

Horticulture

Department of Horticultural Science
Fall 2011

Community. Creativity. Innovation. Excellence.

Professor Stan Hokanson points out Thornless Honeylocust (*Gleditsia triacanthos* var. *inermis*) to undergraduate students in his Woody and Herbaceous Plants course.

Photo credit: Dave L. Hansen, University of Minnesota

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The University welcomes back the International Cold Climate Wine Competition

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Flexible curriculum helps undergraduate student Kasandra Solverson combine horticulture and her passion for food security

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Research Assistant Professor Changbin Chen introduces a Chinese Herb Garden to St. Paul, along with new undergraduate courses

Excellence.

Graduate student Josh Friell researches salt-tolerant turfgrass for Minnesota roadsites

UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Creativity.

Student Spotlight: Q&A

Solverson uses the department's flexible curriculum to meet long-term career goals



Solverson smiles for a picture while in Honduras for a research project.

Senior Kasandra Solverson grew up on a dairy farm and carried a respect and curiosity for agricultural communities and culture at a young age. As she realized her passion for food security, Solverson used the horticulture major's flexible curriculum to develop a program to prepare her to meet her goals.

Q: How did you decide on your goals?

A: By trusting some gut feelings and seeking guidance from a variety of people. In the process, I was hired to work on a research project in Honduras. I lived in an agricultural community of people whose relationship to food security was distinct from the one I had grown up with.

When I returned to the states, I reflected on my experiences, classes, and interests. I had conversations with my advisor Bud Markhart and my professor Tade Okediji, in which they advised me to build a career that allowed plenty of room for my dreams. After researching curriculums at graduate schools, I put together a program for international food security and jumped in with both feet.

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From left: Stacey Williams, Brittany Charlton and Torri Thomas.

Students Visit for Summer Research

When three undergraduates from the South arrived in Minnesota in May to conduct research in the department, they felt nervous, excited, and, well... nervous. That feeling didn't last, though.

"When we arrived, we didn't know what to expect," says Brittany Charlton, a senior at Texas State University. "But we were so welcomed, and we started learning and working on research right away."

The students came through the Summer Undergraduate Research STEM (Science, Technology, Engineering, and

Math) Program Experience, a summer internship program through North Dakota State University that partners with other institutions to offer research opportunities for students interested in STEM careers.

Joining Brittany were Torri Thomas, a sophomore at Mississippi Valley State University, and Stacey Williams, a recent graduate of Mississippi Valley State University. The eight-week experience allowed them each time to choose a subject, gather data, and complete a final project with the help of faculty and staff in our department.

Students Develop Former Elm Tree Dump into Campus Rain Garden

It began with a mud pit straight east of the greenhouses that was used for a specific purpose: dumping and burying dead elm trees. Today, the pit has been transformed into a rain garden completely developed and operated by students.

The change began a little more than five years ago under the direction of Research Scientist Chad Giblin. Two ESPM students, Peter Gillitzer and David Campbell, began brainstorming ways to use the land and decided to start a rain garden drainage area. After a few years went by, they wanted to take it to the next level by creating a living rain garden, com-



Undergraduate Greg Matthews kneels in the rain garden, displaying the beautiful results of the students' transformative work.

plete with new seedlings they purchased for \$50 – the only money spent on the garden to date.

During the past year, Campbell trained

horticulture undergraduate Greg Matthews to take over the maintenance of the garden and carry it into its second season. The garden contains only native plant material and has become a home for much wildlife, including nesting ducks, native birds and butterflies.

"It's inspiring to see students take the initiative and make it their own," Giblin says. "It takes a combination of critical thinking, problem solving, basic plants production and basic research to grow all of these plants."

Innovation.

Chinese Herb Garden & International Trip Provide Hands-On Learning

Starting this fall, students can experience Chinese horticulture firsthand through the department's new Chinese Herb Garden and new opportunities to study Chinese herbal medicine.

Research Assistant Professor Changbin Chen dreamed up the garden's concept last year as he saw increasing numbers of people interested in the usefulness of herbal medicine and its relationship with healthy food and natural healing. That dream was made possible by generous donations by individual supporters to the department. The donations fully funded the garden for its initial installation.

"I'm very thankful for the support and vision of our department and community," Chen says. "This wouldn't be possible without them."

Over the summer Chen and



Undergraduate Korbin Paul holds a bitter melon from the garden. Paul propagates and maintains the garden, and she is writing a paper about its design.

several students began designing and planting the garden on Gortner Avenue. The garden now holds 58 species, and its design reflects the traditional yin-yang philosophy of Chinese herbal medicine.

Chen is using the garden to teach a new class this fall called "Chinese Medicinal Plants: Identification, Classification and Application," where students learn to identify and classify more than 150 common medicinal plants with practical application on dry herbal samples. He will also use the garden to teach a related class in the spring for students who want to take those skills a step further.

"Having a Chinese herb garden provides our

community and students with a direct outlet to gain a greater understanding of the Chinese herbal system and its healing properties," Chen says.

But the learning doesn't stop in Minnesota. This spring Chen will lead a group of horticulture students to China in a global seminar titled, "From Farms to Pharmacies." Through the three-week international class, students will gain experience in growing, processing, and applying medicinal plants for human health and well-being via visits to herb farms, national institutes of Chinese medicinal plants and their gardens, a supermarket for herbs, a herbal pharmaceutical factory, and an ancient tea plantation.

Chen says classes and opportunities that take learning to the next level are key to preparing horticulture students to work in a global environment.

"It helps them to understand the system by experiencing it," he says.

Faculty & Staff Use New Native Tree Techniques to Fight DED

Dutch Elm Disease (DED) is a fungal pathogen that rapidly kills trees of all sizes – and usually in only one season.

DED devastated the Twin Cities' urban forest canopy in the 1970's. According to Research Scientist Chad Giblin, local researchers initially bred Asian species known to have resistance or tolerance to the disease. But in 2005, Giblin and other University colleagues were alerted to several Minnesota-native species that appeared to have survived DED.

The discovery sparked the development of a new research project by Giblin, Professor Jeff Gillman, and several other U of M researchers. Through the project, Giblin says they hope to find and then release local genotypes that are resistant to the disease. Using na-

tive species would lead to releasing trees that were already known to survive the Minnesota climate.

"With emerald ash borer disease, we're already losing another large chunk of our canopy cover," he says. "Having hardy, local, disease-resistant or tolerant species gives us more options for replacing those trees."

To conduct the study, which is sponsored by the Minnesota Turf and Grounds Foundation (MTGF), Giblin and the research team locate elm trees known to have DED resistance or tolerance. They clone the cuttings and then inoculate them with the disease by drilling holes and injecting the fungus.

The project will take close to 10 years, but Giblin says they have already collected valuable information thanks to



Giblin (right) and his colleagues are investigating resistance to Dutch Elm Disease in trees native to Minnesota.

enthusiastic community support.

"The elm is part of our urban forest history and culture," he says. "Its reestablishment would be a source of pride and inspiration here."

Excellence.

Graduate Student Researches Solution for Salt-Tolerant Turfgrass

From the day he started his graduate studies in the department, Josh Friell hit the ground – literally. Friell, who is pursuing a Ph.D. in turfgrass science, began a three-year research process to evaluate roadside turfgrass sites for their salt-tolerance.

“The varieties of grasses had not been evaluated since the seventies, and newer and better varieties were available,” Friell explains. “The mixture used was fairly old so there was a good chance we could create a better mix for growing sod that can be used on roadsides. We chose to study salt-tolerance because we have seen the amount of salt put down on roads can be a major factor in turf dying each year, even before water deficit or disease.”

And if there is one thing Minnesota uses in the winter, it’s salt. Road salt use has been rising steadily for more than 20 years, according to an article this year by the Star Tribune. The article cited a recent study by engineers at the U of M that found the Twin Cities metropolitan area alone drops approximately 350,000 tons of salt during an average winter.

It’s easy to see why: salt is inexpensive, easy to dispense, and very effective at keeping roads safe in the winter. However, its continued use also impacts the economy and environment in negative ways.

The project is in partnership with the Minnesota Department of Transportation. During the first year, Friell says they successfully evaluated cultivars and identified those showing a higher level of salt tolerance. Now they will create and evaluate mixtures containing varying percentages of each cultivar. The resulting mixture will contain anywhere from two to 10 species.



Graduate student Josh Friell takes digital pictures of different pots of grass sitting in salt baths. He will upload them to a computer program to measure and analyze brown and green tissue to tell which varieties are being damaged by salt.

Friell and other researchers have used fieldwork, as well as a hydroponic growing system they built in the greenhouse specifically for this project.

“In the field there are other actors you can’t control, like disease or people driving through the plots, but in the greenhouse we have the big tubs and set them up to grow these grasses hydroponically,” he says. “This way we can control the amount of salt in the nutrient solution, which gives us a really good idea of specifically how each grass responds to salt with all other factors being controlled.”

In the end Friell says they hope to develop a recommendation that will be a certain percent of each species. They will then provide a list of cultivars users can choose from within each species.

Friell says the benefits to salt-tolerant turf are clear.

“Better turf could lead to increased water quality, better erosion control on roadsides, more efficient runoff water filtration, and reduced cost of repair and replacement,” he says. “This could lead to a lot of economic savings.”

Returning from Abroad

Welcome back to **Professor Neil Anderson**, who spent last year in the Czech Republic on a Fulbright Scholarship!



Anderson drove more than 12,000 kilometers collecting reed canary grass along the six major Czech rivers, as well as the Zlata Stoka (Golden Canal) and several historic fish ponds. He spent the winter teaching and doing molecular analysis, along with blogging about his research and visiting regions of France, Greece, Italy and Slovakia.

Above, Anderson is pictured in front of the Renaissance Fountain in Ceske Budejovice, the city in which he lived. To learn more about his experiences, check out his blog at <http://blog.lib.umn.edu/ander044/fulbright/>.

Community.

Cold Climate Wine Winners

Third Annual International Cold Climate Wine Competition Held on St. Paul Campus in August

The University of Minnesota teamed up with the Minnesota Grape Growers Association this summer to host the third annual International Cold Climate Wine Competition.

The competition, held in mid-August, featured commercial wineries that produce wines from cold hardy grape cultivars. The event highlighted the increasing quality of cold climate grapes, such as those from the U of M's grape breeding program.

Professor Gary Gardner, Enology Project Leader Katie Cook and Professor Jim Luby were among several department members who helped organize and judge the event. Cook said the event was very successful and showcased what the University of Minnesota has done to create a northern wine industry.



Cook holds up cold hardy grapes found at the Horticultural Research Center, located at the University of Minnesota Landscape Arboretum (Photo by David Hansen, University of Minnesota)

“For me, the biggest thrill was seeing all the U of M varieties taking top-honors at the event,” she says. “A late-harvest La Crescent and a Marquette took home ‘best red’ and ‘best white’ respectively, and the best Minnesota wine went to a Frontenac wine.”

Cook said the competition also helps Minnesota wineries to see how they fare against other northern wine regions and continue to get better. Though the La Crescent and Marquette both came from Vermont, many of the state's newest wineries took home gold medals.

“It was exciting to see how well they did when this is really the first time their wines have been put up against others,” Cook says.

From the Department Head...

Welcome to the latest issue of our department's alumni and friends newsletter! I hope that through this newsletter you meet a few of our outstanding students, staff and faculty; learn about terrific new department research initiatives; and know how much we appreciate your part in helping this happen.

This year our department faces significant financial challenges that we know realistically will only increase in the future.

As we receive less support from the state, we will need to depend more on new resources and the generosity of our horticulture community. Because you are a valued member of this community, I ask you to consider a gift to the department this year. Please be watching for a letter later this season detailing specific ways your support can be used to benefit students and our community, such as student scholarships and upcoming research projects. You can also find more information and a “Make a Gift” link to online giving on our website at <http://www.horticulture.umn.edu>.

Thank you for interest and support for the department – it's because of you that we are able to continue providing top-quality education, experiences and opportunities for our students and to continue producing research that will better our community.

Dr. Emily Hoover, Professor & Head



Meeting the University's New President



President Eric Kaler visited the **Turfgrass Research, Outreach and Education (TROE) Center** during Inauguration Week this fall. Here Professor Eric Watkins describes a drought trial in which they are screening a number of turfgrass cultivars for performance without water for 60-75 days. Watkins was promoted from assistant to associate professor this summer. *(Photo by Patrick O'Leary, University of Minnesota)*

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Retirement Announcement

Congratulations to **Professor Peter Olin**, who officially retired from the department this summer! Olin is Director Emeritus of the Minnesota Landscape Arboretum. He has taught many courses and seminars on upper-level design, planting design, gardening and public garden management. We have greatly appreciated Professor Olin's hard work and dedication at the University of Minnesota.

Connect with Us!

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Comments or news for upcoming issues:

Please contact Melanie Dolezal, Communications Associate, at mdolezal@umn.edu

[continued from Creativity]

Q: How did you benefit from the flexible curriculum?

A: The flexibility in the curriculum made it possible for me to individualize my academic experience and map my way toward my goals. At certain times during the process, the freedom to explore my interests and build my own program felt like an uncertain risk, but taking that risk and reinforcing it by seeking guidance and asking questions helped me to succeed. International food security is a broad platform for research and extension, so I took courses in horticulture, applied economics, agronomy, and geography.

Q: What do you see yourself doing in the future?

A: I love to write, and I also love working in the field. I have considered a few graduate schools with programs in international agriculture and community development and have also considered applying to the Peace Corps. I would love to pursue a career in research on food security issues, either internationally or at home.

Q: What is your advice for future students?

A: My experiences and passions were strong motivators for my decisions, and this is why I am so enthused by my program. I would advise future students to allow their interests and experiences to motivate them in the process of developing their programs, to ask questions, and to be creative with their choices.