

Plant Science Says



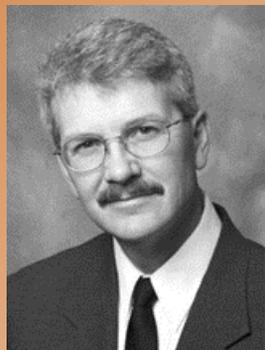
Happy Halloween!

October, 2014

The Department of Plant Sciences and Plant Pathology

Volume 16, No. 9

Edwards and Schuler Receive Awards



From Big Sandy hails The College of Agriculture and Montana Agricultural Experiment Station's Honorary Alumni Award winner Lochiel "Lochy" Edwards. A third-generation Montana farmer, Lochy was born and raised in Big Sandy and still works the family's dryland wheat and barley operations. He has an

extensive record of public service and leadership - Montana Farm Bureau, Montana Grain Growers Association, Montana Grains Foundation, National Association of Wheat Growers and many others.

Most recently Lochy is lending his talents to creating an endowed chair position in our Plant Sciences and Plant Pathology Department. On October 26, 2013, Lochy, along with Dale Schuler, presented MSU President Cruzado a \$1,000,000 check from the Crop Producers of Montana for the start-up funding for this new position. Lola Raska with Montana Grain Growers says it best, "I can't think of a more deserving individual to receive this honor. Through his years as a leader of the Montana Grain Growers Association, his longtime collaboration with university researchers and his ongoing volunteer efforts on behalf of Montana grain producers, Lochy has always been a strong supporter of MSU and the College of Agriculture."



Dale Schuler, who runs Schuler Bros. farm in Carter, has been a continual force for economic development in Montana and a key advocate for the first endowed chair in MSU's College of Agriculture.

He also has an extensive record of public service and leadership - Montana Grain Growers Association, National Association of Wheat Growers/U.S. Wheat Associates Joint International Trade Policy Committee, and the Montana Grains Foundation. In 2012, Schuler was honored with the College of Agriculture's Outstanding Ag Leader Award.

A Visit from our Legislators By Eva Grimme and Harvey TeSlaa

On September 19, our Department had the privilege of hosting ten legislators from Helena, Taylor Brown, one of the nation's leaders in the field of agricultural broadcasting (Northern Broadcasting System), Collin Watters, Executive Vice President of the Montana Wheat and Barley, and members of the Montana Grain Growers Association. They visited the Cereal Quality Lab and the Plant Disease Clinic, the Seed Lab and the Post Farm. In addition, David Wichman, Superintendent at CARC, presented a seminar entitled "Research Center Environment and History".



The legislators that visited our Department (Left to Right): Representative Mike Cuffe (Eureka), Senate Candidate Mary Moe (Great Falls), Representative Mike Lang (Malta), Rep. Dennis Lenz (Billings), Representative Christy Clark (Choteau), Representative Dan Salomon (Ronan), Lola Raska (Montana Grain Growers Association), Representative Alan Redfield (Livingston), MGGGA Lobbyist John Semple (Helena), Senator Brad Hamlett (Cascade).



John Sherwood, Department Head, speaking with Ben Tiller, attorney for the Montana Department of Agriculture.

During the tour of the Cereal Quality Lab, participants were educated on how the Lab assists the Spring and Winter Wheat breeding programs. They were shown the different tests that are performed on wheat. Many topics of discussion came up such as growing organic, how there is a need to be a responsible grower, falling

numbers, high and low protein wheat and their effects, and how different conditions can affect the end product of wheat and Montana check off dollars.

Mary Burrows demonstrated the impact of the Schutter Diagnostic Lab throughout the state. Examples included Ascochyta testing of pulse crops such as peas, lentils and chick peas; screening Ascochyta cultures for fungicide resistance and making relevant recommendations; and mushroom, plant, and insect identification. Mary also had one of the legislators demonstrate fast detection kits for TMV—Tobacco Mosaic Virus and Eva Grimme demonstrated the DON test for mycotoxin due



John Schutter -Schutter Seed Farm, Inc., Lola Raska, Mary Burrows and Mike Lang having an in-depth discussion during a tour the legislators took of the Schutter Diagnostic Lab. John Schutter talked about his family farm and how they use the Lab.

to Fusarium Head blight. Fusarium head blight, also known as scab, was widespread in the state this year. Hilary Parkinson and Jane Mangold demonstrated some of their seedling identification interactive activities, talked about Early Detection and Rapid Response, and offered legislators their new weed seedling identification guide.

North American Colleges and Teachers of Agriculture Conference By Tracy Dougher



"Learning Runs Through It" was the theme for the 60th annual NACTA conference hosted at Montana State University, June 25-28, 2014.

Keynote speaker Craig Mathews, owner of Blue Ribbon Flies and founding member of 1% for the Planet, kicked off the conference. He emphasized the importance of giving back to the environment that we utilize and the importance of the university's role in teaching stewardship. The three day conference was filled with more than 300 participants networking over 182 posters and 48 oral presentations. Seven workshops this year were drawn from submitted abstracts changing presentations into active learning for participants on topics such as "Speeding with Technology", "Field-Based Learning", and "Are field trips worth it?". The Gaines Hall Technology Enhanced Active Learning (TEAL) Classroom and MSU library's new innovative classroom were the focus for a workshop on innovations in classroom design.

To be sure our participants were not locked up in the SUB for the duration of the meeting and were properly exposed to Montana, participants and guests were treated Thursday night to an Evening in the Mountains with dinner at Deer Park Chalet. A choice of four Friday afternoon tours featured MSU's interaction with the community including, Copper Spring Ranch, Eaglemount, Kimm's potatoes, Visser Greenhouses, Flying D Ranch, MSU Horticulture Farm, and Hyalite Canyon. We did not need to go far to impress our visitors.

A tradition at each year's meeting is the silent book auction which usually features 20 -25 donated textbooks from Cengage and various faculty. This year Cheryl Moore-



NACTA participants tour the horticulture therapy gardens at Eaglemount.

Gough donated over 200 books from Dr. Bob Gough's collection. The auction contributed over \$4000 to the NACTA foundation. Additionally, the NACTA Journal Teaching Tips Award was renamed this year to honor Dr. Bob Gough for his contributions to NACTA, particularly his years of service as editor of the NACTA Journal. Cheryl Moore-Gough was recognized at the awards banquet on Saturday evening.

Notable events included installation of Dr. Bill Hoch (PSPP) as Western Region Director and Dr. Shannon Arnold (AgEd) received the Teacher Fellow Award.

During the awards ceremony at the end of the conference, MSU received a standing ovation for hosting the annual meeting. I am pleased and humbled to have worked with such an incredible group of people and to share MSU's resources and talent with NACTA.

The 2014 NACTA Planning Committee devoted time to organizing the details of the conference and running the sessions: Tracy Dougher, Jennifer Britton, Bill Hoch, Carl Igo, Clayton Marlow, Bok Sowell, Anton Bekkerman, Shannon Arnold, Tracy Sterling, and Gary Brester.

Speakers, Workshop and Tour Organizers: Tony Hartshorn, Matt Rognlie, Amanda Buckley, Ritchie Boyd, Diana Cooksey, Justin Bartels, Charissa Bujak, and Nora Smith.

Session Moderators: Alison Harmon, Bill Dyer, Clain Jones, Rebekah VanWieren, Mac Burgess, Florence Dunkel, Shelly Lawton, Ashley Powell, and Rosemary Keating.

Celebration of Invention

On September 11, 2014, MSU celebrated the impact of research by inducting nearly 100 of its faculty and students as well as 28 local businesses into the prestigious National Academy of Inventors. The National Academy of Inventors was established to honor academic invention; recognize and encourage inventors; enhance the visibility of university technology and innovation; encourage the disclosure of intellectual property; educate and mentor innovative students; and translate the inventions of its members to benefit society. MSU inventors named on issued patents and Plant Variety Protection Certificates were honored at the ceremony.

The Keynote speaker for the event, Renee Reijo Pera, MSU's Vice President for Research and Economic Development, said that she is optimistic about continued success for MSU research funding for a variety of reasons, beginning with the fact that 39.5 percent of MSU research applications are funded, which is twice the national average. Reijo Pera also said her vision is that MSU would be the number one research university in the Rocky Mountain region, which she believes is possible for several reasons including geography, fundability of MSU faculty, and a good financial base in the community and surrounding area.

Reijo Pera said MSU needs to submit more applications, target more top peer journals and fully engage the surrounding business community.

Following are the honorees from our Department: Nancy Blake, Tom Blake, Phil Bruckner, Bryn Daisy, Florence Dunkel, Gene Ford, Mike Giroux, Bill Grey, Barry Jacobsen, Konduru Krishnamurthy, Susan Lanning, David Sands, John Sherwood, Gary Strobel, Luther Talbert, Mark Young, and Nina Zidack. Congratulations to all of you!

Young Named New Associate VP

Mark Young was recently named the new Associate Vice President for Research and Economic Development. In this position, he will be assisting with all aspects of promoting research excellence at MSU. His overall goal is to advance the diverse research activity at MSU. Mark will continue to maintain his own virus research program. Congratulations Mark!

Service-Learning Design Project at Missouri Headwaters State Park

By Rebekah VanWieren

Senior landscape design majors are participating in a service-learning design project at Missouri Headwaters State Park, as part of the "capstone" course, HORT 432: Advanced Landscape Design.

Students will be helping three community partners, Montana Fish, Wildlife and Parks; Sacajawea Audubon Society; and Holcim Inc., envision site designs for a new trail extension project that would provide access to a nationally-listed Important Bird Area, enhance habitat, and connect people with MT ecosystems and cultural history.

We do a semester-long service-learning project in this studio course each year, giving students the opportunity to practice their design processes in a real-world context while helping local communities. Student are excited to participate in this project, especially since a portion of the master plan has great potential to be implemented in the very near future. The project has fascinating characteristics at the site and

community scales, and at our initial site visits, students met with local bird experts, toured the cement plant, and explored the ghost town-like village of Trident.

Students will organize and facilitate a stakeholder visioning workshop on Tuesday, October 14, and will share their site design solutions at a public review, on Friday, November 21, starting at 1:10 in 138 ABB – anyone is welcome.



Project Site Map



Students exploring the Trident, MT village site



Site visit with community partners

Species Named After Strobel



A new Muscodor species has just been described by a group of Indian mycologists and published in Mycotaxon. The species designation is *M. strobelii* in honor of Gary

Strobel. This is probably the first time that an MSU scientist has been honored in such a unique manner. Strobel's group was the first to describe this fungal genus about 15 years ago. The fungus is unique in that it always appears as an endophyte and it is always making a mixture of bioactive gases. Strobel has been issued numerous U.S. and international patents on this fungal genus

and it and its gas compositions have and are finding their way into U.S. and international businesses for multiple uses. As an example, Marrone Bioinnovations of Davis, California is in the final process of getting EPA approval for the release of *M. albus* for agricultural applications, especially for soil born plant disease control.

Montana Ag Live Schedule for Fall, 2014

October 5

Clain Jones, MSU Extension Soil Fertility Specialist, "Fall fertilization programs in both farm and urban settings"

October 12

Robert Sanders, Ducks Unlimited Manager of Conservation Programs for Montana and Kent Wesson, Phillips County Farmer and Rancher, "Coordinated conservation and farm and ranch programs can be beneficial to both the environment and production agriculture"

October 19

Jess Aber, DNRC water resource staff scientist and member of the Governors Drought Advisory Panel, "Water usage in Montana and the factors that influence long and short term availability"

October 26

Steve Jenkins, Engineer, Western Transportation Institute, "Road issues in rural Montana cities and counties"

Course Focus

Plant Propagation - HORT 245

By Tracy Dougher



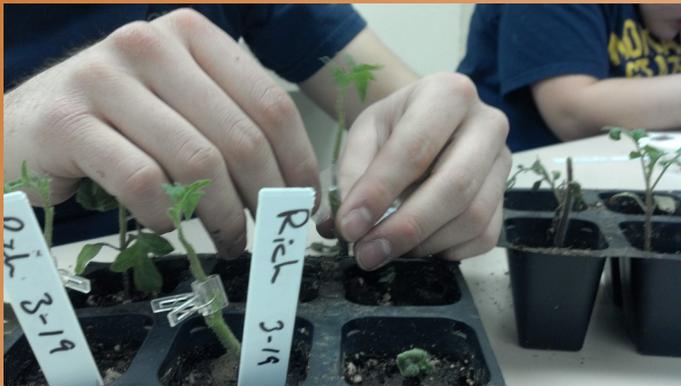
Though I say that all my courses are fun to teach, this course is far and away the most fun for the students and me. Every week in class we use one propagation technique or another to produce new plants. Students' homes (or their parents') are filled with plant materials after this course.

The course moves quickly as we spend only a week on each method, including softwood cuttings, hardwood cuttings, layering, specialized structures, tissue culture, herbaceous and woody grafting, budding, seed production and testing, and seed dormancy. The MSU Potato Lab and Seed Testing Lab graciously instructs our students on tissue culture and seed testing, respectively. This instruction gives students firsthand knowledge of the direct application of the technique. The course also makes full use of the Plant Growth Center atrium plants.

I was a TA for a propagation course at Purdue University taught by Bob Joly and Bruno Moser, authors of the lab manual I utilize. The manual has been through many iterations of my own in the 14 years of my teaching this course so that each lab focuses on a small experiment within the attempt to learn the technique. In more recent years, student experimentation with native plants has yielded insight into propagation and production techniques that were previously unknown for those species. I have widely shared this lab manual with new faculty at other universities, as well as science and agriculture teachers looking to incorporate more plant sciences into their classroom. Environmental Horticulture Science and Landscape Design students top the list of majors taking the course, closely followed by Agricultural Education and Sustainable Foods. But many students from a vast array of majors including Architecture, Fish and Wildlife, Ecology, Biology, Psychology, and Ag Business pursue a little more knowledge of plant propagation.

Plant propagation is taught in a flipped format and students are required to view material online, read the textbook, and answer questions before attending class. Class time is then spent in discussion either in small groups or as a class. Layout of the course closely mimics the world famous Hartmann and Kester's Plant Propagation textbook which is divided into sections on propagation methods with a chapter on technique and a chapter on biological principles for each method. Monday's class is spent on techniques and production with a subsequent afternoon lab on practicing the technique which can include wandering campus to collect material in its proper phase. Wednesday's class is spent on the biology, physiology, and anatomy of the method.

The course culminates in an afternoon of student demonstrations of each of the techniques. Demonstrations require the students to study a particular technique more in-depth, prepare and maintain the necessary plant material, and research experiments that utilize the technique. Demonstrations are given to either a 7th grade science class (Sacajawea Middle School 7th grade science class visits MSU Horticulture each spring) or to Master Gardeners. One of the requirements is that our audience members can practice the technique and take home propagated plant material, so the students must produce enough material for everyone to practice!



A student wraps a tomato/potato graft with parafilm; this is compared to a plant held together with a grafting clip in the foreground.

Most often, the most shocking exercise for many students is a tomato/potato plant. This grafting exercise helps the students learn about taxonomic relationships (more closely related species can be joined by grafting), the plant healing process (joining of the graft union), function of anatomical structures (necessity to keep moist due to loss of xylem connection), and sanitation (the art of connecting to plant pieces while keeping them clean!). Though most students love to take this plant home, I inevitably end up with a few plants myself and each year enjoy small tomatoes and potatoes from the confines of my deck container garden.

New Employees

Bright Agindotan, PhD, MBA, PMP - Pulse



Crop Diagnostician
I was excited to start my new job on September 15 as a Pulse Crop Laboratory Diagnostician in the Department of Plant Sciences and Plant Pathology. The laboratory is currently at the Marsh Laboratories.

I have a doctorate degree in biochemistry from the University of Ibadan in 2001 and an MBA from the University of Illinois in 2014. I have over 11 years of postdoctoral experience in molecular diagnostics of viruses. Most recently, I worked for six years as a research associate at the Energy Biosciences Institute, University of Illinois, identifying viruses of bioenergy crops. For three years, I worked at Cornell University developing macroarray systems for the detection of viruses and viroids. I have also worked at Kansas State University, the University of Idaho, The International Institute of Tropical Agriculture (Ibadan, Nigeria), and the Leibniz Institute DSMZ-

German Collection of Microorganisms and Cell Cultures (Braunschweig, Germany).

My outstanding achievements include the discovery of nine new viruses in bioenergy switchgrass, the identification of leafhopper vector of *Switchgrass mosaic virus*, the development of membrane-based macroarray for the detection of viruses and viroids of solanaceous crops, and the production of the first monoclonal antibodies to Banana streak virus.

My spouse, two daughters (11 & 14), and a son (10) joined me on September 30.

My desire is to make significant contributions to the Department of Plant Sciences and Plant Pathology through competitive diagnostic services and other departmental assignments. I need your support and encouragement.

Publications

Morales-Rodriguez, A., R., O'Neill and K.W. Wanner. 2014. A Survey of Wireworm (Coleoptera: Elateridae) Species Infesting Cropland in Montana. *Pan-Pacific Entomologist*. 90(3):1-10.

Morales-Rodriguez, A and K.W. Wanner. 2014. Efficacy of thiamethoxam and fipronil to control *Limonioides californicus* and *Hypnoides bicolor* applied alone and in combination. *Pest Management Science*. DOI 10.1002/ps.3877.

Etzler, F. E., K. W. Wanner, A. Morales-Rodriguez, and M. A. Ivie. 2014. DNA barcoding to improve the species-level management of wireworms (Coleoptera: Elateridae). *Journal of Economic Entomology*. 104 (4):1476-1485.

Funded Research Expansion Proposals

Vice President for Research and Economic Development, "Microbial and Environmental Factors in Bee Population Health and Pathogen Transmission," Michelle Flenniken, Laura Burkle, Megan Higgs.

Agriculture Research Award, "Marketing Low Glycemic High Protein Naked Oats to a Thirsty and Hungry World," Michael Kroff, David Sands, and Alice Pilgeram.

Grants

Norm Weeden, U.S. Dry Pea and Lentil Council, "Genetics of Fusarium Root Rot"

Mike Ivie, Montana Department of Agriculture, "Pine shoot Beetle Survey"

Mary Burrows, U.S. Department of Agriculture, "Pulse Crop Diagnostic Laboratory"

Invited Talks

Michelle Flenniken and Laura Brutscher, a Microbiology PhD student in the Flenniken lab, presented their research results at the Western Apiculture Society Meeting in Missoula, MT, Sept. 17-18, 2014. David Baumbauer also attended the meeting, which featured talks from leaders in bee research, bee extension, agrochemical industries, sustainable agriculture experts, and beekeepers from both small and large scale beekeeping operations.

Thank you!!!

By Anuar Morales-Rodriguez

After about five years, I finished my PhD, and I have moved to UC-Riverside, California for a Post Doc position in the Department of Entomology. I will be working with the Biological Control of Asian Citrus Psyllid in California. Looking back, I want to take this opportunity to thank everyone who helped me throughout the entire process of my research from the beginning to its completion.

First, thank you to my advisor, Dr. Kevin W. Wanner, for his invaluable guidance, advice, and support. Also thank you to my committee members, Drs Michael A. Ivie, David K. Weaver and Robert K. D. Peterson, for all your advice. A huge thank you to the Wanner laboratory team who helped me so much including Peggy Bungler, Aracely Ospina, Frank Etzler and Ruth O'Neill. I was very lucky to have an incredible group of undergrad and high school students working with me including Emily Rohwer, Hannah Johnson, Alix Bold, Branden Brelsford, Ammiel Branson, Meghan McGauley, Laura Morales and Diana Florian. Thank you for your enthusiasm, energy and hard work. My work was made possible largely with the aid of Research Center Superintendents David Wichman, CARC, Grant D. Jackson and Gadi V.P. Reddy (WTARC) and Dave Gettel (Post Farm) for allowing us to collect and conduct wireworm research at their facilities. I also want to thank John Miller (WTRC) for his invaluable help seeding and harvesting all the different field trials.

Thank you to all the helpful people in the Department of Plant Sciences and Plant Pathology, especially Jim Berg, Ron Ramsfield, and Jeff Johnston for all their help in different aspects of my work. A special thank you for all their help and support to Irene Decker, Tamara

Parnell and Jill Scarson. Finally, thank you to all my friends and colleagues at Montana State University for making my stay a memorable one. I miss all of you!!

Emerald Ash Borer Roadshow September 17, 18, 24, 25

By Laurie Kerzicnik

Although we don't have the Emerald ash borer (EAB) in Montana yet, we headed out to Sidney, Miles City, Glasgow, and Lewistown to do workshops and educational outreach to prepare for its arrival. Among the other workshop participants were Ian Foley (MT Dept. of Ag), Shayne Galford (APHIS), and Patrick Plantenberg (MUCFA). Extension agents, city foresters, and community members attended the workshops.

The workshop covered topics such as "What's at stake for Montana ash?", EAB biology and other ash pests, a tree planting demonstration, destructive branch sampling, Montana's EAB response plan, regulatory actions, and treatment. Emerald ash borer was discovered in Detroit, Michigan in 2002. It is now present in 22 states and two Canadian provinces. It has and will continue to be one of the most destructive invasive pests introduced to North America and is expected to wipe out any untreated ash that it encounters. Montana, compared to other states, has a significant percentage of ash in many of its communities. Great Falls, Bozeman, and Helena have over 50% ash in their urban communities. Early detection is difficult with this pest, and it is often present for several years before it is discovered.

Montana communities have to be proactive in preparing for the arrival of this pest, including diversifying tree plantings, keeping ash trees healthy, and developing a response plan for their community prior to the arrival of EAB. Tree inventories are also a crucial component in assessing future management costs.

After its arrival in Montana, treatment options include the removal/replacement of trees and insecticide treatments. Since its discovery in 2002, several chemical options are now available for treatment of healthy ash trees, with the key point being "healthy". Preventative treatments are not recommended unless EAB is discovered within 15 miles of your location due to costly treatments.



Shayne Galford demonstrating the "destructive sampling technique" for detecting the Emerald ash borer larvae.

**Master Gardener Celebration
By Toby Day
Extension Horticulturist**

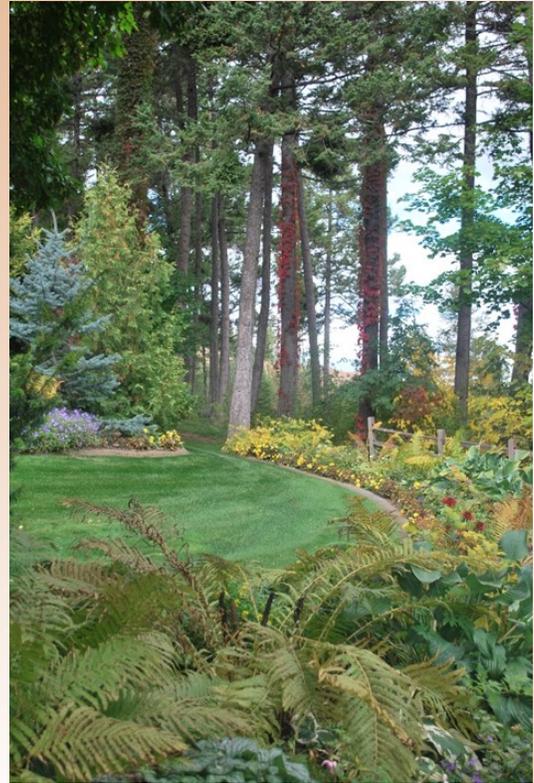
Nearly 50 Master Gardeners attended the biennial Montana Master Gardener Celebration in Kalispell, Montana September 18-20. The Master Gardener Celebration is the year-end conference in which Master Gardeners tour a specific region, learn from area educators and horticulturists and attend an award banquet. This year attendees started the celebration by touring a hops yard where over 39 varieties are being tested through a grant written by Pat McGlynn, the Flathead County MSU Extension Agent. The tour was followed up by a tour of the Great Northern Brewing Company in Whitefish (<http://www.greatnorthernbrewing.com/>).



Tour of a hops harvester, the only one like it in the state

The following day, the Master Gardeners had the privilege of touring Bibler Gardens, a private display garden in Kalispell. Designed by the late Sam Bibler, the extensive gardens include ponds, waterfalls, sculptures, and an arboretum. There is also an extensive fruit tree orchard and green house facility on the

grounds. To understand the vastness of the gardens, the grounds are maintained by 10 full-time horticulturists. The most amazing statistic (that we were not able to see due to the season) is that over 200,000 tulip bulbs are planted in the gardens *each* year (<http://biblergardens.org/>).



The group then had a luncheon at the Apple Barrel Country Market and Glacier Sun Winery (<http://www.applebarrelmt.com/>), owned by Dave and Dana Cordell. Master Gardeners got to shop in a Farmer's Market style store and even got to taste some award winning wine produced by Doug Wagner. If you are ever in the Kalispell area, this is a must-see store!

We then toured Glacier Nursery, one of the largest wholesale nurseries in the state (<http://www.glaciernursery.com/>). Owned by Desi and Brad Brown, Glacier Nursery offers over 550 varieties of trees and shrubs with over 1,500 spring dug B&B trees and over 100,000 containerized trees and shrubs. Glacier Nursery is a true Montana success story, as Brad explained when that the nursery was started in 1983 with 100 aspen trees that were watered by hand! Chances are, if you shop at one of our local nurseries, you will see the Glacier Nursery tag on many of the trees and shrubs being sold retail.

The award dinner and banquet had Brad Brown from Glacier Nursery talk about the appropriateness of some of the trees and

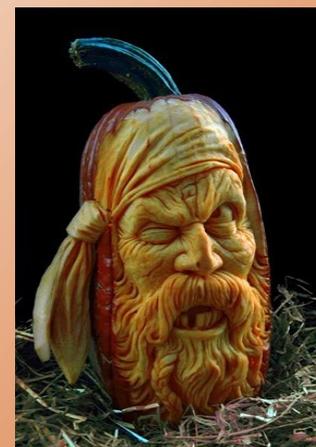
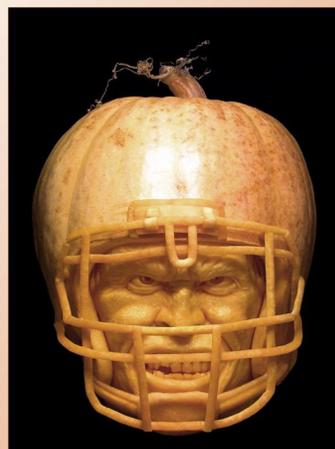
shrubs coming into Montana. There was also a presentation by Brent Sarchet and myself on the Heritage Orchard project we have been working on. The good news is that the Heritage Orchard grant was funded for the next three years! There also was a program on the Montana Women's Prison Master Gardener classes, the garden and greenhouse presented by Bob Paul, Deputy Warden at the prison, and Sharon Wetsch, who coordinated the Master Gardener classes at the prison. Wetsch received the "Master Gardener of the Year" award for her work on that project and the many other projects she works with in Billings and surrounding areas. There were four other awards given that night to Montana Master Gardeners and coordinators.



David Baumbauer, Manager of the Plant Growth Center, weighing a giant pumpkin at last year's event (Photo courtesy of the Bozeman Daily Chronicle)

A little closer to home is the Gallatin County Giant Pumpkin Contest October 18th at Rocky Creek Farms (<http://www.rockycreekfarm.com/>), three miles east of Bozeman on the Frontage road. The contest will start at 10:00 am with entries being taken from 8:00 am until the weigh-off. There will be prizes and fun activities for all. Rocky Creek farm is a great place to bring the family, and I assure you that you will see some giants! Call me, Toby Day, at 579-8438 if you have any questions. I hope to see you there!

Finally, for your viewing pleasure, and one of my favorite pumpkin carving artists, I want to introduce you to Villafane studios (<http://villafanestudios.com/>). It has to be one of the coolest pumpkin carving studios nationwide. I got to see Ray Villafane on the Martha Stewart show and decided to check out the website out. He is pure genius. I hope it will give you some ideas. It inspired me to have my giant carved by a local artist this year for Halloween!



Amy Grandpre, Sharon Wetsch, Master Gardener of the Year, and Toby Day

The following Saturday the group attended seminars by Bill McClaren, author of the *Encyclopedia of Dahlias* (<http://www.amazon.com/Encyclopedia-Dahlias-Bill-McClaren/dp/1604690631>), on the importance of the soil web, Pat McGlynn, Flathead County Extension agent, on the fruit research she has been working on in the Flathead Valley, and Teresa Stump, local Master Gardener and Native Plant Society member, who had a short presentation and a tour of the Central School Native Plant Gardens. Overall the celebration was a huge success. The next Master Gardener celebration will be held in Great Falls the fall of 2016.

**Giant Pumpkins!
By Toby Day
Extension Horticulturist**

It's time again for giant pumpkins! There are two events that you should know about if you are interested in these giant squashes! The first is the Big Sky Giant Pumpkin Weigh-off in Polson, MT this Saturday, October 4 at Murdoch's Ranch and home supply. There will prizes, games, food and fun. The weigh-off begins at noon! For more information here is the Big Sky Pumpkin Growers website: <http://www.bigskypumpkingrowers.com/>

October Birthdays

Roshan Archarya	1
Florence Dunkel	10
Bob Sharrock	11
Joanna Gress	13
Jamie	20
Ed Barge	24



Recipe of the Month

Popcorn Balls courtesy of pioneerwomancooks.com

1/4 t peanut oil
6 T popcorn kernels
1/2 c sugar
4 T butter
6 oz mini marshmallow (about 1/2 pkg)
1 c candy corn
1/2 shelled unsalted peanuts
Cooking spray



Add the oil to a medium saucepan (one that has a tight-fitting lid) over medium-high heat. Add the popcorn and shake the pan gently to make sure the kernels are coated. When the oil starts to sizzle, but before the corn starts popping, add the sugar to the pan. Shake the pan again, and when the first couple of kernels pop, place the lid on the pan and shake the pan gently with the other hand while you hold the lid in place. Keep doing this as the popcorn pops, until the popping slows down.

When almost all the kernels have popped, pour the popcorn onto a parchment paper-lined baking sheet, separating the kernels slightly with a spatula or spoon. Let the popcorn cool slightly.

Meanwhile, melt the butter in a separate pot over low heat. Add the marshmallows, stirring as they melt. When the marshmallows are almost melted, add 2 or 3 drops of orange food coloring (this is optional!) Stir it to combine. Remove the pot from the heat and add the popcorn to the pot, stirring immediately to coat it as quickly as possible. Right after stirring, add the candy corn and the peanuts and stir until the candy and nuts are totally worked in.

Spray your hands lightly with cooking spray and form the popcorn mixture into individual balls 2 to 3 inches in diameter. Set them aside and let them cool and set completely! Serve at room temperature.

Jill's Photography



Recently, Jill had over ten photographic images of bacterial mats that grow in Yellowstone's unique and ever changing thermal features on display at the Bozeman Public Library. The photographs featured the colonies of bacteria that thrive in the scalding water of Yellowstone Park.

"With this series, I hope to highlight Yellowstone's microcosm; life on an infinitesimal scale, life that is largely unknown, unseen and greatly misunderstood," says Scarson. "I strive to make my art reflect the organic forms and brilliant contrasts that I see with my naked eye and to create them in a way that will force the observer to take a more intimate and panoptic view of Yellowstone's world, within and below."

If you would like to see more of Jill's photography, go to jscarsonphotography.com.



A photograph by Jill Scarson entitled, "Paintbox"