reach that coveted job title of head groundskeeper someday.

HORT internship



Nutrition in Bolivia

ALLISON JAEGER, Global Resource Systems and Dietetics

I spent four years at Iowa State University developing a global perspective in the Global Resources Systems (GRS) major, studying Dietetics in the College of Human Sciences, and learning Spanish in the World Languages and Cultures department. This past summer I packed a suitcase and ignited my critical thinking skills to live and work in Bolivia as a nutrition intern for Servicio Departamental de Gestión Social (SEDEGES) Entre Ríos. From May 22nd to July 5th, I was immersed in the Bolivian culture, communicated in Spanish, worked with a government organization providing nutrition services to the community, and gained a personal understanding of the nutrition status of the Entre Ríos community. Personally experiencing the physical, financial, geographical, and knowledge barriers that prevent Bolivians from consuming a well-balanced diet was an educational experience that has inspired and reshaped how I will pursue a career in the dietetic profession.

During my internship, I primarily stayed in Entre Ríos with the community that has access to abundant vegetables, fruits, proteins, and grains via the daily markets, but didn't receive potable water through their pipes. I spent a considerable amount of time observing and consuming the community's typical diet, working with a team to monitor malnutrition among children in the integral care centers, assembling distributing food packages for persons with disabilities, and leading nutrition education workshops for adolescents.

Class discussions about combatting world hunger as well as my passion to work as an international dietitian are seemingly easy from the comforts of my Iowan home; when in Bolivia, I realized a lot was required of me beyond the technical skills of nutrition knowledge in order to be a successful intern. Working with the team visiting the daycare centers, obtaining anthropometric measurements, and giving nutrition supplements to the undernourished children opened my heart to have compassion for the most vulnerable. Providing food packages for the handicapped, though a deceptively mundane task, gave me a real understanding of the complexities of maintaining basic health and livelihoods in Bolivia, especially for the indigenous community. Receiving their food package required budgeting time and money, two photo copies of required documents, and not missing the only public transport which came early in the morning. I quickly saw that for many individuals, these were tremendous challenges. To a greater extent, I had to honestly assess the nutrition status, knowledge and culture of the middle and high school students while remaining conscious of my own perspective and biases, in order to create a presentation that met the nutritional needs of that age group. I've given nutrition presentations before, but it's a completely new experience considering this was in another country, among an unfamiliar culture, with a completely different diet, and in another language.

These presentations required vulnerability and self-confidence, and they were the best part of my internship. In the midst of these presentations I realized that the dietetic profession suits me. I can't cook everyone's meals, but I can provide nutrition education that empowers individuals to make appropriate nutritional decisions for the sake of their health and the health of their families.

GRS internship

Health Program in Uganda

STEPHANIE McMILLIAN, Global Resource Systems and Nutritional Science

Sister Angela welcomed me with open arms to her health center in Nawanyago, Uganda. I was there to visit and spend the day with her and her staff learning about their daily work. The health center was set up around a central courtyard. The health center included: a teaching area, where, that morning HIV positive patients were being counseled about living with their disease, a diagnostic lab, where they could run tests for malaria and other common diseases, in-patient and outpatient wings, antenatal care, a delivery area, a fully stocked pharmacy, and my favorite— an ultrasound machine. Sister Angela was part of the program called "Imaging the World", a non-governmental organization dedicated to bringing medical equipment and training to remote areas.

The ability to have ultrasound technology allowed Sister Angela to check on the progress of pregnancy, determine sex, and identify various tumors. Patients would wait all day to be seen by the ultrasound technology.

The health center at Nawanyago was different than some of the other health centers I had visited because it was private. A small fee had to be paid for the services at Nawanyago. This small fee helped to ensure that medicine was available for their patients. To put the fees in perspective, a C-section cost $125 USD, a large sum for a Ugandan but a very small sum for a C-section in the United States.

Throughout the day, I shadowed people working in all areas. The efficiency of the health center and the passion by which each staff person worked was encouraging for the health of the people of their community as well as showed me a glimpse of health care in Uganda. Seeing the clinicians interacting with their patients in outpatient care further reinforced my desire to go into primary care medicine.

Visiting health centers was just one facet of my internship in Uganda, but one of the most impactful for me. I also completed research, surveying Nutrition Education Center clients on their adoption of hygiene and sanitation practices and their reported incidence of disease. I also spearheaded an Eye-Care Camp in a village that served over 300 community members. Two days a week I was able to teach science at Naluwoli Primary School.

The six weeks I spent in Uganda with the Iowa State Uganda Program will undoubtedly be six of the most impactful weeks of my undergraduate career. I am thankful for the incredible opportunity and convinced that human medicine is my passion. I admire the patient care relationships and the holistic attitude essential for family physicians to possess. This experience ultimately reinforced my desire to become a physician serving rural areas.

GRS Internship

Sustainable Ag in Costa Rica

RACHEL SPORER, Global Resource Systems and Environmental Science

My name is Rachel Sporer and I am a senior studying Global Resource Systems and Horticulture with a minor in Spanish. When I was evaluating my goals before choosing an internship, my main goal was to find something that encompassed all three of my areas of study. This meant finding a place where I could explore the various systems of sustainable development, teach me about horticultural crops and systems, and allow me to practice my Spanish. This was no easy feat, but I found all of these things and more with the Peri-Urban agriculture farm at a sustainable agriculture college called EARTH University in Costa Rica.

During my internship my main responsibility was to maintain the innovative, space saving, and resource efficient crop production systems on the Peri-urban agriculture farm. These systems included vertical agriculture, raised beds, hydroponics, compost, bio-intensive beds, and many more. They were all designed with the same thing in mind: helping urban and peri-urban families increase their food security by producing their own food with their limited space and resources. I also was able to design and implement a research project regarding the effect of LED lights on lettuce growth and development that will be carried out by a professor and student at EARTH.

I also got to take two classes during my two months there, one regarding natural resource management and the other an intensive Spanish class. In addition to these field and classroom educational experiences, I took a couple of trips to learn more about sustainability in Costa Rica. One was to the largest hydroelectric dam in central America, the other was to Tarcoles River and Isla Tortuga where we measured pollution and the carbon footprint of tourism. Spending a weekend with a family from the community was perhaps the most hands-on urban farming experience I had ever had. This gave me the chance to see the things I practice in action and also allowed me to hone my Spanish skills.

This internship provided me the opportunity to explore the things I'm passionate about in an international setting. The faculty and students at EARTH University are from all corners of the world, and I got the opportunity to work closely with a lot of them. I not only learned about horticultural systems and sustainable development, I learned how to communicate and foster relationships with people from many different backgrounds. I made friendships that I know will last a lifetime in addition to the professional relationships that I developed.

While I can't narrow down one single "favorite" part of this internship, I can say that one of the most impactful things was learning to overcome challenges on my own. Going to college 40 minutes from where I grew up, I have always had a very secure network of support right in my backyard. At EARTH, I was completely on my own which gave me a chance to get to know myself on a deeper level and gave me the confidence that I can flourish outside of my comfort zone. It also solidified the fact that I am in the right field and on the right path for my future. At EARTH I was able to work with community members in an extension type setting and I felt that I was able to make a big impact on their lives by doing that. My internship has lead me to strive for an extension career where I can continue this work. Overall, my EARTH experience was one that I will cherish for life.

GRS internship

Cargill Research in China

ADAM WILLMAN, Global Resource Systems

My name is Adam Willman and I am currently a senior at Iowa State University majoring in Global Resource Systems and Agronomy. While my technical area is agronomy and I've studied Arabic and the Middle East and North African (MENA) region, I completed my international internship in Shanghai, China with Cargill Animal Protein China (CAPC) where I was an innovation and Research & Development intern. My experience living and working in Shanghai provided me with a sense of mental clarity that all undergraduates dream about. It was truly a transformative time in my college career.

CAPC is a business unit of Cargill that operates a fully vertically integrated poultry supply chain in China. They produce millions of pounds of fresh, frozen and partially cooked chicken products for consumers and customers in both the domestic and export markets. I was tasked with identifying areas of collaboration between other Cargill business units and functions. I was also in charge of creating a billable service for the newly opened Cargill One Innovation Center. One of the goals of Cargill One is to create complete menu solutions for domestic and international customers like McDonald's, Yum! and local quick-service restaurants. Specifically, I created a pricing model that was based off trust and Cargill's ability to provide a variety of services to its customers.

I had several concerns about my internship at the start of the summer. I didn't know the language and I knew my work wouldn't be directly related to my agronomy background. However, I found that everyone within Cargill and most people throughout China were willing to help me along the way. Additionally, I was able to connect many aspects of my internship project to my agronomic knowledge. It was really exciting to see how the agricultural supply chain plays an important role in food security. I had the opportunity to see first-hand how the chickens were raised, processed, marketed, shipped and consumed all within the context of the global supply chain and in a country with a changing diet. In fact, it is because of this internship with CAPC and my exposure to the agriculture supply chain that I have changed what I want to do after graduation.

I learned a lot about problem solving from my internship and decided to apply for a Fulbright Scholarship to earn my Master of Science in Research for International Development from the University of London's School of Oriental and African Studies. I discovered that I like to combine my various interests in agriculture and development to help alleviate food insecurity. In the last weeks of my internship it dawned on me that what I really want to do after graduation is learn more about agricultural economics and trade policy and work with producers in the MENA region.

It is because of my internship experience with CAPC that I am confidently applying for graduate programs, fellowships and the Peace Corps opportunities all related to development monitoring and evaluation. Most importantly, I learned that I have what it takes to live and work in foreign environment and succeed! I am truly grateful for all the support I've received throughout my internship experience.

GRS internship

Agroecology in Brazil

ALLIE WILSON, Global Resource Systems

My name is Allie Wilson and I am a Globe major with minors in Sustainability and Animal Science. This summer I was able to complete my international internship in Viçosa, Brazil. My internship focused on agroecology in Brazil and the social aspects of the movement. I worked alongside Dr. Irene Cardoso, a professor at the Federal University of Viçosa. Dr. Cardoso is also the President of the Brazilian Agroecology Association and a Coordinator for the Center for Alternative Technologies of the Zona da Mata. I was fortunate enough to work with the best of the best in agroecology.

I chose this particular internship because I wanted to put myself out of my comfort zone. I've studied a lot about agroecology during my time as a Globe major and have practiced several sustainable agriculture practices during my experience abroad, but I never immersed myself within the agroecology movement. I wanted to get to know the social aspects of agroecology in a developing nation. I was also interested in learning Portuguese since it is such a beautiful language. An opportunity to study alternative agriculture in Brazil came up and I took advantage of it!

During the two months I spent in Brazil, I had several amazing experiences. I spent four days camping in rural Brazil for a regional agroecology conference where I witnessed participatory development practices in person. This event was a regional meeting of agroecology groups in southeastern Brazil. I got to meet students, indigenous activists, and professors from Rio de Jainero and other regions of Minas Gerais. We had homestays with farmers in the region and assisted them in agroecology projects. It was an amazing opportunity to put what I learn at ISU into practice! Along with this conference, I volunteered at a youth program with my roommates in an underprivileged neighborhood in Viçosa. At my last visit to the program, I taught a group of children about the basics of agroecology and planted lettuce with them. They were all so eager to learn about where their food comes from!

The biggest part of my internship was working on an event called Troca de Saberes. Troca de Saberes is an annual conference held at the Federal University of Viçosa where farmers from all over southeastern Brazil meet to discuss agroecology practices, exchange seeds, advocate for indigenous rights, educate each other on land rights, and so much more. This event was the reason why I came to study in Viçosa. I met with students, professors, and volunteers once a week before the event to set an agenda. Two weeks before Troca, I spent most of my time working with some amazing people to construct bamboo teepees, yurts, geodomes, and other structures. I learned how to blowtorch bamboo, operated more power tools than I ever thought I would, got several splinters, and carried enough giant bamboo to

(continued)

GRS internship

Allie Wilson (continued)

make my arms sore. We would start working at eight in the morning and wouldn't finish until nine at night. It was a demanding two weeks, but they were definitely the best two weeks of my internship.

When Troca officially started, it was the most gratifying thing I have ever experienced. Planning this event from the beginning of my internship and then watching Troca participants enjoy the fruits of our labor made me proud of our hard work. The structures that we spent days building turned into indigenous community centers, art exhibits, and small group areas. Everything was colorful, music was in the air, and there was an overall atmosphere of joy that I can't put into words.

Farmers brought crates of fresh fruits and vegetables with them to contribute to the conference. A seed exchange was held where hundreds of different plants were traded and knowledge was shared. Small group sessions ranged from discussing the impact of agrochemicals on small scale communities, how to use plants for medicinal uses, analyzing the works of Paulo Freire, and political activism. At night we would dance to performances by farmers and local bands, sing with friends, and reflect on what we gained from the conference. I learned so much about agroecology in Brazil that it lit a fire in me to learn more and eventually come back to Brazil for a career in agroecology and advocacy.

Interning in Brazil changed me in ways that I never would have imagined. I learned Portuguese within two months, something I never thought I would do in my life. My roommates, my colleagues, and the friends I made along the way became my family. They want to make the world a better place, whether that's in rural Brazil or worldwide. They took me in, taught me Portuguese and showered me with love and acceptance. Because of them and the amazing lessons I learned during my internship, I now aim to return to Brazil and start my career within the agroecology community. Experiencing Troca de Saberes and communicating with my Brazilian family regarding the importance of agroecology gave me a new goal that I know I can achieve.

Internship Opportunities

Paid educational work experiences where students earn college credit and learn first-hand what it means to be a professional horticulturist.

GRS internship

Undergraduate Degrees

FALL 2016

Global Resource Systems

Rachel Michelle Boylan
Ames, Iowa

Rebecca Marie Clay**
LeMars, Iowa

Jade Jacqueline Hanson
Orange City, Iowa

Jane Anne Kersch
Dubuque, Iowa

Catherine Ann Krezowski*†
St. Paul, Minnesota

Horticulture

Lexie Myra Boyens
North Liberty, Iowa

Brent Dashawn Cribbs
Davenport, Iowa

Adrienne Grace S. Gent
Ames, Iowa

Heather Nicole Lappe
Marion, Iowa

Danielle Kathryn Massa
Aurora, Illinois

Jared Neal Oelmann
Ames, Iowa

Knuton Louis Severson
Belmond, Iowa

Anna Nicole Underhill***†
Eagan, Minnesota

SPRING 2017

Global Resource Systems

Morgan Matthew Burden
Iowa City, Iowa

Blake James Duden
Beloit, Kansas

Christina Gonzalez
Chicago, Illinois

Adam Thomas Hansen
Ames, Iowa

Michaela Katherine Hoffelmeyer**
Winterset, Iowa

Nicholaus Paul Jackosky**
Lakewood, Ohio

Samantha Kanselaar
Bloomfield, Iowa

Grant Thomas Lang
Ames, Iowa

Benjamin Ryan McCully
Rochester, Minnesota

Olivia Rae Miller**
Robins, Iowa

Forrest Austin Nicholson
Ames, Iowa

Elizabeth D. Reams*
Indianola, Iowa

Mikayla Jean Fitzgerald Sullivan**†
Ames, Iowa

Sara Catherine Walsh
Wolfeboro, New Hampshire

Anna Wilcox*** †
Marcus, Iowa

Emily K. Zagula*
Mundelein, Illinois

Horticulture

Mitchell S. Countryman
Fairfield, Iowa

Timothy Otto Dalsgaard
Springfield, Minnesota

Rolland Clare Danner III
Marshalltown, Iowa

Adam Bernard Grimm**
Muscatine, Iowa

Georgeanna Haley Heitshusen
North English, Iowa

Blake Charles Kass
Dyersville, Iowa

Joseph David Lekowski
Rock Island, Illinois

Vincent Currans Metz
Apple Valley, Minnesota

Lindsay Elizabeth Meylor
LeMars, Iowa

Zachary Spencer Olinger
Marion, Iowa

Tyler James Olson
Nevada, Iowa

Grace Anna Parsley*
Des Moines, Iowa

Derick Michael Perkins**
Lamont, Iowa

Erica Faye T. Schlichte
Coon Rapids, Iowa

Jenna Lynn Stalder*
Greenfield, Iowa

Nathan Allen Trainer
Nevada, Iowa

SUMMER 2017

Global Resource Systems

Rebecca Marie Gerdes
Webster City, Iowa

Horticulture

Keegan John Cook
Robins, Iowa

Sean Hamilton
Joliet, Illinois

* 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

Andrew Foy

Andrew Foy graduated in Horticulture – Landscape Design, Installation, and Maintenance Option Entrepreneurial Studies Minor in May 2015. Andrew is from Waverly, Iowa.

Since last September, Andrew has been working as an AmeriCorps VISTA Youth and Food Programs Coordinator at Malama Kaua'i a 501©3 non-profit that's working towards a number of sustainability initiatives on the island of Kaua'i (the western most of the Hawaiian islands). His primary responsibility as Youth & Food Programs Coordinator is building the capacity of youth and school garden programs on the westside of Kaua'i. Writing grants, launching social media and crowdfunding campaigns, recruiting and managing guest speakers and volunteers, coordinating school break ag internships, and collaborating with teachers to design, source materials for, and install school gardens are all activities he might do on a day-to-day basis. With 90% of Hawaii's food - approximately 6 million pound per day being imported from the mainland (contiguous U.S.) or Asia, it's vital that Hawaii's youth be reconnected with how to grow and produce their own food and heed the call to become Hawaii's next generation of farmers!

We asked Andrew what he likes most about this position. Because the schools I work with are on the opposite side of the island as the Malama Kaua'i headquarters, I haven't really had an onsite boss telling me what to do each day, and therefore have had to work independently, think entrepreneurially, and be a self-starter. Being able to "be my own boss" has been a very rewarding experience and has definitely forced me to learn new administrative and people skills that I otherwise would've relied on a co-worker or supervisor for. Another great part of my VISTA position is the opportunity it's given me to utilize the design and installation skills I developed in Lisa Orgler and Ann Marie VanderZanden's studio classes in a very real-world, practical sense. Over the course of my service term, I have been able to help see four school garden projects through to completion – starting with brainstorming and designing the school garden with teachers, staff and other stakeholders, and going all the way to funding and purchasing materials and overseeing volunteers to help install and bring the garden design to life!

Following is the advice Andrew offers to current students: Don't feel like you have to commit to a full-time job or have the rest of your life figured out immediately after you graduate college. The best career decision I made thus far was turning down an offer with a well-established landscaping company right after school and deciding instead to pursue a volunteer opportunity in Guatemala. That experience, and two years worth of AmeriCorps terms in different parts of the country, have allowed me to meet some incredible people, work with some awesome organizations, and develop a broader, more realistic perspective of how the world works, the social and environmental problems it faces, and my responsibility to bring about positive change and be a part of the solution.

Jacob Graber

Jacob Graber graduated in Horticulture with an emphasis in Greenhouse Management and Fruit and Vegetable Production May 2015. Jacob grows orchids in a very large greenhouse. The Orchid Range covers more than 25 acres with four major sections: Young Plants, Growing, Cooling and Staging. I manage over the cooling section with the help of an assistant with daily responsibilities that include: Watering and fertilization, climate control with Priva, troubleshoot crop and health issues, perform chemical applications (when needed), monitor pests using bug cards, tape and scouting, and maintain equipment within my section with the help of our maintenance team and grower manager. Jacob is from Huxley, Iowa.

We asked Jacob what he likes most about this position. "I am challenged every day to achieve something within my own section. Whether it be by understanding more about orchids, controlling climate with daily changes

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in Priva to make more optimal climate, or dealing with problems as they rise."

Following is advice Jacob offers to our current students. "Take your time and enjoy life and school at this current moment. Make sure to try and apply for jobs within the industry before you graduate so you know everything that's involved. If you can't see yourself doing what your going to school for then change it so you can enjoy what you do later on. Spend time not worrying about the small things, but enjoy the good times and people in your life. Time goes by so fast."

Matthew Heard

I am a Buyer at Green Circle Growers in Oberlin, Ohio.

My hometown is Aledo, Illinois.

My Major was Horticulture with an option in Greenhouse Production and Management. I graduated in May 2009.

I am in charge of: MPS – a sustainability program, the national and international intern programs, purchasing all chemicals, fertilizers and numerous grower, maintenance, landscaping, shipping and sales supplies.

As a former grower here before I took my present job, I believe that knowledge has helped me today. What I like most is getting to meet with the representatives from all the chemical companies and hearing about new chemistry, as well as coming into work and not knowing what the day will bring.

My advice would be to make sure you have good work references as well as good grades. Companies are looking more and more for people that have a good work ethic as well as the GPA. So work hard guys and if you have trouble along the way, don't give up because trust me it is all worth it in the end!!!

Nicole and Steve Jonas

We own Red Granite Farm located in rural Boone County

Steve graduated in 2001 and Nicole in 2002 with majors in Horticulture.

Steve also works full time so he does a lot of the growing and behind the scenes stuff, while I am the main salesperson. We grow about 3 acres of vegetables for sale from the farm and at the farmers market in downtown Ames. I grow about 5,000 perennials for sale at the farm each year. We also have between 300-500 laying hens, depending on the time of year. I do a fair amount of landscape consulting as well. We can't do it alone though, we hire 1-2 students every year for a summer internship.

We enjoy the freedom of making our own schedule and the satisfaction of growing quality local food for our community. We also can give our kids a rural farm life, while living comfortably. The garden center fulfills a passion for me as I love working in and teaching customers through our many display gardens on the farm.

Our advice is work lots of different places to find out what you really enjoy (and maybe really dislike) in horticulture. Your on the job experience is invaluable.

Katrina Lansman

I am Project Manager at Lanoha Nurseries in Omaha, Nebraska.

My hometown is Harlan, Iowa.

I received a Bachelor of Science in horticulture with a focus in landscape design in the fall 2015 and a Master of Science in horticulture in the fall 2016.

At Lanoha Nurseries I am working directly under a very talented designer where I help to manage landscape crews out on job sites. I also manage a crew that focuses on planting annual pots at commercial and residential areas around the Omaha area. Other than managing crews I get to do some annual planting designs, meet with clients in the garden center to pick out plants for their landscape, install water feature pumps, lay out the plants according to a design, and regularly check on and guide crews at maintenance properties. Being a manager has helped me learn how larger landscaping companies operate and has also given me a lot of valuable

hands-on experience with problem solving and doing anything and everything that needs to be done to complete a project.

During my time as a graduate student in the Horticulture Department with Dr. Ann Marie VanDerZanden, I created an online, garden design course. This course merged elements from each of the different landscape design courses offered to students at Iowa State University. The goal of this course was to be able to reach out to those wanting to learn about garden/landscape design. After building the course, I was selected to teach it! There were 4 students who completed the course that went from November to March and I am excited to use their feedback to keep improving and offering the course!

I really like the people that I work with! I think it is really important to be productive at work but still have fun doing it. I also love the feeling I get when I see the difference my work or the crew's work makes once a job is completed. Landscaping has an instant impact! I also love being able to use my horticultural and landscape design background to help educate crew members, clients, and students. I look forward to where each of these opportunities I have right now will lead me.

My advice to horticulture students is to take advantage of the amazing opportunities and resources that are available to you through Iowa State and the Department of Horticulture. I studied abroad in Ireland, was involved in multiple clubs and organizations, and stayed around for an extra year for my Master's. However, I still wish that I would been involved in more. Iowa State is where you will make some of your best friends and memories that you will hold on to for the rest of your life…as well as get a fabulous education that will prepare you for the industry of course!

Danielle Massa

I am a Landscape Design Trainee, Bachman's.

My hometown is Aurora, Illinois.

I graduated in Horticulture, December 2016.

I am an assistant to one of the lead designers. I create base maps, hand draw and color render final plans and write up estimates.

The creativity combined with horticulture! First and foremost, I get to draw and color every day. But there are also so many opportunities to participate in projects with other departments so I am always learning and experiencing something new. For instance, during Valentines Day and Mothers Day I created floral arrangements and various gift baskets/planters and throughout the summer I have installed annuals for residential clients and businesses in downtown Minneapolis. I also get to travel to assist with recruiting efforts and even got to attend the NALP Collegiate Landscape Competition in Utah this year. I also got to model for a floral fashion show at the Minneapolis Institute of Art and this fall I will be involved in creating a tablescape to represent Bachman's amongst other floral retailers and wholesalers in Minneapolis at the State Fair.

My advice is don't cut corners; embrace challenges and don't be afraid to put yourself out of your comfort zone. You will be surprised with what you are capable of and it is at those times that we come out more accomplished and proud of who we are.

Jim Nau

I am a Cultural Advisor and Manager of the Ball Horticultural Company Archives.

My hometown is Mt. Pleasant, Iowa.

I graduated with the class of 1982 in Horticulture.

I was the head of the Gardens at Ball for 34 years and now I am using the information collected to populate the photo files and cultural information for the Ball customers. I edited/wrote the Ball Red Book 18th edition, the Ball Perennial Manual and the Ball Culture Guide.

I have always been an avid historian and equally a plant culture records keeper. This newest position is something I have wanted for years.

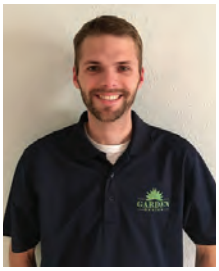
Iowa State University did not necessarily teach me everything I needed to do my job right out of school. Instead, they taught me how to think!

Every science, including horticulture, provides new ideas on a weekly basis. Keep your mind open and you will succeed.

(Continued)

Alumni Spotlight (continued)

Jake Potter



I am a Landscape Designer – Garden Design Inc.(Dallas/ Fort Worth, Texas)

My hometown is Monroe, Iowa.

I graduated in Horticulture, May 2015.

I design landscapes for homebuilders and homeowners.

I like getting to be creative. I've done just about everything in landscaping over the past few years, but designing is where I find the most enjoyment.

My advice for current students is establish short-term and long-term goals for your career. Explore every opportunity that you can that will help you reach your goals. Don't be afraid to step out of your comfort zone to try something new within the industry. Remember, you don't want to wake up every morning and dread going to work. Do what you love to do.

Emily Swihart

I am a Design Specialist/Field Coordinator with Trees Forever.

My hometown is New Liberty, Iowa.

I graduated in May 2007 with a major in Horticulture.

I am responsible for volunteer coordination in eastern Iowa, I manage our Trails Visioning Program and I am the landscape designer on staff with my work focusing on trail enhancements. I work with communities to plan, seek funding for and implement projects. I host educational opportunities including presentations, walkabout workshops and hands-on demonstrations.

By working with volunteers throughout Iowa, I have the great privilege of supporting community enhancement projects, sharing a passion for our natural resources and outdoor spaces and developing lasting friendships.

My position at Trees Forever is flexible which permits work-life balance and sometimes includes involving my children in my work. The flexibility also means that no day is the same as any other. The variety of tasks, diversity of people, and abundance of travel create an environment of continuing education and excitement.

My advice for current students: As you move through your formal education, don't forget to also seize opportunities outside of the classroom. Try things that intimidate you, pursue opportunities that challenge your abilities, get to know people who are different than you; all this will help make you a more interesting and employable graduate. And DO NOT underestimate the incredible resource the people of Iowa State provide. Instructors, graduate students, and classmates are extremely connected, helpful, and eager to help you succeed…all you need to do is ask for their assistance.

2017 HILA Award

Mike and Rachel Gooder along with family accepted the Horticultural Industry Leadership Award. They are owners of Plantpeddler, a greenhouse in Cresco, Iowa. Mike, Rachel, and John are ISU Horticulture graduates.

Global Food and Agriculture: CHINA

by KEVIN DUERFELDT, MAGGIE SPRECHER and HANNAH DARR

Students preparing to climb the Great Wall of China. Front row: Anne Marie Greenwood, Izzy Worrall, Sammi Naranjo, Liz Hada, Amy Boyce, Aryaa Regmi, Katie Stringer, Bree Williams, Maggie Sprecher. Back row: Shui-zhang Fei, Jack Burns, Isaac Anderson, Peter Lewis, Kylee Joiner, Emily Howell, Elizabeth Atukunda, Emma Robinson, Kevin Duerfeldt, and Madison Lapke.

First- and second-year Global Resource Systems students explored resource systems related to agriculture, food production and food processing in China through the Global Food and Agriculture course. The seminar series included courses for pre-departure orientation, in-country travel experience, and a post-travel reflection. Kevin Duerfeldt, Maggie Sprecher, and Shuizhang Fei led the study abroad program and co-taught the courses.

In May, the 19-member team of 16 students and three ISU faculty participated in a two-week travel opportunity in China. Many students with limited international experience were able to participate. In China, students observed food processing and supply chains.

The group started their adventure in Beijing by discussing agricultural research at the China Agriculture University. They toured the research and demonstration farm and teaching labs. Students were impressed with demonstrations of robotics programming and three-dimensional printing. While in Beijing, students climbed the Great Wall of China, attended a tea ceremony, and toured the Forbidden City, Tiananmen Square, and the Olympic Village. The historical and cultural significance of these attractions exposed students to societal factors that impact food and agricultural production and the culture of Eastern China.

The scenery of the trip quickly changed as the group boarded a bullet train (speeds reaching 186 mph!) that took them from the urban hub of Beijing to the countryside of Chuzou. There the group visited Cargill Animal Protein, including the hatchery, poultry barns, and processing plants. The plants have the ability to process approximately 65 million chickens per year, which go into a variety of food value chains including McDonalds and Disney Shanghai. Cargill hosted meals with students for extended times to discuss topics such as eminent domain, worker welfare, environmental protection, and sustainability.

Leaving Chuzou the group traveled to Hangzhou and Zhejiang University, where students interacted with faculty, students and toured the beautiful West Lake District and several farms in the area. The group then boarded a bus

(Continued)

Students with Buddha at West Lake Hangzhou. Front row: Izzy Worrall, Emily Howell, Aryaa Regmi, Anne Marie Greenwood, Emma Robinson. Back row: Elizabeth Atukunda, Katie Stringer, Amy Boyce, Kylee Joiner, Madison Lapke, Sammi Naranjo.

for a three-day tour of various farmers' cooperatives and farming villages. The cooperatives produced high-value vegetables, table grapes, and tea, which are sold in nearby urban markets. Farmers and students discussed land tenure, the generational transition of farmland, online marketing, and how these issues compared to American practices.

A highlight of the bus tour was visiting a refurbished traditional village where artisans have small stores. The artisans taught a lesson in Kado or "The Way of the Flower", an ancient art form of floral arranging. Afterwards, they arranged for the Iowa State University students to face off against local talent in a karaoke contest.

The group then traveled to Huzhou to visit a silk research station, where researchers breed new improved varieties of silkworm and make them available to farmers. Farmers have raised silkworms in a sustainable "mulberry-fish pond" system for the last 2,000 years. Mulberry trees are grown on dykes around fishponds and the leaves are used to feed silkworm larvae. The larvae and their waste feed fish, and the silt from the fishponds are used to fertilize the mulberry trees in nearly closed loop system.

In the final days of the trip, the group traveled to Shanghai where they visited the U.S. Department of Agriculture Foreign Service and discussed how U.S. agriculture products are traded on the global market. Students were

Students preparing for Kado floral arranging lesson (left to right: Jack Burns, Peter Lewis, Katie Stringer, Isaac Anderson, and Izzy Worrall).

Silk worms eating mulberry leaves.

Katie Stringer and Emma Robinson with silkworms.

Izzy Worrall teaching English with middle school students.

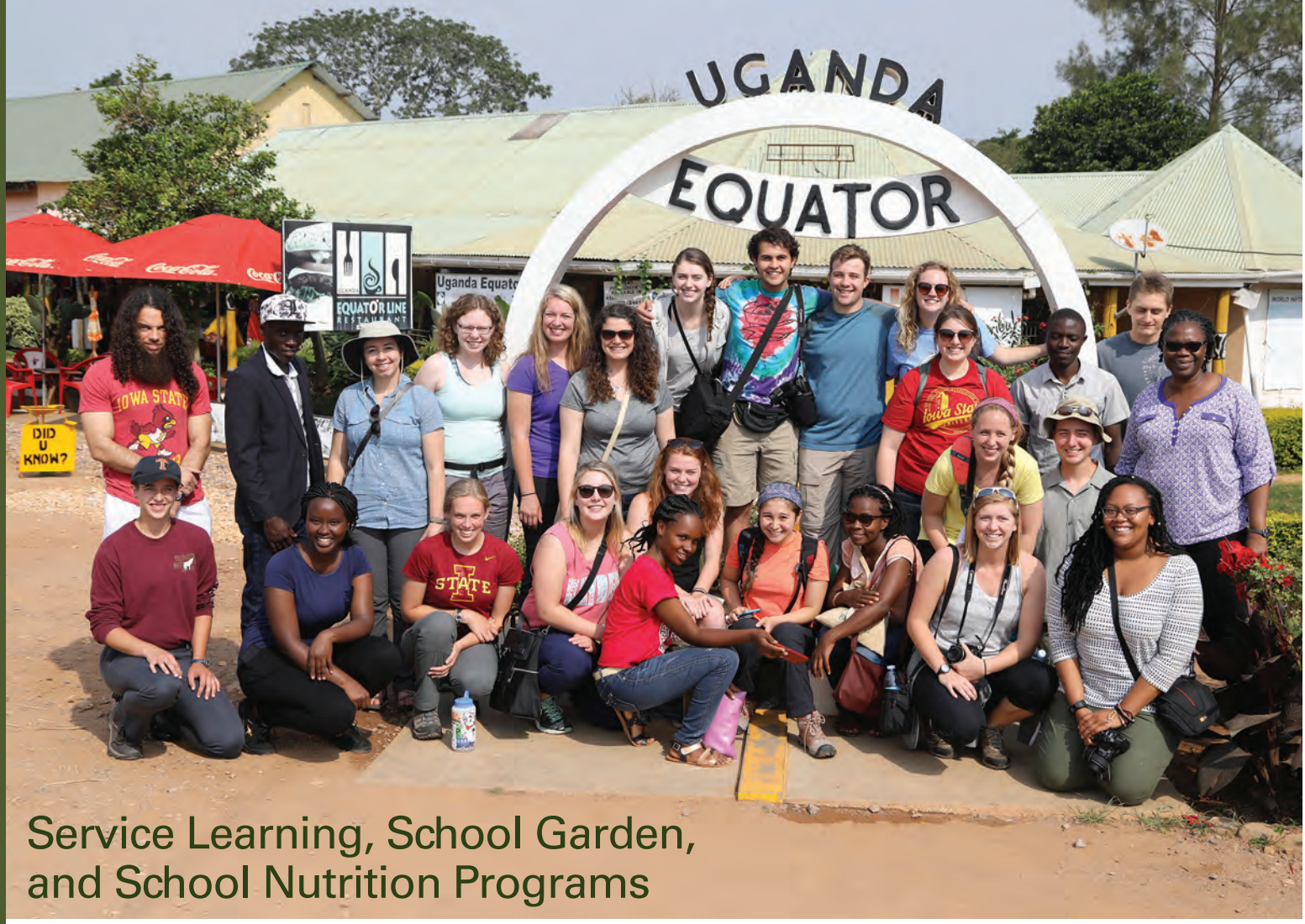
exposed to "Guanxi" or the system of social networks used to conduct business in China. While there, the U.S. announced a trade deal with China exchanging U.S. beef for Chinese chicken. The policy change will directly impact places we toured and was an excellent example of the impacts of policy on international trade.

Students in the post travel reflection course meet regularly through the fall semester and develop posters to share during a poster session with the university community on October 2nd.

The study abroad course to China was an incredible student learning opportunity. Students saw, first-hand, the examples of food and agriculture resource systems in China and were able to make comparisons to resource systems in the United States. They were exposed to various aspects of Chinese culture and for many—this was their first trip outside of the United States. They also will be better prepared for their global internship in another country and culture that they will complete later in their Global Resource Systems curriculum.

Students learning about table grape cultivar development at the China Agriculture University research farm (left to right Liz Hada and Peter Lewis).

Students outside the Forbidden City (front row left to right: Maggie Sprecher, Izzy Worrall, Anne Marie Greenwood, Sammi Naranjo, Aryaa Regmi, Liz Hada. Back Row left to right: Elizabeth Atukunda, Isaac Anderson, Bree Williams, Emma Robinson, Katie Stringer, Kylee Joiner, Amy Boyce, Madison Lapke, Peter Lewis, Jack Burns, Emily Howell, and Kevin Duerfeldt



Service Learning, School Garden, and School Nutrition Programs

UGANDA 2017

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

INTRODUCTION

In 2017, we completed the 12th year of the Uganda Service Learning, School Garden Program. The program ended somewhat bittersweet, as it was the last year in our current rented housing facility. A new Iowa State University, Uganda Program training center will open in 2018 and create many opportunities for increased student learning and community outreach over the next years. As in past years, 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 Service Learning, School Garden Program had another cohort of excellent students from Iowa State (ISU) and Makerere University (MAK) participating in 2017. Thanks to donor support the number of ISU students increased from 7 to 13. They were joined by 16 MAK service learners, five additional MAK service learners from previous years who returned to Kamuli as student leaders, and seven 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.

TEACHING

Bi-national teams of ISU and MAK students assisted in teaching of 5th and 6th grade pupils at four primary schools. Students helped with mathematics and integrated science classes, which included subjects of math, agriculture, and health – nutrition and sanitation. Specific agriculture topics covered included root crops, managing pest and diseases, soil fertility and erosion, and keeping farm animals.

Students created engaging educational materials to teach pupils. Song and dance, handmade posters, and demonstrations in school gardens were just a few strategies used to

create an interactive and engaging learning environment. While in classrooms and the gardens, ISU and MAK students served as role models and inspired primary school students 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 programs. They also create learning opportunities for pupils and university students from outdoor learning laboratories for classes and providing hands-on learning experiences. High-value crops such as grain and leafy amaranth, 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 add additional weekdays. The school lunch programs improve attendance and pupils' ability to focus in the classroom, directly impacting children's education.

Lunch is served.

ISU and MAK students tended gardens, 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, avocados, and mangoes. Pupils and university students learned about sustainable production practices in a tropical

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Planting a sack garden.

UGANDA 2017 (Continued)

Preparing plot for planting.

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. Primary school pupils worked in the 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, composting, grain storage, health and sanitation, irrigation, poultry, school gardening, and school feeding and nutrition. These projects developed 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 or yellow oleander (*Thevetia peruviana*) to prevent loosing garden produce to roaming livestock and/or residents from encroaching on school property. The agroforestry team also planted woodlots to provide the primary schools with firewood in the future for cooking school 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. They also conducted bee safety trainings with the Namasagali College Entrepreneurship Club and invited local community members to teach a workshop for club members to learn how to make local bee hives from clay pots.

Composting expanded to include cover crops and other soil amendments. The soil improvement team established trial beds to compare the use of kitchen ash, compost, and poultry litter as soil amendments for collard green production. They measured plant growth of collard greens grown under each treatment and plan to make recommendations for future production plots.

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, fixed grain handling equipment, and organized grain storage rooms at Nakanyonyi and Namasagali Primary Schools to help manage grain and reduce post-harvest loss. The post-harvest handling team also constructed and recorded data about using a cooler for greens and fresh produce. The prototype cooler uses charcoal and evaporative cooling to keep produce from wilting.

At Namasagali Primary School the health and sanitation team painted murals on pit latrines and trained pupils to promote proper sanitation. They also constructed dish racks to dry dishes after the school lunch and repaired tip tap hand washing stations.

The team also worked with girls to sew reusable sanitary pads for pupils, decreasing stigma and allowing them to stay in school.

Irrigation is vital to maintaining crops year-round, due to Uganda's dry seasons and climate variability. The irrigation team installed a randomized trial to determine the best mulching practices to conserve soil moisture for eggplants. They also tested a sprinkler system at Namasagali College and watered school gardens at Namasagali and Nakanyonyi Primary Schools.

The poultry team finished a new poultry house at Nakanyonyi Primary School by adding a chicken run and thatched ceiling inside the unit. They also prepared the poultry house for a new batch of chicks and vaccinated the new chicks upon arrival. Eggs from the chickens are incorporated into the school feeding program for animal-source protein.

The school feeding and nutrition team made keyhole and sack gardens near the kitchens, with the aim to increase the convenience of having fresh vegetables nearby and give cooks a place to compost kitchen waste. They also compared the amount of food prepared verses the amount of food consumed to make meal planning more efficient, and ordered new benches for pupils to sit on while eating their lunch.

With the additional students, this year school gardening was added as a binational team project. The school garden team surveyed gardens and created maps of the various school garden plots to use in planning crop rotations. They also interviewed head garden/agriculture teachers to record past pest and disease issues for future use.

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Newly constructed keyhole garden at Nakanyonyi Primary School.

Namasagali Primary School pupils caring for broilers as part of the poultry project.

Measuring seedlings' progress in the garden.

Construction progress on the new Training facility.

UGANDA 2017 (Continued)

Dr. Schultz and students mulching tomato plants during a farm visit.

FARM VISITS

Students observed and assisted local agricultural producers while visiting small-scale farmers 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's farm visits included activities such as planting bananas, threshing beans, mulching tomatoes, and visiting the nutrition education centers.

TRAINING CENTER

A new training center is being constructed for the Iowa State University – Uganda Program. This new facility will be able to house all of the ISU and MAK student service-learners together in one dormitory and location– something not possible in the past or current guest houses. The training center will have dormitories, meeting rooms, labs, and spaces available for community extension workshops and agricultural demonstrations. Everyone is very excited for the opportunities that the new training center brings to the ISU-UP.

INTERNSHIPS

Seven GRS interns completed internships with the Iowa State University Uganda Program (ISU-UP) in 2017. ISU–UP is a registered nongovernmental organization of Iowa State University.

Three interns studied health and wellness of Nutrition Education Center (NEC) clients. Stephanie McMillan interviewed over 80 NEC clients about health and sanitation practices at home and compared practices to reported instances of diseases in the households. Joi Latson evaluated the retention rates of mothers attending trainings at the NEC and shadowed health professionals at health clinics in the Kamuli District. Hannah Schlueter surveyed NEC clients on food security and post-harvest handling practices. Hannah also made observations at the NECs and assisted with the NEC mothers' craft group. Mothers from the NECs weave traditional baskets that are sold through ISU-UP, creating a source of income for the mothers and empowering them in their families and community. Stephanie, Joi, and Hannah also assisted local health workers during a free eye care clinic.

Two interns worked in the community to study water usage and sustainability of the CSRL boreholes.

Sydney Beaurivage interviewed water user committee members to record recommendations and suggestions for improving boreholes. She also assisted with borehole maintenance and mapping boreholes. Kerri Carleton surveyed the community on the use of alternative water sources such as shallow wells and water tanks.

Rachael Barns completed her global internship working with farmers in Kamuli on post-harvest storage. Rachael surveyed farmers to determine current grain processing and storage techniques, and implemented a maize management program at the primary schools, and trained mothers at nutrition education centers on proper grain handling and storage. Between 20% and 40% of grain can be lost on average in post-harvest storage and addressing post-harvest loss is crucial to increasing nutritional food security.

Maureen Booth worked with primary schools in Kamuli to create an inventory of trees located on their property and their uses. Maureen completed the first half of her global internship at the Budongo Forest in Uganda working with researchers to study chimpanzees.

YOUTH ENTREPRENEURSHIP PROGRAM

Iowa State University's education programs of the Center for Sustainable Rural Livelihoods initiated the Youth Entrepreneurship Program (YEP) in 2013 at Namasagali College (a rural secondary school) in Kamuli District, Uganda, as a way of engaging the youth who are currently involved in informal employment activities. In 2017, members from two secondary school YEP clubs Kamuli gathered to discuss possible entrepreneurship activities which youth can participate in to earn an income, what are the obstacles which prevent youth from participating in entrepreneurship activities, and what interventions could be made to encourage youth to engage in entrepreneurship activities. Throughout the day YEP club chapters shared how they grow vegetables, raise livestock, cut hair, and polish shoes to earn money for school fees for their members. Pupils also discussed how lack of mentorship, land, and capital for inputs deterred them from starting businesses and created possible solutions how they could overcome these challenges. Pupils returned to their schools energized and ready to lead their chapters in new activities


Garett Onstot and Sheillah Kwikiiriza teaching class.

to earn funding for school fees and to become future leaders in the community.

SUMMARY

Creating a School Garden: Service Learning in Uganda has developed into a world-class, transformational learning experience and development program thanks 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 still enthusiastically look forward to next years' service-learning program. With the move to the new training facility, we will have the opportunity to increase the number of ISU students and the bi-national ISU and MAK teams will continue to provide service to the Kamuli District, while learning.


Participants of the Youth Entrepreneurship Program Workshop with their certificates of completion.

Dr. Cindy Haynes presented at the Rock Rapids demonstration garden field day.

Growing Together: Master Gardeners Donating Produce

by Susan DeBlieck

When surveyed, food pantry clients in Iowa noted that fresh fruits and vegetables were the number one thing they needed more access to. The Growing Together project was initiated in 2016 to make fresh fruits and vegetables more accessible. Growing Together is a partnership between ISU Extension and Outreach's SNAP-Education program, Master Gardener volunteers, ISU Research Farms and Iowa food pantries.

In 2016, twenty-six Master Gardener volunteer teams worked with 47 food pantries in their communities to provide fresh produce throughout the growing season. A total of 73,465 pounds of produce, which equates to more than 220,000 servings, was grown and donated by the Master Gardeners through mini grants and ISU Research Farm gardens.

In 2017, fifteen counties received mini grants to support Master Gardener food security projects. The Master Gardener volunteers planted donation gardens and connected growers with food pantries.

For example, in Linn County, Master Gardeners are donating fresh produce to a mobile food pantry that visits low income neighborhoods. ISU Extension and Outreach staff are on site with the mobile food pantry to distribute information about how to prepare the vegetables.

Additionally, Black Hawk County Master Gardeners are growing produce to donate to the Northeast Iowa Food Bank. The Master Gardener volunteers established an orchard for fresh fruit to be donated to the food bank.

"The Growing Together project brings Iowans together to help solve a problem in their community," said project partner Christine Hradek, "Master Gardeners have demonstrated a tremendous capacity to improve healthy food access for their neighbors and ISU SNAP-Ed is thrilled to be their partner in this work."

Again this growing season, the Home Demonstration Gardens on six ISU Research Farms were planted as model donation gardens. These gardens show an example of donation crops and model principles of food safety for growing, harvesting, and transportation. In 2016, 9,370 pounds of fresh produce were donated to nearby food pantries from the Home Demonstration Gardens. ISU Research Farms and local Master Gardeners share in garden care responsibilities.

Horticulture graduate student, Laura Irish, 2015 Hort Alum, has been traveling to each of the six donation garden sites to provide food safety and harvest best practices to Master Gardener volunteers. "Research farms, plus Master Gardener volunteers, equals fresh produce for food pantries," said Irish.

LETTERS from ALUMNI

Alejandra Feliciano

After graduating from ISU I moved to Seattle, and then again to a small community near a glacier lake called Lake Roesiger. I used the funds from the AgEI competition to start my own landscape design business, The Zealous Thumb, based in the Seattle east side. I ran it successfully for about two years, performing a number of residential and commercial projects. You can see some of my work online.

As soon as I moved to Washington I worked hard to learn all the different flora and plant material used in the area (zones 7-9). To that end, I became a Certified Professional Horticulturist (CPH) under the Washington State Nursery & Landscape Association (WSNLA).

For the last year I've also been working as a horticulture instructor at a local community college, Edmonds Community College. I currently teach four different courses related to landscape design and sustainability.

More recently I was accepted into the PhD Horticulture program at Washington State University, where I will be doing research under the tutelage of Dr. Linda Chalker-Scott. I'll be starting my first semester as a PhD student on Monday and I'm very excited!

I always enjoy hearing news from the ISU Horticulture Department, keep us posted!

Alejandra Feliciano, CPH, LEED AP BD+C
PhD Student, Department of Horticulture
WSU Puyallup Extension

Rita Peters

Hello,

On June 30th I retired from Hy-Vee. It's been a great 30 years with a terrific company. Many of my colleagues asked "What will you do"? I responded "To enjoy summer and I will figure out the rest."

One enjoyable summer event was Ragbrai. Spencer was fortunate to be chosen as an overnight host community. Dave and I hosted 60 riders. This is such a great event to showcase the community and meet people from all over the country.

As I move forward in this retirement "gig", I will find new adventures to be passionate about.

Thanks for all the time and effort invested in this newsletter. It's great to hear about old friends and classmates.

Rita Peters
Hort 1977

(continued)

Susan Ruden

It is hard to believe nearly 38 years have passed since graduation! Most of my career has been spent working in quality control testing as I worked first for Woodson Tenent Labs, then Intervet and now Kemin Industries in Des Moines. Although I am back in the lab, several of my years at Kemin were spent helping to establish the Specialty Crops division of Kemin. What a great company! If you ever get a chance to take a tour, go for it.

As I will soon be retiring, I often look back and see how much has changed. Growth in Iowa's horticulture industry has been steady and interesting to watch. I expect it will continue to grow. I recently toured the horticulture research farm in Ames and ran into my advisor, the now retired, Dr. Domoto. What a nice surprise. There are many new faces at the farm who do a great job of supporting the horticulture industry in Iowa. One of the highlights of the tour was seeing an acre of hops in production and then seeing the hops separating from the vine with a mechanical harvester.

I like to look forward too. The last 30+ years have been spent growing and selling fruits and vegetables locally which I foresee continuing as long as possible. Our farm is called Red Barn Produce. If you ever travel through Dexter, Iowa our red barn is highly visible on the southwest side of town. When I can no longer till the land, I hope to promote the local fruit and vegetable industry. I am not sure where that will take me, but I hope to meet some of you along the way.

Sincerely,

Susan (Soderblom) Ruden
Hort 1979

Chris Harmeyer

Hi ISU Horticulture Department and Alumni,

I've been working at the University of Kansas Medical Center in Kansas City, KS for almost a year now. I was hired to design and develop a botanical garden located on the campus of KU's Medical School, Nursing School and School of Health Professions. The first of 21-themed garden areas, a pollinator garden, is nearing completion and a dedication ceremony is being planned for this October. The goal is to have all of the gardens in place within five years.

Even though I face new challenges every day at my job, this is truly a dream job and the education I received at Iowa State really helped prepare me for this once-in-a-lifetime opportunity.

Chris Harmeyer
Hort 2014

Robert W. McMahon

I retired from the Ohio State University Agricultural Technical Institute in Wooster after a stellar 29-year career on July 1, 2015. I was an Associate Professor within the Division of Horticultural Technologies, and the Coordinator of Ohio State ATI's Greenhouse and Nursery Management Technology during this time, with an enrollment that averaged approximately 30 Greenhouse Specialization students in recent years. This truly was my "dream career" for me as I loved teaching and working with the students, along with training students on greenhouse production techniques in our ~14,000 ft2 teaching greenhouse range and adjacent tropical plant conservatory. I taught a number of floriculture production courses over the years, including Greenhouse Environment Control, Greenhouse Perennial Production, Greenhouse Bedding & Flowering Pot Plant Production, Horticultural Root Media and Plant Propagation. I also managed Greenhouse Practicum, and I supervised internship students, along with managing the greenhouse complex and providing service to the local OSU campus and to the college. Upon retirement, I was honored by being granted Emeritus status with the Ohio State University.

During this time, I also authored a textbook, An *Introduction to Greenhouse Production*, originally published in 1992 by the OSU Curriculum Materials Service, with a second and third edition subsequently being published. I was honored with being the recipient of several teaching awards at the campus, college, and national levels, and my program enjoyed an outstanding reputation within the greenhouse industry, as evidenced by both small and large greenhouse businesses requesting my students for internships and graduates for full-time jobs upon graduation. Green Circle Growers, Timbuk Farms, Possum Run Greenhouse, Four Star Greenhouse and C. Raker & Sons, Inc. are but a few of the larger, more prominent greenhouses that I was doing my job in providing the greenhouse students a first-rate experiential education to get them into satisfying and rewarding careers within the greenhouse industry. Of course, seeing my graduates enjoying successful careers within the greenhouse industry is my true compensation and is extremely gratifying for

me, since my sole purpose at Ohio State ATI was to be there for my students, to share my knowledge with them, and to help them prepare for their subsequent careers.

I want to heartily thank my Ph.D. advisor, Dr. Richard J. Gladon, who played a major role regarding my successful career. Without his guidance, enthusiasm for teaching, and caring for his students, I wouldn't have had such a wonderful career; in addition, it was he who informed me about this posted position back in 1986 and encouraged me to apply for it. I had a rough time adjusting to the real world after receiving my Ph.D. from ISU, "bouncing around" a couple of times after taking positions that were not a good "fit" for me, but I took them anyway as I felt I should and not because I truly wanted these types of research careers. Dr. Gladon nonetheless still believed in me and stood by me, realizing that teaching was my "true calling", and I will always be grateful to you! Thanks, Dick!

Finally, I am enjoying my retirement immensely, but I do miss my students and teaching; nonetheless I know I made the correct decision to retire. I am working part-time at Lakewood Garden Center that is a 15 minute "walking commute" from my condo building. I totally enjoy working there, and I certainly do not miss all those meetings I attended and the committees that I served on during my career at OSU! I also am a member of my church's council, and that has been a very informative and rewarding experience. I am keeping physically fit through riding my bicycle and walking, and also working out in the Fitness Center and swimming laps in the swimming pool in our condo building. Life is good, and I am very thankful for each and every day.

Thank you, Department of Horticulture, and ISU. Go Cyclones!

Robert W. McMahon
Hort 1980 M.S. and 1984 Ph.D.

Dwight Shappell

Dear Dr. Iles,

Your newsletters have been better every year for a number of years. I do enjoy getting and reading them. I have been doing so for 64 of those ninety-two years.

I am still gardening and caring for my chickens although the weeds seem to grow faster and the crops may not be cleaned quite so often as they once were.

After twenty-one seasons of volunteering as a tour guide at Bloedel Reserve, I still enjoy doing it and meeting people from around the country and the world.

This coming December will be the eighth year that my avocation of contracting models of real and imaginary buildings including all the furniture will be on display at the visitor center of Bloedel.

It has become a tradition here on the island and draws up to 5,000 visitors each year.

My last visit to the ISC campus remains the most memorable and I thank you as much now as I did upon leaving seven years ago, for the hospitality during the visit.

Sincerely,
Dwight Shappell

Katherine Eldridge-Hutton

It is hard to believe that this December will mark 20 years since graduation. After graduation, I went to work out in Chicago land for a couple of years. Then I moved back to Iowa to help family. After working for someone else I decided to start my own landscaping company in 2004. In 2008 my husband, Rick and I started a restoration company that he managed and I took care of the financials. The two businesses kept us quite busy. In 2014 Rick passed away after a two-week battle with cancer. I still have the landscaping and have been helping with a community garden the last 7 years. The garden is a teaching tool for both youth and adults. We have other partners involved that teach the people how to prepare the foods they grow with simple recipes that are nutritional. Going to ISU was a great experience and it is always nice to get back to campus and see the changes.

Sincerely,
Katherine Eldridge-Hutton

Rod Smith

Hello to all ISU Horticulture Alumni,

My life took an unexpected turn on 8/8/2016 when I stepped off of a ladder, dropped two feet and broke my left leg just below the hip. Fortunately, the falling ladder missed me and a nearby coworker called 911.
The ambulance EMT's speculated that I had Multiple Myeloma, which is bone cancer, and they were right. Surgeons at Oregon Health Sciences University put a titanium pin in my leg and had me up on my feet with a walker the next day.

(continued)

After seven radiation treatments, six months of chemotherapy, a bone marrow transplant and a lot of prayers by a lot of people, my cancer is in remission and I feel great again. I am back to work three days a week as Plant Health Care Supervisor for a landscape maintenance company. I also teach gardening classes at Portland Community College and write gardening articles and Bible meditations for my website: rodsgarden.50megs.com.

My bone is slow to heal and I walk with a cane, so I work slower than I used to, but I am determined to do as much as I can for as long as I can.

God is good. Who could ask for anything more?

Rod Smith
Hort '72

Russ Swanson

Several years have passed since offering an input to the Annual Newsletter. But the mood has struck…so here it goes…from the beautiful forested rolling hills of northwest Arkansas, specifically, Bella Vista. We, Jean and I, settled here 18 years ago from central Florida. A quick flashback: This ol' Iowa farm boy (near Sac City) gained an Ag Ed BS in '51 at Iowa State "College"; two days after graduation I was called to Uncle Sam's Air Force to help with the Korean "fracas". I stayed 20 years flying several of his aircraft, commanding some remote early warning electronic/radar sites in Japan, Spain, Minnesota, and other interesting duties in many locales. After retiring I returned to Iowa and joined the ISU Cooperative Extension Service as County Extension Director, Appanoose Co. Although the duties were primarily agronomic associated, my interest was also inclined toward the aspect of horticulture. Thus, enrolled in the ISU Horticulture Master program, graduating in '79, and joined the Univ. of FL Extension Service as a Lake County Horticulturist. There I developed the Lake County Master Gardner program teaching/graduating 200 during the 13-year tenure. The MGs assisted establishing teaching/demo gardens on the grounds, maintained a plant clinic, a soil testing lab, and participated in community projects. I provided year-round classes, tours, and demonstrations for the citizenry, while also providing extension programs for the retail horticulture industry.

After 43 years of service to country and Extension, it was time to hang up the hats…and go fishing. However, during my working "tenures" and for several years beyond, Jean and I RVed all lower 48 states, Canada, and Alaska. Those ventures were wonderful trips viewing landscapes and creations of the "Supreme" above us. Now into 8th year of our eighth decade of life (aka "last quarter") we are in good health, active with occasional golf and fishing (Bella Vista has six challenging courses, and six fishable lakes), bridge (Jean only!), a combo "man cave"/workshop, club activities, church functions, socially active with friends, attend preforming arts events at nearby Univ. of Arkansas, and some traveling visiting offspring families, grands, great grands, and longtime friends.

Nonetheless, this farm Iowa boy still feel those back-home roots, the venues of the state's bread basket crops, farmsteads, congeniality of Iowa folks, the pleasant unique small towns, and metros. We both read fully the periodical *Our Iowa* by Publisher Roy Reiman, an Iowa State alumnus and of course of the Reiman Gardens namesake. The picture herewith is of a windmill in our backyard viewable from the deck and porch. It's an ever-present reminder of rural Iowa.

The cardinal and gold colors bring to mind ISU academia that supported my rewarding years of good employment ventures.

I'm sure I share with other alumni the fond memories of our special years on our alma mater campus.

Even the trek from Curtis to Beardshear in January has "fond" thoughts, right?

I applaud Dr. Iles, faculty, staff and students for their efforts put forth for sustaining the ongoing production of the Annual Alumni Newsletter now into the 92nd year.

Russ Swanson
BS Ag Ed '51
MS Hort "79

KEEP IN TOUCH

Department of Horticulture

www.hort.iastate.edu

2017 Shade Tree Short Course

The 61st Annual Iowa State University Shade Tree Short Course and Iowa Nursery & Landscape Association Conference and Trade Show was held February 21-23, 2017 at the Scheman Building at Iowa State University.

The theme was "Arboriculture Has Center Stage... Let's Make the Most of It!" Attendees were welcomed by Donald Lewis, Iowa State University.

The first session was "The Psychology of Attraction" by Michael Angelo Caruso, Royal Oak, Michigan. "Hold'em or Fold'em!" was given by Mark Vitosh, Iowa DNR District Forester, Iowa City, Iowa and Dr. Jeff Iles, Iowa State University for the closing session.

Other sessions included:

- "In Defense of Trees"
- "Iowa's Largest and Tallest Trees"
- "Managing Ancient and Historic Trees"
- "Creating the Edible Landscape"
- "Ethics in Arboriculture"
- "Why Do Trees Die?"
- "Managing Veteran Trees"
- "The Tree Decline Disease Concept"
- "Fun Shrubs for Form and Function"

In Memoriam

Charles V. Hall was born to Dolphus Roland and Hester Lee (Frazier) Hall near Kittle, a small Fulton County community in northern Arkansas. Charlie, 93, died of natural causes in Colorado.

Charlie graduated from high school at Ash Flat, Ark. in 1942. During World War II, Charlie served in Europe as a member of the 373rd General Service Engineers.

Charlie married Elsie Regina Gray on April 14, 1949. Three children were born to Charlie and Elsie: Kathy, Mary, and Marc.

Charlie received his BSA from the University of Arkansas in 1950, his MS from the UofA in 1953, and his PhD from Kansas State University in 1960.

Before beginning at KSU, Charlie worked as a technical research assistant (1950-1953) at the UofA Fruit and Truck Branch Experiment Station in Hope, Ark. He was a member of the Horticulture Department at KSU from 1953 to 1974 where his plant breeding research led to development of several watermelon varieties. He is widely known for the Crimson Sweet watermelons, a variety that is now grown and enjoyed in more than 50 countries.

In 1974, Charlie began work in the Horticulture Department at Iowa State University where he was head of the department until his retirement in 1990, becoming an emeritus professor. He continued watermelon research during his tenure at ISU. He contributed to the expansion of the Horticulture Department at ISU and the building of a new Horticulture building on campus. He had a great love of teaching and mentored many graduate students to successful careers in their own right. He always loved hearing from his former students and was proud of their accomplishments.

Charlie and Elsie spent the first part of his retirement working with the Sojourners, a Christian organization comprised mostly of retired members who travel in RVs to assist smaller church congregations and institutions, such as children's homes, of the Churches of Christ. After several years with Sojourners, Charlie and Elsie moved back to Manhattan, Kansas, where they remained for eight years. In the summer of 2016, they moved to Parker, Colorado.

Charlie enjoyed golfing, hunting, fishing, and gardening. He was a dedicated husband, father, grandfather, and great-grandfather, who loved gathering with friends and family, especially at birthdays. Charlie was an inspiration to many, but he always preferred celebrating the success of those he loved.

The funeral service for Charlie was held February 25, 2017.

Elsie Regina Gray Hall was born to Obie Katherine (Dollar) and Oscar Gray on Aug. 20, 1926, in DeValls Bluff, Ark. Elsie passed away at the age of 91 on Aug. 28, 2017, in Centennial, Colorado.

Elsie grew up in DeValls Bluff and spent some years in towns in Oklahoma and Texas due to her father's work with the Rock Island railroad. She graduated from DeValls Bluff High School.

During WWII, Elsie worked as a civilian employee at the Air Force base in Stuttgart, Ark.

She attended the University of Arkansas and graduated in 1949 with a degree in business. Elsie was joined in marriage to Charles V. Hall on April 14, 1949, in Fayetteville, Ark. As a newlywed she taught at a business college and worked at a bank in Fayetteville.

Elsie and Charlie moved to Hope, Ark. in 1950 and lived there until 1953.

Elsie moved with Charlie to Manhattan, Kansas in 1953 when he joined the horticulture department at Kansas State University. Three children were born to Elsie and Charlie after their move to Manhattan. During this time Elsie was very active in the Manhattan Church of Christ and Ladies Home Demonstration unit, and she supported her children in 4-H, Scouts, and all their other endeavors.

Elsie and Charlie moved to Ames, Iowa in 1974 for Charlie to join the horticulture department at Iowa State University. She was active in entertaining faculty and their spouses as well as students and supporting the work of the horticulture department at ISU. She also enjoyed bowling and golfing while they lived in Ames.

After Charlie retired, Elsie and Charlie spent a great deal of time traveling with and supporting the work of the Sojourners, a Christian organization comprised mostly of retirees who travel in RVs to assist smaller church congregations and children's homes. In 2008 Elsie and Charlie moved back to Manhattan, Kan., where they lived for eight years. They moved to Parker, Colorado in the summer of 2016.

Throughout the years, Elsie loved to cook for family and friends. She also spent many hours canning and freezing fruits and vegetables for her family. Elsie was a very dedicated and devoted mother, grandmother, and great-grandmother. She always wanted to know all about the activities and lives of her children, grandchildren, and their families, and she supported each of them in every way she could.

Clinton Frederick Hodges, 78, Ames, died at Bethany Manor in Story City on May 4, 2017. A Celebration of his life will be held at 11:00 a.m. on Wednesday May 10, 2017 in the Chapter House located at the Izaak Walton League (2066 Stagecoach Rd, Ames, IA 50010).

Clinton Hodges was born on April 20, 1939 in Danville, Illinois to Paul and Vinita (Delamater) Hodges. He graduated from Parker High School in Chicago, IL in 1957. He continued his education at the University of Illinois receiving his Ph. D in Plant Pathology. He went on to become a professor in horticulture at Iowa State University.

Clinton Hodges married Judy Bender of Chicago, on June 25, of 1960. Clinton and Judy raised three children, and enjoyed an active life together in Ames.

He was an attentive and caring family man, always proud and protective. He enjoyed Jazz music, time at the Izaak Walton League and family trips to the Colorado Mountains. He seemed to be able to fix anything and always loved a good debate. He will be remembered for his devotion to his family and friends.

James Durrett Kelley passed away at the age 88 of St. Louis Park, Minnesota on June 10, 2017. He was born June 10, 1929. Services were held June 29, 2017.

He attended the University of Kentucky at Lexington and went on to receive a master's degree in Horticulture at Iowa State University. He received a doctorate in Horticulture at Michigan State University.

He taught Horticulture at Iowa State University for his entire career. In 1990, he retired and moved to Minneapolis. He loved plants, nature, music, theatre, travel and food.

2017 Horticulture Alumni Reunion

Wendy Wintersteen, Craig Stark and Jeff Iles.

The reunion was held at the ISU Alumni Center, June 3, 2017.

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Greetings Alumni