Department of Horticultural Science
Fall 2015

# Horticulture

Adventure. Leadership. Excellence. Community.

## INSIDE:

**Horticulture. A culture of...**



**West Bank Community Garden**
*Created by students through the Living Laboratory program, the West Bank Community Garden is a place to grow food, build community, and educate all levels of gardeners through rewarding work. Read more about the WBCG inside.*

UNIVERSITY OF MINNESOTA
Driven to Discover℠

# Leadership.

## Rebuilding an Industry Through Science of (the) Green®

For years, the number of active golf players has been declining, and golf courses around the country have been shutting down. People aren't as interested in golf as they once were. Golf courses are expensive to run, and they require inputs such as fertilizer and pesticides to maintain green grass. The sport also demands a lot of time from players in a culture that may be too busy to devote a full afternoon to a hobby.

"Golf is in the midst of significant change," says Dr. Brian Horgan, professor in Horticultural Science. "We have an industry that is in need of change, a golf course that is in need of renovation, and a university that's ready to make a difference. This all gives us a once in a lifetime opportunity to make a major impact on golf." The Science of (the) Green® initiative aims to renovate the Les Bolstad Golf Course, just across the street from the St. Paul Campus, to make it a working model for the industry that will pave the way for a new kind of interaction with golf personally, communally, and generationally.

The vision for Les Bolstad is grand, but with a simple premise at its core: a golf course should be of use to the greater community. Because of its status as a research golf course, Horgan has the freedom to test out innovative ideas. For instance, in any urban setting water runoff is a major issue. Buildings, roads, and sidewalks all take up ground that would have once absorbed rainfall. In many metro areas there is even a tax on water runoff to encourage communities to create landscapes that retain and reuse the water instead of allowing it to wash immediately into the nearby surface water.

"In comes our 150-acre golf course," Horgan says, detailing one of the top ideas for Les Bolstad's renovation. "Think of it as a huge rain garden and rain barrel system. Now this golf course can accept water from the surrounding community, filter it, recycle it, reuse it, and not send it into the Mississippi River." By preventing water from leaving the community, the golf course reduces storm water management costs. Because the biggest time of the year for water runoff in Minnesota is when the snow melts, Horgan hopes to take it a step further. "Why just build a rain garden? Create a snow garden. Keep the soil in an area from freezing so that when the snow does melt, the course is there ready to accept the water."

In addition to being a standout model amongst golf courses in the nation, Les Bolstad will be redesigned with the needs of the golf industry in mind. Much of the research done in the U of M turfgrass science program has focused on developing and caring for grass varieties that require fewer inputs like water, fertilizers, and mowing. Because of this, Horgan and his colleague Dr. Eric Watkins intend to make an area of Les Bolstad a destination for golf course owners across the nation who are considering a renovation to visualize and assess economic decisions that are more sustainable for the future. Horgan compares this area to a home and garden show specifically for more sustainable golf courses. "People come in and they see the options: grass species, irrigation systems, bunker technologies, etc. They can see it right there on a scalable model. When they leave they'll have a couple of options to bring back to their membership, as well as pricing so they know the costs and benefits of implementing those different strategies."

Many of Horgan's ideas are still in the beginning stages; discussions as to which ideas are most viable and how they can best be implemented are ongoing. However, with the amount of plants and wildlife a golf course brings to an area, water conservation is only the beginning of what Science of (the) Green® can accomplish. With Horgan's framework in mind, Les Bolstad can think beyond what makes a golf course useful for a round of golf, and on to what makes it of value to the rest of the community.

The majority of the benefits associated with Science of (the) Green® have

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Science of (the) Green℠

**Above:** *The logo for the Les Bolstad redevelopment initiative, Science of (the) Green®.*

# Excellence.

## *Continued: Rebuilding an Industry Through Science of (the) Green®*

nothing to do with golf itself — they make the surrounding community a cleaner, more sustainable place. However, Horgan hopes to change the culture around golf as well. "My generation's time devoted to this sport is not the same as my parents'. So how do we give options to people to engage them in the sport so that when they do have more flexible time and income, they'll decide to go out and play more golf?"

The answer Horgan proposes is an alternative routing, which means the course will have an opportunity to engage golfers based on time and not on the number of holes. A traditional 18-hole platform will be available but so will a 3-hole lunchtime loop or two consecutive 6-hole leagues playing concurrently. This solution could give golf an opportunity to operate on a smaller platform, reducing the footprint of the course by 35%. This design allows the game to fit the player's schedule, instead of expecting the player to figure out how to fit an afternoon of golf into their busy life.

It's not just Horgan that sees the need for change within the industry. In early November, the United States Golf Association (USGA) and the University of Minnesota announced a five-year research partnership to study and develop solutions to golf's present and future challenges. This doesn't mean that all of Horgan's plans can move forward yet, but it's a big step in the right direction. This partnership will allow both parties to identify projects to make funding plans on an individual basis, and bolsters the research and development capabilities of both organizations.

**Right:** *Professor Brian Horgan hopes to renovate the Les Bolstad Golf Course to breathe new life into the sport of golf across the country.*

It's a massive undertaking with years of planning having already taken place and several more to go before it's finished, but it's a challenge that both the U of M and the USGA are prepared to face head on. "The industry is looking for a leader, and that's what the University of Minnesota and USGA do best. We don't follow, and we don't do anything mediocre. We do things top notch," says Horgan. When it is complete, Les Bolstad will be a premiere golf course, and a destination for other golf course owners hoping to model the techniques used and researched there. With the U of M and the USGA paving the way, Science of (the) Green® will have the power to change the way the world thinks about golf. To learn more about Science of (the) Green® and stay up-to-date on current developments, visit *scienceofthegreen.org*. ♦

## News from the Department Head

The last year has brought several major changes to the department. First, when you're around campus next spring, stop by Alderman Hall to see the new Living Laboratory garden next to the third floor entrance. The garden features a pollinator-friendly yard and plants developed through department breeding programs such as chrysanthemums, roses, and plum trees. Classes will be able to use the garden to teach students about a variety of topics.

In December 2014, Evonne Kuyper retired from her student services role after 35 years in the department. We have a a great team in place with Lauren Drube taking over student services, Echo Martin managing communications, and Samantha Grover as the department administrator. I'm excited for where this team will take us in the future. Over the summer our main office space also received a much-needed update, and it turned out even better than we could have hoped. You can see before and after pictures below. The new layout really brightens up the office and makes it a welcoming environment for students and guests.

We couldn't make these changes happen without our students, alumni, donors, and friends of the department. Thank you for how wonderfully you represent the department around the world, and I hope that the upcoming year brings more good changes for us all.

Happy holidays from Emily Hoover, Department Head

Before

After

# Adventure.

## Creating a Sustainable Community: The Markhart Scholars Program

As Moriah Maternoski (*B.S. Food Systems '17*) starts to talk about all the work that she had to do as a Markhart Scholar last spring — scheduling, emailing, grant writing, evaluating and more — her eyes light up. She's not shy about admitting that the last semester was a lot of hard work, but the experience has had a lasting positive impact on her. It's a feeling shared with the other eight students involved in the inaugural year of the Markhart Scholars Program, a competitive scholarship opportunity that enables students to build a network around community engagement, food security, and sustainable agriculture.

The scholarship, created in memory of Professor Albert "Bud" Markhart, was originally distributed like most scholarships: students applied and the ones selected had the money deposited into their student account. However, Julie Grossman and Mary Rogers, assistant professors in the department, saw the program needed something more to continue to spread the impact that Bud had on the sustainable agriculture community. Bud believed that working with and learning from the community was the key to making a vibrant learning experience on both sides. That realization led Grossman and Rogers to modify the scholarship to include a service-learning course.

Scholars apply and are selected in the fall; then they take the service-learning course in the spring. In the course, they choose a community partner to work with to develop a project that is meaningful to them and the organization. When asked about who Maternoski would suggest become a Markhart scholar, she doesn't even mention majors. "People from any background interested in food should apply to the program. The discussions have been eye opening." The 2015 scholars included students majoring in food systems, plant science, environmental science, and horticulture.

Projects developed in the spring of 2015 ranged greatly in style and scope. Maternoski's project worked with Urban Roots to schedule five cooking classes offered this summer as part of a new program that is led by local chefs and aimed at teens. Other projects involved surveying community members to see how the organization can better serve them, improving storage practices at a food shelf, creating marketing materials that detail the history of the organization, and more. At the end of the semester, each scholar presented their project to their peers and representatives of the community organizations involved.

In her final presentation, Markhart Scholar Yordanose Solomone (*Environmental Science '17*) echoes Maternoski's sentiment about the class. "I learned about a lot more than just food, which I didn't think would happen. I realized that there's so much to food security. Layers like race, family size, social class, residency status, and more. This class has expanded how I think about food and opened horizons."

For many students, their experience with their community organization is their first extended glimpse into a situation they may not have experienced before with people who aren't that different from themselves. This chance to connect with someone new is what truly carries on Bud's legacy. As the Markhart scholars continue through their undergraduate education and start careers of their own, hopefully they will take the work they do as scholars and use it to bring change to the world. ♦

**Left:** *2015 Markhart Scholars, including Yordanose Solomone and Moriah Maternoski (right) with Beth Markhart at the Kermit Olson Awards Ceremony last spring.*

## Gardening Around Campus: The West Bank Community Garden

On West Bank, between the Carlson School of Management and the Rarig Center, a small garden lays brimming with tomato trellises, native perennials, kale, and scattered pollinator beds. It's there thanks to a small cohort of students looking for a place where faculty, staff, students, and community members can gather on the more metropolitan side of campus to have meaningful interactions with a core theme of healthy food and the environment. With the help of the Living Laboratory initiative, an IonE grant, and Professor Tom Michaels advising, these students created the West Bank Community Garden (WBCG).

With the first year completed, some of the hardest parts of creating the garden have been accomplished. The students had several obstacles to face, including how to design this community garden in the middle of an area whose community changes rapidly. Ultimately the group decided to share produce based on the amount of effort each individual put into the garden as a whole rather than have individual plots. This ensures the aesthetics of the garden are upheld and that the University will welcome the garden in the future.

Now the organizers are looking ahead to next year, which includes garden planning and looking for new leaders. "There are a lot of things we hope to improve on next year," says organizer Louis Mielke (*Environmental Sciences Policy and Management '16*). "We want to get more perennial seeds in, ward off bunnies, and get more variety of produce." If you're interested in learning more about or supporting the WBCG, get in touch with the current organizers at *westbankcommunitygarden@gmail.com* or follow them on Facebook. ♦

# Community.

## Nominations for the Horticultural Science Distinguished Alumni Award

The Department of Horticultural Science is proud to open nominations for our inaugural Distinguished Alumni Award. This award will honor an alumnus/alumna who has attained professional distinction in horticultural science as evidenced by outstanding professional achievement on a state, national, or international level.

Nominees will be chosen based on demonstrated distinction in their professional lives, recognition as an authority within the field of horticultural science, and exceptional service to or volunteer activities in her/his field. The recipient of the award is asked to attend the Kermit Olson Memorial Lecture on April 13, 2016. Their visit will entail participating in discussions with undergraduate students on career development, speaking to class(es), and attending the Kermit Olson Lecture.

Anyone may nominate an individual for this award, and individuals are welcome to self-nominate. Eligibility requirements and award criteria are on the nomination form.

**Deadline Extended**

Due by midnight on January 6, 2016

Apply at z.umn.edu/hortscialumniaward2016
Please contact Echo Martin (mart1794@umn.edu)
or 612-624-4242 with any questions.

## Remembering Arnold Blomquist

In early August, alumnus Arnold 'Arne' Blomquist passed away. Arne earned his master's degree (1961) and Ph.D. (1963) from the University of Minnesota in horticulture, genetics, and biology. Known for his strength of character and physical constitution, Arne used his extraordinary intelligence and bold leadership to spearhead many projects. He has led military, professional, religious, and education programs that benefit humanity and are a credit to the University.

Perhaps his most notable accomplishment however was his involvement in designing, launching, and administering Tumaini University — now the University of Iringa — in Iringa, Tanzania, which is currently the headquarters for the Institute of Agriculture. Through the University of Iringa, Arne spread his passion for higher education and helped to improve agricultural practices in Tanzania; today the school boasts an enrollment of about 4,500 students.

While he is interred in Michigan, a burial spot is also reserved for him at the University of Iringa to acknowledge his outstanding accomplishments. ♦

## Growing Plants on the Patio with Hydroponic Salad Tables

Sitting on either side of the main entrance to Alderman Hall this summer were two small wooden boxes brimming with salad greens. These little boxes are the current iteration of a project initially developed by Professor Tom Michaels in 2011, and worked on by many undergraduates since then, called hydroponic salad tables. The tables offer a way for people with little to no land to grow their own salad greens.

**Below:** *One of the two hydroponic salad benches outside Alderman Hall this summer.*

These tables are small, but pack a big punch. The conventional table is two feet by four feet and holds 24 plants at one time. It might not sound like much, but that adds up to three fresh salads a day for seven weeks. The tables outside of Alderman debuted a new, more compact version called the hydroponic salad bench. It's approximately 1/3 the size of the table, making it easy to fit in just about any location with sufficient light. The bench still produces enough for one fresh salad a day, which is more than many urban families get.

The key to the success of these little tables is the lack of electricity. They use static hydroponics technology. "It's like a deep water system," says Michaels, "but with an air gap between the nutrient solution and the pots so that part of the roots are in the air and absorb oxygen. There's no need for electrical pumps to power an air bubbler, dribble a nutrient solution, or fill/ drain a tank." Because of this, the salad tables can be placed anywhere outdoors without having to worry about finding a plugin or tripping over cords.

While the salad tables work great outdoors, Michaels has done some experiments bringing them inside as well. Unfortunately, indoor natural light isn't quite enough for the salad tables, even with a south-facing window. However, getting a good grow light system set up over a salad table has been shown to yield nearly as many fresh greens as planting outdoors.

The tables are easy to set up, and $60 can purchase enough building supplies, nutrients, and seeds to last several years. Interested in creating your own salad table? Read more of the research behind them and download construction plans at *z.umn.edu/hydroponicsaladtables.* ♦

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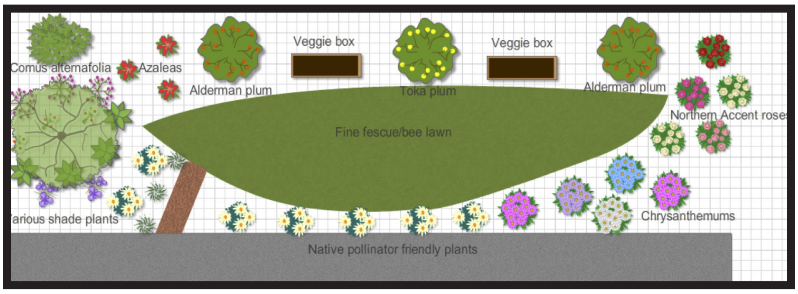


**Above:** *Design plans for the garden in front of the 3rd floor entrance of Alderman Hall. Much of the initial implementation has been completed.*

## Alderman Hall Living Lab Garden

This summer the front of Alderman Hall was re-landscaped thanks to the Living Laboratory initiative and generous donations from our alumni and friends. The new garden combines plantings that are both aesthetically pleasing and environmentally beneficial to help create a more sustainable campus environment. Read more about this and other exciting changes in the department in the News from the Department Head.

## Save the Date!

Mark your calendar for our annual Kermit A. Olson Memorial Lecture. Alumni, friends, faculty, staff, and students are encouraged to attend. This year alumni, graduate, faculty, and staff awards will be presented at the lecture.

### Kermit A. Olson Memorial Lecture

Wednesday, April 13, 2016
Lecture and awards starting at 3:30 p.m.
UMN St. Paul Campus, room TBA

Lecture featuring guest speaker

### Dr. James Simon

Professor, Department of Plant Biology and Pathology
Rutgers University

Detailed email invitation to follow.